



Region of Waterloo

**REQUEST FOR PROPOSAL**

**P2017-30**

**GRAND RIVER TRANSIT (GRT)  
TRANSIT BUS SIMULATOR SYSTEM**

**THE REGIONAL MUNICIPALITY OF WATERLOO  
PROPOSAL - P2017-30**

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**PROPONENT'S CHECK LIST**

Before submitting your proposal, check the following points:

1. Has your proposal been properly signed? \_\_\_\_\_
2. Are the documents complete? \_\_\_\_\_

NOTE: Your proposal will be informal and may be disqualified if ANY of the foregoing points (if applicable) have not been complied with.

**SECTION A**  
**INSTRUCTIONS TO PROPONENTS**

**SECTION A  
INSTRUCTIONS TO PROPONENTS**

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1. **DESCRIPTION**

This Request for Proposal (RFP) is for one (1) Transit Bus Simulator System that will be delivered and installed at Grand River Transit, 250 Strasburg Road, Kitchener.

2. **CLOSING DATE AND TIME**

Proponents shall be solely responsible for the delivery of their proposals in the manner and time prescribed herein.

Proposals for **P2017-30 – Grand River Transit (GRT) Transit Bus Simulator System** will be received until **2:00:59 p.m. on Wednesday November 29, 2017** at The Region of Waterloo, Procurement Office, Reception Desk, 4<sup>th</sup> Floor, 150 Frederick Street, Kitchener, Ontario N2G 4J3.

The time of 2:00:59 p.m. will be determined based on the wall clock located at The Region of Waterloo, Procurement Office, Reception Desk, 4<sup>th</sup> Floor, 150 Frederick Street, Kitchener, Ontario N2G 4J3. Proposals received at 2:01:00 p.m. or later will be deemed to be late and non-compliant.

Proposals shall be enclosed and sealed in an envelope with the envelope template provided affixed securely to the front of the envelope.

3. **DESIGNATED OFFICIAL**

Questions, clarifications, or interpretations regarding this Request for Proposal shall be requested in writing and shall only be directed to:

**Scott Agnello, CPPO, CPPB, Supervisor, Procurement**  
[sagnello@regionofwaterloo.ca](mailto:sagnello@regionofwaterloo.ca)

**The deadline for questions is Wednesday November 22, 2017 at 4:00PM.** The Region reserves the right to not address questions received after the specified deadline for questions has passed.

4. **BID DOCUMENTS**

Only documents posted on the Region's website are to be considered the "official" documents. The Region accepts no responsibility for the accuracy of information found on other websites. Bid documents are only published on the Region's website at <https://bids.regionofwaterloo.ca>.

5. **CLAIMS OR LITIGATION**

The Region of Waterloo will not open and consider bids received from parties with whom the Region is in litigation or pending litigation unless approval allowing such

is obtained by the bidder from the Council of the Region of Waterloo prior to the close of the bid.

Bids which are unopened pursuant to this policy will be returned to the proponents and no contract in regard to the bid process will be created as between the bidder and the Region of Waterloo.

The terms “litigation” and “pending litigation” are defined in the Region’s Purchasing By-law.

In order to obtain approval from Council of the Region to open and consider a bid, the bidder, before the close of the bid, must contact the Regional Clerk and the Manager, Procurement in writing at least one (1) week before the next regularly scheduled Council meeting, setting out the bidder’s request and any grounds to support the request. The bidder’s request will then be presented to Council for its consideration.

The Regional Clerk and the Manager, Procurement may be contacted at:

Regional Clerk's Office  
150 Frederick Street, 2<sup>nd</sup> Floor  
Kitchener, ON N2G 4J3  
Fax (519) 575-4481

Information on the regularly scheduled Council meetings can be found at <http://www.regionofwaterloo.ca/en/regionalgovernment/agendasminutes>.

**6. PROPONENT’S MEETING**

The proponent must carefully examine the site of the work before submitting the bid, either personally or through a representative and be satisfied as to the nature and location of the work, local conditions, soil structure and topography at the site of the work, the nature and quality of the materials to be used, the equipment and facilities needed preliminary to and during the prosecution of the work, the means and access to the site, on-site accommodation, all necessary information as to risks, contingencies and circumstances as may affect the bid, and other matters which can in any way affect the work under the contract.

The bidder is fully responsible for obtaining all information required for preparation of the proposal and for the provision of the equipment as proposed. It shall be the responsibility of the successful proponent to provide all of the necessary materials and labour required to fully satisfy the intent of this contract.

**There will not be a formal prebid meeting for this proposal.**

**7. ADDENDA**

- (a) If a proponent finds discrepancies in or omissions from the RFP Documents, or if they are in doubt as to their meaning, the bidder shall notify the Region.

- (b) The Region reserves the right, for any reason, to issue addenda to the proponents at any time prior to bid closing. Addenda issued during the bidding period shall be allowed for by the proponent in submitting the bid.
- (c) Any information or changes to the requirements for this RFP opportunity will be posted on the Region's website <https://bids.regionofwaterloo.ca> in the form of an addendum. All addenda posted prior to the closing date shall be considered part of the contract documents. When an addendum is issued, the Region will attempt to send a notification email to all registered plan takers with a link to the addendum. The Region makes no promise or guarantees that addenda will be delivered by any means to any bidder nor is the Region responsible for computer malfunctions or delays, therefore, it is the bidder's sole responsibility to check the website for any addenda prior to the RFP closing. By submitting a proposal, the proponent acknowledges and agrees that they have checked the website and that their bid incorporates all addenda.
- (d) No addenda will be issued within 48 hours of the closing date except to extend or cancel the bid.

8. **CONTRACT REQUIREMENT**

- (a) The accepted proponent will be required to enter into the contract with the Region.
- (b) The proponent agrees that, if requested so to do by the Region or anyone acting on its behalf within one hundred and twenty (120) days from the closing, the proponent will execute all copies of the Contract provided and return it to the Region within fourteen (14) days after being so requested.
- (c) If the proponent has not been requested to execute the Contract or if the proponent has not received the written order to proceed one hundred and twenty (120) days from closing, then the Contract between the proponent and the Region may be voidable by either party through written notice.

9. **BID ACCEPTANCE**

- (a) Each proposal must be properly signed by an authorized official or principal who has authority to bind the proponent.
- (b) The lowest or any proposal will not necessarily be accepted.
- (c) The Region reserves the right to reject any or all proposals, including without limitation the lowest proposal, and to award the contract to whomever the Region in its sole and absolute discretion deems appropriate, notwithstanding any custom of the trade to the contrary nor anything contained in the bid and RFP Documents.



- (d) The Region shall not, under any circumstances be responsible for any costs incurred by any proponent in the preparation of its proposal.
- (e) Without limiting the generality of the foregoing, the Region reserves the right, in its sole and absolute discretion, to accept or reject any proposal which in the view of the Region is incomplete, obscure, or irregular; uncertain, which has erasures or corrections in the documents, which contains exceptions, variations or qualifications; which omits one or more prices; or which otherwise fails to comply with the requirements herein.
- (f) The Region in its sole and absolute discretion, reserves the right at any time to re-bid or cancel the request for proposal, or negotiate a contract for the whole or any part of the project with any one or more persons whatsoever, including one or more of the proponents.
- (g) The Region reserves the right to communicate with one or more proponents following the bid close to clarify elements of the bids.
- (h) In the event of a tied proposal, the Region may evaluate and accept a proposal, in its absolute and sole discretion, based upon experience, efficiencies or cost considerations other than price. In the event of a tied proposal, the Region also reserves the right in its sole and absolute discretion to flip a coin as between the tied proponents or to cancel and re-issue the request for proposal.
- (i) This proposal is irrevocable and open to acceptance by the Region up to and including, but not after 90 calendar days after the bid closing.

10. **DISQUALIFICATION OF BIDS**

- (a) The proposal must be legible in ink or typewritten and all items must be bid.
- (b) Bids which are incomplete, conditional, or obscure, or which contain erasures or alterations not properly initialed, or irregularities of any kind, may be disqualified at the sole discretion of the Region.
- (c) Wherever the amount bid for a unit price item does not agree with the extension of the estimated quantity and the bid unit price, or if the extension has not been made, the unit price shall govern and the extension and the total bid price shall be corrected accordingly. If any unit price is left blank then the unit bid amount shall be deemed to be zero even if the bidder has submitted an amount for the extension. For greater certainty, as a unit price contract, the unit prices bid shall prevail and shall constitute the bidder's stipulated prices for acceptance by the Region. Any multiplication of the unit prices bid by the estimated quantities or the totaling of such is for the Region's convenience.

- (d) If a bidder has omitted to enter a price for an item of work set out in the RFP Document, the proponent shall, unless the proponent has specifically stated otherwise in the bid, be deemed to have allowed elsewhere in the bid for the cost of carrying out the said item of work and unless otherwise agreed to by the Region, no increase shall be made in the total bid price on account of such omission.
- (e) Should the Region consider non-compliance with the formal requirements of the proposal to be minor in nature, it reserves the right to waive such requirements at its sole discretion.
- (f) Proponents who have submitted proposals that have been disqualified by the Region because of informalities will be notified.

11. **WITHDRAWAL OF PROPOSALS PRIOR TO BID CLOSING**

- (a) A proponent who has submitted a proposal may request that their proposal be withdrawn. The withdrawal shall only be allowed if the request is made before the closing time for the submission of proposals. Withdrawal requests must be directed to the designated official by letter, telegram, fax or in person. Telephone requests will not be considered.
- (b) When withdrawals are made in person, the official receiving bids shall obtain a signed withdrawal form confirming the details. If the person is other than a senior official of the bidder, and for letter, telegram or fax withdrawals, the authenticity of the request must be confirmed by telephoning a responsible official of the bidder.
- (c) Bids confirmed as withdrawn prior to being placed in the bid box, shall be returned unopened to the bidder.
- (d) Withdrawal notices received after the bid has been deposited shall, together with the confirmation of withdrawal, be placed in the bid box. These bids are dealt with at the opening by announcing that the bid was withdrawn. The bid amount of a withdrawn bid shall not be read out.
- (e) The withdrawal of a bid does not disqualify a bidder from submitting another bid on the same contract.

12. **CONFLICT OF INTEREST**

- (a) The bidder declares that no member of the Council of the Region and no officer or employee of the Region will become interested directly or indirectly as a contracting party, partner, shareholder, surety, or otherwise in or in the performance of the Contract or in the supplies, work or business to which it relates, or in any portion of the profits thereof, or in any of the money to be derived therefrom.

- (b) Should the proponent believe that a conflict of interest or potential conflict of interest exists, the proponent must disclose this information to the Region prior to the acceptance of the proposal. The Region may, at its sole discretion, withhold acceptance of the proposal until the matter is resolved to the Region's satisfaction.
- (c) The Region may disqualify a proposal if it believes that a conflict of interest or potential conflict of interest exists or it may, at its sole discretion, allow a conflict of interest or potential conflict of interest to exist if it is satisfied that there are adequate safeguards in place and if the Region determines that it is in its best interests to do so.

13. **FREEDOM OF INFORMATION**

The proponent acknowledges that any bid submitted shall become a record belonging to the Region and therefore is subject to the *Municipal Freedom of Information and Protection of Privacy Act*. This provincial law gives individuals, businesses and other organizations a legal right to request records held by the Region, subject to specific limitations. The proponent should be aware that it is possible that any records provided to the Region, including but not limited to, pricing, technical specifications, drawings, plans, audio-visual materials or information about staff, parties to the bid or suppliers could be requested under this law. **If the proponent believes that all or part of the proposal should be protected from release, the relevant parts should be clearly marked as confidential.** Please note that this will not automatically protect the submission from release, but it will assist the Region in making a determination on release if a request is made. The identity of all proponents, as well as total proposal prices, may be available to the public under the Region's Purchasing By-law.

14. **COLLUSION AND PRICE FIXING**

- (a) By submitting a bid, the proponent certifies that:
  - (i) The prices in the proposal have been arrived at independently of those of any other proponent;
  - (ii) The prices in the proposal have not been knowingly disclosed by the proponent, and will not knowingly be disclosed by the proponent prior to selection of the successful proponent, directly or indirectly, to any other proponent or competitor; and
  - (iii) No attempt has been made, or will be made, to induce any other person to submit or not to submit a bid, for the purpose of restricting competition.
- (b) The Region may disqualify a bid if it believes that any of the prohibited acts in (a) have occurred.

15. **ENTIRE AGREEMENT**

- (a) The RFP Documents contain all the terms and conditions and requirements relating to the RFP.

- (b) Any other information, including but not limited to:
  - (i) verbal communications with any person including an elected official, officer, employee, agent or consultant of the Region;
  - (ii) written documentation from any source including from an elected official, officer, employee, agent or consultant of the Region;
  - (iii) past practices or qualifications accepted by the Region for prior request for proposals; and
  - (iv) any industry customs, are not relevant and should not be relied upon by the proponent unless such is specifically incorporated into the RFP Documents, or any addendum thereto, by the Region.

16. **DISPUTE RESOLUTION**

- (a) If the proponent has any complaint, disagreement or dispute whatsoever in regard to the manner in which the Region, its elected officials, officers, employees, or its consultants and advisors, has or is carrying out the bid which cannot be resolved then the proponent shall submit its complaint, disagreement or dispute in writing to the Region's Chief Financial Officer as soon as practicable and the Region's Chief Financial Officer shall investigate the complaint, disagreement or dispute forthwith and provide a written report as he or she deems necessary to the bidder with the results arising from such.
- (b) Any conclusions and recommendations of a written report from the Region's Chief Financial Officer will be implemented, as necessary, in the request for proposal unless such conclusions and recommendations are no longer possible because the request for proposal has been awarded or for any other reason, in which case, the conclusions and recommendations will be considered and implemented, as necessary, by the Region for future request for proposals.

17. **PROVISIONAL PRICES**

Provisional prices may be discarded or incorporated, as a whole and/or in part, into the bid price in the amounts indicated, at the absolute discretion of the Region and may be used to determine the low bidder. Proponents must provide provisional prices.

18. **ERRORS AND OMISSIONS**

It is understood, acknowledged, and agreed that while this RFP includes specific requirements and specifications, the Region shall not be held liable for any errors or omissions in any part of this document. While the Region has used considerable effort to ensure an accurate representation of information in this document, the information contained in the document is supplied solely as a guideline for proponents. The information is not guaranteed or warranted to be accurate by the

Region, nor is it necessarily comprehensive or exhaustive. Nothing in the document is intended to relieve the proponents from forming their own opinions and conclusions with respect to the matters addressed in the document.

19. **PROPOSAL SUBMISSION**

To be considered complete, **five (5) copies [one (1) marked original] + one (1) electronic copy on USB** of the proposal clearly identified with the RFP number and title must be received by the Region prior to the closing date and time.

All proponents are required to submit their proposals using 2 envelopes, with the envelope template provided affixed securely to the front of the envelope – one for qualifications and technical factors and the other for the cost proposal. Both envelopes must be sealed.

Proponents who include their cost proposal in the technical requirements envelope will be disqualified.

The proponent's cost proposal is an important component of the evaluation process; however, the other criteria will be assessed first.

Submissions must be submitted on the forms provided in the bid documents and bear an original signature, not a photocopy or facsimile.

All prices in the proposal are to be in Canadian funds.

20. **PROPOSAL FORMAT**

Evaluation of proposals is made easier when proponents respond in a similar manner. The following format and sequence should be followed in order to provide consistency in proponent response and ensure each proposal receives full consideration. All pages should be consecutively numbered.

The proposal must be no longer than 15 pages in length (excluding appendices which are limited to 20 pages) and must contain, at a minimum the following components:

Technical Envelope:

Compliance to Specification/Product information  
Enhancements  
Workplan, Delivery and Installation Schedule  
Signing Sheet

Cost Proposal:

Completed Form of Proposal

21. **EVALUATION CRITERIA**

Proposals will be assessed on the basis of information provided in the technical bid submission and as well, any additional information provided during subsequent interviews/meetings, as required, to clarify the content of the bid submission.

Criteria – Quality Factors	Weighting
Compliance to Specification	40%
Enhancements	10%
Work plan, Delivery and Installation Schedule	20%
Price	30%

22. **EVALUATION AND AWARD**

The Region’s Evaluation Committee will evaluate the submitted technical proposals based on assessments against the “non-price” criteria (i.e. quality factors).

To ensure the cost proposals do not influence the technical or qualifications assessment they will remain unopened until the quality factors have been evaluated. Proponents who include their cost proposal in the technical submission envelope will be disqualified.

The Region intends to enter into a formal agreement with the selected proponent based on the technical submission together with the proponent’s cost proposal obtained at the time of selection. The Region may negotiate any aspect of any RFP submission with one or more of the proponents at any time. Negotiations with any bidder shall not oblige the Region to enter into a contract with any bidder or be construed as an acceptance of the RFP submission. All negotiations shall be in writing, in a form satisfactory for inclusion into the contract.

All or any prior agreements, representations, statements, negotiations, understandings, undertakings and proposals, either written or oral, relating to this subject matter are hereby superseded by this Request for Proposal.

Proponents are advised that this information is to be provided at their own expense. The Region may wish to interview proponents after submissions have been reviewed for clarification. However, should it be evident from the information provided that one proposal is clearly superior, the Region reserves the right to negotiate with that vendor to enter into a contract without soliciting proposals from others.

Proponents are further advised that no contract may result from the Request for Proposal.

23. **OTHER PUBLIC AGENCIES**

Prior to submitting this tender, it is of significant importance that all potential respondents be advised of the following:

It is clearly understood that by submitting a tender in accordance with this document, the bidder is agreeing that other public agencies may review their tender document and further, if a successful bidder is selected by the Region and other public agencies deem it is in their best interest to join the Region contract under the same terms and conditions, then one or more parties may join the Region contract, if mutually agreed upon between the interested public agency and the successful bidder.

With the above agreement comes the realization that if other public agencies do join the Region contract on a consortium basis, then the total dollar value resulting from the potential contract could prove to be significantly higher than suggested in this document and bidders are requested to consider this information while preparing their responses and bring to their tender the best possible economical benefits and returns to the Region.

24. **EXCLUSION OF LIABILITY**

The Bidder acknowledges and agrees that the Region of Waterloo may be required as part of this Bid to:

- (a) make certain determinations or rulings in regard to the Bidder's compliance or another bidder's compliance with the terms and conditions of the Bid;
- (b) exercise any discretion that it has reserved to itself in this Bid, or that it has by law;
- (c) make an award of the Bid whether to the Bidder or to another bidder;
- (d) cancel the Bid and re-bid the corresponding works in whole or in part at a later time; and/or
- (e) cancel the Bid and all corresponding works.

(hereinafter referred to as a "Decision") in a manner or on grounds that the Bidder disagrees or disputes.

In this regard, the Bidder, by submitting a bid, acknowledges and agrees, notwithstanding any other terms and conditions of the Bid, any express or implied duties that the Region of Waterloo may owe the Bidder, including without limitation any implied duty of fairness, or any remedies available to the Bidder at law or in equity, that its sole recourse and remedy against or in regard to the Region of

Waterloo, its elected officials, officers, employees, or its consultants and advisors, arising from or related in any way to a Decision shall be in accordance with the Dispute Resolution paragraph of the Bid and that in **NO EVENT** shall the Region of Waterloo, its elected officials, officers, employees, or its consultants and advisors, be liable or responsible, in any way whatsoever, to the Bidder, its officers, directors, employees, consultants, subcontractors, suppliers, sureties or insurers, for any claims, actions, causes of action, contracts, damages, including without limitation direct, indirect, consequential, incidental, general, special or exemplary damages, any economic losses, any lost profits, lost opportunities, expenses, costs, including without limitation any expenses or costs to prepare a bid, or any other losses arising from or related in any way whatsoever to a Decision.

25. **RECTIFICATION PROCESS**

Notwithstanding any other term and condition in this RFP, upon the RFP closing date and receipt of the Proposals and following the procedures as set out in Section A, there will be a “rectification” period of two (2) business days in which the Proponents will have the opportunity to rectify any deficiencies in failing to provide a fully completed set of requirements.

If the Proposal does not include a fully completed set of requirements as set out in Section A the Region, at its discretion, may provide the Proponent an opportunity to rectify the deficiencies within two (2) business days by 2:00:59 p.m. EST. Proponents must submit the information in person to the Procurement Office by the required day and time as noted in the Rectification Notice. **This timeline is considered mandatory and no extensions will be provided.**

The Procurement Office will issue Rectification Notices by email to the Proponent Contact.

The Proponent must ensure that any contact information is current and up to date.

Proponents which do not comply and fail to provide the required information within the rectification period will be disqualified and excluded from further consideration.

26. **CONTRACTOR/PROPONENT PERFORMANCE EVALUATION**

The Region of Waterloo, at any time during and/or after the completion of the Contract, may conduct a formal evaluation of the Contractor's/Proponent's performance using a performance evaluation form as established by the Region of



Waterloo. The results of the formal performance evaluation shall be provided to the Contractor.

If the Contractor/Proponent obtains a score of less than 80% on one performance evaluation on one contract then the Region of Waterloo shall place the Contractor/Proponent on probation for a period of two years from the date that the Region of Waterloo gives the Contractor/Proponent notice of the probation. If a Contractor/Proponent receives a score of less than 80% on a performance evaluation for a contract during a probation period then the Region of Waterloo shall suspend the Contractor/Proponent for a period of two years from the date that the Region of Waterloo gives the Contractor/Proponent notice of the suspension and the Region of Waterloo shall not open and consider any bids or otherwise acquire any goods or services from the Contractor/Proponent. At the conclusion of the suspension period, the Region of Waterloo may open and consider bids from the Contractor/Proponent, and otherwise acquire any goods or services from the Contractor/Proponent, but the Contractor/Proponent will be on probation for a one year period commencing on the date that the suspension concludes.

The Contractor/Proponent may, within 15 days of receipt of a performance evaluation, write to and request that the Region's Chief Financial Officer review the performance evaluation in relation to the grounds as set out in the Contractor's/Proponent's written request. Upon receipt of a written request, the Chief Financial Officer shall review the performance evaluation based on the grounds set out in the request and the Chief Financial Officer shall have all the authority to either revise or confirm the performance evaluation. At the conclusion of the review, the Chief Financial Officer shall advise the Contractor/Proponent in writing of his or her decision and the Contractor/Proponent agrees to be bound by such without any further right of review or appeal to any court or other body having lawful jurisdiction.

This provision shall not limit the ability of the Region of Waterloo in any way to utilize third party references, internal references, performance evaluations or other information when considering this or any other bid.

The Region's performance evaluation process shall not limit any other rights or remedies of the Region of Waterloo including those rights and remedies as set out in the Contract.

The Contractor/Proponent agrees to the terms of the performance evaluation process as set out herein and shall adhere, both during and after the term of the Contract, as applicable

**SECTION B**

**GENERAL TERMS AND CONDITIONS**

## **SECTION B - TERMS AND CONDITIONS**

### **1. INSPECTION**

The successful Proponent is responsible for ensuring that the unit is thoroughly tested and inspected, and that all deviations are corrected prior to delivery.

The Region has the right to inspect the unit at any stage of production or assembly and have all deviations corrected upon request.

The Region shall complete a final inspection at the time of delivery.

### **2. DELIVERY AND RESPONSIBILITY – generally for equipment**

Price is F.O.B. delivered to Grand River Transit, 250 Strasburg Road, Kitchener and is to include all freight, delivery charges.

The successful Proponent shall be responsible for **all** transportation of the units to and from the Grand River Transit location up until the units have passed the Regional delivery inspection. The delivery shall be at the successful Proponent's sole risk, responsibility and expense.

The successful Proponent shall also be responsible for insurance coverage at all times, until the goods are delivered and accepted, based on final inspection by the Region.

Delivery timing indicated in the Form of Proposal shall be adhered to. The specific dates of delivery shall be scheduled with Grand River Transit.

### **3. PAYMENT OF INVOICE**

Invoices shall be sent to Lynda Stelmach electronically at [LStelmach@regionofwaterloo.ca](mailto:LStelmach@regionofwaterloo.ca) no earlier than the day of delivery of the goods. Payment of the invoice will be Net 30 from the date of final acceptance by the Region.

The Regional standard is for all vendors to accept payment via Electronic Funds transfer. It is the responsibility of the successful proponent to contact the Region's Accounts Payable division at 519-575-4490 ext. 3006 to set up their account for direct deposit. Signup is required only once. Information submitted is held in the strictest confidence and is kept on file for **all** future payments.

### **4. ASSIGNMENT OF CONTRACT**

This contract may not be assigned, sub-contracted, or let out in whole or in part, without the prior written consent of the Region.

5. **CONTRACT DOCUMENTS AND ORDER OF PRECEDENCE**

The contract document shall consist of:

- a) An executed Agreement/Purchase Order;
- b) Addenda to the RFP;
- c) The proponent's bid and any subsequent negotiated changes.
- d) The RFP, including Terms and Conditions, Instructions to Proponents, Specifications; and

These documents and portions thereof, take precedence in the order in which they are named above, notwithstanding the chronological order in which they are issued or executed.

The successful proposal shall become an integral part of the contract. It shall not, however, be considered the total binding obligation for the contract. Any and all bid conditions may be included at the discretion of the Region as part of the final negotiated and approved contract.

The Region reserves the right to include additional terms and conditions during the process of contract negotiations. These terms and conditions shall be within the scope of the original RFP document and contract documents and shall be limited to cost, clarification, definition, and administrative and legal requirements.

6. **INSURANCE**

It is the responsibility of the Vendor and/or their Insurance Broker to review all potential operations and exposures to determine if the coverage and limits noted below are sufficient to address all insurance related exposures presented by the specifications of this Project, Work or Supply. The Vendor shall insure its undertaking, business and equipment under the following coverage so as to protect and indemnify and save harmless the Region of Waterloo:

- a.) **General Liability Insurance:** The Vendor shall maintain liability insurance acceptable to the Region of Waterloo throughout the term of this Agreement. Coverage shall consist of a comprehensive policy of public liability and property damage insurance, with all coverage endorsements applicable, in an amount of not less than \$5,000,000 per occurrence. Such insurance shall name Region of Waterloo, and any other person or party identified in the contract documents, as an additional insured with a cross liability endorsement and severability of interests provision. The policy SIR/deductible shall not exceed \$100,000 per claim and if the policy has an aggregate limit, the amount of the aggregate shall be double the required per occurrence limit.

- b.) **Automobile Liability Insurance:** The Vendor shall maintain automobile liability insurance on all Owned, Leased and Non-Owned Automobiles used in the

performance of work to a limit of \$5,000,000 throughout the term of this Agreement.

- c.) **Provisions:** All Insurers must be licensed in Ontario. The Vendor shall forward Certificates of Insurance evidencing this insurance to the Region of Waterloo. The Certificates shall state that coverage will not be cancelled, terminated, amended or otherwise changed or modified except after thirty (30) days ( fifteen (15) days if cancellation is due to non payment of premium) prior written notice by certified mail to the Region. It is also understood and agreed that in the event of a claim any deductible or self-insured retention (SIR) under these policies of insurance shall be the sole responsibility of the Vender and that this coverage shall preclude subrogation claims against the Region of Waterloo and any other person insured under the policy and be primary insurance in response to claims. Any insurance or self-insurance maintained by the Region of Waterloo and any other person insured under the policy shall be considered excess of the Vender's insurance and shall not contribute with it. The minimum amount of insurance required herein shall not modify, waive or otherwise alter the Vendor's obligation to fully indemnify the Region of Waterloo under this Agreement. Any failure to comply with any provision of the insurance policy by the Vendor shall not affect coverage provided to the Region of Waterloo. The (Region of Waterloo reserves the right to modify the insurance requirements as deemed suitable.

### **Third Party Claims Process:**

The Region of Waterloo's claims process for Third Party claims is to refer the claimant directly to the Vendor and to leave the resolution of the claim with the Vendor. This applies regardless of whether or not it is an insured loss.

As the Region of Waterloo has a responsibility to the taxpayers, we must ensure that claimants are dealt with in a fair and efficient manner. Claims reported to the Vendor, either directly by a third party or through the Region of Waterloo shall be promptly investigated by the Vendor. The Vendor shall make contact with the third party claimant within 48 hours of receipt of notice of a claim. The Vendor shall initiate an investigation of the claim immediately upon notice, and advise the third party claimant in writing, with a copy to the Region of Waterloo, of the status of their claim within 21 calendar days of the notice. Upon resolution of the claim, the Vendor shall issue a letter to the claimant, with a copy to the Region of Waterloo, which will include the reasons for their position.

Should this position not resolve the claim and be accepted by the third party claimant, the Vendor shall immediately report the claim to its Insurer for a further review. (Insurer for this purpose is defined as either the Claims Department of the Vendor's Insurance Company or the Claim's Administrator at the Vendor's Insurance Broker.) The Vendor's Insurer upon receipt of this claim shall advise the third party claimant by letter, with a copy to the Region of Waterloo, that they

are now investigating the claim. When a final position on the claim has been determined, the Vendor's Insurer shall advise the third party claimant by letter, with a copy to the Region of Waterloo. Failure to follow this procedure shall permit the Region of Waterloo to investigate and resolve any such claims.

Nothing herein shall limit the right of the Region of Waterloo to investigate and resolve any such claims notwithstanding the response of the Vendor and/or its Insurer and to seek indemnification from the Vendor or to exercise any other rights under this agreement.

The Region of Waterloo may, without breaching this Purchase Order agreement, retain from the funds owing to the Vendor an amount that, as between the Region of Waterloo and the Vendor, is equal to the balance in the Region of Waterloo's favour of all outstanding debts, claims or damages, whether or not related to this Agreement.

7. **WORKPLACE SAFETY INSURANCE BOARD**

The Vendor must register as an employer or independent operator (as the case may be) with the Workplace Safety and Insurance Board (WSIB). Prior to commencing the Work, the Vendor shall enrol in the WSIB e-Clearance service and provide the Region with a Clearance Certificate Number through the e-Clearance service. The Vendor must maintain its account with the WSIB in good standing throughout the duration of this Agreement, and shall ensure that its e-Clearance is automatically renewed prior to its expiry. At no time may work proceed or continue under this Agreement in the absence of a current Clearance Certificate Number from the WSIB.

8. **REGION NOT EMPLOYER**

The proponent agrees that the Region of Waterloo is not to be deemed the employer of the proponent nor its personnel under any circumstances whatsoever.

9. **INDEMNIFICATION AND HOLD HARMLESS AGREEMENT**

The Vendor, both during and after the term of this Agreement, shall at all times, and at its own cost, expense and risk, defend, indemnify and hold harmless the Region of Waterloo, its elected officials, officers, employees, volunteers, agents, contractors, and all respective heirs, administrators, executors, successors and assigns from any and all losses, damages (including, but not limited to, incidental, indirect, special and consequential damages, or any loss of use, revenue or profit by any person, organization or entity), fines, penalties and surcharges, liabilities (including, but not limited to, any and all liability for damage to property and injury to persons, including death), judgments, claims, demands, causes of action, contracts, suits, actions or other proceedings of any kind (including, but not limited to proceedings of a criminal, administrative or quasi

criminal nature) and expenses (including, but not limited to, legal fees on a substantial indemnity basis), which the indemnified person or persons may suffer or incur, howsoever caused, arising out of or in consequence of or directly or indirectly attributable to the Services required to be performed by the Vendor, its agents, employees and sub-contractors on behalf of the (Region of Waterloo, provided such losses, damages, fines, penalties and surcharges, liabilities, judgments, claims, demands, causes of action, contracts, suits, actions or other proceedings of any kind and expenses as defined above are due or claimed to be due to the negligence, breach of contract, and/or breach of law of the Vendor, its agents, employees or sub-contractors.

10. **TAXES**

With the exception of HST, the successful bidder shall pay government sales taxes, customs duties and excise taxes with respect to the contract and in its bid shall have taken into account all current legislation respecting such taxes and duties.

11. **ADDITIONS TO CONTRACT**

The Region reserves the right to add or delete items not listed herein, but required throughout the term of this contract. Those items will automatically become part of the contract and subject to all the same terms and conditions.

12. **PRICING**

All prices shall be in Canadian funds and must be inclusive of customs, duty and freight.

13. **GOVERNING LAW**

This contract shall be governed by and construed in accordance with the Laws of the Province of Ontario.

14. **ACCESSIBILITY FOR ONTARIANS WITH DISABILITIES ACT, 2005 (AODA)**

All contractors performing work for the Region must comply with the Accessibility for Ontarians With Disabilities Act, 2005 ("AODA"), in particular the Integrated Accessibility Standards, O. Reg. 191/11.

Without limitation, all contractors performing work for the Region shall maintain training records with respect to all accessibility standards training provided as prescribed in the Regulations under the AODA and in the Human Rights Code, including dates when training is provided, the number of personnel who received training, and individual training records.

Contractors shall submit to the Region, if requested, documentation describing their accessibility training policies, practices and procedures, and a summary of the contents of training, together with a record of the dates on which training is provided and the number of attendees.

Unless determined by the Region to not be practicable, contractors shall ensure that any information, products, deliverables and/or communication (as defined in the Integrated Regulation), including future updates, produced pursuant to a Contract shall be in conformity with World Wide Web Consortium Web Content Accessibility Guidelines (WCAG) 2.0 Level AA and shall be provided in accessible Word, Excel, PowerPoint, PDF or other electronic format.

15. **DUTY TO NOTIFY**

In the event that the Contractor becomes aware of the occurrence of any problem and / or condition which may adversely affect the supply, delivery, installation, cost, functional capability or performance, of the deliverables to be provided, or the ability of the product to conform with the specifications for the term of the contract, then the Contractor shall promptly, and in no event more than two (2) days after becoming aware of same, notify the Region, in writing, of such occurrence and of the nature of the relevant problem or condition in sufficient detail to permit the Region to understand the nature and scope thereof.

16. **IMMEDIATE TERMINATION FOR CAUSE**

Despite any other provision herein, the Region reserves the right at its exclusive option to immediately terminate this Contract, or part thereof, without further liability of any kind:

- a) For any breach of condition of the Contract by the Contractor;
- b) For failure by the Contractor to meet described performance standards required by the Contract;
- c) For failure by the Contractor to perform the Contract in a timely fashion;
- d) the Contractor does not adhere to the Contract before commencing with provision of the goods
- e) the Contractor fails to commence providing the goods on the commencement date as specified in the Contract
- f) the Region determines reasonably that the Contractor has abandoned provision of the goods; or
- g) For any Act of God event which lasts longer than thirty (30) days.



Additionally, the Contractor shall indemnify and reimburse the Region for all costs, expenses, damages and costs of any kind, including legal fees and expenses and consequential losses arising out of the Contractor's default.

17. **DEFAULT BY THE CONTRACTOR**

The following shall constitute acts or events of default ("Event of Default") by the Contractor:

- a) the Contractor has failed to observe and perform any of the covenants, obligations or provisions of the Contractor contained in this Contract, as solely determined by the Region;
- b) the Contractor has breached any representation or warranty contained in this Contract or has provided any information either before or after the execution of this Contract which is false or otherwise misleading in any material respect, the determination of which the Region shall be the sole judge;
- c) any formal or informal proceeding for the dissolution of, liquidation of, or winding up of, the affairs of the Contractor is instituted by or against the Contractor, or where a resolution is passed or any other act undertaken for the winding up of the Contractor;
- d) the Contractor ceases or threatens to cease to carry on its business, or where the Contractor makes or agrees to make a bulk sale of its assets;
- e) a receiver, manager or trustee is appointed in respect of the business or assets of the Contractor, or any part of thereof, by a court of competent jurisdiction, or under an agreement;
- f) the Contractor defaults in payment of any indebtedness or liability to a bank or other lending institution, whether secured or not;
- g) the Contractor fails to properly and fully perform as specified in this Contract;
- h) the Contractor fails to remedy defects or deficiencies in the Work after having been given written notice to do so, within the time stipulated in such notice;

- i) the Contractor fails to hold, comply with and maintain in good standing any insurance policies, certificates of approval, permits, licences or other approvals required by the Contract or commits any acts or omissions that jeopardizes or may jeopardize these policies, certificates of approvals, permits, licences or other approvals;
- j) the Contractor subcontracts the whole or any part of the Contract, or makes an assignment of the whole or any part of the Contract, without the prior written consent of the Region;
- k) the Contractor fails or refuses to remedy any unsatisfactory or defective goods or to remove any unsatisfactory or condemned material when so ordered by the Region in writing;
- l) the Contractor persists in any course in violation or breach of any of the provisions, terms, covenants, agreements, obligations, warranties or representations contained in the Contract after receiving written notice from the Region to correct that violation or breach;
- m) the Contractor fails to deliver a performance bond renewal as required under this Contract;
- n) such other acts or events of default of the Contractor identified in the Contract.

18. **NOTICE OF DEFAULT**

If the Contractor should neglect to provide the services as specified or otherwise fails to comply with the requirements of the Contract, or the event of a minor Event of Default, as determined solely by the Region, the Region may, without prejudice to any other right or remedy the Region may have, notify the Contractor in writing that the Contractor is in default of the Contractor's Contractual obligations and instruct the Contractor to correct the default within TWO (2) business days, or such greater or lesser period of time determined by the Region in its sole discretion, immediately following the receipt of such notice.

If the default cannot be corrected in the TWO (2) business days or other time period specified, the Contractor shall be in compliance with the Region's instructions if the Contractor:

- a) commences the correction of the default within the specified time;
- b) provides the Region with an acceptable schedule for such correction; and
- c) corrects the default in accordance with such schedule.

19. **REMEDIES**

In the event that the Region proceeds to immediately terminate the Contract, or if the Contractor fails to correct any default to the satisfaction of the Region in the time specified in a written Notice of Default given to the Contractor, or within any other time period subsequently agreed upon in writing, without prejudice to any other right or remedy the Region may have, the Region may do any one or more of the following:

- a) itself correct the default or retain one or more third parties to correct the default, and deduct the cost thereof from any payment then or thereafter due to the Contractor;
- b) itself perform the Contract or any part thereof or retain one or more third parties to perform the Contract or any part thereof, and deduct from any payment then or thereafter due to the Contractor the costs incurred by the Region in excess of the Component Prices for the applicable part of the Work for the period of time and the extent of the Work provided;
- c) suspend the performance of the Contract by the Contractor and either perform the Contractor's obligations under the Contract on a temporary basis itself or retain one or more third parties to perform such obligations on a temporary basis, and deduct from any payment then or thereafter due to the Contractor the costs incurred by the Region in excess of the component prices for the applicable goods for the period of time and the extent of the Work provided;
- d) suspend all payments to the Contractor;
- e) have recourse to any Performance Security provided by the Contractor, but such recourse shall not preclude the Region from recovering any further amounts, costs, expenses, or other consequential losses or damages incurred by the Region as a result of the default by the Contractor;
- f) terminate the Contractor's right to continue to supply the goods in whole or in part or terminate the Contract;

In case the provision of goods, or any part thereof, is taken out of the hands of the Contractor, as herein provided, it shall in no way affect the relative obligations of the Region and the Contractor, or its surety, hereunder, in respect of the remainder of the provision of goods (if any) as the Region may deem reasonable.

20. **SURVIVAL**

All obligations of the parties shall expressly, or by their nature, survive termination of the Contract until, and unless, they are fulfilled, or by their nature expire or until the parties mutually agree to a release of the obligation. The

Contractor's obligations under the Contract as to quality, correction and warranty of the goods performed by the Contractor at the time of termination shall continue after such termination of the Contract.

The Region's rights to indemnity provided for in these terms and conditions shall survive the termination of this Contract.

21. **TERMINATION WITHOUT CAUSE**

The Region reserves the right to terminate the Contract, at any time, without cause and without liability, upon a minimum of thirty (30) days written notice to the Contractor.

**SECTION C**

**SPECIFICATIONS**

**Submission Requirements**

**Envelope 1**

Compliance to Specification/Product information – Detail how your products meets or exceeds the specifications requested in this RFP. Include Product, Warranty and Service information.

Enhancements – Provide details on potential enhancements your product could offer the Region.

Work plan, Delivery and Installation Schedule – Describe your plan to build, deliver and install the unit at Grand River Transit including a detailed timeline.

**Transit Bus Simulator System Functional Requirements:**

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## Transit Bus Simulator System Functional Requirements

### 1 Introduction

#### 1.1 Purpose and Scope

The purpose of this document is to outline the functional and technical requirements and specifications for a Transit Bus Training System (the “Simulator System”) to be installed at a Region of Waterloo facility.

The Contractor shall be responsible for the manufacture, supply, delivery, installation, testing, commissioning, training, documentation, warranty, and on-going maintenance of the Simulator System in accordance with the requirements described herein.

The Contractor shall be responsible for delivering a complete and working system as per the Region of Waterloo’s requirements. Any additional components and/or functions not specifically called out in the requirements described within the RFP, which are required to deliver complete and working system, shall be clearly detailed in the Proponent’s submission.

The Simulator System will be installed at the Strasburg Road Facility, located on 250 Strasburg Road in Kitchener, Ontario. The Strasburg Road Facility was built in 1976, and went through an addition in 2005 and a subsequent renovation in 2014. The facility is currently the main operations and storage facility that serves Grand River Transit’s Kitchener and Waterloo Service Area. The provisioned space for the Simulator System will be available by February 16, 2018 for on-site installation. The work plan shall require the delivery, installation and acceptable testing to be completed by March 16, 2018.

The Simulator System will specialize in providing training to drivers providing conventional Grand River Transit bus service. Operation of the Ion, the Region of Waterloo’s new Light Rail Transit system (LRT), is expected to begin in 2018. Additionally, conventional service is being adjusted to accommodate these new systems. Proponents should visit <http://www.grt.ca/en/index.aspx> to view current and future outlook and vision for the Grand River Transit system.

The Simulator System shall include the following features:

- High-end Simulator System with customized driver cab replicating a conventional 2017 New Flyer Xcelsior, including console features and controls. The Simulator System should include an option to extend the bus length from the conventional 40 foot length to an articulated 60 foot length
- The ability to customize virtual worlds reproducing and replicating select existing and future Region of Waterloo and conventional roadways and associated features, including roadside architectural and structural features

- Intelligent and realistic simulation of road traffic, pedestrian traffic, passengers boarding and alighting cars, traffic, Grand River Transit's/LRT's signalling system, other transit traffic, etc. with high degree of customization
- Ability to develop customized training scenarios and situations through a user-friendly editor.
- Auxiliary Station to allow manual interaction in the virtual world using a wheel and/or joystick for vehicle and pedestrian traffic
- Instructor Workstation which integrates all features and functionalities to manage and facilitate training to drivers, including reporting and scenario editors
- Viewing Monitor
- All hardware, software, network, and office furniture
- 5-Year Warranty and Support with options for up to 10-Years

Proponents are encouraged to present any innovations, enhancements, upgrades, or extra features that may not necessarily be outlined in these specifications as detailed in Section 5.2.2.2 "Additional Items", of the RFP document.

## **1.2 Project Arrangement**

The project will be composed of two phases:

- Phase 1 will include the manufacture, supply, delivery, installation, testing, commissioning, training, documentation of the Simulator System.
- Phase 2 will focus on adding/enhancing customized features to the virtual world and training environment.

All requirements stated in this document are part of Phase 1 unless otherwise explicitly noted as Phase 2. Final system acceptance at the end of Phase 2 will commence the 5-Year Warranty and Support period.

## **2 Abbreviations and Definitions**

**BRT** - Bus Rapid Transit

**CCTV** - Closed Circuit Television

**GRT** - Grand River Transit

**HOV** - High Occupancy Vehicle

**ION** - Region of Waterloo's Light Rail Transit Service

**ROW** - The Region of Waterloo

**SRF** - Strasburg Road Facility



## Simulator System Components

### 2.1 General Room Arrangement

- 2.1.1 The Simulator System shall be designed to efficiently fit the layout of the Strasburg Road Facility (SRF) Simulator room. The floor plan is included in Attachment 1 (insert at later date).
- 2.1.2 The Contractor shall provide a proposed layout drawing of all the Simulator System within the room for approval prior to the manufacture of the Simulator System.
- 2.1.3 An independent Heating, Venting, Air Conditioning (HVAC) system will be provided by The Region of Waterloo (ROW) for the room. The Simulator System components shall also have fans to maintain appropriate operating temperatures for the hardware.

### 2.2 Driver Cab

- 2.2.1 The Driver Cab shall be designed and constructed to replicate a 2017 New Flyer Xcelsior conventional vehicle using similar, high-quality materials. The Contractor shall be responsible for contacting and coordinating with New Flyer and/or the ROW to gather the proper information to reconstruct the Enclosure. Attachment 2 contains photos of the desired vehicle to provide initial information for bidding purposes.
- 2.2.2 The Driver Cab shall be designed to replicate the driver's area of the vehicle; the spatial layout of items within the cab shall be authentic and placed in the same locations as they exist in the actual vehicle.

### Driver Cab Enclosure

- 2.2.3 The Driver Cab shall include, at a minimum, the roof, flooring, enclosure openings, front passenger door, driver separation panel, and windows.
- 2.2.4 The Driver Cab shall include 3 glass rear view mirrors – driver side, curb side, and interior center – of equal size, shape (flat glass) and control to that of the replicated bus model New Flyer Xcelsior. The mirrors shall provide accurate parallax and reflection of the Simulator System generated images similar to that of an actual vehicle in operation at GRT. The driver side and curb side mirrors shall have a minimum dimension of 6" wide and 9" in height.
- 2.2.5 The entrance and exit to the Driver Cab shall be through the rear of the enclosure.
- 2.2.6 The Driver Cab enclosure shall be designed to comfortably accommodate persons with height ranging from 5'0" to 6'6" by being able to adjust the seat and steering wheel column accordingly.

- 2.2.7 The Driver Cab enclosure shall be designed to include a space for the instructor to stand by the trainee (over the right shoulder) without obstructing any of the training environment screen views. This space shall allow for persons ranging from 5'0" to 6'6" in height to comfortably stand.
- 2.2.8 The Driver Cab shall be constructed with authentic materials and be of sturdy construction. The exterior of the Driver Cab enclosure shall be painted in authentic Grand River Transit (GRT) and ROW colors and design
- 2.2.9 The Diver Cab enclosure shall include at least two fans for air circulation and cooling of the trainee. The locations are to be proposed by the Contractor and approved by the ROW. The Contractor shall consider the location of fans in the New Flyer model.

### **Driver Cab Console**

- 2.2.10 The Driver Cab dashboard shall be composed of physical components to mimic the dashboard of the selected vehicle. Contractors may propose digital screen dashboard displays for consideration as part of pricing Table 9.2 in the RFP.
- 2.2.11 All vehicle controls, indicators, and related components shall accurately replicate or simulate correct behavior dependent on the training exercise and driver interaction. The following bus components shall be provided with integrated functions in the Simulator System:
- Tilt and telescopic steering wheel with horn
    - Realistic horn sound logged in the reporting module and reproduced through the Simulator System audio system
  - Accelerator and brake pedals
    - Realistic tension and feedback based on the vehicle being driven
  - Adjustable driver's seat including seat belt and seat belt sensor
    - Comfortably accommodate persons from 5'0" to 6'6" in height
    - Seat belt sensor shall provide notifications to the Instructor Workstation if not being used during a training session by the trainee
  - Speedometer in kilometres per hour
  - RPM
  - Door control
    - For operation with articulated and standard buses
    - Front door shall open accordingly
    - All doors opening shall be shown in the Simulator Software Training Environment
    - Door interlock system to prevent vehicle from moving when a door is open
  - Pressure, temperature, and status gauges
  - Parking brake

- Washer and wiper control
  - Response shall be simulated in the Simulator Software Training Environment regardless of weather conditions
- Lights
  - Simulator Software Environment shall illuminate based on the lighting function chosen
- Turn signals
- Transmission controls
- Wheelchair ramp control
- Kneeling control
- Driver covert alarm
- Telltale panel with indicator lights for all warnings and messages consistent with vehicle type
- Fire suppression system status panel
- Emergency alarm
- Mounted gooseneck driver microphone

## **Motion System**

2.2.12 The Driver Cab seat shall be equipped with a full motion platform base to provide realistic motion feedback through three degrees of freedom; pitch, roll, and heave. The Simulator System shall provide real-time motion feedback based on the occurrences in the Simulator Software Environment. Motion feedback shall result from driving conditions such as hard braking, acceleration, contact with external objects, steering, wheel return and tire deflation.

2.2.13 The steering column shall provide force feedback to simulate driving conditions; this may include contact with external objects, steering, wheel return, and tire deflation.

2.2.14 The extent of motion feedback of the Driver Cab and steering column shall be adjustable from the Instructor Workstation.

## **2.3 Audio and Visual System**

### **Screen Display System**

2.3.1 The Screen Display System shall be composed of multiple high-definition flat-panel monitors producing a continuous wraparound which provides a seamless 225 degree horizontal field of view and 35 degree vertical field of view from the driver's viewpoint. The field of view shall be maintained in all adjustable positions of the driver's seat.

2.3.2 Each high-definition, flat-panel monitor's screen size shall be at least 60 inches diagonally.

- 2.3.3 The combined space and bezel between adjacent images on the monitors shall be less than one (1) centimetre.
- 2.3.4 The Screen Display System shall provide a minimum 1080p resolution with minimum 120 Hz refresh rate.
- 2.3.5 The Screen Display System shall be installed in such a way as to provide unobstructed entry and exit in to the Driver Cab.
- 2.3.6 The Screen Display System for the left-side view, middle-rear, and right-side view cab shall include three (3) high-definition flat panel LCD/LED displays providing 45 degree horizontal field of view and 30 degree vertical field of view through the mirrors from the driver's seat.

#### Audio System

- 2.3.7 The Driver Cab shall include an integrated surround sound Audio System composed of at least four (4) speakers located in the four corners of the Driver Cab.
- 2.3.8 Each speaker shall have at least 5 Watts of power with associated amplifier to support the total system power output. The system as a whole shall output at least 95 dB of sound.
- 2.3.9 The Simulator System shall provide simulated sounds of the following through the audio system;
- Engine, dependant on Revs Per Minute (RPM)
  - Rolling noise, dependant on roadway material
  - Pneumatic brake
  - Horn
  - Door operations
  - Turn signals
  - Alarms
  - Stop request
  - Collisions
  - Skidding, slipping
  - Weather conditions
  - Passengers speaking to each other on the vehicle
  - Passenger yelling/crying/screaming
  - Other traffic vehicles and pedestrians
- 2.3.10 The Audio System volume controls shall be accessible through the Instructor Workstation.

2.3.11 The Instructor Workstation shall also include a microphone allowing for two-way communication with the trainee through the Audio System.

2.3.12 The Audio System shall be recorded as and be part of the audio/video playback of the reporting module.

#### Camera System

2.3.13 The Driver Cab shall include two (2) Closed Circuit Television (CCTV) cameras. Each camera shall be a fixed, full-colour, day/night, high-definition (minimum 720p) network camera.

2.3.14 Locations of the cameras are to be proposed and approved by the ROW.

2.3.15 The cameras shall output to the Instructor Workstation and Viewing Station and allow for recorded video to playback synced with the playback of the Simulator Training Environment.

2.3.16 Cameras shall be configurable over the local area network (LAN).

## **2.4 Instructor Workstation**

2.4.1 The Simulator System shall include an Instructor Workstation which will allow for monitoring, control, and configuration of the Simulator Systems in real time, including training exercises, Auxiliary Station, driving conditions, vehicle types, CCTV camera, reporting, database management, and user profiles.

2.4.2 The Instructor Workstation shall include but not be limited to the following components:

- Computer workstation including:
  - Wireless keyboard and mouse
  - Minimum two (2) 21-inch high-definition flat panel monitors
  - Computer programming unit (CPU) designed to exceed requirements of the Simulator System;
  - Minimum 500 GB of free hard drive space after all software installation
- High-quality colour inkjet printer
- High quality office desk, chair, and stands to accommodate the Instructor Workstation and related peripherals.

2.4.3 The Instructor Workstation shall provide a graphical user interface (GUI) which will include but not be limited to the following functionality;

- Load or Shutdown the Simulator System
- Start, stop, pause, restart, and replay any position within a training exercise
- Activate or deactivate any driving conditions

- Administrative and User management
- Generate performance reports based on the automated assessment from the Simulator System and manual input from the Instructor
- Mark locations within a training exercise for follow up review
- Activate or configure the Auxiliary workstation vehicle
- Record and playback training exercises
- Access the CCTV camera for live viewing or recall recorded video.

2.4.4 The Instructor Workstation shall allow for operation in “off-line” mode not requiring the Driver Cab/Visual System to be turned on.

2.4.5 The Instructor Workstation shall provide an “off-line” training exercise editor with testing function.

2.4.6 The Instructor Workstation shall be equipped with a portable wireless tablet (minimum 8” screen size) and associated software and charging cables to allow for mobile operation and oversight during training sessions.

## **2.5 Auxiliary Simulator Station**

2.5.1 The Auxiliary Station shall provide the ability to control a simulated vehicle or pedestrian in the virtual training environment which will be used to interact with the trainee.

2.5.2 The simulated vehicle or pedestrian shall have the ability to be placed anywhere in the virtual environment or by selecting an existing vehicle or pedestrian in the environment.

2.5.3 The Auxiliary Station shall be activated or deactivated by the Instructor Workstation.

2.5.4 The Auxiliary Station shall include but not be limited to;

- Minimum of one (1) 27-inch high-definition flat panel monitor
- Desktop-based steering wheel, turn signals, and automatic transmission control
- Brake and accelerator pedals
- Joystick for pedestrian movement

2.5.5 The Auxiliary Station shall be configured to include and resemble the following vehicles;

- Standard New Flyer Xcelsior
- Articulated New Flyer Xcelsior
- Waterloo Region Police Service Police Car
- City of Kitchener, Waterloo, and/or Cambridge Fire Truck

- ROW Ambulance
- GRT Supervisor van/SUV type vehicle
- Taxi Cab
- Unmarked Sedan Car
- Tractor Trailer
- Motorcycle
- Bicycle

2.5.6 The Auxiliary Station shall be configured to include and resemble the following pedestrians;

- Adult Man
- Adult Woman
- Adult Woman with Stroller
- Construction Worker
- Police Officer
- Fire Fighter
- Paramedic
- Person using Wheelchair/Scooter
- Child

## **2.6 Viewing Station**

2.6.1 The Simulator System shall include a Viewing Station to allow observers to follow the actions of the trainee while using the Simulator Station.

2.6.2 The Viewing Station shall consist of a single wall mounted 46-inch high-definition flat panel monitor.

2.6.3 The Viewing Station shall allow any of the following views of real time or recorded training exercises, configurable by the Instructor Workstation;

- Fixed overhead view
- Driver forward field of view
- CCTV camera view
- Custom view (changeable side or overhead vantage point)

## **2.7 Other Hardware**

2.7.1 The Simulator System application software and database shall be installed on high quality 19 inch rack mounted servers, accessible within the Simulator room.

2.7.2 The Contractor shall supply and install all servers.

- 2.7.3 The Contractor shall provide all hardware and software server specifications to the ROW in advance of supply and install for approval. The Contractor shall only supply and install approved servers.
- 2.7.4 The application software and database shall include backup and recovery functionality which will allow for manual recovery of the Simulator System within 1 hour, in the event of a failure to any of the servers.
- 2.7.5 All required power distribution units, fans, mounting hardware, and other accessories shall be provided to ensure proper installation and operation of the Simulator System.

### **3 Simulator System Software Training Environment**

This section details some of the overall software expectations for the Simulator System.

#### **3.1 General Performance Requirements**

- 3.1.1 The Simulator Software Training Environment shall produce images in real-time at a rate of 50 frames per second or higher with no lag in performance or force feedback.
- 3.1.2 The Simulator Software Training Environment shall support the following, depending on the conditions selected, without affecting the performance of the Simulator System.
- Up to 100 moving vehicles of various types shall be visible at the same time
  - Up to 50 moving pedestrians of various types shall be visible at the same time
  - Up to 10 GRT-branded transit vehicles shall be visible at the same time
- 3.1.3 All elements in the Simulator Software Training Environment shall operate with a high level of artificial intelligence to reflect realistic response including:
- Transit/Traffic Signal timings
  - Roadway vehicles
  - Pedestrians and transit passengers

#### **3.2 Simulated Vehicle Types**

- 3.2.1 The Simulator System shall accurately replicate the following vehicle types and provide realistic interaction with the simulated training environment;
- 2017 New Flyer Xcelsior (Articulated length ~62.0 ft.)
  - 2017 New Flyer Xcelsior (Standard length ~40.0 ft.)
- The Driver Cab enclosure shall be designed to replicate the conventional model (detailed in Section 2.2).



3.2.2 The simulated vehicle types shall respond to user inputs through the system and provide an accurate representation of all vehicle sub systems and components, including:

- Steering
- Engine performance, acceleration and deceleration based on Diesel propulsion
- Suspension
- Turning radius
- Vehicle weight
- Braking performance
- Tire adhesion
- Transmission performance and control
- Aerodynamic properties
- Electrical systems including lights and turn signals
- Diesel exhaust fluid system lockout/warning

### **Bicycle Racks**

3.2.3 The Simulator System shall include the option to make visible a 2-position Sportsworks bicycle rack within the simulator environment. The Instructor Workstation shall have the ability to add one or two bicycles to mimic the real-world field of view.

### **3.3 Customized Region of Waterloo Training Environment**

3.3.1 The Contractor shall develop virtual training environment that consists of areas and features that are similar to those found in ROW. The Contractor shall visit all areas that are identified to assist in developing the environment. Where areas are still under construction or pre-construction, the Contractor shall coordinate with the ROW in obtaining any available construction drawings, engineering drawings, architecture drawings, urban design drawings and illustrations to create those areas. The Contractor shall coordinate with the ROW to get an update on the status of construction for all roadway, stations, and stops if it is considered to be crucial to the design of the virtual environment.

3.3.2 The Contractor shall include all virtual content in one loadable ROW training environment map.

3.3.3 The Contractor shall propose a map of the ROW training environment for approval prior to detailed development. The ROW training environment shall show all roadways, stops, terminals, and facilities along with transitional roadways. Transitional roadways shall allow for the quick access to and from adjacent roadways/facilities that do not intersect or adjoin.

3.3.4 The simulated training environment may be based on, or may replicate, the following physical transportation features found in the ROW.

Highways	Limit
Westbound Highway 8 Bus By-pass Shoulder lanes	From 0.3km west of Sportsworld Drive to King Street East Exit Ramp & From King Street East Entrance Ramp 0.8km east of Fairway Road
Eastbound Highway 8 Bus By-pass Shoulder lanes	From 0.8km east of Fairway Road to King Street East Exit Ramp & From King Street East Entrance Ramp) 0.3km west of Sportsworld Drive

3.3.5 The simulated training environment may include virtual replicas of the following stops, intersections, features or situations in the virtual training environment. Proponents shall note that many stop features are similar and may be re-used to optimize design time:

<b>Intersection/Area</b>	<b>Problem</b>	<b>Feature Type</b>
Caroline & William	Difficult turn	Intersection
Park St (r) to Glasgow	Difficult turn	Intersection
River Road & Kinzie	Difficult turn	Intersection
Ring Road University of Waterloo	Many pedestrians, frequent stop signs and speed humps	Roadway
Curbside Running ION Service - TBD	Trains operating next to buses, train signal	Roadway
Centre Running ION Service - TBD	Centre running trains with stops, pedestrians	Roadway
Ira Needles @ Thorndale	Busy roundabout	Roundabout
Ottawa at Homer Watson and Alpine	Busy roundabout with bus stops	Roundabout
Cedar @ Krug @ Lancaster	Three point intersection	Intersection
King Street @ Uptown Waterloo	Crowded street, LRT present.	Roadway
Weber & (r) Queen	Difficult right turn	Intersection
Caroline & Erb	Railroad crossing	Roadway/railroad crossing
Route 9 Conestoga @ Weber bus in R turn lane	Difficult right turn	Intersection

3.3.6 The simulated training environment may include virtual replicas of the following GRT terminals in the training environment. The replicas shall include all bus-related infrastructure, roadways and at least 200 metres of surrounding approach roads in all directions. Subway/rail features are not required.

<b>Terminal</b>	<b>Stop Type</b>
Charles Street Terminal	Terminal
Cambridge Centre Station	Terminal

3.3.7 The simulated training environment shall also include virtual replicas of at least 5 km of conventional roadways and associated roadside stops/shelters in the training environment for the purposes of conventional service training. The selected roadways will be confirmed with the Contractor during project start-up.

3.3.8 The virtual environment required may include the following ROW-specific features in realistic detail and scale based on data collected and provided:

- Roadway features
  - Roadways and lanes
  - Lane types including standard mixed-traffic, dedicated bus lanes, bicycle lanes, high occupancy vehicle (HOV) lanes
  - Number and width of lanes
  - Pavement markings
  - Guardrails, traffic islands, parking areas,
- Lighting features
  - Roadway lighting and poles
- Traffic signal control features
  - Standard traffic signals and poles
  - GRT/LRT signalling system
  - 2-stage pedestrian crossing system
- Transit station features
  - Architectural and structural features
  - Electronic and static signage
  - Fare collection and call station machines
  - Benches
  - Driveways and parking lots for larger stations
  - Crosswalks for pedestrian traffic
- Infrastructure features (Phase 2)
  - Environmental features including trees, parks, grass, landscaping

- Structural features including bridges, overpasses, commercial/residential buildings, schools, shopping plazas/centres
- Architectural details of infrastructure
- Other features
  - Sidewalks
  - Street and roadway signage based on ROW standard types (in metric)

3.3.9 Arterial roads shall have vehicle and pedestrians entering, exiting the training environment to reflect realistic conditions.

Visit <http://www.grt.ca/en/index.aspx> for additional information on these terminals.

### 3.4 Training Environments

3.4.1 In addition to the ROW training environment, the Contractor shall provide at least three other training environments. Each training environment shall have metric system signage and vehicles driving on the right-side of the road. The Contractor shall include the street map of these training environments in their proposal. The three training environments shall be:

- Downtown/urban-type
- Suburban/rural-type
- Safety/practice

3.4.2 The downtown/urban training environment shall provide an accurate representation of driving conditions in a built up urban area. The Urban training environment shall include the following simulated components and characteristics;

- Heavy vehicle and pedestrian traffic conditions
- Frequent controlled intersections
- Frequent bus stops
- High concentration of buildings
- Construction zones with lane reductions
- Cyclists
- Multi-lane roads with side curbs and center medians
- Parked cars on both sides
- Intersections including 3 way & 4 way, various lane configurations
- Expressway overpass style on/off ramps and bridges
- Rail level crossings

3.4.3 The suburban/rural training environment shall provide an accurate representation of driving conditions in a suburban area, similar to conditions throughout the core of the ROW

- Medium to heavy vehicle traffic conditions

- Light to medium pedestrian traffic conditions
- Wider intersection spacing
- Less frequent bus stops
- Lower density buildings
- Industrial parks
- School Zones
- Parks
- Residential neighborhoods
- Shopping malls
- Controlled and uncontrolled intersections
- Construction zones with lane reductions
- Cyclists
- Multi-lane highways with light to heavy traffic conditions and entrance and exit ramps
- Varying speed limits from 50km/h to 80km/h on streets and 100 km/h on highways
- Multi-lane roads with side curbs and center medians
- Parked cars on both sides
- Intersections including 3 way & 4 way, various lane configurations
- Expressway overpass style on/off ramps and bridges
- Rail level crossings
- Winding roads
- Two-lane roads with side ditches
- Rural obstacles such as guide posts, mail boxes
- Gravel road shoulders

3.4.4 The safety/practice training environment shall be composed of, at a minimum, an open-paved area allowing for a configurable pylon, cones, and poles layout to practice vehicle maneuverability skills, this includes

- Serpentine formation
- Offset
- Diminishing clearance

### **3.5 Training Environment Conditions**

3.5.1 The Simulator System shall allow for the following conditions to be changed dynamically in the training environment to a random or configurable conditions from the Instructor Workstation controls;

- Time and Weather Conditions
- Traffic Conditions
- Traffic Signal Conditions

- Transit Vehicle Conditions

3.5.2 All training environment conditions shall be configurable from the instructor workstation.

3.5.3 All computer generated vehicles and pedestrians shall operate with a high degree of artificial intelligence simulating real-world actions and reactions to all other static and dynamic elements in the simulation including the trainee simulation vehicle and Auxiliary Station vehicle/pedestrian.

#### Time and Weather Conditions

3.5.4 The time in the training environment shall be configurable to include the following times of day;

- Day
- Night
- Sunset (sun in driver's sightline)

3.5.5 The weather in the training environment shall be configurable to include the following weather types in both daytime and nighttime lighting conditions;

- Sunny
- Overcast
- Rain – adjustable from light to heavy
- Snow – adjustable from light to heavy and drifting with minimal visibility
- Rain/Snow mix – adjustable from light to heavy
- Fog – adjustable from light to heavy
- Freezing rain – adjustable from light to heavy
- Ice Pellets – adjustable from light to heavy

3.5.6 The type and level of the weather shall affect driving conditions, road conditions, visibility and windshield buildup (as with ice and snow) accordingly.

#### Traffic Conditions

3.5.7 The Simulator System training environment shall allow the ability to dynamically adjust traffic conditions using the instructor workstation for the following traffic types;

- Roadway traffic – adjustable from light to heavy for typical roadway vehicles including cars, SUVs, motorcycles, and trucks
- Transit Bus vehicles – adjustable from light to heavy for both transit vehicles in operation and transit vehicles parked at terminal bus stops, queuing areas, and parking lots
- Train traffic – adjustable frequency of train crossing railroad
- Pedestrian traffic – adjustable from light to heavy

3.5.8 The Simulator System training environment shall allow the ability to dynamically adjust traffic behaviour from “normal” to “aggressive” and vice versa. This should affect how vehicles and pedestrians obey traffic signals, pedestrian signals, speed limits, acceleration/deceleration, jaywalking tendencies and lane changes accordingly.

3.5.9 Pedestrians shall behave in an autonomous fashion and react to the trainee and / or instructor vehicles in a realistic manner which includes:

- Walking along sidewalks and crossing streets
- Populate transit stops
- Flag transit vehicles to stop from inside the vehicle and outside the vehicle
- Boarding and alighting vehicles
- Run to catch a bus

3.5.10 The Instructor workstation shall have the ability to trigger a passenger request to board or alight the vehicle.

3.5.11 Non-transit vehicles shall not be able to drive on any dedicated bus laneways with the exception of user-controlled Auxiliary vehicles.

3.5.12 The Simulator System shall provide the ability to control the movements of a single Auxiliary vehicle or pedestrian within the training environment (described in Section 2.5).

#### Traffic Signals Operation

3.5.13 The Simulator System shall have configurable traffic signal timings for each intersection. Traffic signal timings shall be configurable dynamically as a vehicle approaches from the Instructor Station.

3.5.14 The ROW World training environment shall include both GRT specific and standard Traffic Signal Control system as per the real-world conditions. All vehicles (transit and non-transit) shall abide accordingly to this system.

#### Transit Vehicle Conditions

3.5.15 The Simulator System shall provide the ability to dynamically initiate vehicle malfunctions and react accordingly. Malfunction scenarios shall include but not be limited to the following;

- Flat tire
- Low tire pressure
- Low air brake pressure
- Door open
- Low oil pressure

3.5.16 All malfunctions shall be displayed correspondingly in the Simulator Drive Cab console and screens, as applicable.

3.5.17 The Simulator System shall provide the ability to place trainee vehicles “in-service” or “out of service” which will require trainees to pick up and drop off passengers accordingly at bus stops and terminals.

### **3.6 Training Exercises and Scenarios**

3.6.1 The Simulator System shall include pre-configured training exercises which allow for testing in various scenarios. Training exercises shall be configured with appropriate constraints, objectives, and limits to allow for proper analysis and results. The ROW will work with the Contractor to verify the objective for each exercise. The Contractor shall assume each script lasts up to two minutes.

3.6.2 The Contractor shall coordinate with the ROW in developing a structured training curriculum for each of the following:

- New hire operator training
- Post collision training
- On-going refresher training
- Unsafe driving behaviours

3.6.3 The Contractor shall provision for developing training exercises. The scope of services shall include the development of;

- Up to ten (10) exercises for various merging/turning/reversing scenarios
- Up to three (3) exercises which focus on utilizing the side-view mirrors
- Up to four (4) exercises for various bus stop pick-ups
- Up to six (6) exercises for defensive driving tactics
- Up to ten (10) exercises for corrective action
- Up to two (2) exercises for transit bicycle racks
- Up to two (2) timed road courses which shall utilize a combination of at least five (5) exercises

3.6.4 Each training exercise shall be supplied with pre-recorded audible instructions. The Instructor Workstation shall have the ability to override/mute the pre-recorded instructions.

3.6.5 Recorded audible instructions shall play at the beginning, introducing the exercise, and introduce as necessary additional instructions based on various triggers being activated during the exercise.



3.6.6 Training exercises shall include the option of inserting the following objects into the environment and scripting their behavior based on triggers such as trainee vehicle location or speed;

- Pedestrians
- Cyclists
- Cars
- Animals (deer, dogs, cats)
- Emergency vehicles

3.6.7 For example, an emergency vehicle may be configured to follow and overtake the bus once the trainee has reached a certain point in the exercise route.

3.6.8 During a training exercise, the Simulator System shall allow the Instructor to start, pause, reset, or move the vehicle to a specified location on the route.

3.6.9 During a training exercise, the Simulator System shall provide the option to allow the Instructor to ignore any driver faults.

3.6.10 The Instructor shall have the ability to override any actions to prematurely end, restart or continue a training exercise. The Instructor shall have the ability to reset a training exercise to an intermediate point in the exercise.

#### Training Tool

3.6.11 The Simulator System shall include a user-friendly graphical user interface (GUI) tool to allow the Instructor to develop customized training exercises. This tool shall include, but not limited to, the ability to add obstacles, follow a defined route, and set constraints.

3.6.12 The Simulator System shall allow for an unlimited number of training exercises to be developed and saved.

3.6.13 Proponents shall provide screenshots of this training exercise development tool.

#### Reporting

3.6.14 The Simulator System shall provide the ability to record, store, and report various parameters within training exercises. These parameters shall include but not be limited to the following;

- Trainee Name
- Trainee User ID
- Instructor Name
- Time and date
- Start and stop time of exercise
- Trainee performance (objects hit, bus stop markers missed, etc.)

- Average speed and speed limit adherence
- Fuel consumption (simulated)
- Other parameters as applicable to the exercise such as average following distance, braking performance, and lane positioning
- Instructor comments (unlimited characters)
- Number of braking applications

3.6.15 A reporting tool shall be provided which can be configured to output the above mentioned parameters in a report format customized to GRT's needs.

3.6.16 The Simulator System shall provide for an unlimited number of customized training exercises to be configured and saved in the system.

3.6.17 The Simulator System shall provide a database capable of storing a minimum of 1000 individual trainee records.

## **4 General Requirements**

### **4.1 Installation Location**

4.1.1 The Simulator System will be installed at 250 Strasburg Road, Kitchener, Ontario in a purpose built training room. Appendix 1 includes the room layout. The entire Simulator System including Instructor, Auxiliary Workstations and furniture must fit into this room.

4.1.2 It will be the responsibility of the Contractor to completely satisfy themselves as to the exact nature and existing conditions of the site areas as well as the requirements of the specifications for the extent and quality of work to be performed. Failure to assess these factors will not relieve the Contractor of their obligation to fulfill the requirements of this RFP.

4.1.3 The Contractor will be responsible for all hardware, software, data entry, and wiring installation required to make the system fully operational. The Contractor will be required to cooperate with ROW staff, Drivers, Dispatchers, Building/Facilities staff, building owners, and property management staff while undertaking installation.

### **4.2 General Installation Requirements**

4.2.1 The Contractor will be required to submit an installation plan and schedule 30 business days in advance of any installation requiring access to ROW facilities, vehicles, or equipment. The Plan shall include proposed installation locations, footprint, schematic diagrams for all interconnected devices, and any installation requirements such as electrical or HVAC (Heating, Ventilation, and Air Conditioning).

- 4.2.2 For any cases where new equipment is to be installed or integrated with existing workstations, the Contractor will be required to provide 48 hour notice for any access to the workstation.
- 4.2.3 In any location where wiring work is to be performed by the Contractor, the Contractor shall:
- Route cable parallel or perpendicular to the building structure
  - Support cable from building structure using approved cable supports
  - Assure that cables do not lie on ceiling tiles/grids
  - Assure that cables are not fastened to conduits, pipes, ducts, or ceiling support wires
  - Assure that cables do not restrict the removal of ceiling tiles, light fixtures, or other ceiling components
- 4.2.4 During installation, the Contractor shall be responsible for the integrity of the data used in the system.
- 4.2.5 The Contractor shall follow good engineering practice in the installation of the Simulator. All equipment shall be installed in a manner that allows simple replacement in the event of a failure.
- 4.2.6 The Contractor shall ensure all cables are easily accessible, labelled and colour-coded for maintenance access.

### **4.3 Training**

- 4.3.1 The Contractor shall be responsible to train ROW-designated personnel according to the requirements specified herein.
- 4.3.2 Training shall take place at ROW-designated facilities.
- 4.3.3 Practical training on equipment shall occupy a significant portion of all training classes. The training presentations and material shall be in English.
- 4.3.4 Instruction shall cover equipment familiarization and systems operation. The minimum training is that which is necessary to bring those employees designated to the level of proficiency required for performing their respective duties.
- 4.3.5 The Contractor shall provide experienced and qualified instructors to conduct all training sessions. The Contractor is responsible for ensuring that the instructors teaching these courses are not only familiar with technical information but are able to utilize proper methods of instruction, training aids, audiovisuals and other materials to provide for effective training.

- 4.3.6 The Contractor is responsible for providing all training materials, training aids, audiovisual equipment and visual aids for the conduct of these courses.
- 4.3.7 Instructional materials consisting of applicable equipment operation and maintenance manuals, and supplemental notebooks consisting of additional drawings, procedures, and descriptive information shall be provided.
- 4.3.8 Student guides shall include full topic descriptions, illustrations as needed to enhance content presentation, and common problems with comprehensive solutions given. Student guides shall mirror the instructor guides.
- 4.3.9 All training materials are to become the property of ROW at the conclusion of training.
- 4.3.10 Maintenance training shall commence during the time when equipment is installed and operable.
- 4.3.11 At the request of ROW, the Contractor shall provide additional training sessions at the contract price per session.
- 4.3.12 The Contractor shall submit the training curricula, presentations, and materials for review and approval by ROW. No training shall commence until these items have been approved by ROW.
- 4.3.13 Training curricula shall meet all training requirements and indicate course content, training time requirements, and who should attend.
- 4.3.14 Training curricula shall be provided to ROW for review a minimum twenty days prior to commencement of equipment installation.
- 4.3.15 Level of competency required to pass course examinations shall be determined by GRT, if applicable.
- 4.3.16 The following summarizes the minimum training that shall be provided:
- System Administration Training and Training Exercise Design – 3 days of training for 4 users;
  - Maintenance Training – 3 days of training for 4 maintenance technicians;

#### **4.4 Testing**

- 4.4.1 The Contractor shall submit a Test Plan that outlines the criteria for test initiation, procedure for dealing with test failures and retests, and the test schedule. The Test Plan shall be submitted at the same time as the SDS documentation. The Test Plan shall identify the testing process for dealing with the Pilot test and the segmented delivery.

- 4.4.2 The test schedule with proposed times and dates for testing of each item of equipment and each system four (4) weeks prior to designated dates, for the Owner approval;
- 4.4.3 The Contractor shall submit test descriptions, procedures and expected results for the following tests at least four (4) weeks prior to the testing date:
- Factory Acceptance Test (FAT);
  - Proof of Performance Test (POP);
  - System Acceptance Test (SAT);
  - Operability Period Test (OPT)
  - Final System Acceptance
- 4.4.4 ROW shall be notified five (5) business days in advance of each test. ROW reserves the right to witness any or all of the tests.
- 4.4.5 A requirements traceability matrix shall be submitted that will cross-reference the SDS, test procedures and original specifications.
- 4.4.6 FAT and POP documentation shall be submitted for each type of device. Where the device is a Commercial Off the Shelf product, the FAT may be replaced with a stamped quality certificate.
- 4.4.7 An overall SAT document shall be submitted that shall include an end-to-end system test and cover both hardware and software functions.
- 4.4.8 A record of testing with time, date and list of persons present shall be submitted by the Contractor with each testing activity;
- 4.4.9 Prior to testing, the Contractor shall verify conditions for testing and comply with specification testing criteria and requirements;
- 4.4.10 Prior to testing, the Contractor shall verify that all designated personnel required are present, preconditions for the test have been met, and all deficiencies from previous tests have been addressed;
- 4.4.11 All testing using Owner data/information shall be performed on Owner premises.
- 4.4.12 In order to comply with Owner policies and the terms and conditions of this contract Owner data/information shall not be used anywhere other than on Owner premises.
- 4.4.13 As a minimum, the following tests shall be completed by the Contractor.

**Factory Acceptance Testing (FAT)**

- 4.4.14 Factory Acceptance Testing shall be performed to ensure that the supplied and developed components meet all functional and environmental requirements and specifications.

4.4.15 Factory Acceptance Tests shall be performed prior to onsite installation. For commercial off-the-shelf products, the FAT may be replaced by stamped quality testing documents.

4.4.16 Factory Acceptance Testing (FAT) shall be completed on the software to confirm that the required functionality can be delivered by the software before it leaves the factory environment. For commercial off-the-shelf products, the FAT may be replaced by stamped quality testing documents.

4.4.17 The FAT on the software shall confirm, in a controlled environment, that the required functions are delivered. Each requirement listed in the specification shall be tested where possible; if it cannot be tested compliance shall be proven by corresponding written documentation or certificates. The central system software FAT may be completed with field devices or components running in simulation mode or with representative field samples.

#### **System Acceptance Testing (SAT)**

4.4.18 The SAT is the final test to be completed and can only be initiated once all of the system elements have been installed and configured and all FAT tests have been successfully completed. The SAT looks at the entire system and tests are completed to ensure that the overall functional requirements are met. The SAT is typically done from the central system software out to each of the devices and is also known as an end-to-end test. Where software interfaces with other software, this interface shall be tested through the SAT for each piece of software.

4.4.19 Each requirement listed in the specification shall be tested or – in case it may not be feasible to test certain functions in the operational environment - evidence for correct function to be provided.

#### **Operability Performance Test (OPT)**

4.4.20 The OPT is a 30 day performance test that is initiated once the SAT has been completed and operation has commenced. Through the OPT, the system is tested under full operations to ensure that the performance requirements are met and to measure the system reliability and availability.

4.4.21 System failures will result in the restart of the OPT.

4.4.22 A deficiency list shall be compiled during the OPT for resolution during the Final System Acceptance.

#### **Final System Acceptance**

4.4.23 After completion of the OPT, items in the deficiency list shall be rectified and corrected by the Contractor;

4.4.24 Upon verifying correction of deficiencies, the Owner or their representative will issue a letter to the Contractor confirming Final Acceptance of the System.

## **4.5 Documentation**

### **Design Process and Procedure**

4.5.1 The Contractor shall undertake a phased approach to the integration of ROW operational systems. This approach shall minimize downtime to existing resources, prevent any negative impacts on the existing operating systems, and provide for a smooth and secure transition to use the ROW equipment.

4.5.2 The Contractor shall ensure that all points of interface have been investigated well, and all technical risks addressed. The Contractor shall ensure that appropriate staff have been trained on the operation of the systems, as well as briefed on how the systems will change their job responsibilities and enhance their ability to perform their jobs efficiently.

### **General Documentation Requirements**

4.5.3 The Contractor shall provide detailed documentation that describes the system design, configuration, training, as-built conditions, operation and maintenance. All documentation shall be in English, shall utilize metric measurements, and shall be submitted directly to ROW or its designated representative in paper hardcopy and/or electronically in Word/AutoCAD/Excel/MS Project and Adobe Acrobat.

4.5.4 The Contractor shall include 2 weeks in their schedule for ROW review and required document submission and shall include the necessary time and resources to modify the documentation to incorporate comments from ROW.

4.5.5 The Contractor shall then include additional time for ROW to review the revised documentation. The Contractor shall include the necessary time and resources to modify the documentation to incorporate comments from ROW.

4.5.6 Equipment installation drawings shall be prepared in AutoCAD and Adobe Acrobat and provided on CD-ROM as well as hard copies.

4.5.7 Electrical and electronic drawings shall be supplied to show engineering changes made to any component or module up to the end of the Warranty and Support period of the system supplied.

4.5.8 The manuals shall be complete, accurate, up-to-date, and shall contain only that information that pertains to the system installed.

4.5.9 All pages of the documentation shall carry a title, version number and issue date, and shall contain a complete subject index. The Contractor shall be responsible for fully coordinating and cross-referencing all interfaces and areas associated with interconnecting equipment and systems.

4.5.10 Documentation shall require re-issues if any change or modification is made to the equipment proposed to be supplied. The Contractor may re-issue individual sheets or portions of the documentation that are affected by the change or modification. Each re-issue or revision shall carry the same title as the original, with a change in version number and issue date.

4.5.11 Each volume shall have a binder (stiff cover and spine) and drawings shall be protected by clear plastic to withstand frequent handling. The binding arrangement shall permit the manual to be laid flat when opened.

4.5.12 The paper used shall be of good quality and adequate thickness for frequent handling.

### **System Design Specifications**

4.5.13 Within 6 weeks following receipt of Notice to Proceed (NTP), the Contractor shall furnish ROW with complete written documentation describing the system to be delivered including all equipment and software to be furnished. The System Design Specification (SDS) shall include, as a minimum, the following information:

- Overall system schematic and architecture;
- Major assumptions and risks;
- Detailed description of all subsystems and equipment and hardware, including functional description, interface descriptions, communications loading details, material specifications (i.e. environmental, electrical etc.), Material Selection Documentation (MSD), configuration details and installation details;
- Details on all network, data, power/electrical or other requirements provided by a third party;
- Detailed description of all software, including functional description, system interface descriptions, Graphical User Interface descriptions, hardware specifications, availability and reliability figures and configuration details;
- Detailed descriptions of information, materials and timing required by the Subcontractor by other parties;
- Maintenance and service details may be included in the SDS.

### **Material Selection Documentation (MSD)**

4.5.14 For custom-manufactured equipment, the Contractor shall submit a set of comprehensive shop drawings and specifications as part of the MSD. The comprehensive shop drawings shall include the general arrangement, layout, wiring details, mounting bolt requirements, location for conduit entry and any physical or electrical requirements.

4.5.15 For standard off-the-shelf items, the Contractor shall submit detailed manufacturer product specifications, drawings on mounting requirement, location of conduit entry and any other physical or electrical requirements.



4.5.16 The Contractor shall provide certification and compliance statements for all standards that apply to the manufacturing of the equipment, whether custom-manufactured or off-the-shelf.

### **Equipment Manuals**

4.5.17 The Contractor shall provide 2 equipment manuals for each type of unit provided unless specified otherwise. The manuals shall provide sufficient detailed installation and maintenance instructions to allow ROW or its representative to properly and safely install, connect and commission the equipment supplied and to operate and maintain the system.

4.5.18 The Contractor shall also provide all details of connectors and interconnect cables to ROW or its representative.

### **Training Manuals**

4.5.19 Training manuals shall be provided for each training participant, in addition 6 additional copies shall be provided. The manuals shall provide information on all of the topics covered during each of the training sessions and include exercises and screen captures.

4.5.20 The Training Manual shall include space for the users to take notes during the training sessions.

4.5.21 The Training Manuals shall be provided at the initiation of each training session.

### **As-built Documentation**

4.5.22 The Contractor shall provide sufficient documentation to reflect "as supplied" conditions and to facilitate operation, maintenance, modification and expansion of the equipment or any of its individual components to the satisfaction of ROW or its representative.

4.5.23 The SDS shall be updated to include the as-built conditions.

4.5.24 The as-built documentation shall be provided 3 weeks after the System Acceptance Test (SAT), and updated documentation will be required at any time the Contractor provides software or hardware upgrades.

### **Operation and Maintenance Documentation**

4.5.25 The operation and maintenance documentation will be comprised of the Operation and Maintenance (O&M) manuals, User Manuals and System Administration Manuals.

4.5.26 The O&M documentation shall be submitted to ROW or its representative prior to OPT testing. The Contractor shall deliver fifteen (15) complete sets of O&M manuals, five (5) of which shall be the original unless specified differently.

## O & M Manuals

4.5.27 The O&M manuals shall be a detailed presentation and shall include illustrations where applicable.

4.5.28 For each unit, it shall include, but shall not be limited to:

- General description,
- Functional descriptions,
- Functional block diagram,
- Operating instructions,
- Maintenance and repair procedures,
- Test procedures,
- Schematic drawings and circuit diagrams,
- Parts list;
- Each type of maintenance manual shall contain but not be limited to:
  - Description of operation including start-up, shut-down and emergency procedures
  - Installation procedures
  - Complete parts identification diagram and list
  - Troubleshooting procedures
  - Inspection procedures
  - Preventive maintenance procedures and program
  - Repair procedures
  - Diagnostic procedures
  - Wiring diagrams
  - Electrical schematics with board and cable identification
  - Adjustment procedures
  - Seasonal maintenance requirements
  - Equipment arrangement and drawings
  - Names and schedules of all lubricants and cleaners used
  - Other consumable materials for the equipment stating where used, quantity, service intervals and annual consumption.

4.5.29 The Contractor shall provide a parts list for each item of equipment as supplied. The parts list shall identify the manufacturer(s) and model/part number.

4.5.30 The Contractor may use manufacturer's data and handbooks for individual items of the equipment that are a sub-component of the overall system. All such documentation shall be contained in similar binders.

4.5.31 Where an equipment component is of such a nature that local repairs cannot be made and it must be returned to the factory as a unit for overhaul, specific information concerning its repair and breakdown into component parts shall be provided.

## **User Manual**

4.5.32 A User Manual shall be provided for each software application and vehicle type. The User Manual shall include screen captures and easy to follow instructions to assist the users through all of the tasks that they may need to complete. The User Manual shall include an index.

4.5.33 As a minimum, the User Manual shall include all information that is available through the context sensitive help.

4.5.34 Fault procedures shall be described, as well as procedures for dealing with problems.

## **System Administration Manual**

4.5.35 A System Administration Manual shall be provided for each software application and vehicle type. The System Administration Manual shall outline all of the configuration parameters, details on how to configure the parameters, backup and recovery process, troubleshooting techniques and technical support information.

4.5.36 Fault procedures shall be described, as well as procedures for dealing with problems.

## **4.6 Software Licenses and Escrow**

4.6.1 As part of the Contract, the Contractor must negotiate and sign with ROW the proper software agreements that will warranty that the system is legally protected in terms of intellectual property, patents and uses rights, and that the sufficient information (i.e. source code, manuals, compiling directives) are accessible to ROW in order to warranty the continuing operation of the system in case of a default by the Contractor. All Contracts and agreements would have to be reviewed and approved by ROW in order to verify that its interests are cover and protected.

4.6.2 ROW and the Contractor will have in place at least the following agreements.

- Software User License Agreement
- Software Escrow Agreement
- Warranty and Support Agreement

## **Software User License Agreement**

4.6.3 The agreement shall release ROW from any liability to the Contractor, third party or other persons in any dispute regarding patents, intellectual property, etc.; furthermore, the Contractor will defend, indemnify and hold harmless based upon an alleged infringement of, or violation of any intellectual property rights, such as trade secrets, trademarks or copyrights and relating to, caused by, or arising out of these agreements.

4.6.4 The agreements should include all the necessary clauses that would give ROW the following rights:

- The access and the rights to use the original software, upgrades and all enhancements made to the software during the duration of the Warranty and Support period as part of the proposal upset limit cost.
- The access and the rights to use the software, upgrades and all enhancements made to the software, during the duration of the Warranty and Support period without need to negotiate any additional agreements.

### **Software Escrow Agreement**

4.6.5 ROW and the Contractor shall negotiate the necessary Software Escrow Agreements. Software Escrow Agreement should at least cover the following scenarios:

- The Contractor has failed to carry out obligations imposed on it pursuant to the Software License Agreement
- The Contractor has ceased to offer support for the Software;
- The Contractor has failed to continue to do business in the ordinary course;
- The Contractor has applied for or consented to the appointment of, or the taking of possession by, a receiver, custodian, trustee, liquidator or the like of itself or all or a substantial portion of its assets;
- The Contractor has made a general assignment for the benefit of, or a composition with, creditors;
- The Contractor has been adjudicated for bankruptcy or insolvency;
- The Contractor has filed a petition seeking to take advantage of any other law relating to bankruptcy, suspension of payments, insolvency, reorganization, liquidation, winding up, composition or adjustment of debts;

### **Additional Agreements**

4.6.6 ROW and the Contractor will negotiate additional agreements, such as Maintenance and Support and/or Extended Warranty Agreements.

### **4.7 Spares**

4.7.1 The Contractor shall supply spare components that will be made available for the ongoing maintenance of the system. Proponents shall include in their submission an amount equal to a minimum of 5% of the material cost (not including installation cost) of all equipment that make up their proposed systems, to account for spares.

4.7.2 Within 30 days of notification of Contract award, the Contractor shall submit a breakdown of the proposed spare components, with individual pricing, that will be required to support the ongoing maintenance of the system. Spares shall be tailored towards components which have a higher tendency to fail and/or require maintenance.

## 4.8 Warranty and Support

- 4.8.1 The Contractor shall be the warrantor of all system components, notwithstanding any manufacturer's warranties whether written or implied.
- 4.8.2 All installed equipment shall have the basic manufacturer's warranty extended to cover a period of five (5) years from the date of System acceptance. The warranty shall cover any defects, failures, or malfunctions in materials and workmanship for all system components.
- 4.8.3 The Contractor shall provide all labor, parts (with the exception of spare parts kept by ROW), transportation, expenses, testing equipment, software and incidentals necessary to provide warranty and support for all elements of the system.
- 4.8.4 The warranty shall also include upgrades to new versions of the Simulator System software that are offered by the software vendor or Contractor within the warranty period.
- 4.8.5 The warranty shall include the following support services, to be provided by the Contractor, or their contracted representative:
- 8am to 5pm EST, Monday through Friday toll free telephone technical support line with 1 hour call back during these times in the event a live operator is not available
  - Maximum of two (2) business day on-site response time for issues that can't be resolved or repaired over the phone
  - On-site troubleshooting, removal, replacement, repair, re-configuration and testing as required to maintain the system in good operating condition
  - Ensuring that documentation is up to date
- 4.8.6 The Contractor shall return swapped-out equipment for warranty replacement. The Contractor shall provide a written report as to the cause of any failure. Any system component returned for warranty replacement shall be repaired or replaced and returned to ROW within 30 days.
- 4.8.7 There shall be no repair cost applied to ROW for warranted equipment, over the warranty period, unless there is reasonable evidence of damage due to misuse, negligence, improper operation or handling, or willful attack. This shall include all equipment, software, and services performed by the Contractor or any of their sub-contractors.
- 4.8.8 Proponents shall provide a per year rate for providing warranty and support services after the initial five (5) year warranty period has expired.
- 4.8.9 Proponents must include a list of support services not covered under warranty.

4.8.10 Proponents shall also provide an hourly rate for providing repair and support services not covered under the warranty and support agreement and the length of time these rates are valid.

**SECTION D**

**FORM OF PROPOSAL / SIGNING SHEET**

**FORM OF PROPOSAL – Price Schedule (Envelope #2- Price Submission)**

I/We the undersigned do hereby acknowledge and offer to supply the requirements, services or perform the work as defined within the Instructions for Proponents, General Terms and Conditions, Service Agreement Terms and Conditions, Specifications, and Addenda of this Request for Proposal, incorporated herein in full by reference and including any supplementary terms and conditions as set out herein

**PRICE SCHEDULE**

Description	Qty	Price	Total
Phase 1 of Grand River Transit (1) Bus Simulator including equipment, installations etc. plus the standard training environments and scenarios per the specification provided	1		
Phase 2 - Customized Region of Waterloo Training Environment for per section 3.3.	1		
<b>Total Submission Cost (Excluding HST)</b>			

Submitted By: \_\_\_\_\_(Company Name)



**Provisional Prices - (Envelope #2- Price Submission)**

Provisional prices may be discarded or incorporated, as a whole and/or in part, into the bid price in the amounts indicated, at the absolute discretion of the Region and may be used to determine the low bidder. Proponents must provide provisional prices.

<b>Description</b>	<b>Rate</b>	<b>Notes</b>
Annual rate to provide warranty and support services after the initial five (5) year warranty period has expired		
Hourly rate for providing repair and support services not covered under the warranty and support agreement and the length of time these rates are valid.		

Submitted By: \_\_\_\_\_ (Company Name)

**SIGNING SHEET (Envelope #1)**

**I/We certify that I/We have the authority to bind the corporation**

I/We the undersigned do hereby acknowledge and offer to supply the requirements, services or perform the work as defined within the Instructions for Bidders, General Terms and Conditions, Special Provisions, Specifications, and Addenda of this Request for Proposal, incorporated herein in full by reference and including any supplementary terms and conditions as set out herein.

**I/We certify that I/We have the authority to bind the corporation**

Signed, and delivered at \_\_\_\_\_ this \_\_\_\_ day of \_\_\_\_\_ 2017.  
Municipality Month

Legal Company Name \_\_\_\_\_

Address \_\_\_\_\_  
# Street Municipality Province Postal Code

Signature of \_\_\_\_\_ Name \_\_\_\_\_  
(Authorized official or principal who has authority to bind the company) Print or Type

Title \_\_\_\_\_ Email \_\_\_\_\_

Telephone # \_\_\_\_\_ Fax # \_\_\_\_\_

SUBMITTED BY

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

REGION OF WATERLOO  
TREASURY SERVICES DIVISION (PROCUREMENT)  
150 FREDERICK STREET, 4<sup>TH</sup>. FLOOR  
KITCHENER, ONTARIO  
N2G 4J3

**IMPORTANT:**

Bids are to be dropped off at the Treasury Services Division (Procurement) Counter, 150 Frederick Street, 4<sup>th</sup> Floor, Kitchener, ON. Submissions received in Treasury Services Division (Procurement) after the closing time will NOT be accepted. The onus is on the bidder to ensure that the bid is received in the proper location and before the closing time.

CONTRACT NUMBER: P2017-30  
CONTRACT NAME: Grand River Transit (GRT) Transit Bus Simulator System  
CLOSING DATE: Wednesday November 29, 2017  
CLOSING TIME: 2:00:59 p.m.

**ENVELOPE #1 – TECHNICAL SUBMISSION**

SUBMITTED BY

Company Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

REGION OF WATERLOO  
TREASURY SERVICES DIVISION (PROCUREMENT)  
150 FREDERICK STREET, 4<sup>TH</sup>. FLOOR  
KITCHENER, ONTARIO  
N2G 4J3

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CONTRACT NUMBER: P2017-30  
CONTRACT NAME: Grand River Transit (GRT) Transit Bus Simulator System  
CLOSING DATE: Wednesday November 29, 2017  
CLOSING TIME: 2:00:59 p.m.

**ENVELOPE #2 – COST PROPOSAL**