



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 550-2017

**SUPPLY, INSTALLATION, CONFIGURATION AND COMMISSIONING OF TRAFFIC
MANAGEMENT CENTRE VIDEO MANAGEMENT SYSTEM**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 SUPPLY, INSTALLATION, CONFIGURATION AND COMMISSIONING OF TRAFFIC MANAGEMENT CENTRE VIDEO MANAGEMENT SYSTEM

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, August 30, 2017.

B3. ENQUIRIES

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

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

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

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

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

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

B4. 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.

- B5.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/bidopp.asp>
- B5.2.2 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.
- B5.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 9 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 Plant, Materials and methods 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 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 Plant, Material or method 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 proposed Work timeframes specified;
 - (i) Demonstration of the performance and function shall be provided upon request.
 - (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 proposed Work timeframes specified.
 - (i) Demonstration of the performance and function shall be provided upon request.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- 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 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 B15.

B6.9 No later claim by the Contractor for an addition to the Total Bid Price 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; and
- (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 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.

B7.5 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 B15.1(a).

B7.6 The Bid may be submitted by mail, courier or personal delivery, or by facsimile transmission.

B7.7 If the Bid 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

B7.7.1 Samples or other components of the Bid 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.

B7.8 If the Bid is submitted by facsimile transmission, it shall be submitted to 204 949-1178.

B7.8.1 The Bidder is advised that the City cannot take responsibility for the availability of the facsimile machine at any time.

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 own name, his name shall be inserted;
- (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
- (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;

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

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

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 Notwithstanding C10.1.3, prices on Form B: Prices shall not include the Goods and Services Tax (GST) or Manitoba Retail Sales Tax (MRST, also known as PST), 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.

B9.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

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) Stantec Consulting
- (b) Genetec
- (c) Milestone Systems

(d) Avigilon

B11. QUALIFICATION

B11.1 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.

B11.2 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>

B11.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) have successfully carried out work similar in nature, scope and value to the Work; and
- (b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and
- (c) have a written workplace safety and health program, if required, pursuant to The Workplace Safety and Health Act (Manitoba);
- (d) be certified by the VMS Developer and experienced in the supply, installation, configuration, and commissioning of the proposed VMS for citywide use, or equivalent setup of a similar VMS solution on a large geographically distributed network with multiple user groups. The Contractor shall provide at minimum one (1) certified person on site to oversee and/or conduct Work;
- (e) have direct experience in the past two (2) years with a minimum of three (3) previous projects with similar (scope and scale) software and hardware integration and implementation as specified herein.
 - (i) Should documentation be required by the Contract Administrator to verify this experience, but is unable to be provided due to confidentiality agreements, the Bidder or any proposed Subcontractor may provide a letter of reference from the VMS Developer regarding, certification, experience, and suitability to perform the Work as herein specified.
- (f) have sufficient experience and applicable knowledge with:
 - (i) networking items including previous work involving enterprise networking, segmentation, multicast, and working within an overall IT security framework;
 - (ii) VMS related server hardware, failover options, and virtual machine operation;
- (g) have direct experience with the use of Axis cameras and the integration of these devices with the proposed VMS solution within the past two (2) years;
- (h) upon request, provide a letter of reference from the VMS developer regarding certification, experience and suitability to perform the work as specified herein.

B11.4 Video Management System Developer Qualifications:

- (a) The VMS Developer proposed by the bidder shall:

- (i) have at minimum five (5) reference projects over the past year where similar hardware and software (scope and scale) has been fully and successfully integrated and implemented as specified herein;
 - (ii) have history of regular software updates, including release of a new version within the past year demonstrating continuous improvement and ability to provide ongoing market demand functionality.
- (b) Upon request, the Bidder shall provide (2) reference letters from previous clients that received similar Work from the VMS Developer noting performance of the Work conducted, and suitability and performance of the VMS provided.

B11.5 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.

B11.6 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.

B12. OPENING OF BIDS AND RELEASE OF INFORMATION

B12.1 Bids will not be opened publicly.

B12.2 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 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/>

B12.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>

B12.4 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. IRREVOCABLE BID

B13.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 10 of Form A: Bid.

B13.2 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 executed and the performance security furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 10 of Form A: Bid.

B14. WITHDRAWAL OF BIDS

B14.1 A Bidder may withdraw his Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

B14.1.1 Notwithstanding C21.6, 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.

B14.1.2 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.

- B14.1.3 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 B14.1.3(b), declare the Bid withdrawn.
- B14.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B13.2 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.

B15. EVALUATION OF BIDS

- B15.1 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 B11 (pass/fail);
 - (c) Total Bid Price ;
 - (d) economic analysis of any approved alternative pursuant to B6;
- B15.2 Further to B15.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid 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.
- B15.3 Further to B15.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid or in other information required to be submitted, that he/she is responsible and qualified.
- B15.4 Further to B15.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for items 1 to 5 and Alternative 4:
- (a) if the lowest evaluated responsive Bid submitted by a responsible and qualified Bidder is within the budgetary provision for the Work, no adjustment will be made to the Total Bid Price; or
 - (b) if the lowest evaluated responsive Bid submitted by a responsible and qualified Bidder exceeds the budgetary provision for the Work, the Total Bid Prices of all responsive Bids submitted by responsible and qualified Bidders will be adjusted by deducting Alternative 4 and adding Alternative 3 and so on for Alternative 2 and Alternative 1 until a Total Bid Price within the budgetary provision is achieved.
- B15.5 This Contract will be awarded as a whole.

B16. AWARD OF CONTRACT

- B16.1 The City will give notice of the award of the Contract, or will give notice that no award will be made.
- B16.2 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.
- B16.2.1 Without limiting the generality of B16.2, 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.

B16.3 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 B15.

B16.3.1 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.

B16.4 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.

B16.5 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 Combined Provision of Goods and Services (2017-02-17)* are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for the Combined Provision of Goods and Services* 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 the Combined Provision of Goods and Services*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of the supply, installation, configuration, and commissioning and ongoing support of an corporate video management system for the Transportation Management Centre and the City for the period from award of contract until May 31st, 2018, with the option of four (4) mutually agreed upon one (1) year extensions.

- (a) The mutually agreed upon contact extensions shall apply, as required, towards the ongoing purchasing of VMS Input Devices Licenses according to the selected and awarded Alternative of Item 6, 7, 8, or 9.
- (b) Items 1 to 5 shall be limited to a one-time purchase to implement the video management system within the City.

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 June 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 major components of the Work are as follows:

D2.2.1 **Licensing:** The Contractor shall supply and deliver appropriate licensing to fulfill VMS specified functionality, input device licence quantity required, and include ongoing VMS Developer care, support and software upgrades as specified and requested.

D2.2.2 **Initial and Immediate Temporary VMS Installation:** The Contractor shall immediately supply, install, and configure (as necessary) the specified VMS software and licensing of existing TMC IP cameras and other h.264 RTSP feeds to ensure uninterrupted and ongoing TMC use of video feeds.

D2.2.3 **Hardware and Network Requirements Development:** New City server hardware and configuration of City networks are expected to be required to support the implementation of the full VMS rollout. The Contractor and VMS developer (as necessary) shall meet and consult with the Contract Administrator, City IT staff, and select City user representatives to define hardware and network procurement and configuration requirements for the VMS based upon gathered knowledge of current City hardware, network, and security requirements availability, requirements, and restrictions.

- (a) The City shall procure and supply all hardware required for the VMS operation. The supply of required hardware is not part of this contract
- (b) Non-VMS software such as requirements for VM, clustering, or SQL Server upgrades needs shall be defined as required, but supply shall not be part of this contract.

D2.2.4 **VMS Configuration Requirement Development:** The Contractor and VMS developer (as necessary) shall consult with the Contract Administrator, City IT staff, and select City user representatives to define and document the required functionality and configuration of the final VMS configuration to be implemented.

D2.2.5 **VMS Implementation and Rollout Plan:** The Contractor shall provide a detailed implementation plan (with a starting date based upon the City hardware and configuration

completion) for the rollout of full VMS functionality that shall be approved by the Contract Administrator

- D2.2.6 **Final VMS Implementation and Rollout:** The Contractor shall supply, install, and configure a complete and fully functional VMS system according to approved functionality, configuration requirements, performance, and schedule while maintaining ongoing camera operation within the Transportation Management Centre (TMC).
- D2.2.7 **Optimization, Training, and Turnover:** Upon completion of the VMS Implementation and Rollout, the VMS shall be optimized by the VMS Developer. The Contractor shall also conduct onsite training for operator and admin client use as specified. VMS certification training shall be provided for two City employees.
- D2.3 The Work shall occur in a timely manner following the order, listed from the above, of the major components of Work. There is potential for the overlap of Hardware and Network Requirement Development alongside the definition of VMS Configuration Requirements.
- D2.4 It is expected that onsite Work shall occur primarily at 821 Elgin Avenue, Winnipeg, Manitoba at the location of Winnipeg's Transportation Management Centre.
- D2.5 The Work for Alternatives shall be done on "as required" basis during the term of the Contract.
- D2.5.1 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.
- D2.5.2 Notwithstanding C7.4, the City shall have no obligation under the Contract to purchase any quantity of any item in excess of its actual operational requirements.
- D2.6 Notwithstanding D2.1, the type and quantity of Work to be performed under this Contract is subject to annual approval of monies therefore in a budget by Council. Proponents are advised that monies have been approved for work up to and including December 31, 2017.
- D2.7 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. DEFINITIONS

- D3.1 When used in this Bid Opportunity:
- (a) **"API"** means Application Program Interface;
 - (b) **"AV"** means Audio/Visual;
 - (c) **"AVI"** means Audio Video Interleaved (also Audio Video Interleave), known by its initials AVI, is a multimedia container format introduced by Microsoft in November 1992;
 - (d) **"AV Processor"** means Central core equipment controlling the whole AV System;
 - (e) **"BMP"** means File format, also known as bitmap image file or device independent bitmap (DIB);
 - (f) **"CCTV"** means Closed Circuit Television;
 - (g) **"DWG"** means file extension for AutoCAD drawing;
 - (h) **"FPS"** means Frames Per Second
 - (i) **"GIS"** means Geographic Information System;
 - (j) **"GOP"** means Group of Pictures
 - (k) **"GUI"** means Graphical User Interface;
 - (l) **"HDMI"** means High-Definition Multimedia Interface;

- (m) **"H.264"** means a block-oriented motion-compensation-based video compression standard that is currently one of the most commonly used formats for the recording, compression, and distribution of video content;
- (n) **"HTTPS"** means Secure Hyper Text Transfer Protocol
- (o) **"IPS"** means Image Per Second;
- (p) **"IT"** means Information Technology;
- (q) **"JPG"** means file extension for a lossy graphics file;
- (r) **"LAN"** means Local Area Network;
- (s) **"Mbps"** means Megabits per second;
- (t) **"MJPEG"** means Motion Joint Photographic Experts Group
- (u) **"MKV"** means The Matroska Multimedia Container, an open standard, free container format, a file format that can hold an unlimited number of video, audio, picture, or subtitle tracks in one file;
- (v) **"ONVIF"** means a non-profit organization of nearly 500 members, driving the development of open global standards for effective interoperability of IP-based physical security products;
- (w) **"OS"** means Operating System
- (x) **"PDF"** means Portable Document Format
- (y) **"POI"** means Point of Interest
- (z) **"PTZ"** means Pan Tilt Zoom;
- (aa) **"RTSP"** means Real Time Streaming Protocol
- (bb) **"SD"** means Secure Digital
- (cc) **"SNMP"** means Simple Network Management Protocol
- (dd) **"SMS"** means Short Message Service
- (ee) **"SQL"** means Structure Query Language Database;
- (ff) **"SDK"** means Software Development Kit;
- (gg) **"TCP/IP"** means Transmission Control Protocol/IP
- (hh) **"UPS"** means Uninterrupted Power Supply;
- (ii) **"VLAN"** means Virtual Local Area Network
- (jj) **"VM"** means Virtual Machine;
- (kk) **"VMS"** means Video Management Software;
- (ll) **"WAN"** means Wide Area Network;
- (mm) **"XML"** means Extensible Markup Language
- (nn) **"4K"** means (3840x2160 pixels) is a full high definition television signal format with 2160 horizontal lines and an aspect ratio of 16:9 (1.78:1);
- (oo) **"720p"** means (1280x720 pixels; also called high definition ready) is a progressive high definition television signal format with 720 horizontal lines and an aspect ratio of 16:9 (1.78:1);

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is:

Jonathan Foord, EIT
Signals Asset Engineer

Telephone No. 204 986-6619

Email Address. jfoord@winnipeg.ca

D4.2 At the pre-commencement meeting, the Contract Administrator will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

D5. CONTRACTOR'S SUPERVISOR

D5.1 Further to C6.21, the Contractor shall employ and keep on the Work, at all times during the performance of the Work, a competent supervisor and assistants, if necessary, acceptable to the Contract Administrator. The supervisor shall represent the Contractor on the Site. The supervisor shall not be replaced without the prior consent of the Contract Administrator unless the supervisor proves to be unsatisfactory to the Contractor and ceases to be in his/her employ.

D5.2 Before commencement of Work, the Contractor shall identify his/her designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

D5.2.1 Further to C5.5 Contract Administrator may give instructions or orders to the Contractor's supervisor and such instructions or orders shall be deemed to have been given to the Contractor.

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 at the following facsimile number:

The City of Winnipeg
Chief Financial Officer

Facsimile No.: 204 949-1174

D7.2 **Bid Submissions must not be submitted to this facsimile number. Bids must be submitted in accordance with B7.**

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.

D9. INSURANCE

D9.1 The Contractor shall provide and maintain the following insurance coverage:

- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured; such liability policy to also contain a cross-liability clause, non-owned automobile liability and products and completed operations cover, to remain in place at all times during the performance of the Work;
- (b) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Service. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence;

D9.2 Deductibles shall be borne by the Contractor.

D9.3 The Contractor shall provide the Contract Administrator with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D9.4 The Contractor shall not cancel, materially alter, or cause the policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

D9.5 The City shall have the right to alter the limits and/or coverages as reasonably required from time to time during the continuance of this agreement.

D10. SUBCONTRACTOR LIST

D10.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site.

SCHEDULE OF WORK

D11. COMMENCEMENT

D11.1 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.

D11.2 The Contractor shall not commence any Work on the Site 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 C6.14;
 - (iii) evidence of the insurance specified in D9;
 - (iv) the Subcontractor list specified in D10;
- (b) the Contractor has attended a meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a meeting.

D12. DELIVERY

D12.1 Goods shall be delivered on an "as required" basis during the term of the Contract, f.o.b. destination, freight prepaid, to various locations within the City.

- D12.1.1 Goods shall be delivered within three (3) Business Day(s) of the placing of an order, unless otherwise allowed by the User at the time of ordering.
- D12.1.2 It is expected that licenses shall digitally delivered through email, with availability for City management of licensing through the VMS developers web portal.

D13. CRITICAL STAGES

- D13.1 The Contractor shall commence critical stages of the Work in accordance with the following requirements, unless otherwise stated in the bid documents, or as approved by the Contract Administrator:
- (a) Initial and Immediate Temporary VMS Installation shall occur within five (5) business days from the receipt of notice of award of contract.
 - (b) Hardware and Network Requirements Development: The Contractor shall commence on site meetings and consultation within seven (7) business days from the receipt of notification of contract award.
 - (c) VMS Configuration Requirements Development shall commence on site meetings and consultation within twelve (12) business days from the receipt of notification of contract award.
 - (d) VMS Implementation and Rollout Plan: The Contractor shall provide an implementation and rollout plan with work schedule for Contract Administrator approval within ten (10) business days of the conclusion of onsite meeting and consultation activities.
 - (e) Final VMS Implementation and Rollout: The Contractor shall commence the Final VMS Implementation within seven (7) business days of notification from the Contract Administrator noting when hardware and network procurement and configuration has been completed by the City.
 - (f) Optimization, Training and Turnover: These activities shall be conducted within three (3) business days of the Final VMS Implementation and Rollout completion.

CONTROL OF WORK

D14. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) - QUALIFICATIONS

- D14.1 Further to B11.3, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require updated proof of compliance, as set out in B11.3.

D15. ORDERS

- D15.1 The Contractor shall provide a local Winnipeg telephone number or a toll-free telephone number at which orders for delivery may be placed.
- D15.2 The Contractor shall provide an email address to facilitate ongoing orders.

D16. RECORDS

- D16.1 The Contractor shall keep detailed records of the goods supplied under the Contract.
- D16.2 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);
 - (d) description and quantity of goods supplied;

- (e) the license upgrade and support years supplied per license, or group of licenses purchased by similar date; and
- (f) an overall VMS date of support and upgrade expiry date. The expiry shall be a calculated weighted average date should licenses have varied support and upgrade expiry dates, see section E5.

D16.3 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

D17. INVOICES

D17.1 Further to C10, the Contractor shall submit an invoice for each portion of work performed 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

D17.2 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 work performed;
- (e) the amount payable with GST and MRST shown as separate amounts; and
- (f) the Contractor's GST registration number.

D17.3 The City will bear no responsibility for delays in approval of invoices which are improperly submitted.

D17.4 **Bid Submissions must not be submitted to the above facsimile number. Bids must be submitted in accordance with B7.**

D18. PAYMENT

D18.1 Further to C10, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

D19. PAYMENT SCHEDULE

D19.1 Further to C10, payment shall be in accordance with the following payment schedule:

- (a) Payment shall occur, for each Form B item provided as they are completed, approved by the Contract Administrator, and appropriately invoiced as per D17.

D19.2 Further to C11, payment shall be in Canadian funds net thirty (30) Calendar Days after receipt and approval of the Contractor's invoice.

WARRANTY

D20. WARRANTY

- D20.1 Notwithstanding C11, the warranty period shall begin on the date of Total Performance and shall expire one year thereafter unless extended pursuant to C11.3, in which case it shall expire when provided for thereunder.

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 AND SERVICES

E2.1 The Contractor shall supply, install, configure, commission, train, and provide ongoing support of a corporate video management system for the Transportation Management Centre and the City in accordance with the requirements hereinafter specified and within the bid documents.

E2.2 Item No. 1 - VMS Corporate Level Base License shall:

- (a) Provide all functionality as required in this specification for a corporate level VMS platform.
- (b) Include all applicable costs for unlimited and simultaneous clients including both administrator and operator – thick, web, mobile, and smart wall/video wall applications (unlimited number of simultaneous displays, and unlimited simultaneous views of VMS sources) as described within this bid document.
 - (i) The number times sources are viewed and where these are shown shall be limited only by the scalable hardware and network performance selected and provided by City (server, network, client, display).
 - ◆ The display of websites or interactive mapping as sources shall not be subject to device licensing and shall be included for display and use.
 - (ii) The number of viewports/tiles available in a given VMS view shall be up to a minimum of 100 VMS sources.
- (c) Provide SDK and APIs for the supplied VMS to implement custom development by the City in order to integrate with other city implemented systems and enhance functionality as beneficial.
 - (i) There shall be no additional ongoing fees, connection fees, or licensing to use and implement.
 - (ii) SDK and APIs shall be supported and maintained until the End of Life software termination date applicable to the latest VMS software version in use by the City.
- (d) Ongoing software upgrade costs and VMS Developer care services and support shall be supported solely through Input Device Licensing, see E2.3, and its included year of care, support, and upgrades.
 - (i) Please see section E4 and E5 for further requirements associated with VMS Care, Support and Ongoing Software Upgrades.

E2.3 Item No. 2 - VMS Corporate Level Input Device Licenses shall:

- (a) Include all applicable costs for the licensed addition of input audio-visual sources/devices for unlimited use within the supplied VMS system. These sources include existing and expected new City IP cameras, and other audio video digital feeds (including h.264 RTSP encoded feeds).
- (b) Include all applicable costs to support the City required number of simultaneous mobile video pushing and as-required ongoing purchasing of additional licenses.
 - (i) An unlimited number of mobile devices shall be configurable and available to provide mobile pushing, and shall only be limited by users that are already pushing up to the maximum simultaneous licensing purchased by the City.

- (ii) There shall be no licensing restrictions on the number of mobile pull applications using VMS Developer iOS and Android apps other than limitations due to City provided bandwidth, hardware performance, and City administration defined user restrictions.
 - (iii) It is expected that 70 camera and RTSP feed devices licenses shall be required initially.
 - (iv) It is expected that 5 simultaneous mobile video push licenses shall be required initially.
- (c) Input Device Licenses shall permit unlimited swapping or re-allocating of licenses. This is to support the replacement and upgrading of installed hardware input devices.
- (i) Maximum Simultaneous Mobile push licenses shall be available for use by any configured, and City authorize mobile app user without further ongoing requirements for swapping or re-allocating of licenses.
- (d) Include VMS required care of software service, support, and software upgrades with at minimum one (1) year provided. Please see section E4 and E5 for further requirements associated with VMS Care, Support and Ongoing Software Upgrades, and calculated expiry.

E2.4 Item No. 3 - Initial Interim Install and Configuration shall consist of the Contractor immediately supplying, installing, and configuring (as necessary) initial specified VMS software and licensing for the ongoing and continuous use of existing TMC IP cameras and other h.264 RTSP feeds to ensure uninterrupted and ongoing TMC utilization.

- (a) Presently the following hardware is being used with a pre-configured demo license of Milestone Corporate 2016 R3. If the bidder proposed VMS Developer is the same as the current demo, updating to the latest build will not be required until the final VMS rollout where available. The current VMS usage is listed below.
- (i) TMC VMS Devices
 - ◆ Previously configured and combined quantity of approximately 80 Axis Q6114-E and Axis Q1615-E cameras
 - ◆ 720p, 8-15 fps, Zipstream enabled with dynamic fps and dynamic GOP equivalent providing typical 0.5-1.5 MB/sec per camera streams.
 - ◆ PTZ POI presets previously created and stored on camera
 - ◆ Edge recording to SD cards enabled
 - ◆ Centralized management of Axis cameras through Axis Camera Management clients for mass configuration.
 - (ii) Four centralized servers for interim VMS Operation (1 Management, 2 recording, 1 mobile servers)
 - ◆ **Management Server (VM based)**
 - ◆ Dual Xeon E5-2690v2 (1 core and logical processor per socket)
 - ◆ 12 GB Ram
 - ◆ Windows 2012 R2 Standard x64
 - ◆ 60 GB OS C: Drive, 300 GB D:Drive
 - ◆ SQL Server Express Version 12.0.2000.80.

 - ◆ **Recording Server 1 (VM Based)**
 - ◆ Dual Xeon E5-2690v2 (1 core and logical processor per socket)
 - ◆ 16 GB Ram
 - ◆ Windows 2012 R2 Standard x64
 - ◆ 60 GB OS C: Drive, 50 GB D:Drive , 5 TB VMS Storage E:Drive

 - ◆ **Recording Server 2 (VM Based)**

- ◆ Dual Xeon E5-2660v3 (1 core and logical processor per socket)
 - ◆ 16 GB Ram
 - ◆ Windows 2012 R2 Standard x64
 - ◆ 60 GB OS C: Drive, 50 GB D:Drive , 5 TB VMS Storage E:Drive
 - ◆ Mobile Server (VM Based)

 - ◆ **Recording Server 1 (VM Based)**
 - ◆ Dual Xeon E5-2690v2 (1 core and logical processor per socket)
 - ◆ 12 GB Ram
 - ◆ Windows 2012 R2 Standard x64
 - ◆ 60 GB OS C: Drive, 300 GB D:Drive
- (iii) Virtual Machine based servers are located centrally within the City and connected through fibre connections to 821 Elgin Avenue.
- (iv) All cameras are connected through M2M LTE connections to the City central servers.
- (v) Multicast is currently not enabled.
- (vi) Current VMS Users
- ◆ Four (4) TMC Operators ,
 - ◆ Two(2) to four (4) TMC VMS AV Computers
 - ◆ TMC Supervisor,
 - ◆ Six (6) Timing Engineers
 - ◆ Six (6) other branch users (6)
 - ◆ Fourteen (14) external branch users
- (vii) Current Typical Usage:
- ◆ TMC VMS AV Computers which stream video that is displayed on the AV video wall often stream 4-16 camera sources at a given time. (Presently only two (2) such video wall clients in use)
 - ◆ TMC Operators utilize two (2) to six (6) camera sources at a given time.
 - ◆ All others utilize generally one (1) to four (4) camera sources simultaneous, as needed.
 - ◆ Users are instructed to minimize camera usage to those required for job function and to maximize system hardware resources.
 - ◆ Recording access and usage is limited to where required.
- (viii) The City's network is a routed network with multiple network and firewalled security zones that the VMS shall be integrated into.
- E2.5 Item No. 4 - Consulting, Requirements, Plan, and Scheduling shall consist of the following Contractor Work Activities:
- (a) The Contractor shall schedule and plan meetings and associated agendas to efficiently meet desired meeting outcomes for a full VMS implementation.
- E2.5.1 Hardware and Network Requirement Development;
- (a) The Contractor shall:
- (i) Meet to consult, provide expertise to make decisions, clarify functionality and expected performance corresponding to gathered knowledge on present and potential new City IT infrastructure provisions and limitations.
 - (ii) Define and document required City hardware, networking, related software, and security requirements that need to be procured and/or configured to support the final full VMS implementation as approved by the Contract Administrator.
 - (iii) It is expected that the:

- ◆ Present quantity of TMC devices will grow from 80 devices to approximately 155 devices during the VMS requirements development and implementation stages. It is anticipated that additional devices will be added in ongoing contract years.
 - ◆ Camera stream quality will stay consistent or with slight improvement from the present 720p 15FPS continuous 7 day first in first out recording streams.
 - ◆ Number of simultaneous users and viewing of live and recorded sources will grow from current numbers.
 - ◆ Mobile clients are expected to be installed on a large number of mobile devices, but mobile video pushing shall be initially limited to 5 devices with some expected growth.
 - ◆ Users will primarily be from the City Public Works Department but is expected to grow and scale both in users and devices in the future to support approved needs.
- (b) Provide up to 15 hours of onsite meetings with Contract Administrator, City IT, and City User Representatives.
- (c) Within ten (10) business days of the conclusion of onsite consultation activities, the Contractor shall provide:
- (i) Sufficient detailed documentation to enable the City to procure and configure IT hardware and networking which facilitate Contract Administrator approved functionality and performance, and support scalable growth of VMS sources and system demand, and
 - (ii) Noted limitations of VMS functionality based upon approved hardware and network configuration selected, if any.
- (d) Approval and Resubmission
- (i) Upon notification from the Contract Administration of errors, omissions, or deficiencies in the provided documentation, the Contractor shall resubmit the required documentation within two (2) business days unless otherwise agreed to by the Contract Administrator.

E2.5.2 VMS Configuration Requirement Development;

- (a) The Contractor shall provide up to 8 hours of onsite meetings, with the Contract Administrator, City IT, and City user representatives.
- (b) Within five (5) business days of the conclusion of onsite consultation activities, the Contractor shall provide for Contract Administrator approval:
- (i) Sufficient detailed documentation of the final VMS configuration requirements to fulfill in the full VMS implementation.
 - (ii) A checklist of all approved configuration and performance requirements
- (c) Approval and Resubmission
- (i) Upon notification from the Contract Administration of errors, omissions, or deficiencies in the provided documentation, the Contractor shall resubmit the required documentation within two (2) business days unless otherwise agreed to by the Contract Administrator.

E2.5.3 VMS Implementation and Rollout Plan

- (a) The Contractor shall install VMS server software on City centralized hardware, and specified user/unmanned workstations. The Contractor shall work in consultation with, and instances alongside, City IT to install, configure all hardware and software to provide a fully functioning final VMS.
- (i) Work shall be pre-planned and scheduled in consultation with the Contract Administrator to limit inconvenience to TMC operators. Work shall occur during regular city working hours where possible, however non-regular work hour requirements shall be noted to the Contract Administrator in implementation plan approved by the Contract Administrator prior to VMS rollout.

- (b) All cameras to be added and controlled by the VMS are and shall be installed, initially configured, and networked by City staff. The Contractor shall provide additional centralized configuration of connected cameras and encoders to ensure optimal performance, and best practice for utilization of IP cameras within the VMS as required.
 - (i) Unless otherwise stated within the bid documents, the Contractor shall be required to install VMS user and management thick clients only within the Traffic Signals Branch at the Transportation Management Centre location. Sufficient documentation shall be provided by the Contractor to assist the City in setting up new or other clients after the VMS implementation.
- (c) Within ten (10) business days of the conclusion of onsite consultation activities, the Contractor shall provide for Contract Administrator approval:
 - (i) An implementation and rollout plan with work schedule noting key activities, durations, and Work milestones, along with sufficient information on when City IT resources/work are required, when Contractor and City IT collaboration occur (if required).
 - ◆ Sufficient and understandable details shall be provided for any City IT activity noted.
- (d) Approval and Resubmission
 - (i) Upon notification from the Contract Administration of errors, omissions, or deficiencies in the provided documentation, the Contractor shall resubmit the required documentation within two (2) business days unless otherwise agreed to by the Contract Administrator.

E2.6 Item No. 5 – Implementation and Rollout, Optimization, Training, and Turnover

E2.6.1 Final VMS Implementation and Rollout

- (a) The Contractor shall supply, install, and configure a complete and fully functional VMS system according to VMS Developer best practices, with approved functionality and performance, while maintaining ongoing camera operation within the Transportation Management Centre (TMC).
 - (i) The Contractor shall optimize video transmissions for the maximization of video quality corresponding to available bandwidth, and server and system performance.
 - (ii) The Contractor shall install server software on City centralized hardware, and specified user/unmanned workstations. The Contractor shall work with and in consultation with City IT to install, configure all hardware and software to provide a fully functioning system.
 - (iii) All cameras to be added and controlled by the VMS are and shall be installed, initially configured, and networked by City staff. The Contractor shall provide additional centralized configuration of connected cameras and encoders to ensure optimal performance, and best practice for utilization of IP cameras within the VMS as required.
 - (iv) The Contractor should provide VMS configuration details for snapshot auto offload for website update based on zoom camera zoom level or user configurable privacy lock and include:
 - ◆ User definable re-occurring time periods with definable resolutions and compression.
 - ◆ User configurable naming and availability to include VMS camera naming, date and time, and other info if available for automatic snapshot naming.
 - ◆ User definable network storage folder or other storage location; and
 - ◆ Occur either through VMS SDK/API integration or through client administration setups.

- (b) It is expected that the final VMS implementation and rollout shall be completed within (10) business days, or as per the Rollout and Implementation work Schedule approved by the Contract Administrator.

E2.6.2 Optimization, Training, and Turnover

- (a) Upon completion of the VMS Implementation and Rollout, the VMS shall be optimized by the VMS Developer. The Contractor shall also conduct onsite training for operator and admin client use, as well as certification training as specified.
- (b) Optimization:
 - (i) A Solutions Engineer from the VMS Developer shall provide three (3) full days (minimum 7 hours per day excluding lunch) of on-site inspection, verification, and required adjustment of the VMS installation/configuration to ensure system optimization and best practices are being followed based upon City supplied hardware, software, and network configuration. Unless otherwise requested by the Contract Administrator, the third day shall be set aside for advanced VMS training of network security and system administrators.
 - (ii) The Solutions Engineer shall assist in any other VMS related work activities during these three days if time is remaining.
 - (iii) The provided VMS Solution Engineer shall have at minimum five (5) years' experience using, configuring, and supporting the VMS in a corporate/enterprise setting and be fully qualified to represent the product according to this specified required use.
- (c) The Contractor shall provide training:
 - (i) Operator Client Training (Up to fifteen (15) people) – ½ day session. (thick, web, mobile client use and configuration, including smart wall viewing and operation)
 - (ii) Operator Admin Training (Up to fifteen (15) people) – ½ day session regarding use of Management Client (adding new cameras, camera device groups, user group and view group management, camera PTZ POI presets, scheduling and prioritization, events and actions. Show how to assign temporary rights and restrictions to users/user groups)
 - ◆ PowerPoint and related PDF documents (handouts or manuals) from the client and Admin training sessions shall be provided for use by the City for ongoing City conducted training activities of new users.
 - ◆ Listing of supplemental web accessible training resources.
 - ◆ Shall occur at Contract Administrator approved City facilities
 - (iii) Provide certification training for two (2) City staff members according to the level of VMS provided.
 - ◆ May occur later than project completion upon approval by Contract Administrator, and if so, shall be within one (1) month of turnover date completion, unless otherwise approved by the Contract Administrator.
 - ◆ May occur off City property however all additional costs shall be borne by the Contractor.
 - (iv) Training session content and dates shall be approved by Contract Administrator, and included in overall project schedule.
- (d) Turnover: Within ten (10) business days of the conclusion of the final VMS implementation, optimization, and training (excluding certification training) the Contractor shall provide a USB disk to the Contract Administrator complete with:
 - (i) All installed VMS software, licenses, and manuals (administrator and user client), in a neat, organized and understandable folder structure shall be provided to the Contract Administrator along with:
 - ◆ Recommended maintenance activities and how-to;
 - ◆ VMS periodic checks;
 - ◆ Periodic backup requirements;

- ◆ Supplementary documentation to VMS Developer manuals on how to/ useful processes for ongoing operation such as adding new VMS devices with prescribed VMS settings including multicast, adding mobile push or pull users, adding/removing new users and/or roles, setup of alerts or notifications, etc.;
- ◆ Training documents utilized in training sessions;
- ◆ A full VMS configuration report;
- ◆ A Contractor sign-off of VMS requirements and performance checklist documentation; and
- ◆ A list with of all Contractor initialized accounts and passwords that require modification by client, as required, with how to change instructions.

(e) Approval and Resubmission

- (i) Upon notification from the Contract Administration of errors, omissions, or deficiencies in the provided USB documentation, the Contractor shall resubmit the required documentation within two (2) business days unless otherwise agreed to by the Contract Administrator.

E2.7 Item No. 6,7,8, or 9 (Alternatives 1,2,3 or 4): Ongoing, As-required, VMS Corporate Level Input Device License with Alternate Care, Support and Upgrade Years Options.

- (a) Items Numbers 6, 7, 8, and 9 (Alternatives 1 – 4) shall meet the same requirements as E2.3 but with one or more years of included care, support, and upgrades as noted. The number of years of included care, support, and upgrades selected shall be determined as per bid evaluation criteria as noted in section B15.
 - (i) Item No. 6 (Alternative 1) shall include one (1) year of Care, Support, and Upgrades
 - (ii) Item No. 7 (Alternative 2) shall include two (2) years of Care, Support, and Upgrades
 - (iii) Item No. 8 (Alternative 3) shall include three (3) years of Care, Support, and Upgrades
 - (iv) Item No. 9 (Alternative 4) shall include five (5) years of Care, Support, and Upgrades
- (b) It is expected that during the first contract year that approximately 80 device licenses will be required for growth of VMS device licenses within the City, this equates to a combined camera, video feed, and mobile push quantity of 155 devices.
- (c) The awarded Alternative 1, 2, 3, or 4 shall be utilized for ongoing purchasing of device licenses upon mutual agreement as noted in section D2.

E2.8 Additional VMS Requirements and Details:

- (a) The Contractor shall configure the VMS according to VMS best practices and in consultation with the Contract Administrator and City representatives to provide a fully functional and optimally performing VMS for the TMC and its various users.
- (b) The Contractor shall provide a detailed understanding of the VMS functionality to the Contract Administrator and other city representatives to enable them to make informed decisions on the VMS configuration.
- (c) The Contract Administrator and City representatives through consultation with the Contractor shall define the detailed configuration requirements for the VMS implementation.
- (d) The Contractor shall provide detailed configuration documentation complete with noted hierarchy of roles, users, and permission levels corresponding to view, control, and management clients.
- (e) The configuration shall incorporate future scalability and expanded city-wide use.
- (f) The Contractor configuration work shall include, but is not limited to the following items below, unless specifically excluded:

- (i) Servers
 - ◆ All recording, failover, and mobile servers shall be optimally configured and aligned with overall use required. The determination of hot or cold failover shall be determined in consultation with Contractor see E2.5, Hardware and Network Requirement Development.
 - ◆ The City shall assign private IP addressing for servers.
 - (ii) Devices

The current TMC cameras (including microphones/speaker/metadata and input-output where required) shall be added to the VMS with configuration including:

 - ◆ Optimal server balancing, and grouping of camera devices.
 - ◆ Device grouping configurations to accommodate access restriction capabilities, and mass camera configuration changes.
 - ◆ Camera setting configuration to maximize performance according to available and to be defined network, storage and resource limitations.
 - ◆ Enabling of PTZ POI presets, optimization of motion detection as necessary, and setup and retrieval of local recordings in the occurrence of communication loss.
 - ◆ Edge recording retrievals for VMS database gap filling may be automatic, but at Contract Administrator discretion be requested to be retrieved by a re-occurring schedule.
 - ◆ Configuring and enabling VMS multicast as available with City infrastructure. Multicast work by the contractor shall be limited to the VMS software; however the Contractor shall provide requirements, support, and knowledge to assist City IT in any required City network/hardware configuration to ensure optimal VMS operation.
 - (iii) Networking:
 - ◆ Provision of documentation on network communication, port settings, to implement required firewall rules.
 - ◆ Use of HTTPS where possible
 - ◆ Provision of documentation and understanding for scaling feeds to remote City network locations where there may be limitations in multicast, QoS, and bandwidth availability.
 - (iv) Privacy Documentation:
 - ◆ Provision of documentation regarding any privacy issues introduced by the VMS to enable City decision making for server VLAN placement.
 - (v) Encryption:
 - ◆ Provision of documentation and knowledge transfer to understand VMS encryption options, impact, and data security.
 - (vi) The Contractor shall configure up to five mobile video push channels and associated users. Additionally up to five users and/or roles shall be configured to utilize mobile apps for view, control, or pushing of video. The Contractor shall provide documentation to show how to add additional users as required.
 - (vii) The VMS devices shall be optimally configured for use in VMS. The configuration shall include the detailed configuration of the VMS devices outside of the VMS interface where needed, using the devices' own configuration tools to modify or enable features such as Zipstream and Dynamic GOP/FPS, or setting optimal local storage requirements for retrieval purposes.
 - (viii) The Contractor, together with City IT shall ensure all devices are using a consistent time server.
- (g) The devices shall be configured for seven day continuous recording, or as otherwise directed by the Contract Administrator.
- (h) Clients

- (i) The Contractor shall create and fully configure up to four thick view client profiles and up to three management client profiles as defined through consultation with Contract Administrator. The definition of the requirements of these profiles shall be derived through Contractor and client meetings.
- (i) Rules and Events
 - (i) The Contractor shall configure rules for:
 - ◆ the return of PTZ cameras to home POI preset positions at a given priority, at given points in time, and
 - ◆ the periodic saving of VMS camera snapshots.
 - ◆ In the opinion of the Contractor and upon approval of the Contract Administrator, should the continuous periodic transfer of snapshots be optimally conducted through the camera interface, rather than through the VMS, the Contractor shall work with City IT to achieve this result, A configuration file shall be provided to allow the City to setup new devices to achieve this functionality.
 - (ii) Security

The Contractor shall define and configure:

 - ◆ The roles and users of the VMS along with detailed VMS permissions, camera access permissions, PTZ use, remote recordings, smart wall permissions, and viewing group for thick/mobile view client use in consultation with Contract Administrator and City representatives.
 - ◆ VMS roles and user accounts to integrate with City Active Directory. This shall occur if permitted and required by the City, and be conducted together with City IT.
 - ◆ The Contractor shall implement best practices for VMS Security Hardening as applicable to the City hardware and network configuration, and this work shall be in done together with, and in consultation with City IT.
 - (iii) System Dashboard
 - ◆ The VMS monitor thresholds shall be setup based upon VMS best practices complete with notification alerts enabled through client consultation.
 - (iv) Server Logs
 - ◆ The Contractor shall ensure all servers logging functionality shall be configured to run optimally allowing the detailed recording of VMS use and performance.
 - (v) Management Server Backup
 - ◆ The Contractor shall enable a backup of configuration upon completion of the final configuration, and provide documentation and/or automation to ensure ongoing backups up the VMS configuration.
- (j) The additional details have been provided to better provide bidder information on scope of work, but do not limit requirements to provide additional unstated requirements that are readily configurable in the VMS system, and defined through consultation work activities.

E3. VMS REQUIREMENTS

E3.1 Overall Description

E3.2 A city-wide enterprise video management system is required to manage and maximize the benefit of an increasing network of IP cameras, streaming video feeds, and mobile video devices throughout the City. The VMS solution is required to leverage traffic monitoring camera feeds to provide real-time and historical insight and verification of incidents, ongoing activities, and events occurring on a city-wide geographic scale to inform appropriate and timely action. The VMS is specified as to enable a citywide use consisting of discrete and complimentary user groups that require VMS access and utilization to gain access to visual information in the

accomplishment of their service delivery. Presently there are approximately 80 cameras installed throughout the City providing ongoing transportation monitoring and road network incident and activity verification. The VMS solution shall provide control by detailed authorization of IP camera resources and controls based upon a highly configurable setup which includes user and user group definable prioritization/authorization levels. The VMS solution shall provide detailed and highly configurable events, and scheduling including graphical calendar views for one time and re-occurring events, along with prioritization to manage and allow not only real-time handoff of PTZ control and use between users and/or events, but also temporal use amongst many users and events. The VMS Solution shall provide an open and transparent event and rule based system allow additional interaction and integration with 3rd party software for further automation and optimization for City usage processes.

E3.3 VMS Product Requirements

- (a) The following represents functionality that shall be available and fully functional within the VMS System provided for the TMC operations. Unless otherwise mentioned, these functionalities shall be readily selectable and configurable without further VMS Developer development in the VMS, and without additional cost. At the time of bid, the following VMS requirements and configuration options shall be readily available within the software proposed by the bidder, unless otherwise stated.

E3.3.1 Overall VMS Requirements

- (a) Scalable and Redundant.
- (b) Support unlimited camera sources, users, or sites.
 - (i) Ability to support at minimum more than 75 workstations and at minimum more than 400 cameras in a centralized server based cross organization VMS;
- (c) Support distributed server architecture with load balancing to ensure performance, and if required from City, specifically F5 Load Balancing.
- (d) Support multi-site architecture with multiple users and administrators simultaneously (greater than 50 locations, 50 workstations);
- (e) Support logical or physical recording servers.
- (f) Support archival of recordings, with automated and scheduled archiving and configurable retention periods.
- (g) Support edge based recording, automated/scheduled central database importing from edge devices to fill in communication failure caused recording gaps.
 - (i) Ability to support edge "Trickling" recording transfer at the camera level with auto transfer to a network storage unit on pre-defined schedules, event, and/or on communication restoration;
- (h) Centralized management of all system parts.
- (i) Support the install of system software on commercial off the shelf hardware.
- (j) Support server virtualization and specifically VMware
- (k) Client use shall support Windows OS 7, 8, 10.
- (l) Mobile clients apps shall be free to install and support Android and Apple devices.
 - (i) Mobile client download and use shall be free and unlimited through the VMS system and limited only by City bandwidth, networking and hardware resources, and administration permissions.
- (m) Server software shall operate on Microsoft Server 2012, 2012 R2, and 2016
 - (i) Shall operate on Microsoft SQL Server 2012 SP1 and 2016;
 - (ii) Where possible the server software shall be installed on the latest server OS or SQL versions to support longevity of install.
- (n) Support 64 bit recording servers.

- (o) Support high availability failover and recovery options, both cold and hot standby failover options providing availability for fully automatic failover due to hardware failures and automatic synchronization on system recovery.
 - (i) The City shall determine failover during Contractor consultation and requirement development.
- (p) Support external storage including network or disk attached storage or storage area networks.
- (q) Provide health monitoring for system components including cameras, storage including
 - (i) Camera tampering notification
 - (ii) Storage utilization
 - (iii) Network connectivity
 - (iv) Hardware Outages
- (r) Permit recording to multiple locations simultaneously to permit redundancy and active failover.

E3.3.2 Camera and Video Source support:

- (a) Open Architecture
- (b) Support for camera and encoder audio/video feeds with dual simultaneous streams using H.264 and MJPEG encoding;
- (c) Support a given cameras maximum number of live camera streams.
- (d) Compatible with ONVIF protocol profile S,C and G; and PSIA standards.
- (e) Allows connection of cameras and encoders from different manufacturers. At a minimum, the following manufacturers: Axis, Panasonic, Arecont, Flir, Hikvision, Bosch, and Hanwha Techwin.
- (f) Allow for the use of cameras and encoders that support the IEEE 802.1X protocol (Radius network authentication server);
- (g) Permit the use megapixels cameras from 720P, 5 Megapixels to 4K;
- (h) Support camera's maximum frame rate and resolution.
- (i) Allow the use of 180 and 360 degrees cameras, with corresponding control and de-warping.
- (j) Support RTSP source streams from H.264 and H.265 audio/video encoders
- (k) Support multiple cameras streaming from the same IP address but with unique port numbering.
 - (i) This permits the use of more than one camera to a fixed M2M LTE Modem utilized by the City.
- (l) Support vendor specific additional H.264 compression such as Axis Zipstream
 - (i) Shall support Axis Zipstream on the Q1615-E and Q6114-E models.
- (m) Support multi-live streaming to facilitate bandwidth optimization, quality, and use based on given need.

E3.3.3 Hardware Support

- (a) Support and leverage Intel Quick Sync Video for mobile server transcoding to mobile/web clients and decoding on client computer hardware.
- (b) Ability to support a redundant server with automatic transfer upon failure of the primary server;
- (c) Ability to support video storage servers redundancy;
- (d) Allows for any kind of network storage unit and edge recording (edge device, SD card, Micro SD);

E3.3.4 License Management

- (a) Provide an internet accessible web interface with City Administration login(s) to manage the VMS licensing, and enable City administration management of device licensing allocation and changes.
- (b) Provide unlimited re-allocation (transfer) of device licenses (swap old camera for new camera without re-occurring new or additional licensing costs)
- (c) Provide online and offline license authentication capabilities.

E3.3.5 Security

- (a) Provide Kerberos and/or NTLM authentication protocol options for VMS security hardening.

E3.3.6 Administration and Configuration

- (a) Centralized administration of entire system including remote management of servers, devices, and users.
- (b) Ability to create user profiles and assign permissions accordingly, aligning with each user's login credentials;
- (c) Ability to assign temporary permissions based on a schedule, date pre-permission, post permission);
- (d) Allows user authentication according to their account in Active Directory;
- (e) Ability to support users access permissions based on Active Directory user ids for:
 - (i) Permissions for view, export, changing view, changing patrol schedules, etc.;
 - (ii) Permissions by date and time.
 - (iii) Single sign on.
- (f) Ability to create groups of users with access to system functionality according to the level of authority of the administrator who is creating the new groups;
- (g) Ability to support a virtual segregation of sites (i.e. group of camera accessible to the Media). One must be able to create up to 50 segments (partitions);
- (h) Extract and retain camera/source metadata
 - (i) Including camera stored video analytics and geographic location from mobile video push sources.
- (i) Ability for creating and saving view profile and activating those profiles on event, operator command, event or by schedule;
- (j) Ability for creating private view profiles/ share view profiles (private view profile for TMC , share view profile for external users);
- (k) Support camera stream selection and designation for recording, client views and real-time modification of these selections.
- (l) Create and manage virtual groups of cameras and video feeds to configure various events, recording or live stream configurations. Enabling mass and selected camera setting modifications.
- (m) Ability to set defaults, or changeable options by user view clients.
- (n) Ability to set default snapshot network folder for user view clients.

E3.3.7 Transmission Capabilities

- (a) Support the TCP/IP protocol for encrypted communication between workstations, mobile apps, web interface, servers, storage servers and cameras;
- (b) Support multicast feeds from recording servers to clients to optimize City network bandwidth and hardware requirements.
- (c) Support a single unicast stream from the camera(s) to the recording server(s) and provide then provide video to multiple view clients without any additional unicast streams from the camera;**

E3.3.8 Events and Logging

- (a) Ability to monitor, log and report any recording device trouble to the main GUI and other means of notifications;
- (b) Ability to detect, log and report any failure from any components over the GUI and over miscellaneous notification methods (email, snmp, sms, xml etc.);
- (c) Ability to automatically transmit SMS messages to several devices on specific events;
- (d) Ability to automatically transmit an email to a user and/or simultaneously to multiple users on specific events;
- (e) Ability to audit user access, client actions, and system configuration changes.

E3.3.9 Client Use Capabilities

The clients shall provide a highly user intuitive GUI with excellent user experience where VMS use is efficient and effective. The GUI shall be non-intrusive, professional, and provide detailed configuration capabilities including keyboard shortcuts for user specific demands. The GUI shall permit the ease to create and access live, recorded, analyze camera and/or combined multiple camera views to quickly and efficiently use connected camera devices.

- (a) Provide view/operating client access through thick, web, and mobile clients.
- (b) Ability to process multiple 16 live video streams of 15 FPS at 720P in H.264 on lower powered (graphical processor unit, ram, main processor) computers equipped with Intel I3 processors with Intel Quick Sync;
- (c) Allow the user to select different video streams from the camera in order to increase or reduce the quality of the displayed video;
- (d) Ability to quickly receive live video, or playback (less than one (1) seconds for loading live view) after the selection of a camera from:
 - (i) Tree Selection
 - (ii) Text Source Query
 - (iii) Camera icon overlaid on a map source
- (e) Ability to provide full VMS workstation capabilities via the use of a web page interface. The GUI shall allow operating and managing the video management systems from this web page interface;
- (f) Ability to provide a quick view(s) and intuitive and easy control of any camera(s)/video source(s) within the VMS for a mobile application (Android and IOS) over the Internet;
 - (i) Live with PTZ control, user defined/named POI preset selection, snap shot capabilities,
 - (ii) Recording views with playback controls (speed, snapshot capabilities, digital PTZ)
- (g) Ability to quickly send or duplicate a live video feed of one camera or a group of cameras to a workstation or a mobile device (i.e. tablet or intelligent phone) from any workstation within the VMS;
- (h) Provide an interactive screen help menu with all the information that is found in the O&M manual of the system without having to connect to the online website of the VMS Developer;
- (i) Ability to instant replay from any camera view including the ability to transition between live and recorded video quickly with quick simple actions (one or two);
- (j) Ability to give permission to a user or an event, based on a schedule. This includes selecting, viewing any camera, including the PTZ control;
- (k) Allow edge based analytics to be visible on VMS client GUI;
- (l) Allow for embedded analytics video detection at a camera level to automatically detect, log and report masking of cameras (or blur) to the VMS client GUI;

- (m) Permit the user or administration creation of keyboard shortcuts for actions within the VMS.
- (n) Create bookmarks for points in time that are of interest and ability to add additional notes visible to other client users.
- (o) Permit the user action of retrieving edge based video recordings to fill in VMS database gaps based on a given time period.

E3.3.10 Views

- (a) Provide user group and permission based views of cameras. Permitting detailed permission capabilities according to user role.
 - (i) Permit the sharing of views between grouped users
 - (ii) Permit the creation, edit, permissions by users within specific user groups.
 - (iii) Permit the view/use only capabilities for other specified user groups.

E3.3.11 Mapping

- (a) Support GIS and CAD Drawing with integration into source mapping
- (b) Support online maps including, but not limited to two of the following:
 - (i) Google, Bing, and Open Street.
- (c) Ability to import vector electronic graphics (DWG, GIS (Shapefile or equivalent) for creating interactive graphic pages, supporting vector zoom in and out;
- (d) Ability to use Google Earth, Bing maps or equivalent as a source for the interactive graphic pages;
- (e) Ability to display interactive graphic pages with 100 interactive icons (cameras or status from other platforms) in less than five (5) seconds in order to ensure speed and accuracy of graphic pages on opening and continuous status update;
- (f) Ability to provide operator functionality of dynamic zoom in and out of maps through mouse scroll wheel (from bird eyes view down to details – i.e Google Maps centred zoom functionality and refresh)

E3.3.12 Live

- (a) Should provide the ability to limit users to viewing no more than an administration defined number of recorded streams concurrently;
- (b) Show motion detection and/or any other analytics overlay information
- (c) Provide diagnostic overlay information including (user configurable to show)
 - (i) Recording/Streaming Codec, Frame Rate, Multicast Status, Hardware Acceleration, Frame loss information.
- (d) Support saving of snapshot to user/administration definable network folder locations or copying snapshots to OS clipboard.
- (e) Provide additional camera functionality through the means of client integration with camera functions.
 - (i) Shall provide means to enable Axis Speed Dry operation as a toggle button on the client interface.
- (f) Pause or navigate forward or in reverse through cycling cameras in a given client viewport.
- (g) Shall provide immediate view (less than one second delay) of live video stream(s) when selecting a camera(s) to view.

E3.3.13 PTZ Operation Presets/Patrolling/Priority

- (a) Support client selection and movement of a PTZ view to pre-defined PTZ POI presets, or activate/de-activate administration or operator defined patrolling pattern(s).
- (b) Support client creation of new or modified PTZ POI presets or patrol patterns.
- (c) Support capture and use of camera defined PTZ POI presets.

- (d) Provide an administration definable/modifiable text naming of PTZ POI presets for ease use and understanding in the client GUIs,
 - (i) The use of numeric or simple IDs along with user defined text naming showing as a tooltip/info tip popup to represent a PTZ POI preset is not sufficient by itself to meet this requirement.
 - (ii) Provide administration selectable default home PTZ position from each camera's lists of defined POI presets.
 - (iii) Presets shall provide administration definable ordering of PTZ POI presets by camera for operator ease of use, i.e.
 - ◆ Home (Selected Default), North Near, North Far, East Near, East Far, South Near, South Far, West Near, West Mid, West Far.
- (e) Provide greater than 5000 levels of control rights for operators or rule based PTZ operation enabling pre-defined use and real-time handoff of PTZ session control by multiple users/user groups. Authorization of PTZ control shall be by administration defined authorization levels (up to 5000),
 - (i) The use of threat levels may be utilized, if available, along with priority authorization levels but availability of threat levels alone is insufficient to meet these requirements.
 - (ii) If provided, VMS threat levels shall provide PTZ access and control, or removal of access and control to authorized users depending on their permission threat level.
- (f) Provide administration definable PTZ session timeout durations
- (g) Provide administration definable PTZ session reserve duration permitting operator to maintain and select reservation use of a specific PTZ for a predefined duration as needed.
- (h) Provide pausing of PTZ patrol upon event or manual authorized PTZ session use, with automatic resumption of patrol upon session timeout.
- (i) Provide PTZ patrolling on event,
- (j) Support the creation and detailed definition of multiple PTZ patrol patterns/sequencing. Shall be able to create multiple PTZ patrols
- (k) Patrol patterns shall be user or administration definable, with ability to define PTZ preset selection (addition/deletion), order, the unique and/or common dwell time for per selected PTZ preset, and unique and/or common speed of transition between PTZ presets.
- (l) Patrol pattern naming shall be user/administration text based modifiable for ease of appropriate operator selection and use in GUIs.

E3.3.14 Cycling Cameras in client Views

- (a) Support the cycling of user selected live view cameras feeds based on a per camera dwell duration or to set a dwell duration applicable to all cameras within the cycling viewport.
- (b) Ability to support sequencing live views from different cameras on one or multiple tiles including the ability to configure the sequencing individually for each tile;
 - (i) Shall support user ordering of camera live feeds, and the enabling of repetition of the camera cycling operation.

E3.3.15 Playback

- (a) Ability to search recorded video by motion and other intelligent video searching capabilities;
- (b) Ability to play recorded video with pre- and post-alarm in real time on reception of an alarm;

- (c) Ability to view recording history with timeline along with corresponding activity such as motion, or edge triggered recording database capture, bookmarks, audio (incoming/outgoing) availability.
- (d) Availability to choose the viewing or skipping of gaps.
- (e) Ability to create bookmarks
- (f) Provide independent playback,
- (g) Provide time sync'd playback of cameras.
- (h) Provide availability to retrieve local camera recordings to fill VMS recording database.

E3.3.16 Alarms

- (a) Ability to sort events and produce reports (alarms) by; transaction categories;
- (b) Allow for alarm events recording with pre- and post-alarm at least 15 seconds at higher FPS than the scheduled FPS for continuous recording. This should be configurable individually for each camera;
- (c) Allow the alarm with pre- and post-alarm recording at least 15 seconds at a higher quality than the quality configured by schedule for continuous recording. This should be configurable individually for each camera;
- (d) Ability to show alarms with different priority levels;
- (e) Ability to filter the display of alarms/events;
- (f) Ability to see in real time all the alarms that have been acknowledged without being stored;
- (g) Ability to activate different sounds depending on the priority level of alarm;
- (h) Ability to activate a voice message for specific alarms and repeat the message until the acknowledgement of the alarm;
- (i) Ability to assign a custom instruction for each alarm event;
- (j) Ability to re-route an alarm to another workstation if no action has been taken within a programmable delay;
- (k) Ability to re-route the alarms to another workstation based on an operator log-off from a VMS workstation;
- (l) Ability to force the input of operator comment's for some alarms when acknowledged;
- (m) Ability to display alarms on graphics interactive pages;

E3.3.17 Exporting and Database Exchange

- (a) Support exporting the full contents and/or selected parts of the database;
- (b) Should support the ability to exchange (in and out) almost any part of the database with a third-party, using database connection exchange table;
- (c) Integration with other platforms must allow linking video events to the events, enabling the view and search for any events from any systems and play the associated recorded video from the main GUI;
- (d) Support exporting video with multiple codecs (including mkv, avi, etc.)
 - (i) Shall support the selection, use, and configuration of local client computer codecs for encoding video/audio outputs.
- (e) Digitally signed video recording - watermarking, in case of legal actions;
- (f) Support exporting pictures with multiple codecs (including JPG and uncompressed BMP);
- (g) Ability to export synchronized video from multiple cameras from same or different recorder servers with correspondent metadata;
- (h) Support user definable privacy masks areas for exports.

- (i) Shall provide a free exported video viewer providing replay control capabilities of exported video.

E3.3.18 PTZ Control

- (a) PTZ control shall allow the users to efficiently track a moving vehicle by manual control over the VMS GUI;
- (b) Shall permit the selection, and default for use of PTZ by Click-to-Centre or Virtual Joystick Mode
- (c) Shall provide the optical and/or digital PTZ functionality based on the creation of a user defined zoom area (i.e select a box shaped area of interest on camera stream, and software immediately pans, tilts and zooms to this defined area of interest.
- (d) Shall provide the availability for users to quickly select zoom level based on user defined centre point of interest.
 - (i) This shall include keyboard mouse combined use to select zoom level and centre point of interest such as:
 - ◆ Holding shift and mouse left click on centre point of interest, and moving mouse up/down to define zoom level.
- (e) Shall provide a user configurable home/default position for the camera.
 - (i) Permit scheduling and prioritization permissions to move PTZ cameras to default or home positions/
- (f) Ability to assign priority control levels to a scheduled event
- (g) Ability to assign a priority level to a user over an event and vice versa in regards to the control of a PTZ;
 - (i) This shall be through the administration defined PTZ control authorization level definition.
- (h) Integrate guard tour functionality including activation of presets for PTZ cameras.
- (i) Support schedule tours based on preset locations, preset cycle periods with cycle recover after movement, and schedule multiple tours based on date and time, or day of week, or repeating calendar schedule using calendar based scheduling interface.
- (j) Future VMS software updates should provide the control of a PTZ by clicking on a position of a graphic page
- (k) Future VMS software updates should provide dynamically displayed PTZ position on camera map illustrating the current geographic view of the camera
- (l) Support sharing to external media outlets (external user getting video stream from the TMC), with controls to shut down or limit views depending on events;
 - (i) At present this feature will not be configured, however in the future should the functionality be available, the cameras should provide streaming capabilities when zoom levels are within an administration defined zoom range.
- (m) Should support the capacity, upon a simple action, to trigger pre-defined actions and modify a user or user groups access level requirements to see a camera or a group of cameras (i.e. in an event of a car accident with wounded people, the ability to quickly prevent the media from seeing related camera);
- (n) Support the creation, of PTZ control, and PTZ preset locations, or other event/action based overlay buttons to automate/enable client operation of individual camera sources.
 - (i) Support user modification of text, size, and placement arrangement of overlay buttons.
 - ◆ Preferred if such overlays can be assigned to individual cameras regardless of view layout in which the overlay buttons were set.
- (o) Support the administration or user permission of digital PTZ zoom on fixed or PTZ cameras.

- (p) Shall support the use of automated PTZ movement of a PTZ enabled camera to geographic points/areas of interests and ability to activate corresponding actions including triggering snapshots, and potentially creating bookmarks through the SDK/API input of PTZ control commands and other event actions.
 - (i) Should provide capability to authorize move and enable such action events occurring based on configurable PTZ priority level defined by administration or authorized users.

E3.3.19 Smart Wall/Video Wall

- (a) Ability to control a group of monitors connected to PC desktop or other server hardware (Video Wall) from within the VMS GUI. This allows an operator to quickly duplicate a camera(s) view on an operator workstation to any monitor or monitor spans of the video wall, and to be able to quickly select any camera to be shown on any monitor and tile of the video wall from the VMS GUI with a command like Cam#.MON#.TILE#, or drag and drop.
- (b) Ability to quickly send or duplicate a complete view within the VMS to other workstations of the VMS System from any workstation within the VMS System;

E3.3.20 Rules Based Management

- (a) A hierarchy of permission levels based on user accounts and profiles providing access and control to video streams and recorded video.
- (b) Event and/or time profile based rule system that allows detailed levels of automation of system tasks and camera control.
- (c) Integration of rules based management with detailed calendar based scheduling, and detailed user permission level administration.
- (d) Rule creation shall be intuitive, user-friendly, for utilization throughout the VMS system to enable detailed control and functionality of hardware, connected devices, events, server functionality, notification mechanisms including email and text, and integrated applications and systems.
- (e) Rules used to trigger, and/or stop events and actions as needed.

E3.3.21 Integration – Third Party Integration Platform, Analytics, SDK and API

- (a) Support the deep integration with numerous third party platforms and be able to show data from those platforms over the standard GUI interface used for the live video. Data exchange shall be two ways (data in from third-party platforms and data and/or video out to third-party platforms, API and SDK Openness) ;
- (b) Provide API and SDK to enable detailed and multistep functionality of the VMS operation and configuration including interoperability with other software systems.
- (c) Ability to show data from third party platforms in overlay on associated live video feed. (i.e. traffic lights status at the street corner shown by the camera)
- (d) Ability to support licence plate recognition regular features (i.e. log all licence plates in metadata and jpg, alarm on specific licence plate
- (e) Ability to provide a seamless integration with intercom systems, and other entry access control systems.

E3.3.22 Recording

- (a) Continuous FIFO recording or continuous recording that discontinues when storage is full.
- (b) Recording on motion with ram configurable buffers
- (c) Provide frame rate, image quality increase capabilities due to motion, time schedule or event.
- (d) Customizable recording configuration based on daily or reoccurring schedules.

E3.3.23 Schedules and Time Profiles

- (a) Shall support the creation of an unlimited number of time profiles to be utilized for VMS actions.
- (b) The VMS shall provide a simple and intuitive calendar based GUI along with simple user forms to create time profiles. The time profiles shall be similar in usage and simplicity as Microsoft Outlook or Google Calendar with availability to click and drag timeframes on days or across days.
 - (i) Time profiles shall include reoccurring time selection, expiry conditions, and dynamic day-length of time that follow daylight changes over a year based on GPS position including daylight savings time.
- (c) Time profiles shall be definable and utilized throughout the VMS system to enable detailed control and functionality of hardware, connected devices, events, server functionality and integrated applications and systems.

E3.3.24 Federation

- (a) VMS software shall support the federation of other City camera systems for cross-silo dissemination and control across the City Network, if required at a later point in time. The setup and licensing of such federation is outside of the scope of Work for this bid opportunity.

E4. VMS CARE, SUPPORT, AND ONGOING SOFTWARE UPGRADES

- E4.1 The VMS Developer shall provide ongoing online support and E-Learning, Online User Forums, Business hour phone support, and access to new service releases and source device driver packs until the VMS version is no longer supported by the VMS Developer.
- E4.2 In addition, the VMS solution provider shall provide free upgrades to new VMS versions, care, and support for a minimum one (1) year from the date of this contract's initial VMS license activation, or until the systems date expiration of VMS care, support, and upgrades (see E5), whichever is longer.
- E4.3 The costs for ongoing care, support and software upgrades shall be solely through the input device license procurement.

E5. VMS EXPIRATION OF CARE, SUPPORT AND UPGRADES

- E5.1 Where Input Device Licenses and associated software upgrade, care and support durations do not have the same end date due to ongoing and as-required license purchasing, the last day for the overall VMS care, support, and software upgradability shall be the calculated mean date of all Input Device Licenses and remaining care, support and upgrade expiries.
 - E5.1.1 Example using months: 100 devices with 6 months upgrades, support and care remaining, and another 100 devices purchased with 1 year remaining upgrades, support and care remaining. New expiry date is 9 months away.
 - (a) $(\#Devices1 * Months\ Remaining\ Devices1) + (\#Devices2 * Months\ Remaining\ Devices2) / (\#Devices1 + \#Devices2) = Calculated\ Months\ Remaining$
 - (b) $(100 * 6) + (100 * 12) / (100 + 100) = 9\ months$

E6. SOFTWARE END OF LIFE

- E6.1 The VMS Developer shall support their VMS software and provide manuals, documentation, and web downloadable software for a period of four years after the initial release date of a given VMS version. Critical hotfixes and extension purchases for a given version shall be available for a minimum 3 years after the in use VMS version initial release date.