



**THE CITY OF WINNIPEG**

**TENDER**

**TENDER NO. 120-2025**

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

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## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

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

### **B2. SUBMISSION DEADLINE**

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, March 5, 2025.

B2.2 The Contract Administrator or the Manager of Purchasing 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 Tender, 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 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Tender will be provided by the Contract Administrator to all Bidders by issuing an addendum.

B3.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Tender will be provided by the Contract Administrator only to the Bidder who made the enquiry.

B3.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B3 unless that response or interpretation is provided by the Contract Administrator in writing.

B3.6 Any enquiries concerning submitting through MERX should be addressed to:  
MERX Customer Support  
Phone: 1-800-964-6379  
Email: merx@merx.com

### **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 Tender 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 Tender, 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 MERX website at [www.merx.com](http://www.merx.com).
- B5.4 The Bidder is responsible for ensuring that they have received all addenda and is advised to check the MERX 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 10 of Form A: Bid/Proposal. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.
- B5.6 Notwithstanding B3, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D5.

## **B6. SUBSTITUTES**

- B6.1 The Work is based on the materials, equipment, methods and products specified in the Tender.
- 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 five (5) 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 their 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 they wish 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 their 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/Proposal;
  - (b) Form B: Prices.
- B7.2 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.
- B7.3 The Bid shall be submitted electronically through MERX at [www.merx.com](http://www.merx.com).
- B7.3.1 Bids will **only** be accepted electronically through MERX.
- B7.4 Bidders are advised that inclusion of terms and conditions inconsistent with the Tender document, including the General Conditions, will be evaluated in accordance with B16.1(a).

## **B8. BID**

- B8.1 The Bidder shall complete Form A: Bid/Proposal, making all required entries.
- B8.2 Paragraph 2 of Form A: Bid/Proposal shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in their own name, their 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 their 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/Proposal, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.
- B8.4 Paragraph 13 of Form A: Bid/Proposal shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in their 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 their duly authorized officer or officers;
  - (d) if the Bidder is carrying on business under a name other than their 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/Proposal should be entered 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.

B9.2 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.

B9.4 The Bidder shall enter the Total Bid Price from Form B: Prices into the Total Bid Price field in MERX.

B9.5 Bidders are advised that the calculation indicated in B16.4 will prevail over the Total Bid Price entered in MERX.

## **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 Further to C3.2, Bidders, by responding to this Tender, 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 their participation in the Tender 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 Tender process) of strategic and/or material relevance to the Tender 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 their 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 Tender 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 their 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 their 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 their 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 their sole discretion:

- (a) disqualify a Bidder that fails to disclose a perceived, potential or actual Conflict of Interest of the Bidder or any of their 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 their 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 their 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 their 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, Purchasing Division website at <https://www.winnipeg.ca/matmgt/Templates/files/debar.pdf>
- B12.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) have successfully carried out work similar in nature, scope and value to the Work; and
  - (b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract;
  - (c) have a written workplace safety and health program, if required, pursuant to The Workplace Safety and Health Act (Manitoba); and
  - (d) have completed the Accessible Customer Service online training required by the Accessibility for Manitobans Act (AMA) (see B12.4 and D6).
- B12.4 Further to B12.3(d), the Bidder acknowledges they and all Subcontractors have obtained training required by the Accessibility for Manitobans Act (AMA) available at [Accessibility Training](#) for anyone that may have any interaction with the public on behalf of the City of Winnipeg.
- B12.5 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.
- B12.6 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) will be available on the MERX website at [www.merx.com](http://www.merx.com).
- B13.3 After award of Contract, the name(s) of the successful Bidder(s) and their Contract amount(s) will be available on the MERX website at [www.merx.com](http://www.merx.com).
- 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 11 of Form A: Bid/Proposal.
- 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 until a Contract for the Work has been duly formed and the contract securities have been furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid/Proposal.

**B15. WITHDRAWAL OF BIDS**

- B15.1 A Bidder may withdraw their Bid without penalty at any time prior to the Submission Deadline.

**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 Tender, 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 their Bid or in other information required to be submitted, that they are qualified.
- B16.4 Further to B16.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.
- B16.4.1 Further to B16.1(a), in the event that a unit price is not provided on Form B: Prices, the City may determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.
- B16.4.2 Bidders are advised that the calculation indicated in B16.4 will prevail over the Total Bid Price entered in MERX.
- 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 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 their 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 qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B16.
- B17.4 Further to Paragraph 7 of Form A: Bid/Proposal and C4, the City may issue a purchase order to the successful Bidder in lieu of the execution of a Contract.
- B17.4.1 The Contract Documents, as defined in C1.1(p), 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.
- B17.5 Following the award of contract, a Bidder will be provided with information related to the evaluation of their Bid upon written request to the Contract Administrator.

## **PART C - GENERAL CONDITIONS**

### **C0. GENERAL CONDITIONS**

- C0.1 The *General Conditions for the Supply of Goods* (Revision 2020-01-31) 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, Purchasing Division website at [http://www.winnipeg.ca/matmgt/gen\\_cond.stm](http://www.winnipeg.ca/matmgt/gen_cond.stm)
- C0.2 A reference in the Tender 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 (ARVSD) for the period from date of award until February 28, 2026, 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 March 1<sup>st</sup> of the respective year. Changes to the Contract shall not be implemented by the Contractor without written approval by the Contract Administrator.

D2.1.3 Bidders are advised that, in future, the City may be participating in collaborative procurement initiatives with other levels of government. Accordingly, extensions to this Contract may not be exercised.

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 Subject to C7, the City shall have no obligation under the Contract to purchase any quantity of any item in excess of their actual operational requirements.

D2.3 Notwithstanding D2.1, in the event that operational changes result in substantial changes to the requirements for Work, the City reserves the right to alter the type or quantity of work performed under this Contract, or to terminate the Contract, upon thirty (30) Calendar Days written notice by the Contract Administrator. In such an event, no claim may be made for damages on the ground of loss of anticipated profit on Work.

#### **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) kilometers 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 their total requirement for an item are to be supplied under their contract; and
  - (d) any additional delivery charge identified and accepted in accordance with D3.4 and D3.5 will apply.
- D3.7 Each participant will be responsible for the administration of their contract and the fulfilment of their obligations under their 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 Tender:

- (a) **“ARVSD”** means Aboveground Radar Vehicle Sensing Detectors;
- (b) **“DRC”** means Detector Rack Card;
- (c) **“DRVDD”** means Dual Radar Vehicle Data Detector;
- (d) **“ETA”** means Estimated Time of Arrival;
- (e) **“KPH”** means kilometres per hour;
- (f) **“MPH”** means mile per hour;
- (g) **“PSBS”** means Preassembled Segmented Backplate System;
- (h) **“PSM”** means Power Supply Module;
- (i) **“RTS/CTS”** means Request to Send/Clear to Send;
- (j) **“SECM”** means Sensor to Ethernet Converter Module;
- (k) **“SPM”** means Surge Protection Module;
- (l) **“SSM”** means Surge Suppression Module;
- (m) **“Supply Chain Disruption ”** means an inability by the Contractor to obtain goods or services from third parties necessary to perform the Work of the Contract within the schedule specified therein, despite the Contractor making all reasonable commercial efforts to procure same. Contractors are advised that increased costs do not, in and of themselves, amount to a Supply Chain Disruption.

#### **D5. CONTRACT ADMINISTRATOR**

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

#### **D6. ACCESSIBLE CUSTOMER SERVICE REQUIREMENTS**

D6.1 The Accessibility for Manitobans Act (AMA) imposes obligations on The City of Winnipeg to provide accessible customer service to all persons in accordance with the Customer Service

Standard Regulation (“CSSR”) to ensure inclusive access and participation for all people who live, work or visit Winnipeg regardless of their abilities.

- D6.1.1 The Contractor agrees to comply with the accessible customer service obligations under the CSSR and further agrees that when providing the Goods or Services or otherwise acting on the City of Winnipeg’s behalf, shall comply with all obligations under the AMA applicable to public sector bodies.
- D6.1.2 The accessible customer service obligations include, but are not limited to:
- (a) providing barrier-free access to goods and services;
  - (b) providing reasonable accommodations;
  - (c) reasonably accommodating assistive devices, support persons, and support animals;
  - (d) providing accessibility features e.g. ramps, wide aisles, accessible washrooms, power doors and elevators;
  - (e) inform the public when accessibility features are not available;
  - (f) providing a mechanism or process for receiving and responding to public feedback on the accessibility of all goods and services; and
  - (g) providing adequate training of staff and documentation of same.

## **D7. UNFAIR LABOUR PRACTICES**

- D7.1 Further to C3.2, the Contractor declares that in bidding for the Work and in entering into this Contract, the Contractor and any proposed Subcontractor(s) conduct their respective business in accordance with established international codes embodied in United Nations Universal Declaration of Human Rights (UDHR) <https://www.un.org/en/about-us/universal-declaration-of-human-rights> International Labour Organization (ILO) <https://www.ilo.org/global/lang--en/index.htm> conventions as ratified by Canada.
- D7.2 The City of Winnipeg is committed and requires its Contractors and their Subcontractors, to be committed to upholding and promoting international human and labour rights, including fundamental principles and rights at work covered by ILO eight (8) fundamental conventions and the United Nations Universal Declaration of Human Rights which includes child and forced labour.
- D7.3 Upon request from the Contract Administrator, the Contractor shall provide disclosure of the sources (by company and country) of the raw materials used in the Work and a description of the manufacturing environment or processes (labour unions, minimum wages, safety, etc.).
- D7.4 Failure to provide the evidence required under D7.3, may be determined to be an event of default in accordance with C16.
- D7.5 In the event that the City, in its sole discretion, determines the Contractor to have violated the requirements of this section, it will be considered a fundamental breach of the Contract and the Contractor shall pay to the City a sum specified by the Contract Administrator in writing (“Unfair Labour Practice Penalty”). Such a violation shall also be considered an Event of Default, and shall entitle the City to pursue all other remedies it is entitled to in connection with same pursuant to the Contract.
- D7.5.1 The Unfair Labour Practice Penalty shall be such a sum as determined appropriate by the City, having due regard to the gravity of the Contractor’s violation of the above requirements, any cost of obtaining replacement goods/ services or rectification of the breach, and the impact upon the City’s reputation in the eyes of the public as a result of same.
- D7.5.2 The Contractor shall pay the Unfair Labour Practice Penalty to the City within thirty (30) Calendar Days of receiving a demand for same in accordance with D7.5. The City may also hold back the amount of the Unfair Labour Practice Penalty from payment for any amount it owes the Contractor.

- D7.5.3 The obligations and rights conveyed by this clause survive the expiry or termination of this Contract, and may be exercised by the City following the performance of the Work, should the City determine, that a violation by the Contractor of the above clauses has occurred following same. In no instance shall the Unfair Labour Practice Penalty exceed the total of twice the Contract value.

## **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 they are 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 C6.17; and
    - (iii) the direct deposit application form specified in D16.
  - (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 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, MB

- D10.1.1 Goods shall be delivered within thirty (30) Business Days of the placing of an order.
- D10.2 Initial start-up delivery shall be thirty (30) Business Days from the date of award.
- D10.3 After the initial start-up delivery stated in D10.2, Goods shall be delivered in accordance with D10.1.1.
- D10.4 The Contractor shall confirm each delivery with the Contract Administrator or their designate, at least two (2) Business Days before delivery.
- D10.5 Goods shall be delivered between 8:00 a.m. and 2:30 p.m. on Business Days.
- D10.6 The Contractor shall off-load goods as directed at the delivery location.



## **D11. LIQUIDATED DAMAGES**

- D11.1 If the Contractor fails to achieve delivery of the goods within the time specified in D10.1 Delivery the Contractor shall pay the City one hundred fifty dollars (\$150.00) per Business Day for each and every Business 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. SUPPLY CHAIN DISRUPTION SCHEDULE DELAYS**

- D12.1 The City acknowledges that the schedule for this Contract may be impacted by Supply Chain Disruption. Commencement and progress of the Work shall be performed by the Contractor with due consideration to the delivery requirements and schedule identified in the Contract, in close consultation with the Contract Administrator.
- D12.2 If the Contractor is delayed in the performance of the Work by reason of Supply Chain Disruption, the Work schedule may be adjusted by a period of time equal to the time lost due to such delay and costs related to such delay will be determined as identified herein.
- D12.3 A minimum of seven (7) Calendar Days prior to the commencement of Work, the Contractor shall declare whether a Supply Chain Disruption will affect the start date. The Contractor shall provide sufficient evidence that the delay is directly related to a Supply Chain Disruption, including but not limited to evidence related to ordering of material or goods, production and/or manufacturing schedules or availability of staff as appropriate.
- D12.4 For any delay related to Supply Chain Disruption and identified after Work has commenced, the Contractor shall within seven (7) Calendar Days of becoming aware of the anticipated delay declare the additional delay and shall provide sufficient evidence as indicated in D12.3. Failure to provide this notice will result in no additional time delays being considered by the City.
- D12.5 The Work schedule, including the durations identified in D10 where applicable, will be adjusted to reflect delays accepted by the Contract Administrator.
- D12.6 Any time or cost implications as a result of Supply Chain Disruption and in accordance with the above, as confirmed by the Contract Administrator, shall be documented in accordance with C7.

## **D13. ORDERS**

- D13.1 The Contractor shall provide a local Winnipeg telephone number or a toll-free telephone number at which orders for delivery may be placed.

## **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

Send Invoices to [CityWpgAP-INVOICES@winnipeg.ca](mailto:CityWpgAP-INVOICES@winnipeg.ca)

Send Invoice Inquiries to [CityWpgAP-INQUIRIES@winnipeg.ca](mailto:CityWpgAP-INQUIRIES@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.

### D16. PAYMENT

D16.1 Further to C10, the City shall make payments to the Contractor by direct deposit to the Contractor's banking institution, and by no other means. Payments will not be made until the Contractor has made satisfactory direct deposit arrangements with the City. Direct deposit application forms are at [https://legacy.winnipeg.ca/finance/files/Direct\\_Deposit\\_Form.pdf](https://legacy.winnipeg.ca/finance/files/Direct_Deposit_Form.pdf).

### D17. PAYMENT SCHEDULE

D17.1 Further to C10, payment shall be in Canadian funds net thirty (30) Calendar Days after receipt and approval of the Contractor's invoice.

## WARRANTY

### D18. WARRANTY

D18.1 Warranty is as stated in C11.

## DISPUTE RESOLUTION

### D19. DISPUTE RESOLUTION

D19.1 If the Contractor disagrees with any opinion, determination, or decision of the Contract Administrator, the Contractor shall act in accordance with the Contract Administrator's opinion, determination, or decision unless and until same is modified by the process followed by the parties pursuant to D19.

D19.2 The entire text of C19.4 is deleted, and amended to read: "Intentionally Deleted"

D19.3 The entire text of C19.5 is deleted, and amended to read:

- (a) If Legal Services has determined that the Disputed Matter may proceed in the Appeal Process, the Contractor must, within ten (10) Business Days of the date of the Legal Services Response Letter, submit their written Appeal Form, in the manner and format set out on the City's Purchasing Division Website, to the Chief Administrative Officer, and to the Contract Administrator. The Contractor may not raise any other disputes other than the Disputed Matter in their Appeal Form.
- D19.4 Further to C19, prior to the Contract Administrator's issuance of a Final Determination, the following informal dispute resolution process shall be followed where the Contractor disagrees with any opinion, determination, or decision of the Contract Administrator ("Dispute"):
- (a) In the event of a Dispute, attempts shall be made by the Contract Administrator and the Contractor's equivalent representative to resolve Disputes within the normal course of project dealings between the Contract Administrator and the Contractor's equivalent representative.
- (b) Disputes which in the reasonable opinion of the Contract Administrator or the Contractor's equivalent representative cannot be resolved within the normal course of project dealings as described above shall be referred to a without prejudice escalating negotiation process consisting of, at a minimum, the position levels as shown below and the equivalent Contractor representative levels:
- (i) The Contract Administrator;
- (ii) Supervisory level between the Contract Administrator and applicable Department Head;
- (iii) Department Head.
- D19.4.1 Names and positions of Contractor representatives equivalent to the above City position levels shall be determined by the Contractor and communicated to the City at the pre-commencement or kick off meeting.
- D19.4.2 As these negotiations are not an adjudicative hearing, neither party may have legal counsel present during the negotiations.
- D19.4.3 Both the City and the Contractor agree to make all reasonable efforts to conduct the above escalating negotiation process within twenty (20) Business Days, unless both parties agree, in writing, to extend that period of time.
- D19.4.4 If the Dispute is not resolved to the City and Contractor's mutual satisfaction after discussions have occurred at the final escalated level as described above, or the time period set out in D19.4.3, as extended if applicable, has elapsed, the Contract Administrator will issue a Final Determination as defined in C1.1(v), at which point the parties will be governed by the Dispute Resolution process set out in C19.

### THIRD PARTY AGREEMENTS

#### D20. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

- D20.1 In the event that funding for the Work of the Contract is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, the following terms and conditions shall apply, as required by the applicable funding agreements.
- D20.2 Further to D20.1, in the event that the obligations in D20 apply, actual costs legitimately incurred by the Contractor as a direct result of these obligations ("Funding Costs") shall be determined by the actual cost to the Contractor and not by the valuation method(s) outlined in C7.4. In all other respects Funding Costs will be processed in accordance with Changes in Work under C7.
- D20.3 For the purposes of D20:
- (a) "**Government of Canada**" includes the authorized officials, auditors, and representatives of the Government of Canada; and

- (b) **“Government of Manitoba”** includes the authorized officials, auditors, and representatives of the Government of Manitoba.

#### D20.4 Modified Insurance Requirements

- D20.4.1 Where applicable, the Contractor will be required to provide wrap-up liability insurance in an amount of no less than two million dollars (\$2,000,000) inclusive per occurrence. Such policy will be written in the joint names of the City, Contractor, Consultants and all subcontractors and subconsultants and include twelve (12) months completed operations. The Government of Manitoba and their Ministers, officers, employees, and agents shall be added as additional insureds.
- D20.4.2 If applicable the Contractor will be required to provide builders' risk insurance (including boiler and machinery insurance, as applicable) providing all risks coverage at full replacement cost, or such lower level of insurance that the City may identify on a case-by-case basis, such as an installation floater.
- D20.4.3 The Contractor shall obtain and maintain third party liability insurance with minimum coverage of two million dollars (\$2,000,000.00) per occurrence on all licensed vehicles operated at the Site. In the event that this requirement conflicts with another licensed vehicle insurance requirement in this Contract, then the requirement that provides the higher level of insurance shall apply.
- D20.4.4 Insurers shall provide satisfactory Certificates of Insurance to the Government of Manitoba prior to commencement of Work as written evidence of the insurance required. The Certificates of Insurance must provide for a minimum of thirty (30) days' prior written notice to the Government of Manitoba in case of insurance cancellation.
- D20.4.5 All policies must be taken out with insurers licensed to carry on business in the Province of Manitoba.

#### D20.5 Indemnification By Contractor

- D20.5.1 In addition to the indemnity obligations outlined in C15 of the General Conditions for Goods, the Contractor agrees to indemnify and save harmless the Government of Canada and the Government of Manitoba and each of their respective Ministers, officers, servants, employees, and agents from and against all claims and demands, losses, costs, damages, actions, suit or other proceedings brought or pursued in any manner in respect of any matter caused by the Contractor or arising from this Contract or the Work, or from the goods or services provided or required to be provided by the Contractor, except those resulting from the negligence of any of the Government of Canada's or the Government of Manitoba's Ministers, officers, servants, employees, or agents, as the case may be.
- D20.5.2 The Contractor agrees that in no event will Canada or Manitoba, their respective officers, servants, employees or agents be held liable for any damages in contract, tort (including negligence) or otherwise, for:
- (a) any injury to any person, including, but not limited to, death, economic loss or infringement of rights;
  - (b) any damage to or loss or destruction of property of any person; or
  - (c) any obligation of any person, including, but not limited to, any obligation arising from a loan, capital lease or other long term obligation;

in relation to this Contract or the Work.

#### D20.6 Records Retention and Audits

- D20.6.1 The Contractor shall maintain and preserve accurate and complete records in respect of this Contract and the Work, including all accounting records, financial documents, copies of contracts with other parties and other records relating to this Contract and the Work during the term of the Contract and for at least six (6) years after Total Performance. Those

records bearing original signatures or professional seals or stamps must be preserved in paper form; other records may be retained in electronic form.

D20.6.2 In addition to the record keeping and inspection obligations outlined in C6 of the General Conditions for Goods, the Contractor shall keep available for inspection and audit at all reasonable times while this Contract is in effect and until at least six (6) years after Total Performance, all records, documents, and contracts referred to in D20.6.1 for inspection, copying and audit by the City of Winnipeg, the Government of Manitoba and/or the Government of Canada and their respective representatives and auditors, and to produce them on demand; to provide reasonable facilities for such inspections, copying and audits, to provide copies of and extracts from such records, documents, or contracts upon request by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada and their respective representatives and auditors, and to promptly provide such other information and explanations as may be reasonably requested by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada from time-to-time.

## D20.7 Other Obligations

D20.7.1 The Contractor consents to the City providing a copy of the Contract Documents to the Government of Manitoba and/or the Government of Canada upon request from either entity.

D20.7.2 If the Lobbyists Registration Act (Manitoba) applies to the Contractor, the Contractor represents and warrants that it has filed a return and is registered and in full compliance with the obligations of that Act, and covenants that it will continue to comply for the duration of this Contract.

D20.7.3 The Contractor shall comply with all applicable legislation and standards, whether federal, provincial, or municipal, including (without limitation) labour, environmental, and human rights laws, in the course of providing the Work.

D20.7.4 The Contractor shall properly account for the Work provided under this Contract and payment received in this respect, prepared in accordance with generally accepted accounting principles in effect in Canada, including those principles and standards approved or recommended from time-to-time by the Chartered Professional Accountants of Canada or the Public Sector Accounting Board, as applicable, applied on a consistent basis.

D20.7.5 The Contractor represents and warrants that no current or former public servant or public office holder, to whom the Value and Ethics Code for the Public Sector, the Policy on Conflict of Interest and Post Employment, or the Conflict of Interest Act applies, shall derive direct benefit from this Contract, including any employment, payments, or gifts, unless the provision or receipt of such benefits is in compliance with such codes and the legislation.

D20.7.6 The Contractor represents and warrants that no member of the House of Commons or of the Senate of Canada or of the Legislative Assembly of Manitoba is a shareholder, director or officer of the Contractor or of a Subcontractor, and that no such member is entitled to any benefits arising from this Contract or from a contract with the Contractor or a Subcontractor concerning the Work.

## 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. In every instance where a brand name or design specification is used, the City will also consider approved equals and/or approved alternatives in accordance with B6.

#### E2. GOODS

- E2.1 The Contractor shall supply and deliver Aboveground Radar Vehicle Sensing Detector (ARVSD) equipment in accordance with the requirements hereinafter specified.

- E2.2 **Item No. 1** – An Aboveground Radar Presence Detector (ARPD) shall be configured and used to detect the presence of individual motor vehicles approaching and waiting in traffic lanes at the stop bar.

##### E2.2.1 General

- (a) The ARPD shall detect vehicles by transmitting and receiving low energy electromagnetic radar signals through the air.
- (b) The ARPD shall provide a non-intrusive means of detecting traffic without roadway modifications or specialized and unique traffic signal poles for mounting.
- (c) The ARPD shall not be affected by normal weather and environmental conditions such as rain, wind, snow, dust, etc. The ARDP shall not require cleaning and shall maintain performance over a wide range of ambient temperatures.

##### E2.2.2 Sensor Outputs

- (a) The ARPD shall:
  - (i) Present real-time presence data in 10 lanes.
  - (ii) Support a minimum of 16 zones.
  - (iii) Support a minimum of 16 channels.
  - (iv) Support user-selectable zone to channel mapping.
  - (v) Use AND logic to trigger channels when all selected zones are active.
  - (vi) Use OR logic to combine multiple zones to a channel output, and shall have channel output extend and delay functionality.
  - (vii) Shall mitigate false calls or interference from wrong way traffic or crossing traffic.
  - (viii) Shall have fail-safe mode capabilities for contact closure outputs if communication is lost.
  - (ix) Shall automatically recover to operating mode when fault conditions corrected.

##### E2.2.3 Detectable Area

- (a) Detection Range
  - (i) The ARPD shall be able to detect and report presence of motor vehicles:
    - ◆ In lanes with boundaries as close as 6' from the base of the pole on which the ARPD is mounted
    - ◆ In lanes located within the 140' arc from the base of the pole on which the ARPD is mounted
    - ◆ Within a 90° field of view

◆ In curved lane approaches and areas with islands and medians

E2.2.4 System Hardware and Interface

- (a) Each ARPD shall interface with a pre-assembled segmented back plate system interconnected by field wiring which shall include:
  - (i) AC Line powered energy supply for ARVSDs and interface equipment, providing a DC power supply voltage of 24V DC.
  - (ii) Surge protection on all power supply cables that are terminated on interface board.
  - (iii) Communication connections to interface with the traffic signal controller equipment.
- (b) The ARPD shall utilize two (2) channel contact closure and extension cards that shall provide
  - (i) Functional and electrical compatibility to 2-channel detection cards used in input file racks normally provided in Model 33x series of traffic signal control cabinets.
  - (ii) Front panel inter-connectivity to other two channel detector and extension cards using a single interface style cable.

E2.2.5 Maintenance

- (a) The ARPD shall not require cleaning or adjustment to maintain performance.
- (b) The ARPD shall not rely on battery backup to store configuration information, thus eliminating any need for battery replacement.
- (c) Once the ARPD is calibrated, it shall not require recalibration to maintain performance unless the roadway configuration changes.
- (d) The mean time between failures shall be 10 years.

E2.2.6 Physical Properties

- (a) The ARPD shall not exceed 4.2lbs. in weight.
- (b) The ARPD shall not exceed 13.2" x 10.6" x 3.3" in its physical dimensions.
- (c) All external parts of the ARPD shall be ultraviolet-resistant, corrosion-resistant, and protected from fungus growth and moisture deterioration.

E2.2.7 Enclosure

- (a) The ARPD enclosure shall:
  - (i) Be able to withstand a drop of up to 5' without compromising its functional and structural integrity.
  - (ii) Be manufactured using a polycarbonate copolymer formulation (Lexan EXL or equivalent).
  - (iii) Be classified "f1" outdoor weather ability in accordance with UL 746C.
  - (iv) Be classified as watertight according to the NEMA 250 standard.
  - (v) Conform to test criteria set forth in the NEMA 250 standard for Type 4X enclosures.
- (b) Test results shall be provided for each of the following Type 4X criteria:
  - (i) External icing.
  - (ii) Hose-down.
  - (iii) 4X corrosion protection.
  - (iv) Gasket.
- (c) Include a connector that provides electrical contacts for all data and power connections
  - (i) The connector shall meet the MIL-C-26482 specification.

E2.2.8 Electrical

- (a) In operation, the ARPD shall:
  - (i) Consume less than 10W.
  - (ii) Operate with a DC input supply voltage between 10 to 28V DC.
  - (iii) Have onboard (internal) surge protection for power and communications circuits.

#### E2.2.9 Communication Ports

- (a) The ARPD shall have two communication ports, and both ports shall communicate independently and simultaneously. This design shall allow one port to be used for configuration, verification and traffic monitoring without interrupting communications on the other dedicated data port.
- (b) The ARPD shall support the upload of new firmware into the ARPD's non-volatile memory over either communication port.
- (c) Free firmware upgrades shall be available on-line through the service lifetime of the ARPD module.

#### E2.2.10 Output Ports

- (a) Contact closure data shall be reliably communicated over homerun cable connections as long as 600' with latency from the time of channel requirement satisfaction to the eventual reporting of the detections on the back edge of the contact closure card in 15ms or less.
- (b) The contact closure output frequency shall be user configurable as short as 10ms, with a default near 130ms for compatibility.

#### E2.2.11 RF Channels

- (a) The ARPD shall function normally when operating in close proximity to a maximum seven (7) other ARVSD devices.

#### E2.2.12 Verification

- (a) The ARPD shall have a self-test feature that is used to verify correct hardware functionality.
- (b) The ARPD shall have a diagnostics mode feature to verify correct system functionality.

#### E2.2.13 Auto-configuration

- (a) The ARPD shall have a method for automatically defining traffic lanes, stop bars and zones without requiring user intervention.
  - (i) This auto-configuration process shall execute on a processor internal to the ARPD and shall not require an external PC or other processor.
- (b) The auto-configuration process shall work under normal intersection operation and may require several cycles to complete.

#### E2.2.14 Manual Configuration

- (a) The auto-configuration method shall not prohibit the ability of the user to manually adjust the ARPD configuration.
- (b) The ARPD shall support the configuring of lanes, stop bars and detection zones in 1' increments.
- (c) The ARPD shall include the ability to do vehicle counting and pulsed channels.

#### E2.2.15 Software

- (a) The graphical user interface shall operate on Windows Mobile any Windows desktop or laptop.
- (b) Free software upgrades shall be available on-line through the service lifetime of the ARPD.



- (c) 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 ARPD configuration to a file or load/restore the ARPD configuration from a file.
  - (iii) Allow the backed-up sensor configurations to be viewed and edited.
  - (iv) Provide zone and channel actuation display.
  - (v) Provide a virtual connection option so that the software can be used without connecting to an actual sensor.
  - (vi) Local or remote sensor firmware upgradability.

#### E2.2.16 Operating Conditions

- (a) The ARPD 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) ARPD shall operate properly through rain falling at a rate of up to 1" per hour.
- (c) The ARPD shall be capable of continuous operation over an ambient temperature range of -40°F to 165.2°F and over a relative humidity range of 5% to 95% (non-condensing).

#### E2.2.17 Testing

- (a) Each ARPD 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 ARPD according to the rules set forth by the FCC.
- (b) The ARPD shall comply with FCC regulations under all specified operating conditions and over the expected life of the ARPD.

#### E2.2.18 Manufacturing

- (a) The ARPD shall undergo a rigorous sequence of operational testing to ensure product functionality and reliability. Testing shall include the following:
  - (i) Functionality testing of all internal sub-assemblies.
  - (ii) Unit level burn-in testing of 48 hours duration or greater.
  - (iii) Final unit functionality testing prior to shipment.
- (b) Test results and all associated data for the above testing shall be provided for each purchased ARPD by serial number, upon request.

#### E2.2.19 Documentation

- (a) ARPD documentation shall include an instructional training guide and a comprehensive user guide as well as an installer quick-reference guide and a user quick-reference guide.
- (b) The ARPD manufacturer shall supply the following documentation and test results upon request:
  - (i) FCC CFR 47 certification (frequency compliance).
  - (ii) IED 6100-4-5 class 4 test report (surge).
  - (iii) NEMA 250 Standard for Type 4X Enclosures (third party test data).

E2.3 **Item No. 2** – Sensor Mount shall be a manufactured assembly designed to align and permanently mount Aboveground Radar Vehicle Sensing Devices (ARVSDs) on City of Winnipeg Traffic Signal Poles.

#### E2.3.1 Mounting

- (a) The mounting assembly shall:

- (i) Feature a symmetric hole pattern that mates with fixed and rotational ARVSD backplates.
- (ii) Be slotted for  $\frac{3}{4}$ " banding.
- (iii) Have two contact points with the pole.
- (iv) Be able to support at least the weight of the AVRSD.
- (v) Provide at least two axes of rotation to ensure proper installation.

#### E2.3.2 Construction

- (a) The mounting assembly shall:
  - (i) Be constructed of 0.1875" thick or thicker aluminum with 316 stainless steel hardware.
  - (ii) Be powder coated for oxidation resistance.

E2.4 **Item No. 3** – Sensor to Field Wiring Cable and Connector shall be constructed from a shielded cable consist of three twisted pairs of conductors 40' in length and have one end terminated to connect to an ARVSD device.

#### E2.4.1 Cable

- (a) The cable shall conform to the following specifications:
  - (i) The Sensor to Field Wiring Cable shall consist of three twisted wire pairs of conductors with an overwrapped shield.
  - (ii) Two twisted 22 AWG wire pairs used for RS-485 communications shall have nominal conductor to conductor capacitance of less than 40 pF/ft at 1kHz.
  - (iii) The same two twisted wire pairs used for RS-485 communications shall have nominal conductor DC resistances of less than 16.7ohms/1000' at 68°F.
  - (iv) A twisted 20AWG wire pair used for power conductors shall have a minimum nominal conductor DC resistance of less than 11ohms/1000' at 68°F.
  - (v) The entire cable shall be shielded with an aluminum/polyester shield with a drain wire.
  - (vi) The cable jacket shall be made of PVC that is at maximum 0.053" thick.
  - (vii) The cable shall have a maximum diameter of 0.41".
  - (viii) The cable shall be RoHS compliant.
  - (ix) The cable shall have a UL/cUL type CMG safety approval.
  - (x) The cable shall be cable of operating at temperatures up to 221°F while dry and 167°F while wet.
  - (xi) The cable shall have an FT4 flammability rating.
  - (xii) The cable shall be UV resistant, as per the UL 720 Hour Sunlight Resistance Test.

#### E2.4.2 Connector

- (a) The cable end connector plug shall meet the MIL-C- 6482 specification and shall be designed to interface with the appropriate MIL-C-26482 socket connector. The cable end 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 Field Wiring Cable and Connector shall be constructed from a shielded cable consist of three twisted pairs of conductors 60' in length and have one end terminated to connect to an ARVSD device.

- E2.5.1 Cable shall conform to specifications stated in E2.4, Item No. 3.
- E2.6 **Item No. 5** – Detector Rack Card (DRC) shall provide 2-channel of outputs that are compatible with devices that may be inserted into any Input File slot in a Model 33x Controller Cabinet.
- E2.6.1 General
- (a) The DRC shall be used to translate data from a radar vehicle sensing device (ARVSD) two output contact closure(s).
- E2.6.2 Product Description
- (a) The DRC shall convert communication from the ARVSD to contact closure data, providing 2 channel contact closure outputs on each card.
- E2.6.3 Physical
- (a) The two-channel DRC shall not exceed 0.25lbs. in weight.
  - (b) The two-channel DRC shall not exceed 8.3" x 4" x 1.2" in its physical dimensions.
  - (c) The DRC shall operate over a temperature range of -29°F to 165°F.
  - (d) The DRC shall operate in up to 95% humidity.
- E2.6.4 Mounting
- (a) The DRC shall mount in a 332 Cabinet input file rack slot.
- E2.6.5 Power
- (a) Each DRC shall receive cabinet DC power through card edge terminals and shall consume 1W of average power during normal operation.
- E2.6.6 Connections
- (a) The DRC shall have a 2x22 way (dual-edge) connector for detection and power connections.
  - (b) The DRC shall also have sufficient communication ports to facilitate required communications.
- E2.6.7 Communication
- (a) The DRC shall have at minimum two independent communication ports which allow it to be configured without interfering with data communication.
  - (b) The DRC's connection to the detector rack shall allow it to pass vehicle information to a traffic controller via contact closures.
- E2.6.8 Faceplate Configuration Features
- (a) The DRC shall have a mode switch for controlling menu operation.
  - (b) The DRC shall have three banks of LEDs"
    - (i) The first bank shall have red LEDs used for detection; these shall indicate the current detection state.
    - (ii) The second bank of LEDs shall aid in viewing and setting menu options.
    - (iii) The third bank shall display menu items for selecting and they shall also have the following status-indicating functions:
      - ◆ One LED shall illuminate to indicate the DRC has power
      - ◆ One LED shall illuminate to indicate when the device is transmitting data
      - ◆ One LED shall illuminate to indicate when the device is receiving data
  - (c) The DRC faceplate features shall support the configuration of communication port data rates and channel mapping settings.
- E2.6.9 Software Configuration Features
- (a) The DRC shall be provided with configuration software that:

- (i) Runs on a Windows desktop or laptop PC (Windows XP and newer).
- (ii) Configures communication settings.
- (iii) Configures channel mapping settings.
- (iv) Can remotely and directly upgrade the DRC firmware to add new features to the DRC.
- (v) Can save/open a configuration to/from a file, and allow a common configuration to be easily programmed into many devices.
- (vi) Has a customizable driver that is stored in an XML file that describes the settings for a device as well the graphical user interface for that driver in the configuration software.

E2.6.10 Data Conversion

- (a) The DRC shall output traffic data as contact closures specified by the ARVSD.

E2.6.11 Fail-Safe-Mode

- (a) The DRC shall enter a fail-safe-mode if it loses communications with the ARVSD for more than ten seconds.
- (b) In fail-safe-mode, all channel outputs shall be asserted to a LOW state.
- (c) The DRC shall exit fail-safe-mode when communication with the ARVSD is restored

E2.6.12 Class 4 Compliance

- (a) The DRC shall comply with the EN 61000-4-5 Class 4 lightning surge protection on the DC input.

E2.6.13 Contact Closure Outputs

- (a) The DRC shall dissipate up to a 600W power surge received on any contact closure output terminal.
- (b) The contact closure output terminals on the DRC shall be able to withstand 50V DC continuously. In the conduction (ON) state, the DRC's contact closure outputs shall be less than 8 ohms and shall also be able to sink up to 150mA DC. Outputs in a non-conducting (OFF) state shall leak less than 1uA.

E2.6.14 Remote Upgradeability

- (a) The DRC 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.

E2.6.15 Testing

- (a) Before shipping, each DRC shall have passed a manufacturer's test. The DRC shall comply with the applicable standards stated in the NEMA TS2-2003 Standard.
- (b) Test results and other documentation demonstrating performance and capabilities shall be provided as requested.

E2.7 **Item No. 6** - Sensor to Ethernet Converter Module (SECM) shall provide an opportunity to use IP-addressable standard Ethernet to communicate with the ARVSD and any associated electronic controls. If the ARVSD has native IP-addressable Ethernet communication no SECM is required.

E2.7.1 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.

E2.7.2 Physical

- (a) The SECM shall not exceed 0.2lbs. in weight.
- (b) The SECM shall not exceed 4.5" x 4" x 0.9" in its physical dimensions.
- (c) The SECM shall operate within a temperature range of -29°F to 165°F.
- (d) The SECM shall operate in humidity up to 95% RH.

#### E2.7.3 Mounting

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

#### E2.7.4 Power

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

#### E2.7.5 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 T-Bus connector
  - (iv) Ethernet.
    - ◆ The SECM shall feature an RJ-45 jack for Ethernet communications

#### E2.7.6 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

#### E2.7.7 Baud Rates

- (a) The SECM shall support baud rates of 1200bps, 2400bps, 4800bps, 9600bps, 19200bps, 38400bps, 57600bps and 115200bps.

#### E2.7.8 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 another serial device. It shall also be able to reset the SECM to factory defaults.
- (b) LED's.
  - (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.

#### E2.7.9 Pocket PC & PC Configuration Software

- (a) The SECM shall be provided with configuration software that:
  - (i) Runs on any Windows desktop or laptop PC.
  - (ii) Configures serial communication port settings including the serial baud rates.
  - (iii) Can remotely and directly upgrade the SECM firmware to add new features to the SECM.
  - (iv) 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.
  - (v) Has customizable drivers that are stored as XML files that describe the graphical user interface for that driver.
  - (vi) Free software upgrades shall be available on-line throughout the service lifetime of the SECM module.

E2.7.10 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.

E2.7.11 Testing

- (a) Before shipping, each SECM shall have passed a manufacturer's test.
- (b) The SECM shall comply with the applicable standards stated in the NEMA TS2-2003 Standard.
  - (i) Test results and other documentation demonstrating performance and capabilities of the SECM shall be provided on request.

E2.8 **Item No. 7** - Preassembled Segmented Backplate System (PSBS) provides a separate power supply panel and two (2) interface panels supplied with all necessary electrical protection devices, surge suppression module, DC power supply, two (2) system surge protection modules, other components, terminal blocks and wiring required to support four (4) ARVSDs consisting of various combinations of ARPDs and ACTADs.

E2.8.1 The PSBS shall consist of three (3) preassembled aluminum backplates mountable within a traffic signal controller cabinet. Each PSBS assembly shall be pre-wired to include the following elements and features:

- (a) Backplate #1 dimensions shall be no larger than 18 cm wide x 13 cm high, and no mounted component shall exceed a height of 10 cm above the backplate.
- (b) Backplate #1 shall include:
  - (i) one AC Circuit Breaker, E2.8.2(a) (Item No. 8);
  - (ii) one Surge suppression module, E2.8.2(b) (Item No. 9);
  - (iii) one DC Power Supply, E2.8.2(c) (Item No. 10);
  - (iv) two System Surge Protection modules, E2.8.2(d) (2 x Item No. 11);
  - (v) one T-bus 5-screw terminal block (left end); and
  - (vi) three (3) T-bus connectors, all mounted on a single DIN rail mounted to the front face of Backplate #1.
- (c) Backplate #1 shall be supplied pre-wired to all modules and interfaces and shall be complete with 3-conductor plug-in 2.4m power cord and a single (solid) conductor green insulated ground wire 2.0 m long with one end electrically secured to the aluminum backplate and the other end terminated with ring style of ground lug for mounting on ½ x 20 machine bolt, Supplied accessories with Backplate #1 shall also include four (4) 1.5m white RJ-11 patch cables and one (1) 1.5m black RJ-11 patch cable.
- (d) Backplates #2 and #3 shall be no larger than 11cm wide x 9cm high.

- (e) Backplate #2 shall contain a single horizontally-mounted DIN-rail supporting all terminal spacers and end blocks and 14 colour-coded insulation displacement terminal blocks, and shall also contain one (1) 3m 15-conductor serial cable for sensor cable termination (needed to interface ARVSD device #1 and ARVSD device #2) with circuits pre-wired to the System Surge Suppressor #1 located on Backplate #1.
- (f) Backplate #3 shall contain a single front-mounted DIN-rail supporting all terminal spacers and end blocks and 14 colour-coded insulation displacement terminal blocks, and shall also contain one (1) 3m 15-conductor serial cable for sensor cable termination (needed to interface ARVSD device #3 and ARVSD device #4) with circuits pre-wired to the System Surge Suppressor #2 located on Backplate #1.
- (g) No feature on Backplate #2 or Backplate #3 shall exceed a mounted height of 10cm above either backplate.
- (h) Backplates shall accept user-supplied 6mm (¼) diameter mounting hardware in slots pre-punched along both the long top and bottom edges of the backplates without the requirement field-modify the backplates.

E2.8.2 The items listed and specified below may be ordered as individually replaceable devices and/or modules which are supplied on Backplate #1 of **Item No. 7:**

- (a) **Item No. 8** - Circuit Breaker shall be rated for 250V AC and 0.5 A with pushbutton-reset feature.
- (b) **Item No. 9** - Surge Suppression Module shall operate over an ambient operating temperature range rated from -29°F to 140°F, shall provide three-stage electrical surge protection for an overvoltage protection exceeding an applied input voltage of 150V AC and shall operate properly following a maximum electrical discharge (8/20 uSec) of 10kA.
- (c) **Item No. 10** - AC to DC Power Supply shall operate over an ambient operating temperature range from -29°F to 140°F with an input voltage range of 100-240V AC @ 45-65 Hz, and will supply a regulated pre-set output voltage of 24V DC (user-adjustable from 22.5 to 28.5V DC) at up to 4 Amps.
- (d) **Item No. 11** - System Surge Protection which includes DC Power Protection (Maximum working voltage of 28V DC, complying with applicable standards in IEC 61000-4-5 class 4 standard for DC power lines) and RS-485 Protection (Maximum working voltage of 5V DC, complying with applicable standards in IEC 61000-4-5 class 4 standard for communication lines).

E2.9 **Item No. 12** – ACTAD Alignment Tool is a visual sighting instrument used to align the ACTAD sensor to the roadway. The tool shall be manufactured from aluminum stock and designed to be attached to the ACTAD temporarily during the setup.

### E3. TESTING

E3.1 All items described within this Specification containing voltage surge suppression circuitry shall meet the latest NEMA TS 2 testing requirements and shall provide three-stage electrical protection (Stage 1: high-powered current-handling gas discharge tubes and Stage 2 and 3: fast-responding surge-arresting diodes and series decoupling elements) on all AC Power Input and DC Power Input circuit interfaces.

E3.2 All items described within this Specification containing communication ports surge suppression circuitry shall meet the latest NEMA TS 2 testing requirements and shall provide three-stage electrical protection (Stage 1: gas tubes and Stages 2 & 3: resistors and fast-responding surge-arresting diodes) on all Communication Circuit Interfaces.

### E4. TRAINING AND TECHNICAL SUPPORT

E4.1 Training and Technical Support.

- (a) The ARVSD manufacturer shall provide both training and technical support services.

- (b) The manufacturer-provided training shall be sufficient to fully train installers and operators in the installation, configuration, and use of the ARVSD to ensure accurate ARVSD performance.
  - (c) The manufacturer-provided training shall consist of comprehensive classroom labs and hands-on, in-the-field, installation and configuration training.
  - (d) Classroom lab training shall involve presentations outlining and defining the ARVSD, 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 ARVSD. 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 ARVSD and its processes. Trainers shall be factory trained and authorized by the manufacturer.
    - (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 ARVSD.
    - (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 ARVSD.
  - (e) Training shall be such that each trainee will mount and align the ARVSD correctly.
  - (f) Training shall be scheduled to insure sufficient time is allocated to cover all aspects, functionality, troubleshooting and installation of the ARVSD.
  - (g) Training shall be conducted within forty-five (45) days of award and be conducted on site.
  - (h) 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 ARVSD. Technical support shall be provided thereafter to assist with troubleshooting, maintenance, or replacement of ARVSDs should such services be required. The vendor shall also provide certified technical support via a toll-free number.
- E4.2 The manufacturer shall make available free firmware upgrades and software upgrades for the ARVSD and assembly till the end of the product life of any product line. The upgrades shall be made available on-line through the manufacture's website.

## **E5. PERFORMANCE RELIABILITY**

- E5.1 The responsibility for the design of the complete unit, warranty and performance reliability shall rest upon the Contractor.
- E5.2 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.
- E5.3 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.



## **E6. INFRASTRUCTURE COMPATIBILITY**

E6.1 The ARVSD shall work and compatible with the City Traffic Signals current wiring infrastructure. The ARVSD cables shall be hardwired directly to the City infrastructure wiring. The City utilizes the following wire:

- (a) six (6) pair polyethylene insulated, polyvinyl chloride jacketed traffic signal cable with copper electrical shielding, rated 300 volts, for use in underground conduit, as aerial cable supported by a messenger, or as traffic communications and data acquisition cable suitable for limited power use;
- (b) Twelve (12) #19 AWG solid and uncoated conductors twisted to form six (6) individual conductor pairs.

## **E7. APPROVED PRODUCTS**

E7.1 Subject to E1.2, the following products are approved;

- (a) **Item No.1** - ARPD – Wavetronix SmartSensor Matrix WX-SS-225
- (b) **Item No. 2** - Sensor Mount – Wavetronix WX-SS-611
- (c) **Item No. 3** - Wiring Cable and Connector – Wavetronix SS-704-040
- (d) **Item No. 4** - Wiring Cable and Connector – Wavetronix SS-704-060
- (e) **Item No. 5** - Wavetronix Click! 112 WX-CLK-112
- (f) **Item No. 6** - SECM – Wavetronix Click! 301 WX-CLK-301
- (g) **Item No. 7** - PSBS – Wavetronix WX-SS-B03-0005
- (h) **Item No. 8** - Circuit Breaker – Wavetronix Click! 210 WX-CLK-210
- (i) **Item No. 9** - Surge Suppression Module – Wavetronix Click! 230 WX-CLK-230
- (j) **Item No. 10** - Power Supply – Wavetronix Click! 204 WX-CLK-204
- (k) **Item No. 11** - System Surge Protection - Wavetronix Click! 222 WX-CLK-222
- (l) **Item No. 12** - ACTAD Alignment Tool - Wavetronix 101-0400