



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 679-2018

**SUPPLY AND DELIVERY OF ABOVEGROUND RADAR VEHICLE SENSING
DETECTOR**

Note to Bidders: Please be aware of revisions to B13.4

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 SUPPLY AND DELIVERY OF ABOVEGROUND RADAR VEHICLE SENSING DETECTOR

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, November 21, 2018.

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 D5.1.

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

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

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

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

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

B4. CONFIDENTIALITY

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

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

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

B5. ADDENDA

B5.1 The Contract Administrator may, at any time prior to the Submission deadline, issue addenda correcting errors, discrepancies or omissions in the Bid Opportunity, or clarifying the meaning or intent of any provision therein.

- B5.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.
- B5.3 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/matmgmt/bidopp.asp>
- B5.4 The Bidder is responsible for ensuring that he/she has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B5.5 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.

B6. SUBSTITUTES

- B6.1 The Work is based on the materials, equipment, methods and products specified in the Bid Opportunity.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least seven (14) Business Days prior to the Submission Deadline.
- B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the material, equipment, method or product as either an approved equal or alternative;
 - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
 - (c) identify any anticipated cost or time savings that may be associated with the substitute;
 - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the Contract;
 - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the Contract.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/her sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.
- B6.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.
- B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.

- B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his/her Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B16.
- B6.9 No later claim by the Contractor for an addition to the price(s) because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

B7. BID SUBMISSION

- B7.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
 - (b) Form B: Prices.
- B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.
- B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely.
- B7.4 The Bid Submission may be submitted by mail, courier or personal delivery, or by facsimile transmission.
- B7.5 If the Bid Submission is submitted by mail, courier or personal delivery, it shall be enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address, and shall be submitted to:
- The City of Winnipeg
Corporate Finance Department
Materials Management Division
185 King Street, Main Floor
Winnipeg MB R3B 1J1
- B7.5.1 Samples or other components of the Bid Submission which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid Submission.
- B7.6 If the Bid Submission is submitted by facsimile transmission, it shall be submitted to 204- 949-1178.
- B7.6.1 The Bidder is advised that the City cannot take responsibility for the availability of the facsimile machine at any time.
- B7.7 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.
- B7.8 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B16.1(a).
- B7.9 Bids submitted by internet electronic mail (e-mail) will not be accepted.

B8. BID

- B8.1 The Bidder shall complete Form A: Bid, making all required entries.
- B8.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, his/her name shall be inserted;

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

B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.

B8.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.

B8.4 Paragraph 11 of Form A: Bid shall be signed in accordance with the following requirements:

- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, it shall be signed by the Bidder;
- (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
- (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, should be affixed;
- (d) if the Bidder is carrying on business under a name other than his/her own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.

B8.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.

B8.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

B9. PRICES

B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B9.1.1 Prices on Form B: Prices shall include:

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

B9.1.2 Prices on Form B: Prices shall not include Environmental Handling Charges (EHC) or fees, which shall be extra where applicable.

B9.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.

B9.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B10. DISCLOSURE

B10.1 Various Persons provided information or services with respect to this Work. In the City's opinion, this relationship or association does not create a conflict of interest because of this full disclosure. Where applicable, additional material available as a result of contact with these Persons is listed below.

B10.2 The Persons are:

- (a) n/a.

B11. CONFLICT OF INTEREST AND GOOD FAITH

B11.1 Bidders, by responding to this Bid Opportunity, declare that no Conflict of Interest currently exists, or is reasonably expected to exist in the future.

B11.2 Conflict of Interest means any situation or circumstance where a Bidder or employee of the Bidder proposed for the Work has:

- (a) other commitments;
- (b) relationships;
- (c) financial interests; or
- (d) involvement in ongoing litigation;

that could or would be seen to:

- (i) exercise an improper influence over the objective, unbiased and impartial exercise of the independent judgment of the City with respect to the evaluation of Bids or award of the Contract; or
- (ii) compromise, impair or be incompatible with the effective performance of a Bidder's obligations under the Contract;
- (e) has contractual or other obligations to the City that could or would be seen to have been compromised or impaired as a result of its participation in the Bid Opportunity process or the Work; or
- (f) has knowledge of confidential information (other than confidential information disclosed by the City in the normal course of the Bid Opportunity process) of strategic and/or material relevance to the Bid Opportunity process or to the Work that is not available to other bidders and that could or would be seen to give that Bidder an unfair competitive advantage.

B11.3 In connection with its Bid, each entity identified in B11.2 shall:

- (a) avoid any perceived, potential or actual Conflict of Interest in relation to the procurement process and the Work;
- (b) upon discovering any perceived, potential or actual Conflict of Interest at any time during the Bid Opportunity process, promptly disclose a detailed description of the Conflict of Interest to the City in a written statement to the Contract Administrator; and
- (c) provide the City with the proposed means to avoid or mitigate, to the greatest extent practicable, any perceived, potential or actual Conflict of Interest and shall submit any additional information to the City that the City considers necessary to properly assess the perceived, potential or actual Conflict of Interest.

B11.4 Without limiting B11.3, the City may, in its sole discretion, waive any and all perceived, potential or actual Conflicts of Interest. The City's waiver may be based upon such terms and conditions as the City, in its sole discretion, requires to satisfy itself that the Conflict of Interest has been appropriately avoided or mitigated, including requiring the Bidder to put into place such policies, procedures, measures and other safeguards as may be required by and be acceptable to the City, in its sole discretion, to avoid or mitigate the impact of such Conflict of Interest.

- B11.5 Without limiting B11.3, and in addition to all contractual or other rights or rights at law or in equity or legislation that may be available to the City, the City may, in its sole discretion:
- (a) disqualify a Bidder that fails to disclose a perceived, potential or actual Conflict of Interest of the Bidder or any of its employees proposed for the Work;
 - (b) require the removal or replacement of any employees proposed for the Work that has a perceived, actual or potential Conflict of Interest that the City, in its sole discretion, determines cannot be avoided or mitigated;
 - (c) disqualify a Bidder or employees proposed for the Work that fails to comply with any requirements prescribed by the City pursuant to B11.4 to avoid or mitigate a Conflict of Interest; and
 - (d) disqualify a Bidder if the Bidder, or one of its employees proposed for the Work, has a perceived, potential or actual Conflict of Interest that, in the City's sole discretion, cannot be avoided or mitigated, or otherwise resolved.
- B11.6 The final determination of whether a perceived, potential or actual Conflict of Interest exists shall be made by the City, in its sole discretion.

B12. QUALIFICATION

- B12.1 The Bidder shall:
- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Bidder does not carry on business in Manitoba, in the jurisdiction where the Bidder does carry on business; and
 - (b) be financially capable of carrying out the terms of the Contract; and
 - (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.
- B12.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/debar.stm>
- B12.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) have successfully carried out work similar in nature, scope and value to the Work; and
 - (b) have successfully installed, operated and provided technical support for DRVDD in the past 3 years from submission of Bid; and
 - (c) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and
 - (d) have a written workplace safety and health program, if required, pursuant to The Workplace Safety and Health Act (Manitoba);
- B12.4 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.
- B12.5 The Bidder shall submit within ten (10) Business Days of a request by the Contract Administrator representative samples of the goods offered. Failure to supply the sample unit(s) within ten (10) Business Days may result in a failure to demonstrate, that the Contractor is responsible and qualified to perform this Contract.

- B12.5.1 Unsolicited samples will be returned at Bidders expense.
- B12.5.2 Further to B12.5, the Bidder shall provide, one (1) sample unit(s) of each item as described in E2.1, for detailed inspection and approval. The following shall be submitted with the sample(s):
- (a) installation manuals;
 - (b) operator/user manuals;
 - (c) compliance test reports for the appropriate standards and/or guidelines. The bidder shall include but not limited to the following:
 - (i) FCC CFR 47 certification (frequency compliance);
 - (ii) NEMA 250 Standard for Type 4X Enclosures (third party test data);
 - (iii) NEMA TS 2 2003 standard third party test data;
 - (iv) Operating conditions as specified in E2.2.20.
 - (d) manufacturer's performance test reports. The bidder shall include but not limited to the following:
 - (i) Volume accuracy data including performance analyses for:
 - ◆ Free-flowing traffic
 - ◆ Traffic with a lane roughly 8ft. (2.4m) beyond a 4ft. (1.2m) concrete barrier
 - ◆ 6ft. (1.8m) and 240ft. (73.2m) lateral offset (simultaneous)
 - (ii) Speed accuracy test data for both per-vehicle and average speed;
 - (iii) Occupancy accuracy test data;
 - (iv) Vehicle classification test data;
 - (e) independent (3rd party) performance test reports;
 - (f) reference contact information for municipalities and/or cities having installed and operating DRVDD within the last 3 years of submission of Bid.
- B12.5.3 Further to B12.5.2 the Bidder shall submit within fifteen (15) Business Days of a request by the Contract Administrator any additional information or clarification. Failure to supply the sample unit(s) within fifteen (15) Business Days may result in a failure to demonstrate, that the Contractor is responsible and qualified to perform this Contract.
- B12.5.4 Should the Bidder not submit a sample that meets the approval of the Contract Administrator, the bid may be determined to be non-responsive.
- B12.5.5 The Bidder shall be responsible for all freight costs associated with the delivery and return of samples.
- B12.5.6 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B13. OPENING OF BIDS AND RELEASE OF INFORMATION

- B13.1 Bids will not be opened publicly.
- B13.2 Following the Submission Deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements or evaluated prices) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt>
- B13.3 After award of Contract, the name(s) of the successful Bidder(s), their address(es) and the Contract amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening

& Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt>

B13.4 The Bidder is advised that any information contained in any Bid may be released if required by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law or by City policy or procedures (which may include access by members of City Council).

B13.4.1 To the extent permitted, the City shall treat as confidential information, those aspects of a Bid Submission identified by the Bidder as such in accordance with and by reference to Part 2, Section 17 or Section 18 or Section 26 of The Freedom of Information and Protection of Privacy Act (Manitoba), as amended.

B14. IRREVOCABLE BID

B14.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 9 of Form A: Bid.

B14.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work for the time period specified in Paragraph 9 of Form A: Bid.

B15. WITHDRAWAL OF BIDS

B15.1 A Bidder may withdraw his/her Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

B15.1.1 Notwithstanding C21, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.

B15.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 11 of Form A: Bid, and only such person, has authority to give notice of withdrawal.

B15.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:

- (a) retain the Bid until after the Submission Deadline has elapsed;
- (b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 11 of Form A: Bid; and
- (c) if the notice has been given by any one of the persons specified in B15.1.3(b), declare the Bid withdrawn.

B15.2 A Bidder who withdraws his/her Bid after the Submission Deadline but before his/her Bid has been released or has lapsed as provided for in B14.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law.

B16. EVALUATION OF BIDS

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

- (a) compliance by the Bidder with the requirements of the Bid Opportunity, or acceptable deviation therefrom (pass/fail);
- (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B12 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B6.

- B16.2 Further to B16.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid Submission is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities if the interests of the City so require.
- B16.3 Further to B16.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is responsible and qualified.
- B16.4 Further to B16.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.
- B16.5 This Contract will be awarded as a whole.

B17. AWARD OF CONTRACT

- B17.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B17.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.
- B17.2.1 Without limiting the generality of B17.2, the City will have no obligation to award a Contract where:
- (a) the prices exceed the available City funds for the Work;
 - (b) the prices are materially in excess of the prices received for similar work in the past;
 - (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
 - (d) only one Bid is received; or
 - (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.
- B17.3 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B16.
- B17.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.
- B17.4 Notwithstanding C4 and Paragraph 6 of Form A:Bid, the City may issue a purchase order to the successful Bidder in lieu of the execution of a Contract.
- B17.5 The Contract Documents, as defined in C1.1(n)(ii), in their entirety shall be deemed to be incorporated in and to form a part of the purchase order notwithstanding that they are not necessarily attached to or accompany said purchase order.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for the Supply of Goods* (Revision 2008 05 26) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for the Supply of Goods* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm
- C0.2 A reference in the Bid Opportunity to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for Supply of Goods*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

D1.1 In addition to the *General Conditions for the Supply of Goods*, these Supplemental Conditions are applicable to the Work of the Contract.

D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of supply and delivery of Aboveground Radar Vehicle Sensing Detector for the period from date of award until October 31, 2019, with the option of four (4) mutually agreed upon one (1) year extensions.

D2.1.1 The City may negotiate the extension option with the Contractor within ninety (90) Calendar Days prior to the expiry date of the Contract. The City shall incur no liability to the Contractor as a result of such negotiations.

D2.1.2 Changes resulting from such negotiations shall become effective on November 1st of the respective year. Changes to the Contract shall not be implemented by the Contractor without written approval by the Contract Administrator.

D2.2 The Work shall be done on an "as required" basis during the term of the Contract.

D2.2.1 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.

D2.2.2 Notwithstanding C7, the City shall have no obligation under the Contract to purchase any quantity of any item in excess of its actual operational requirements.

D3. COOPERATIVE PURCHASE

D3.1 The Contractor is advised that this is a cooperative purchase.

D3.2 The Contract Administrator may, from time to time during the term of the Contract, approve other public sector organizations and utilities, including but not limited to municipalities, universities, schools and hospitals, to be participants in the cooperative purchase.

D3.3 The Contract Administrator will notify the Contractor of a potential participant and provide a list of the delivery locations and estimated quantities.

D3.4 If any location of the potential participant is more than ten (10) kilometres beyond the boundaries of the City of Winnipeg, the Contractor shall, within fifteen (15) Calendar Days of the written notice, notify the Contract Administrator of the amount of any additional delivery charge for the location.

D3.5 If any additional delivery charges are identified by the Contractor, the potential participant may accept or decline to participate in the cooperative purchase.

D3.6 The Contractor shall enter into a contract with each participant under the same terms and conditions as this Contract except:

- (a) supply under the contract shall not commence until the expiry or lawful termination of any other contract(s) binding the participant for the same goods;
- (b) a participant may specify a duration of Contract shorter than the duration of this Contract;
- (c) a participant may specify that only some items under this Contract and/or less than its total requirement for an item are to be supplied under its contract; and
- (d) any additional delivery charge identified and accepted in accordance with clause D3.4 and D3.5 will apply.

- D3.7 Each participant will be responsible for the administration of its contract and the fulfilment of its obligations under its contract. The City shall not incur any liability arising from any such contract.
- D3.8 No participant shall have the right or authority to effect a change in the Contract, or of any other participant in this Contract.

D4. DEFINITIONS

- D4.1 When used in this Bid Opportunity:
- (a) “**ARVSD**” means Aboveground Radar Vehicle Sensing Detectors;
 - (b) “**AWG**” means American Wire Gauge;
 - (c) “**CSA**” means Canadian Standards Association;
 - (d) “**CFR**” means Code of Federal Regulations;
 - (e) “**cUL**” means UL evaluated to CSA;
 - (f) “**DC**” means **Direct Current**;
 - (g) “**DIN**” means **German Institute of Standardization**;
 - (h) “**DRC**” means Detector Rack Card;
 - (i) “**DRVDD**” means Dual Radar Vehicle Data Detector;
 - (j) “**ETA**” means Estimated Time of Arrival;
 - (k) “**FCC**” means Federal Communications Commission;
 - (l) “**KPH**” means kilometres per hour;
 - (m) “**MPH**” means mile per hour;
 - (n) “**NEMA**” means National Electrical Manufacturers Association;
 - (o) “**PSBS**” Preassembled Segmented Backplate System;
 - (p) “**PSM**” means Power Supply Module;
 - (q) “**RTS/CTS**” means Request to Send/Clear to Send;
 - (r) “**SECM**” means Sensor to Ethernet Converter Module;
 - (s) “**SPM**” means Surge Protection Module;
 - (t) “**SSM**” means Surge Suppression Module;
 - (u) “**UL**” means Underwriters Laboratory;

D5. CONTRACT ADMINISTRATOR

- D5.1 The Contract Administrator is:
- Vic Hucko
Asset Standards & Contracts Specialist
Telephone No.: 204-986-4191
Email Address: vhucko@winnipeg.ca

D6. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE

- D6.1 The Contract, all deliverables produced or developed, and information provided to or acquired by the Contractor are the property of the City and shall not be appropriated for the Contractors own use, or for the use of any third party.
- D6.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.

- D6.3 The following shall be confidential and shall not be disclosed by the Contractor to the media or any member of the public without the prior written authorization of the Contract Administrator;
- (a) information provided to the Contractor by the City or acquired by the Contractor during the course of the Work;
 - (b) the Contract, all deliverables produced or developed; and
 - (c) any statement of fact or opinion regarding any aspect of the Contract.
- D6.4 A Contractor who violates any provision of D6 may be determined to be in breach of Contract.

D7. NOTICES

- D7.1 Notwithstanding C21.3, all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer.

SUBMISSIONS

D8. AUTHORITY TO CARRY ON BUSINESS

- D8.1 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

D9. COMMENCEMENT

- D9.1 The Contractor shall not commence any Work until he/she is in receipt of a notice of award from the City authorizing the commencement of the Work.
- D9.2 The Contractor shall not commence any Work until:
- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D8;
 - (ii) evidence of the workers compensation coverage specified in C6.16;
 - (b) the Contractor has attended a meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a meeting.
 - (c) A purchase order has been received from the City of Winnipeg Public Works Stores personnel noting quantity of material required

D10. DELIVERY

- D10.1 Goods shall be delivered on an "as required" basis during the term of the Contract, f.o.b. destination, freight prepaid, to:
- Public Works Stores
1277 Pacific Avenue
Winnipeg, Manitoba
- D10.1.1 Goods shall be delivered within thirty (30) Calendar Day(s) of the placing of an order.
- D10.2 The Contractor shall confirm each delivery with the Contract Administrator or his/her designate, at least two (2) Business Days before delivery.
- D10.3 Goods shall be delivered between 8:30 a.m. and 2:30 p.m. on Business Days.

D10.4 The Contractor shall off-load goods as directed at the delivery location.

D11. LIQUIDATED DAMAGES

D11.1 If the Contractor fails to achieve delivery of the goods within the time specified in D10. Delivery the Contractor shall pay the City one hundred dollars (\$100.00) per Calendar Day for each and every Calendar Day until the goods have been delivered.

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

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

D12. ORDERS

D12.1 The Contractor shall provide a local Winnipeg telephone number or a toll-free telephone number at which orders for delivery may be placed.

D13. RETURNED GOODS

D13.1 Further to C.7 and C.11, The Contract Administrator or his/her designate shall inform the Contractor of the item(s) being returned and the reason for the return. The Contractor shall provide the Contract Administrator with Return Material Authorization (RMA) including shipping instructions, within five (5) Calendar Days of the request.

D13.2 The Contractor shall be responsible for all transportation charges on returned Goods and further to C.8 the Goods will be held at the Contractor's risk pending instruction.

D13.3 Further to D13.1 (above) the RMA shall include the following information, as a minimum:

- (a) Company name, if different than Contractor, and ship to addresses;
- (b) Written authorization for the return and for a collect shipment;
- (c) Preference of carrier / shipping method, a contact person with either a local Winnipeg telephone number or a toll free telephone number.

D13.4 The Contract Administrator shall provide, as a minimum:

- (a) The City department returning the Goods, including an address and contact information for pick up;
- (b) The City account number; if applicable;
- (c) The City of Winnipeg's Department and address;
- (d) Two (2) copies of the written authorization / RMA, one (1) copy on the outside and (1) one within the package;

D13.5 Total number of packages, weight and dimensions.

D14. RECORDS

D14.1 The Contractor shall keep detailed records of the goods supplied under the Contract.

D14.2 The Contractor shall record, as a minimum, for each item listed on Form B: Prices:

- (a) user name(s) and addresses;
- (b) order date(s);
- (c) delivery date(s); and
- (d) description and quantity of goods supplied.

D14.3 The Contractor shall provide the Contract Administrator with a copy of the records for each quarter year within fifteen (15) Calendar Days of a request of the Contract Administrator.

MEASUREMENT AND PAYMENT

D15. INVOICES

D15.1 Further to C10, the Contractor shall submit an invoice for each order delivered to:

The City of Winnipeg
Corporate Finance - Accounts Payable
4th Floor, Administration Building, 510 Main Street
Winnipeg MB R3B 1B9

Facsimile No.: 204- 949-0864

Email: CityWpgAP@winnipeg.ca

D15.2 Invoices must clearly indicate, as a minimum:

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

D15.3 The City will bear no responsibility for delays in approval of invoices which are improperly submitted.

D15.4 Bid Submissions must not be submitted to the above facsimile numbers. Bids must be submitted in accordance with B7.

D16. PAYMENT

D16.1 Further to C10, payment shall be in Canadian funds net thirty (30) Calendar Days after receipt and approval of the Contractor's invoice.

D16.2 Further to C10, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D17. WARRANTY

D17.1 Warranty is as stated in C11.

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS

- 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 B6.

E2. GOODS

- E2.1 The Contractor shall supply and deliver Aboveground Radar Vehicle Sensing Detector equipment in accordance with the requirements hereinafter specified.
- E2.2 **ITEM NO. 1 – Dual Radar Vehicle Data Detector (DRVDD)** shall be configured and used to detect the presence and speed of individual motor vehicles traveling in traffic lanes.
- E2.2.1 General
- (a) The DRVDD shall detect vehicles by transmitting and receiving low energy electromagnetic radar signals through the air.
 - (b) The DRVDD shall provide a non-intrusive means of detecting traffic without roadway modifications or specialized and unique traffic signal poles for mounting.
 - (c) The DRVDD shall not be affected by normal weather and environmental conditions such as rain, wind, snow, dust, etc. The DRVDD shall not require cleaning and shall maintain performance over a wide range of ambient temperatures.
- E2.2.2 Measured Quantities
- (a) The DRVDD shall:
 - (i) Provide volume, speed, length & class, direction and lane assignment for each vehicle detected.
 - (ii) Provide vehicle data for up to at least 12 lanes of traffic.
 - (iii) Support user-selectable time intervals.
- E2.2.3 Detectable Area And Range
- (a) The DRVDD shall be able to detect and report information of motor vehicles:
 - (i) In lanes with boundaries as close as 6ft. (1.8m) from the base of the pole on which the DRVDD is mounted.
 - (ii) In lanes located within the 250ft. (76.2m) from the base of the pole on which the DRVDD is mounted.
 - (iii) In a lane located at the minimum offset and in a lane located at the maximum offset simultaneously.
 - (b) The DVRDD shall operate from a mounting height of 12ft. (3.5m) to 35ft. (10.5m).
- E2.2.4 Performance
- (a) The DRVDD shall:
 - (i) Have minimum volume accuracy per direction of 95% and per-individual lane of 90%. Based on a minimum vehicle separation of 5.5' (1.67m).
 - (ii) Have an average speed accuracy per-direction of ± 3 mph (5 kph) and per-lane ± 3 mph (5 kph) or better. Based on more than 5 cars per lane in an interval.
 - (iii) Provide speed data on a minimum 95% or better of vehicles that are not obstructed.
 - (iv) Have an occupancy accuracy per direction of $\pm 10\%$ and per-individual lane of $\pm 20\%$ or better.

- (v) Have a minimum classification accuracy of 80% or better. Based on an occupancy of all lanes is 30% and bins are minimum 10ft. (3m) wide.

E2.2.5 System Hardware and Interface

- (a) Each DRVDD shall interface with a pre-assembled segmented back plate system interconnected by field wiring which shall include:
 - (i) AC Line powered energy supply for DRVDDs and interface equipment, providing a DC power supply voltage of 24 Volts DC.
 - (ii) Surge protection on all power supply cables that are terminated on interface board.
 - (iii) The system hardware shall be a standalone system that shall be mounted on a standard traffic pole at mid-block

E2.2.6 Maintenance

- (a) The DRVDD shall not require cleaning or adjustment to maintain performance.
- (b) The DRVDD shall not rely on battery backup to store configuration information.
- (c) The DRVDD shall not require recalibration to maintain performance after the initial calibration unless the roadway configuration changes.
- (d) The mean time between failures shall be 10 years.

E2.2.7 Physical Properties

- (a) The DRVDD shall not exceed a maximum weight of 6lbs. (2.7kg) in weight.
- (b) The DRVDD shall not exceed a maximum 15in. x 13in. x 5in. (38.1cm x 33.0cm x 12.7cm) in its physical dimensions.
- (c) All external parts of the DRVDD shall be ultraviolet-resistant, corrosion-resistant, and protected from fungus growth and moisture deterioration.

E2.2.8 Enclosure

- (a) The DRVDD enclosure shall:
 - (i) Be able to withstand a drop of up to 5ft. (1.5m) without compromising its functional and structural integrity.
 - (ii) Be outdoor weatherable in accordance with UL 746C, IP66 rated or better.
 - (iii) Be classified as watertight according to the NEMA 250 standard and be compliant to the following criteria:
 - ◆ External icing
 - ◆ hose down
 - ◆ 4X corrosion protection
 - ◆ gasket
 - (iv) Have an electrical connector for power and data that shall meet MIL-DTL-36482 specifications. The connector shall provide contacts for all data and power connections. The contacts shall be designed as to not degrade the data and power signals.

E2.2.9 Electrical

- (a) The DRVDD shall operate with a DC input supply voltage between 10 VDC and 28 VDC
- (b) The DRVDD assembly power consumption shall be less than 11 watt, allowing the use of solar panels to power the DVRDD assembly.

E2.2.10 Communication Ports

- (a) The DRVDD shall have a minimum two communication ports for firmware upgrade and download of data, and both ports shall communicate independently and simultaneously.
- (b) The DVRDD shall support ethernet capability for port forwarding.

- (c) The DRVDD shall support the upload of new firmware into the DVRDD non-volatile memory over either port.

E2.2.11 Data Protocols

- (a) The DRVDD shall support the following data protocols, interval data, event data and real time true presence data. The data protocol document shall be provided free of charge.
- (b) Interval data shall contain the following:
 - (i) sensor ID.
 - (ii) timestamp of the end of the interval (yyyy-mm-dd_hh:mm:ss).
 - (iii) average speed values (mph/kph).
 - (iv) occupancy in 0.1% increments.
 - (v) volume in up to eight user defined vehicle classification bins.
 - (vi) volume in up to fifteen user defined speed bins.
 - (vii) volume of traffic per direction.
 - (viii) total volumes.
 - (ix) average headway (seconds).
 - (x) average gap (seconds).
 - (xi) 85th percentile speed (mph/kph).
- (c) Event data shall contain the following:
 - (i) sensor ID.
 - (ii) timestamp when the vehicle left the detection area (yyyy-mm-dd_hh:mm:ss).
 - (iii) lane assignment.
 - (iv) speed values (mph/kph).
 - (v) vehicle length.
 - (vi) up to eight user defined classifications.
 - (vii) range.
- (d) Real time true presence data shall contain the following:
 - (i) sensor ID.
 - (ii) true presence information for each lane monitored.

E2.2.12 Radar Design

- (a) The DVRDD shall be a dual radar design. The DRVDD shall be designed to include a minimum of two receive channels to achieve accurate vehicle speed measurements (Note: video and/or other combo sensing units shall not be accepted).

E2.2.13 Radar Frequency Stability

- (a) The DRVDD shall have no manual tuning elements.
- (b) The DRVDD frequency stability transmission shall not be dependent on temperature compensation.
- (c) The DRVDD transmitted bandwidth shall not vary more than 1% under seasonal change and/or aging of components.

E2.2.14 Antenna Design

- (a) The DRVDD shall have a vertical beam width of 65° or better. The beam shall be designed to simultaneously detect vehicles from the lane located at the minimum offset and the lane located at the maximum distance.
- (b) The DRVDD shall have a horizontal beam width of 6° or less. The beam shall be designed to resolve vehicles at the farthest ranges and to permit the use where median obstructions occur.

E2.2.15 Resolution

- (a) The DRVDD shall transmit at a minimum bandwidth of 245 MHz as to maximize radar resolution and detection performance.

E2.2.16 RF Channels

- (a) The DRVDD shall have minimum four (4) RF channels as to function normally when operating in close proximity with DRVDD devices.

E2.2.17 Auto-configuration

- (a) The DRVDD shall have a method for automatically defining traffic lanes or detection zones without requiring user intervention.
 - (i) This auto-configuration process shall execute on a processor internal to the DRVDD and shall not require an external PC or other processor.

E2.2.18 Manual Configuration

- (a) The auto-configuration method shall not prohibit the ability of the user to manually adjust the DRVDD configuration.
- (b) The DRVDD shall support the configuring of traffic lanes of detection zones in 1ft. (0.3m) increments.

E2.2.19 Software

- (a) The graphical user interface shall operate on Windows XP, Windows Vista, Windows 7, Windows 8.1 and Windows 10 in the .NET framework.
- (b) The software shall support the following functionality:
 - (i) Operate over a TCP/IP connection
 - (ii) Give the operator the ability to save/back up the DRVDD configuration to a file or load/restore the DRVDD configuration from a file
 - (iii) Provide a virtual connection option so that the software can be used without connecting to an actual sensor
 - (iv) Auto detects and configures correct serial port.
 - (v) Port forwarding.

E2.2.20 Operating Conditions

- (a) The DRVDD shall maintain accurate performance in all weather conditions, including rain, freezing rain, snow, wind, dust, fog and changes in temperature and light, including direct light on sensor at dawn and dusk.
- (b) DRVDD shall operate properly through rain falling at a rate of up to 2in. (50.8mm) per hour.
- (c) The DRVDD shall be capable of continuous operation over an ambient temperature range of -40°F to 165.2°F (-40°C to 74°C) and over a relative humidity range of 5% to 95% (non-condensing).

E2.2.21 Testing

- (a) Each DRVDD shall be certified by the Federal Communications Commission (FCC) under CFR 47, part 15, section 15.249 as an intentional radiator.
 - (i) The FCC certification shall be displayed on an external label on each DRVDD according to the rules set forth by the FCC.
- (b) The DRVDD shall comply with FCC regulations under all specified operating conditions and over the expected life of the DRVDD.

E2.2.22 NEMA TS 2-2003 Testing.

- (a) The DRVDD shall comply with the applicable standards stated in the NEMA TS 2-2003 standard.

- E2.3 ITEM NO. 2 – Sensor Mount** shall be a manufactured assembly designed to align and permanently mount Dual Radar Vehicle Data Detectors (DRVDDs) on City of Winnipeg Traffic Signal Poles.
- E2.3.1 Mounting**
- (a) The mounting assembly shall:
 - (i) Be slotted for 3/4in. (1.9cm) banding.
 - (ii) Have two contact points with the pole.
 - (iii) Be able to support at least a 20lb. (9.1kg) load.
 - (iv) Provide at least two axes of rotation to ensure proper installation.
 - (v) Mount on a standard octagonal traffic pole
- E2.3.2 Construction**
- (a) The mounting assembly shall:
 - (i) Be constructed of 0.1875in. (0.48cm) thick or thicker aluminum with 316 stainless steel hardware.
 - (ii) Be powder coated for oxidation resistance.
- E2.4 ITEM NO. 3 –Wiring Cable and Connector** shall be constructed from a shielded cable consist of 8 conductors..
- E2.4.1 Cable**
- (a) The cable shall conform to the following specifications:
 - (i) Shall be designed as to provided power and communication between the DVRDD and cabinet.
 - (ii) The entire cable shall be shielded with an aluminum/polyester shield with a drain wire.
 - (iii) The cable jacket shall be made of PVC that is at maximum 0.053in. (1.3mm) thick. The cable jacket and sheath shall be of a material to allow flexibility in extreme climates.
 - (iv) The cable shall have a UL/cUL type CMG safety approval.
 - (v) The cable shall have an ambient operating temperature up to 221°F (105°C) for dry and up to 167°F (75°C) for wet conditions.
 - (vi) The cable shall be UV resistant, as per the UL 720 Hour Sunlight Resistance Test.
 - (vii) Cable shall be 49.2ft. (15m) in length, terminated with a connector to mate to the DVRDD at one end and unterminated at the other end. The unterminated end shall be color coded for easy wiring to the terminal.
- E2.4.2 Connector**
- (a) The cable end connector plug shall meet the MIL-C-26482 specification and shall be designed to interface with the appropriate MIL-C-26482 connector. The cable and connector backshell shall be an environmentally sealed shell that offers excellent immersion capability.
 - (b) All conductors that interface with the connector shall be encased in a single jacket, and the outer diameter of this jacket shall be within the backshell's cable O.D. range to ensure proper sealing.
 - (i) The backshell shall have a strain relief with enough strength to support the cable slack under extreme weather conditions.
- E2.5 ITEM NO. 4 - Sensor to Ethernet Converter Module (SECM)** shall provide an opportunity to use IP-addressable standard Ethernet to communicate with the DRVDD and any associated electronic controls. If the DRVDD has native IP-addressable Ethernet communication no SECM is required.
- E2.5.1 Product Description**

- (a) The SECM shall be capable of converting two-wire half-duplex RS-485 communication and RS-232 communication to IP-addressable Ethernet protocol and vice versa. All serial ports shall pass data on one port to all other ports. Any data coming to or from the Ethernet port shall simultaneously be sent to all RS-485 and RS-232 ports.

E2.5.2 Physical

- (a) The SECM shall operate within a temperature range of -29°F to 165°F (-34°C to 74°C).
- (b) The SECM shall operate in humidity up to 95% RH.

E2.5.3 Mounting

- (a) The SECM shall mount to a DIN rail with hot-swappable power and communication buses for quick installation and replacement.

E2.5.4 Power

- (a) The SECM shall have a power supply voltage of 10 to 30VDC.
- (b) The SECM shall operate using less than 1W of average power at 24VDC.

E2.5.5 Connections

- (a) The SECM shall include the following connections for power and communications:
 - (i) Power
 - ◆ The SECM shall include a 5-position T-Bus connector, with two contact points reserved for connecting power through the bus.
 - (ii) RS-232
 - ◆ The SECM shall feature a DB-9 connector for RS-232 communications.
 - (iii) RS-485
 - ◆ The SECM shall feature a pluggable screw terminal for RS-485 communication. The 5-position connector shall have three contact points reserved for connecting RS-485 through the bus.
 - (iv) Ethernet
 - ◆ The SECM shall feature an RJ-45 jack for Ethernet communications.

E2.5.6 Communications

- (a) The SECM shall support the following communication capabilities:
 - (i) Serial Protocol Conversion
 - ◆ The SECM shall allow communications with any serial device that has a serial connection by converting 2-wire half-duplex RS-485 communication to half-duplex RS-232 communication, and vice versa.
 - (ii) Ethernet
 - ◆ The SECM shall convert RS-232 and RS-485 protocol to Ethernet, allowing communication with any device connected to the SECM via an Ethernet network.
 - ◆ The SECM shall support port forwarding

E2.5.7 Baud Rates

- (a) The SECM shall support standard baud rates.

E2.5.8 Configuration Features

- (a) Push-button
 - (i) The front of the SECM shall include a push-button Mode Switch that causes the SECM to autobaud to a SmartSensor or other serial device. It shall also be able to reset the SECM to factory defaults.
- (b) LEDs

- (i) The front of the SECM shall include a red LED for power and green and yellow LEDs, which shall illuminate when corresponding data is successfully transmitted or received.

E2.5.9 PC Configuration Software

- (a) The SECM shall be provided with configuration software that:
 - (i) Configures serial communication port settings including the serial baud rates.
 - (ii) Can remotely and directly upgrade the SECM firmware to add new features to the SECM.
 - (iii) Allows users to save a configuration to a file, and to open existing files and save to a device, allowing a common configuration to be easily programmed into many devices.
 - (iv) Free software upgrades shall be available on-line throughout the service lifetime of the SECM module.

E2.5.10 Upgradeability

- (a) The SECM shall have flash memory that can be remotely upgraded to add functionality to the firmware when new features have been developed to improve the performance of the installation.
- (b) Free firmware upgrades shall be available on-line through the service lifetime of the SECM module.

E2.5.11 Testing

- (a) The SECM shall comply with applicable standards stated in the NEMA TS 2-1998 Standard.
- (b) Each SECM shall be tested by the manufacture before shipment

E2.6 **ITEM NO. 5 – Circuit Breaker** shall be compact designed to interrupt an electrical current under overload conditions.

E2.6.1 Product Description

- (a) The circuit breaker shall be appropriately current rated to handle the current requirements of the system and shall be trip free and be easily reset after a current interruption.

E2.6.2 Physical

- (a) The circuit breaker shall operate continuously over a temperature range of -4°F to 140°F (-20°C to 60°C).

E2.6.3 Mounting

- (a) The circuit breaker shall mount to a DIN rail for quick installation and replacement.

E2.6.4 Power

- (a) The circuit breaker shall have a nominal operating voltage of 250VAC
- (b) Circuit breaker supplied shall be appropriately rated for configuration of components and DVRDD.

E2.6.5 Connections

- (a) The circuit breaker shall feather two screw terminal connections, one on each end, for wiring power in and out.

E2.6.6 Configuration Features

- (a) The circuit breaker shall have a push-button for resetting the device after a current interruption.

E2.7 **ITEM NO. 6 – Surge Suppression Module (SSM)** shall provide surge protection on AC power lines.

- E2.7.1 Product Description
- (a) The SSM shall be capable to handle surge suppression and be rated for 120VAC.
- E2.7.2 Physical
- (a) The SSM shall operate continuously over a temperature range of -40°F to 185°F (-40°C to 85°C).
- E2.7.3 Mounting
- (a) The SSM shall mount to a DIN rail for quick installation and replacement.
- E2.7.4 Power Rating
- (a) The SSM shall have a nominal operating voltage of 120VAC and a current of 26A.
 - (i) The 120VAC SSM shall have a maximum continuous operating voltage of 150VAC.
 - (b) The SSM shall have a maximum discharge current (8/20μS) of 10kA.
- E2.7.5 Connections
- (a) The SSM shall have terminal connections line, neutral and ground inputs and outputs.
- E2.7.6 Surge Protection
- (a) The SSM shall provide three-stage surge protection consisting of:
 - (i) Fast-responding surge-arresting diodes.
 - (ii) High-power current- handling gas discharge tubes.
 - (iii) Series decoupling elements.
- E2.7.7 Testing
- (a) The SSM shall comply with the applicable standards stated in the NEMA TS-2-2003 Standard.
 - (b) Each SSM shall be tested by the manufacture before shipment.
- E2.8 **ITEM NO. 7 – Power Supply Module (PSM)** shall provide a regulated power output.
- E2.8.1 Product Description
- (a) The PSM shall provide a regulated 24 VDC output from a 120.
 - (b) The PSM shall be appropriately rated for the total power consumption of the DVRDD and accessories. Power consumption shall not be more that 70% of the PSM rating. VAC.
- E2.8.2 Physical
- (a) The PSM shall operate in the temperature range of -29°F to 140°F (-34°C to 60°C).
 - (b) THE PSM shall operate in humidity up to 95% RH.
- E2.8.3 Mounting
- (a) The PSM shall mount to a DIN rail for quick installation and replacement.
- E2.8.4 Power
- (a) The PSM shall be appropriately current rated to supply system current when operating temperature is from -29°F to 140°F (-34°C to 60°C).
 - (b) The PSM shall accept inputs from 100 to 120 VAC at frequency of 45 to 65 Hz.
- E2.8.5 Connections
- (a) The PSM shall have pluggable screw terminals allowing the user to wire input and output of the AC/DC power supply before installation to make installation easy and minimize incorrect wiring.
- E2.8.6 Surge Protection

- (a) The PSM shall comply with the applicable standard stated in the IEC 61000-4-5 Standard for AC input power lines.
- E2.8.7 UL Listed
- (a) The PSM shall be listed with UL under UL 508 and comply with all applicable UL 508 standards.
- E2.8.8 Testing
- (a) The PSM shall comply with the applicable standards stated in NEMA TS 2-1998.
 - (b) Each SPM shall be tested by the manufacture before shipment.
- E2.9 **ITEM NO. 8 – DC Surge Protection Module (SPM)** shall protect the DRVDD from surges coming from a traffic cabinet, or protect a cabinet from surges coming from the DRVDD.
- E2.9.1 Product Description
- (a) The SPM shall be capable to suppress electrical surges up to 4kV on DC power lines.
 - (b) THE SPM shall be capable to suppress electrical surges on communication lines to/from the DRVDD and any devise connected to the SPM.
- E2.9.2 Physical
- (a) The SPM shall operate in the temperature range of -29°F to 165°F (-34°C to 74°C).
 - (b) The SPD shall operate in humidity up to 95% RH.
- E2.9.3 Mounting
- (a) The SSM shall mount to a DIN rail with hot swappable surge protection power and communication buses for quick installation and replacement.
- E2.9.4 DC Power Protection
- (a) The SPM shall comply with the applicable standard stated in IEC 61000-4-5 level 4 Standard for DC power lines.
- E2.9.5 RS-485 Protection
- (a) The SPM shall comply with the applicable standards stated in the IEC 6100-4-5 level 4 Standard for communication lines. The RS-485 communication bus shall have a clamping voltage of 8VDC and a 12VDC differential clamping voltage.
- E2.9.1 RS-232 with RTS/CTS Protection
- (a) The SPM shall comply with the applicable standards stated in the IEC 6100-4-5 level 4 Standard for communication lines. The RS-232 communication bus shall have a clamping voltage of 11VDC
- E2.9.2 Connections
- (a) The SPM shall have pluggable screw terminals, compatible with 12 AWG or smaller wires, allowing the user to wire a contact closure data collector to the SPM before installation to make installation easy and to minimize incorrect wiring.
 - (i) The SPM shall have a protected DB-9 connector for the RS-232DTE with RTS/CTS communication bus.
 - (ii) The SPM shall have a protected RJ-11 connection of the RS-485 communication bus.
 - (iii) The SPM shall have a 5-position connection for connecting power and RS-485 communication to and from the T-bus.
- E2.9.3 Surge Protection
- (a) The SPM shall have a two-stage power surge suppression design.
 - (i) The first stage shall be gas tubes.
 - (ii) The second stage shall use inductors and diodes.
 - (b) The SPM shall have a three-stage communication surge suppression design.
 - (i) The first stage shall be gas tubes.

- (ii) The second stage shall use resistors and TVS diodes.
- (iii) The third shall have resistors and MOVs.

E2.9.4 Testing

- (a) The SPM shall comply with the applicable NEMA TS2-1998 Standard.
- (b) Each SPM shall be tested by the manufacture before shipment.
- (c) Each SPM shall comply with all CE requirements under IEC 60950-1.

E2.10 ITEM NO. 9 – Preassembled DIN Rail

E2.10.1 The preassembled DIN rail shall be fully assembled and pre-wired for full functionality. Each assembly shall be pre-wired to include the following elements and features:

- (a) Preassembled DIN rail form factor shall be no larger than:
 - (i) Length - 10" (254mm).
 - (ii) Height – 4.5" (114.3mm).
 - (iii) Width/Depth – 5.5" (139.7mm).
- (b) DIN rail shall be 1.38" (35mm) wide and 10" (254mm) in length. Each DIN rail shall have 3 evenly spaced rail support brackets mounted on each rail.
- (c) Each DIN rail assembly shall include the following:
 - (i) One Circuit Breaker (ITEM No. 5).
 - (ii) One Surge Suppression Module (ITEM No. 6).
 - (iii) One Power Supply Module (ITEM No. 7).
 - (iv) One DC Surge Protection Module (ITEM No. 8).
 - (v) One Sensor to Ethernet Converter Module (ITEM. 4).
 - (vi) One T-bus 5-screw terminal block.
 - (vii) One T-bus rail connector (power and communication).
 - (viii) Twelve IDC to Plug IDC terminal blocks for cable termination (insulation to displacement to plug insulation displacement). Terminal blocks shall support wire from 24 – 16 AWG, be labeled and come with a removable plug.
 - (ix) Three 3 SC to Plug SC terminal blocks for AC line input (spring cage to plug spring cage 10 AWG). Terminal blocks shall support wire from 28 - 10 AWG, be labeled and come with a removable plug
 - (x) One terminal block for earth ground (grounded spring cage to spring cage 10 AWG). Terminal block shall support wire from 28 - 10 AWG.
 - (xi) Two end brackets with appropriate labelling to identify power and communication.
 - (xii) Three end brackets without labels to delineate power from communication terminal blocks.
- (d) Each DIN rail assembly shall be fully assembled, prewired, tested and verified to be operational.

E3. TESTING, TRAINING, TECHNICAL SUPPORT AND DOCUMENTATION

- E3.1 All items described within this Specification containing voltage surge suppression circuitry shall meet NEMA TS2-1998 testing requirements.
- E3.2 All items described within this Specification containing communication ports surge suppression circuitry shall meet NEMA TS2-1998 testing requirements.
- E3.3 The manufacturer shall provide comprehensive hands-on classroom labs and in-the-field installation and configuration training sufficient to fully train installers and operators in the installation, configuration and use of the DRVDD.
 - (a) The DRVDD manufacturer shall provide both training and technical support services.

- (b) The trainer(s) shall be certified by the manufacturer in the installation, troubleshooting and operation of the DVRDD.
- (c) The manufacturer-provided training shall be sufficient to fully train installers and operators in the installation, configuration, and use of the DRVDD to ensure accurate DRVDD performance.
- (d) The manufacturer-provided training shall consist of comprehensive classroom labs and hands-on, in-the-field, installation and configuration training.
- (e) Classroom lab training shall involve presentations outlining and defining the DRVDD, its functions, and the procedures for proper operation. These presentations shall be followed by hands-on labs in which trainees shall practice using the equipment to calibrate and configure a virtual DRVDD. To facilitate the classroom presentation and hands on labs, the manufacturer-provided training shall include the following items:
 - (i) Knowledgeable trainer or trainers thoroughly familiar with the DRVDD and its processes
 - (ii) Presentation materials, including visual aids, printed manuals and other handout materials for each student
 - (iii) Computer files, including video and raw data, to facilitate the virtual configuration of the DRVDD
 - (iv) Laptop computers or Windows CE handheld devices with the necessary software, and all necessary cables, connectors, etc.
 - (v) All other equipment necessary to facilitate the virtual configuration of the DRVDD
- (f) Training shall be such that each trainee will mount and align the DRVDD correctly.
- (g) Manufacturer-provided technical support shall be available via a toll free number, and a certified technical representative shall be remotely available to assist with the physical installation, alignment, and auto-configuration of each supplied DRVDD. Technical support shall be provided thereafter to assist with troubleshooting, maintenance, or replacement of DRVDDs should such services be required. The vendor shall also provide certified technical support via a toll free number.
- (h) The training shall be conducted within 45 days of award and be conducted on-site.
- (i) The City shall identify those who shall be trained. A list of staff to be trained will be submitted to the Contractor. The Contractor shall schedule a minimum 2 days to insure staff are appropriately trained. The Contractor shall schedule additional time if required at no additional cost should additional time be required to train staff.

E3.4 The Contractor shall supply and include a comprehensive user guide as well as an installer quick-reference guide and a user quick-reference guide.

E3.5 The manufacturer shall make available free firmware upgrades and software upgrades for the DVRDD and assembly till the end of life of any product line. The upgrades shall be made available on-line through the manufacturer's website.

E4. PERFORMANCE RELIABILITY

E4.1 The responsibility for the design of the complete unit, warranty and performance reliability shall rest upon the Contractor.

E4.2 The term "*repeat failures*" as used herein is defined to mean that the same component, subassembly, or assembly develops repeated defects, breakdowns and/or malfunctions rendering the unit inoperative, or required repeated shop correction, service and/or extra during the warranty period applicable for said component, subassembly, or assembly. Minor items or ordinary service adjustments are not included, or considered under the scope of "repeated failures", as well as other factors, such as operational damage due to accidents, misuse or lack of proper maintenance and service attention by not following the manufacturer's preventative maintenance schedules.

- E4.3 Where the unit develops “repeated failures” in service, the Contractor shall make any necessary engineering changes, repairs, alterations or modifications in order to guarantee reliability of performance.

- E4.4 Should any component, sub-assembly or assembly of the system fail more than three times during the life of the contract the Contractor shall replace that component with a new non-refurbished component or assembly.