THE CITY OF WINNIPEG

REQUEST FOR PROPOSAL

RFP NO. 901-2011

DESIGN-BUILD OF TRANSIT BUS PARKING AND SERVICING GARAGE

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BIDDING PROCEDURES

GENERAL

B1. CONTRACT TITLE

B1.1 DESIGN BUILD OF WINNIPEG TRANSIT BUS PARKING AND SERVICING GARAGEDESIGN-BUILD OF TRANSIT BUS PARKING AND SERVICING GARAGE

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, February 7, 2012.

B2.2 Proposals determined by the Manager of Materials to have been received later than the Submission Deadline will not be accepted and will be returned upon request.

B2.3 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

B3. BIDDING PRE-REQUISITE

B3.1 Only Proponents short-listed from RFQ 707-2011 are invited to submit detailed Proposals in response to this RFP.

B4. SITE INVESTIGATION

B4.1 Further to C3.1, the Bidder may

(a) view the Site for the Transit Garage at any time. Bidders may cross, but not enter the rapid transit corridor bounding the west side of the Site.

(b) make an appointment to view the storage and parking area on the north side of Brandon Avenue, or the existing light duty service bays and bus washes on the Transit grounds, by contacting Mr. Tony Dreolini, Manager of Plant and Equipment at 986-5774.

B4.2 The Bidder shall not be entitled to rely on any information or interpretation received at the Site investigation unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

B4.3 Further to C3.1, The Bidder is responsible for determining:

(a) the location of any utility which can be determined from the records or other information available at the offices of any public authority or person, including a municipal corporation and any board or commission thereof, having jurisdiction or control over the utility;

(b) the nature of the surface and subsurface conditions at the Site;

(c) the location, nature, quality or quantity of the materials to be removed or to be employed in the performance of the Work;

(d) the nature, quality or quantity of the Plant needed to perform the Work;

(e) all matters concerning access to the Site, power supplies, location of existing services, utilities or materials necessary for the completion of the Work; and

(f) all other matters which could in any way affect the Proposal or the performance of the Work.

B5. ENQUIRIES

B5.1 All enquiries shall be directed to the Contract Administrator identified in D5.1.

B5.2 If the Bidder finds errors, discrepancies or omissions in the Proposal, or is unsure of the meaning or intent of any provision therein, the Bidder shall promptly notify the Contract Administrator of the error, discrepancy or omission at least five (5) Business Days prior to the Submission Deadline.

B5.3 If the Bidder is unsure of the meaning or intent of any provision therein, the Bidder should request clarification as to the meaning or intent prior to the Submission Deadline.

B5.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Request for Proposal will be provided by the Contract Administrator to all Bidders by issuing an addendum.

B5.5 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Request for Proposal will be provided by the Contract Administrator only to the Bidder who made the enquiry.

B5.6 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B5 unless that response or interpretation is provided by the Contract Administrator in writing.

B6. BIDDERS' CONFERENCE/TOUR

B6.1 Further to C3.1, the Bidder should attend a Bidders' conference at 1520 Main Street (North Garage) from 10:00 to 12:00 on January 9, 2012.

B6.2 The Bidder is advised that, at the Bidders' conference, a tour will be given of various process rooms in the existing North Garage. Some minimum space requirements and equipment requirements of the new garage are based on proven processes in the North Garage (and Fort Rouge garage). This is also an opportunity to show Bidders processes or areas that Transit has found to be deficient and is looking for innovation and improvement in the new garage facility

B6.3 The Bidder shall not be entitled to rely on any information or interpretation received at the Bidders' conference unless that information or interpretation is provided by the Contract Administrator in writing.

B7. CONFIDENTIALITY

B7.1 Information provided to a Bidder by the City, or by a Bidder to the City, or acquired by a Bidder by way of further enquiries or through investigation is strictly confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Contract Administrator, or of the Bidder.

B7.2 The Bidder shall not make any statement of fact or opinion regarding any aspect of the Request for Proposals to the media or any member of the public without the prior written authorization of the Contract Administrator.

B8. ADDENDA

B8.1 The Contract Administrator may, at any time prior to the Submission Deadline, issue addenda correcting errors, discrepancies or omissions in the Request for Proposal, or clarifying the meaning or intent of any provision therein.

B8.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.

B8.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/bidopp.asp.

B8.2.2 The Bidder is responsible for ensuring that he has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.

B8.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Proposal. Failure to acknowledge receipt of an addendum may render a Proposal non-responsive.

B9. SUBSTITUTES

B9.1 The Work is based on the Plant, Materials and methods specified in the Request for Proposal.

B9.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.

B9.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least ten (10) Business Days prior to the Submission Deadline.

B9.4 The Bidder shall ensure that any and all requests for approval of a substitute:

(a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;

(b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;

(c) identify any anticipated cost or time savings that may be associated with the substitute;

(d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;

(e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.

B9.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.

B9.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.

B9.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he wishes to inform.

B9.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.

B9.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B23.1.

B9.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

B9.10 Notwithstanding B9.2 to B9.9 and in accordance with B10.4, deviations to terms and conditions inconsistent with the Proposal document shall be evaluated in accordance with B23.1.

PROPOSAL SUBMISSION

B10. PROPOSAL SUBMISSION

B10.1 The Proposal shall consist of the following components:

(a) Form A: Proposal (see B12);

(b) Form B: Prices (see B13);

(c) Bid Security (see B14)

(i) Form G1: Bid Bond and Agreement to Bond, or
Form G2: Irrevocable Standby Letter of Credit and Undertaking, or
a certified cheque or draft;

(d) Design Proposal Summary (see B15)

(e) Design Illustrations (plans/elevations) (see B16)

B10.2 Further to B10.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B9.

B10.3 All components of the Proposal shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Proposal.

B10.4 Bidders are advised that inclusion of terms and conditions inconsistent with the Proposal document, including the General Conditions, will be evaluated in accordance with B23.1

B10.5 Bidders are advised not to include any information/literature except as requested in accordance with B10.1.

B10.6 The Proposal should be submitted enclosed and sealed in an envelope clearly marked with the RFP number and the Bidder's name and address.

B10.6.1 Samples or other components of the Proposal which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the RFP number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Proposal Submission.

B10.7 Proposals submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.

B10.8 Proposals shall be submitted to:

The City of Winnipeg
Corporate Finance Department
Materials Management Division
185 King Street, Main Floor
Winnipeg MB R3B 1J1

B11. PROPOSAL FORMAT

B11.1 Bidders should submit one (1) unbound original (marked "original") and eleven (11) copies, plus one (1) copy in an MS Office compatible electronic format, or PDF with searchable text on a standard CD or DVD. The unbound original shall consist solely of 8.5" x 11" sheets, with oversize sheets (11" x 17", drawings, etc.) reduced for ease of photocopying. The Proposal copies and digital copy may utilize the format noted in B11.4. If there is any discrepancy between the electronic version and the unbound original hard copy, the original hard copy shall take precedence.

B11.2 Each Proposal component should be addressed under a separate Tab clearly marked in accordance with B10.1.

B11.3 Design Illustrations are part of each copy and must be suitably attached, such as folded in a tabbed envelope or pocket, a referenced protective cardboard/plastic drawing tube, or by other means.

B11.4 The Design Proposal Summary should contain no more than forty (40) pages (standard 8.5" x 11"), single sided, using a 12 pt font. Of the allowable pages, the outline specifications shall comprise no more than twenty (20) pages. Any graphics or appendices included should be contained with the specified number of pages. 11" x 17" pages shall count as two (2) pages each. Tab or heading sheets, and table of contents are excluded from the total allowable number of pages. Page numbers must be listed in a header or footer as appropriate.

B11.5 Design Illustrations are to be ISO A1 size. There is no limit to the number of illustrations. Design illustrations (and specifications) shall be issued in metric notation unless directed otherwise.

B11.6 The complete illustrations shall be done using AutoCAD 2007 or later, in DWG Format or in any other CAD program in DXF format which is 100% compatible with AutoCAD 2007. Drawing layering standards to follow the A.I.A. American Institutes of Architects long format layering convention. The Bidders shall include the AutoCAD illustrations on the CD submission.

B11.7 Other information not specifically requested will not be reviewed during the evaluation process.

B11.8 The City reserves the right to make additional copies of all Submissions for the evaluation process and to provide such copies to its staff.

B12. FORM A: PROPOSAL

B12.1 The Bidder shall complete Form A: Proposal, making all required entries.

B12.2 Paragraph 2 of Form A: Proposal shall be completed in accordance with the following requirements:

(a) if the Bidder is a sole proprietor carrying on business in his own name, his name shall be inserted;

(b) if the Bidder is a partnership, the full name of the partnership shall be inserted;

(c) if the Bidder is a corporation, the full name of the corporation shall be inserted;

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

B12.2.1 If a Proposal is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B12.2.

B12.3 In Paragraph 3 of Form A: Proposal, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Proposal.

B12.4 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Proposal. Failure to acknowledge receipt of an addendum may render a Proposal non-responsive.

B12.5 Paragraph 12 of Form A: Proposal shall be signed in accordance with the following requirements:

(a) if the Bidder is a sole proprietor carrying on business in his own name, it shall be signed by the Bidder;

(b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;

(c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, should be affixed;

(d) if the Bidder is carrying on business under a name other than his own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.

B12.5.1 The name and official capacity of all individuals signing Form A: Proposal should be printed below such signatures.

B12.6 If a Proposal is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Proposal and the Contract, when awarded, shall be both joint and several.

B13. FORM B: PRICES

B13.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B13.1.1 Notwithstanding C12.2.3(c), prices on Form B: Prices shall also not include the Manitoba Retail Sales Tax (MRST), also known as PST, which shall be extra where applicable.

B13.2 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each item, the sum of the quantities multiplied by the unit prices for each item shall take precedence.

B13.3 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B14. BID SECURITY

B14.1 The Bidder shall provide bid security in the form of:

(a) a bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in the form included in the Bid Submission (Form G1: Bid Bond and Agreement to Bond); or

(b) an irrevocable standby letter of credit, in the amount of at least ten percent (10%) of the Total Bid Price, and undertaking issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form included in the Bid Submission (Form G2: Irrevocable Standby Letter of Credit and Undertaking); or

(c) a certified cheque or draft payable to “The City of Winnipeg”, in the amount of at least fifty percent (50%) of the Total Bid Price, drawn on a bank or other financial institution registered to conduct business in Manitoba.

B14.1.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.

B14.1.2 All signatures on bid securities shall be original.

B14.1.3 The Bidder shall sign the Bid Bond.

B14.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.

B14.2 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly executed by the successful Bidder and the performance security furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.

B14.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B14.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.

B14.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.

B14.3 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Bid Opportunity.

B15. DESIGN PROPOSAL SUMMARY

B15.1 The Design Proposal Summary will reflect the requirements of this RFP on the building and the Site. The Design Proposal Summary must provide sufficient information that conveys the design for evaluation.

B15.2 Proponents are encouraged to use their creativity to submit a Proposal, which provides the requested information for evaluation and other information, which illustrates the strength of their design and the Design Build team.

B15.3 The Bidder shall provide, in his Proposal:

B15.3.1 Understanding of Project:

(a) Restatement of project key team members from the Request for Qualifications (RFQ) stage. This is to confirm that the team that was approved in the shortlisting process is intact. An organization chart outlining members and roles is acceptable.

(b) Presentation of a carefully considered CPM work plan using Microsoft Project or similar project management software indicating key tasks, milestones, etc. to the end of the project

(c) The RFQ requested broad information on Quality Control/Quality Assurance (QC/QA) methodology. At this point, Bidder is to provide details specific to this project, including material testing program, frequency, required inspections, and method of recording and presenting QC/QA information to the Contract Administrator

(d) Communication Plan to effectively outline the plan for communication including, but not limited to, lines of communication, reporting protocol, meeting type and frequency, submission types and schedule, client input points and involvement, material testing and reporting

B15.3.2 Design of Facility:

(a) Synopsis of Design Concept
  (i) Broad functional and technical requirements and the approach to the design.

(b) Innovation in Design/Key Features
  (i) Must effectively communicate the unique and innovative aspects of the overall design, its LEED innovation as well as other Sustainable features.
  (ii) Include key aspects of the design and its integration into the urban context. This section should also help highlight the key element and features of the building itself.

(c) Outline Specifications
  (i) Identifies key building components and assemblies.
  (ii) Provide outline specifications for each discipline (A,L A, S,M,E, C) describing materials and application.

(d) LEED Silver Certification Process
  (i) The Request for Qualifications briefly described the requirement for the project to be delivered to achieve a minimum level of LEED Silver Certification.

(ii) Bidders are required to provide information on their process for the delivery of the project to achieve the certification. The information should include information on the initiatives and related points that their design may potentially be pursuing to meet the requirements for the process and eventual certification.

(iii) Further to (ii), Bidders are required to provide a LEED Project Checklist/Scorecard that indicates prerequisites, displays a Y/Y?/N?/N assessment, each individual credit, the percentage likelihood calculation and the total projected score for the project.

(e) Neighbourhood Fit Criteria

(i) Provide description of design features that address issues raised by neighbourhood as listed in E9.

B16. DESIGN ILLUSTRATIONS

B16.1 Further to B15.3.2, drawings should be able to accurately convey the design intent and required detail of each discipline:

(a) Site Plan

(b) Civil Plan

(c) Landscape Plan

(d) Architectural, Structural, Mechanical & Electrical Floor Plans with sufficient detail and details to effectively communicate design intent and construction details.

(e) Elevations - as required to communicate design intent

(f) Building Section (s) – as required to communicate design intent

B17. QUALIFICATION

B17.1 The Bidder shall:

(a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Bidder does not carry on business in Manitoba, in the jurisdiction where the Bidder does carry on business; and

(b) be financially capable of carrying out the terms of the Contract; and

(c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.

B17.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

(a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/debar.stm.

B17.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

(a) have successfully carried out work similar in nature, scope and value to the Work; and

(b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and

(c) have a written workplace safety and health program, if required, pursuant to The Workplace Safety and Health Act (Manitoba);

(d) have been shortlisted for this Request for Proposal through RFQ 707-2011.

B17.4 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B17.5 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B17.6 Further to B17.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

(a) a valid COR certification number under the Certificate of Recognition (COR) Program administered by the Manitoba Construction Safety Association or by the Manitoba Heavy Construction Association's Safety, Health and Environment Program; or

(b) a report or letter to that effect from an independent reviewer acceptable to the City. A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division internet site at http://www.winnipeg.ca/matmgt/Safety/default.stm

EVALUATION AND AWARD

B18. NEGOTIATIONS

B18.1 The City reserves the right to negotiate details of the Contract with any Bidder. Bidders are advised to present their best offer, not a starting point for negotiations in their Proposal Submission.

B18.2 The City may negotiate with the Bidders submitting, in the City's opinion, the most advantageous Proposals. The City may enter into negotiations with one or more Bidders without being obligated to offer the same opportunity to any other Bidders. Negotiations may be concurrent and will involve each Bidder individually. The City shall incur no liability to any Bidder as a result of such negotiations.

B18.3 If, in the course of negotiations pursuant to B18.2 or otherwise, the Bidder amends or modifies a Proposal after the Submission Deadline, the City may consider the amended Proposal as an alternative to the Proposal already submitted without releasing the Bidder from the Proposal as originally submitted.

B19. OPENING OF PROPOSALS AND RELEASE OF INFORMATION

B19.1 Proposals will not be opened publicly.

B19.2 After award of Contract, the name of the successful Bidder will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt .

B19.3 To the extent permitted, the City shall treat all Proposal Submissions as confidential, however the Bidder is advised that any information contained in any Proposal may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

B19.4 Following the award of Contract, a Bidder will be provided with information related to the evaluation of his submission upon written request to the Contract Administrator.

B20. IRREVOCABLE OFFER

B20.1 The Proposal(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Proposal.

B20.2 The acceptance by the City of any Proposal shall not release the Proposals of the other responsive Bidders and these Bidders shall be bound by their offers on such Work until a Contract for the Work has been duly executed and the performance security furnished as herein provided, but any offer shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Proposal.

B21. WITHDRAWAL OF OFFERS

B21.1 A Bidder may withdraw his Proposal without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

B21.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Proposal shall be the time and date of receipt as determined by the Manager of Materials.

B21.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Proposal or the Bidder's authorized representatives named in Paragraph 12 of Form A: Proposal, and only such person, has authority to give notice of withdrawal.

B21.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:

(a) retain the Proposal until after the Submission Deadline has elapsed;

(b) open the Proposal to identify the contact person named in Paragraph 3 of Form A: Proposal and the Bidder's authorized representatives named in Paragraph 12 of Form A: Proposal; and

(c) if the notice has been given by any one of the persons specified in B21.1.3(b), declare the Proposal withdrawn.

B21.2 A Bidder who withdraws his Proposal after the Submission Deadline but before his offer has been released or has lapsed as provided for in B20.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law.

B22. COMPENSATION TO BIDDERS

B22.1 The successful Proponent will be required to pay an honorarium to each responsive unsuccessful Proponent in the amount of $20,000.00 (Twenty Thousand Dollars, Canadian Funds) including the GST. The honorarium will be paid in recognition that the Bidders have undertaken a portion of the professional services that would normally be done during a conventional design project. No other compensation or reimbursement of the Bidder's costs will be made for any activity associated with this Request for Proposal. It is incumbent on each Bidder to allocate the fee among its Design Build Team member.

B22.2 Honoraria will be paid to the unsuccessful Bidders in accordance with the following:

(a) following the award of a Contract to a successful Proponent;

(b) Upon written submittal noting the Bidder agrees to transfer to the City all intellectual property rights (including waiving of moral rights) contained with in the Bidder's Proposal;

(c) Following the successful Proponent's internal financial system schedule, which is outside the City's control.

B22.3 The successful Proponent will be required to provide documentation that payments have been made to each responsive unsuccessful Proponent within 60 days of award of Contract. If documentation is not provided, the City will not process subsequent payments on this contract until the situation is rectified.

B22.4 In the event that the City cancels the current procurement process for any reason, after issuance of the RFP, and after Bidders have incurred significant costs developing their Proposals, the City will pay a Break Payment to each such Bidder of up to $20,000.00 for

Proposal development costs provided that the Bidder first submits its Proposal development work together with a transfer of all intellectual property rights (including waiver of moral rights).

B22.5 The amount of the Break Payment will be proportionate to the amount of work completed and scheduled time expired for the RFP procurement process with maximum possible entitlement where cancellation occurs after final Proposals have been submitted at the end of the RFP process.

B23. EVALUATION OF PROPOSALS

B23.1 Award of the Contract shall be based on the following evaluation criteria:

(a) compliance by the Bidder with the requirements of the Request for Proposal or acceptable deviation therefrom: (pass/fail);

(b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B17: (pass/fail);

(c) Total Bid Price: 50%;

(d) Design Proposal Summary (B15):

COMPONENT	**MAXIMUM SCORE (%)**
UNDERSTANDING OF PROJECT (B15.3.1)	
❑ Key Team Members	2
❑ Work Plan and Schedule	2
❑ Quality Control/Quality Assurance methodology	3
❑ Communication Plan	3
Subtotal	10
DESIGN OF FACILITY (B15.3.2 and B16)	
❑ Synopsis of Design Concept	5
❑ Innovation in Design/Key Features	15
❑ Outline Specifications	5
❑ LEED Silver Certification Process	5
❑ Neighbourhood Fit Criteria	10
Subtotal	40

B23.2 Further to B23.1, the Award Authority may reject a Proposal as being non-responsive if the Proposal Submission is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Proposal, or waive technical requirements or minor informalities or irregularities if the interests of the City so require.

B23.3 Further to B23.1(b), the Award Authority shall reject any Proposal submitted by a Bidder who does not demonstrate, in his Proposal or in other information required to be submitted, that he is responsible and qualified.

B23.4 The Design Proposal Summary will be evaluated considering the information submitted, and the degree to which the Proposal submission responds to the criteria specified in B23.1(d) and the performance specifications herein.

B23.5 Further to B13, the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices, including the items listed as Potential Project Item Deductions.

B23.5.1 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each item, the sum of the quantities multiplied by the unit prices for each item shall take precedence.

B23.5.2 Further to B23.5, in the event that a unit price is not provided on Form B: Prices, the City will determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.

B23.6 If, in the sole opinion of the City, a Proposal does not achieve a pass rating for B23.1(a) and B23.1(b), the Proposal will be determined to be non-responsive and will not be further evaluated.

B23.7 Selection of a successful bidder does not relieve the successful bidder from the responsibility and ongoing obligation to comply with all elements and requirements as stated within the RFP document.

B24. AWARD OF CONTRACT

B24.1 The City will give notice of the award of the Contract, or will give notice that no award will be made.

B24.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Proposals are determined to be responsive.

B24.2.1 Without limiting the generality of B24.2, the City will have no obligation to award a Contract where:

(a) the prices exceed the available City funds for the Work;

(b) the prices are materially in excess of the prices received for similar work in the past;

(c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;

(d) only one Proposal is received; or

(e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.

B24.3 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the most advantageous offer.

B24.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his Proposal upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

C0.1 The *General Conditions for Construction* (Revision 2006 12 15) are applicable to the Work of the Contract.

C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm .

C0.2 A reference in the proposal to a section, clause or subclause with the prefix "**C**" designates a section, clause or subclause in the *General Conditions for Construction*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

D2.1 The City of Winnipeg Public Service has received Council approval to proceed with procurement of a Transit Bus Parking and Servicing Garage (the Project). The project will be delivered through a Design-Build process.

D2.2 A previous Request for Quotation listed as RFQ 707-2011 was issued to identify experienced and capable Proponents to design, build and commission the Project. After receiving the Submissions to this RFQ, the City reviewed all Submissions received and short-listed qualified Proponents.

D2.2.1 In accordance with B3.1, , only Proponents short-listed from RFQ 707-2011 are invited to submit detailed Proposals in response to this Request for Proposal (RFP).

D2.3 The RFP contained herein documents the City of Winnipeg's (City) invitation to organizations (Bidders/Proponents) to present Proposals in accordance with the requirements identified in this RFP for the development of Transit's Bus Parking and Servicing Garage. Specifically, the City is requesting submissions from private sector firms, individually or in consortium, for the design; construction and commissioning of a Transit bus garage with the capacity to park and service one hundred and thirty five (135) regular forty foot transit buses. It is anticipated that sixty foot articulated buses will be added to Transit's fleet in the future and the garage must efficiently accommodate these types of buses when required. The procurement will be turn-key and will include all necessary equipment and fixtures for a fully functional parking and servicing garage at the completion of the Contract. The garage is expected to be approximately 136,000 sq. ft. in size.

D2.4 The Total Bid Price is expected to be between $17 and $20 million dollars, based on industry accepted costs per square foot for a facility of this type, and as per the performance specifications included herein.

D2.5 The major components of the design and construction work will include but not be limited to the following:

(a) Continued design work after the RFP stage. The design will include building structure, mechanical, and electrical systems, landscaping and site design, and anticipated LEED credits.

(b) Topographic site survey to finalize required offsets from adjoining properties, locate underground services, and provide any information needed for further design.

(c) Geotechnical investigation as required for foundation design;

(d) Environmental impact study as required;

(e) Relocate existing underground services as required;

(f) Regular design submissions to the Contract Administrator and City at regular design stages equivalent to 33%, 66%, and 99% design;

(g) Provide a preconstruction public open house to inform area residents of the final design of the facility and measures taken to address concerns expressed at the pre-design open house administered by the Contract Administrator;

(h) Prepare construction documents for all architectural, civil, structural, mechanical, electrical, site services and landscaping elements in conformance with functional space program and

design guidelines. Such services to be provided by professionals registered in the Province of Manitoba;

(i) Liase with Contract Administrator and City as necessary through correspondence and meetings;

(j) Secure all permits, approvals, inspections and certifications required for the construction of the facility;

(k) Supply all materials, manuals, training, commissioning, equipment, labour, management and supervision to construct and commission the facility;

(l) Supply necessary management resources, tools and equipment to ensure the timely completion of the project within the price bid;

(m) Provide warranty repair service for all building components during the warranty period;

D2.6 This project is not only a storage facility; it plays a key role in the efficiency and cost effectiveness of the entire transit system. The garage must be conceived, designed and delivered with ultimate efficiency. By ultimate efficiency, we do not only mean the lowest capital construction cost. We also mean the best value. Among many other items, best value means highest material life-cycle, lowest Operations and Maintenance costs, longest serviceable life with ease of component replacement, commonality of components and access to components.

D2.7 The proposed Transit Garage Facility will be located on the property commonly known as the Fort Rouge Rail Yards, and will generally be bounded to the north by Brandon Avenue, to the east by the Argue Street Bicycle (and lane), to the south by the virtual extension of Arnold Avenue, and to the west by the newly constructed Southwest Rapid Transit Corridor Roadway. A preliminary plan of the Site is shown in the project drawings.

D2.8 The purpose of this RFP is to select a Contractor capable of meeting Transit's requirements in a cost effective and timely manner.

D2.9 For the duration of this project, the City has contracted with an outside firm to act as the Contract Administrator. The Contract Administrator is responsible for the delivery of the project from the City's end, including the preparation of the prior RFQ document used to shortlist Proponents, this RFP document outlining project requirements, design criteria, and evaluation metrics. The Contract Administrator is then responsible for subsequent design review and construction review of the successful Design-Build Proponent, ensuring conformance with project requirements.

D2.10 Additional information on the project vision and scope is in Section E3 and E4

D3. PROJECT TIMELINE

D3.1 The estimated schedule for this project is as follows:

Phase	Approximate Date(s)
1. RFP Submission Deadline	February 7, 2012
2. Award of Contract	April 5, 2012
3. Critical Stage as listed in D21.1(a)	May 11, 2012
4. Substantial Performance	June 28, 2013
5. Total Performance	July 26, 2013
6. End of Warranty Period	June 28, 2014

D3.2 The Selected Proponent must align the scheduling of the project's activities and its resources to meet the City's project timeline expectations.

D4. DEFINITIONS

D4.1 When used in this Request for Proposal:

(a) "**Acceptance"** means:

(i) when in reference to a Proposal, a Letter of Intent sent by the Chief Administrative Officer or his/her delegated authority notifying the Contractor that a contract for Services is being awarded to the Contractor; or

(ii) when in reference to Services provided by the Contractor to the City, a letter of acceptance of the particular report, recommendation, program project or totally completed project, or other related matter proposed by the Contractor requiring acceptance, endorsement, confirmation or other appropriate form of approval or consent from the Project Manager prior to continuance by the Contractor of the previously agreed upon Services or the conclusion of same;

(b) **Break Payment**" means the amount determined by the City to be payable to each Bidder for wasted Proposal development costs in the event that the procurement process is terminated by the City after issuance of this RFP at a time when the City recognizes that Bidders have expended significant time and effort preparing to respond to the RFP;

(c) **"Change in Services"** or **"Scope Change"** means an addition, deletion or modification to the Services as described in the Contract and which have been approved by the Project Manager;

(d) "**City Council**" means the Council of the City of Winnipeg;

(e) **"Contract Administrator"** means the person authorized to represent the City in respect to the Request for Proposal and subsequent Project;

(f) "**Contractor**" means the person undertaking the performance of the work under the terms of the Contract. This is sometimes used interchangeably with the term "successful Proponent", or "design-builder";

(g) "**Design**" means graphic representation of the evolution of the functional and spatial concept ;

(h) "**Design-Build**" means a project delivery method where a firm is engaged to provide a turnkey project, from preliminary design, through to construction, commissioning, and warranty services.

(i) **"Deliverables"** means all reports, drawings, calculations, designs, plans, leading practices, specifications, and other data, information and all material utilized, collected, compiled, drawn and produced (including digital files) to carry out Services contemplated in this Contract;

(j) ""**LEED Silver Certification**" means receiving between 50-59 points in the Leadership in Energy and Environmental Design Program, in accordance with the current LEED Canada Reference Guide for Green Building Design and Construction 2009;

(k) **"Letter of Intent"** means the letter sent by the Chief Administrative Officer or his/her delegated authority notifying the Contractor that a contract for Services has been awarded to the Contractor;

(l) **"may"** indicates an allowable action or feature which will not be evaluated;

(m) **"must"** or **"shall"** indicates a mandatory requirement which will be evaluated on a pass/fail basis;

(n) "**NFPA**" means National Fire Protection Association.

(o) "**NMS**" means National Master Specifications.

(p) **"Project"** shall refer to the project described in the Scope of Work;

(q) "**Proponent**" means any Person or consortium submitting a Proposal Submission in response to this Request for Proposal. This is sometimes used interchangeably with the term "Bidder";

(r) "**Proposal**" means the offer contained in the Proposal Submission;

(s) "**Proposal Submission**" means the documents, drawings, illustrations, forms, schedules and spreadsheets stipulated in the Request for Proposal which must be completed or provided and submitted by the Submission Deadline in order to constitute a responsive Proposal;

(t) "**Request for Proposal**" means the Proposal Submission Forms, the Bidding Procedures, the General Conditions, the Supplemental Conditions, the Specifications, the Drawings, the Appendices and all Addenda;

(u) "**Shop Drawings**" means all drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are prepared by the Design-Build team, Subcontractor, manufacturer, supplier or distributor and which illustrate some portion of the Work;

(v) "**should**" indicates a desirable action or feature which will be evaluated on a relative scale;

(w) **"Subcontractor"** means a person contracting with the Contractor to perform a part or parts of the Services to be provided by the Contractor pursuant to the Contract.

D5. CONTRACT ADMINISTRATOR

D5.1 The Contract Administrator is Dillon Consulting Limited, represented by:

Dave Krahn, P.Eng.
Dillon Consulting Lmited
1558 Willson Place, Winnipeg, Manitoba, R3T 0Y4

Telephone No. (204) 453-2301
Facsimile No. (204) 452-4412

D5.2 Before commencement of Work, Dillon Consulting Limited will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

D6. CONTRACTOR'S SUPERVISOR

D6.1 Further to C6, the Contractor shall employ and keep on the Work, at all times during the performance of the Work, a competent supervisor and assistants, if necessary, acceptable to the Contract Administrator. The supervisor shall represent the Contractor on the Site. The supervisor shall not be replaced without the prior consent of the Contract Administrator unless the supervisor proves to be unsatisfactory to the Contractor and ceases to be in his employ.

D6.2 Before commencement of Work, the Contractor shall identify his designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

D6.2.1 Further to C5, Contract Administrator may give instructions or orders to the Contractor's supervisor and such instructions or orders shall be deemed to have been given to the Contractor.

D7. CONFIDENTIALITY AND OWNERSHIP OF INFORMATION

D7.1 Information provided to the Contractor by the City or acquired by the Contractor during the course of the Work is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Contract Administrator.

D7.2 The Contract, all deliverables produced or developed, and information provided to or acquired by the Contractor are the property of the City. The Contractor shall not disclose or appropriate to its own use, or to the use of any third party, all or any part thereof without the prior written consent of the Contract Administrator.

D7.3 The Contractor shall not make any statement of fact or opinion regarding any aspect of the Contract to the media or any member of the public without the prior written authorization of the Contract Administrator.

D8. NOTICES

D8.1 Notwithstanding C23.2.2, all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following facsimile number:

The City of Winnipeg
Chief Financial Officer
Administration Building, 3rd Floor
510 Main Street
Winnipeg MB R3B 1B9

Facsimile No.: (204) 949-1174

D9. FURNISHING OF DOCUMENTS

D9.1 Upon award of the Contract, the Contractor will be provided with five (5) complete sets of the Bid Opportunity. If the Contractor requires additional sets of the Bid Opportunity, they will be supplied to him at cost.

D10. INTERPRETATION

D10.1 Further to C2 of the General Conditions for Construction, the following applies:

D10.1.1 All obligations under this Contract that necessarily extend beyond termination of this Contract in order to fully achieve their intended purpose shall survive termination of this Contract, including without limiting the generality of the foregoing, all indemnification provisions, intellectual property provisions, and confidentiality provisions.

D11. AUTHORITY OF CONTRACT ADMINISTRATOR

D11.1 Further to C5 of the General Conditions for Construction, the following applies:

D11.1.1 The Contract Administrator shall give prompt consideration to all documents submitted by the Contractor including all sketches, Drawings, specifications, tenders, proposals, contracts, agreements, reports and correspondence and shall provide written decisions, instructions, Acceptances and any other information required as soon as reasonably possible in order to enable the Contractor to comply with the agreed time schedule.

(a) Acceptance provided by the Contract Administrator does not relieve the Contractor of its professional responsibility for errors and omissions.

D12. CONTRACTOR'S DESIGN SERVICES AND RESPONSIBILITIES

D12.1 The Contractor shall perform, to the satisfaction of the Contract Administrator, all design services of every kind, either expressly or impliedly required for the Project, including those identified in the Scope of Work, as well as any Change in Services.

D12.2 Design services generally include professional engineering and architectural services as required to build the Project. This includes, but is not limited to preliminary design, final design, and production of technical specifications and drawings as part of the Design-Build project delivery method.

D12.3 The Contractor, if requested in writing to do so by the Contract Administrator, shall make any required changes in the Project notwithstanding his/her previous approval and the Contractor shall advise the Contract Administrator of any effect on the time schedule, budget and other implications of the changes.

D12.3.1 However, nothing done by the Contractor to remedy design errors or other deficiencies attributable to shortcomings of the Contractor, including persons consulted, employed or supervised by it, shall entitle it to additional fees.

D12.4 The Contractor shall notify and obtain the approval of the Contract Administrator for all significant additions and changes to design staff.

D12.5 The Contractor shall keep and maintain accurate time sheets and cost invoice records of its design services performed under this Contract including design services performed on its behalf by any SubContractor and, when required, shall make such material available for inspection and audit by the Contract Administrator. The Contractor shall keep and preserve the said material for a period of at least six (6) years following Total Performance or termination of its design services under this Contract.

D12.6 The Contractor shall ensure that the design services comply with all relevant federal, provincial and municipal legislation, codes, bylaws and regulations. Where there are two or more laws, by-laws, regulations or codes applicable to the design services, the most restrictive shall apply.

D12.7 The Contractor and all professional individuals conducting design services pursuant to the Contract shall be members in good standing with the applicable professional association in the Province of Manitoba.

D12.8 The Contractor shall obtain and pay for all necessary permits or licences required for the execution of the design services.

D12.9 If the Contractor performs the design services contrary to any laws, by-laws, regulations, codes and orders of any authority having jurisdiction, the Contractor shall be responsible for and shall correct any violations thereof and shall bear all resulting costs, expenses and damages.

D12.10 In the event the Contractor fails to comply with any legislation or any regulations thereunder and the City is required to do anything or take any steps or pay any sums to rectify such non-compliance, the City may set-off the cost of such rectifications from any monies owed to the Contractor. Any such set-off is not to be construed as liquidated damages.

D13. INTELLECTUAL PROPERTY

D13.1 All reports, drawings, calculations, designs, plans, leading practices, specifications, and other data, information and all material utilized, collected, compiled, drawn and produced (including digital files) to carry out the design services contemplated in this Contract (“Deliverables”) are solely the property of the City, and the Contractor's copyright in such property, if any, is hereby assigned to the City.

D13.1.1 For greater clarity, any disclaimer that is included in or on any Deliverable to limit the use by the City of such Deliverable, as provided for under this agreement, shall have no force and effect and will not alter the terms of this Agreement, unless the terms of that disclaimer are expressly agreed to by both parties in writing as an amendment to this Agreement.

D13.2 Upon completion of the design services or termination of this Contract, all of the Deliverables shall be delivered by the Contractor to the City on demand by the City. The Contractor may retain one complete set of the Deliverables for its records and the City shall make the originals, or a reasonable reproduction thereof, available to the Contractor for all proper and reasonable purposes during the period of five (5) years following the completion or termination of the Contractor's design services under this Contract.

D13.3 Without prejudice to any rights which may exist in the City by virtue of any prerogative rights and powers or by virtue of the Copyright Act of Canada, as amended from time to time, the

Contractor assigns all present and future rights in the copyright in the Deliverables absolutely and immediately to the City. Furthermore, the City or any third party granted a right through the City, may use the Deliverables or any part thereof for, or apply it to, other studies or projects without the Contractor's consent and without any payment or compensation whatsoever. If the City or any third party granted a right through the City elects to so use or apply the Deliverables to another project, it does so at its own risk and the Contractor shall not be liable in any way for such other use or application or any adverse consequences flowing therefrom.

D13.4 The Contractor expressly waives any claim to moral rights, as provided for in the law of copyright, over the Deliverables or any part thereof, created by the Contractor, and the Contractor shall ensure that any agent or employee of the Contractor shall have waived all moral rights, as provided for in the law of copyright, over the Deliverables or any part thereof.

D13.5 All concepts, products or processes produced by or resulting from the design services rendered by the Contractor in connection with the Project, or which are otherwise developed or first reduced to practise by the Contractor in the performance of design services, and which are patentable, capable of trademark or otherwise, shall be the property of the City.

D13.6 The Contractor shall have a permanent, non-exclusive, royalty-free licence to use any concept, product or process, which is patentable, capable of trademark or otherwise, produced by or resulting from the design services rendered by the Contractor in connection with the Project, for the life of the Project, and for no other purpose or project.

D13.7 The Contractor shall not infringe any copyright, trademark, patent, industrial design, trade secret, moral or other proprietary right of a third party and shall indemnify the City from all claims arising out of such an infringement.

D13.8 If the City or the Contractor is served with a claim or notice of an infringement or alleged infringement of any patent, copyright, trademark or trade name, the Party so served shall immediately give notice thereof to the other Party.

D13.9 The Contractor shall assist the City in every reasonable way to secure, maintain and defend for the City's benefit all copyrights, patent rights, trade secret rights and other proprietary rights in and to the Deliverables.

D13.10 If the City or the Contractor is prevented by injunction from using any design, device, material or process covered by letters patent, copyright, trademark or trade name, the Contractor shall, at its own cost, substitute an equally suitable design, device, material or process, all subject to the prior approval of the Contract Administrator.

SUBMISSIONS

D14. AUTHORITY TO CARRY ON BUSINESS

D14.1 The Contractor shall be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Contractor does not carry on business in Manitoba, in the jurisdiction where the Contractor does carry on business, throughout the term of the Contract, and shall provide the Contract Administrator with evidence thereof upon request.

D15. SAFE WORK PLAN

D15.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D15.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg,

Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/safety/default.stm .

D16. INSURANCE

D16.1 The City shall provide and maintain the following owner controlled project insurance coverage to remain in place at all times during the performance of the Work:

D16.1.1 Builder's risk Insurance, insuring 100% of the total Project Cost. The amount of the insurance will include the full value of property that is specified by the City to be incorporated into the project, up to a maximum loss limit of twenty million dollars ($20,000,000).

(a) The policy will insure against all risk of direct loss or damage consistent with industry standard insurance policy wordings, and shall apply to all property in the course of construction, installation, testing and commissioning, reconstruction or repair that is owned by the Insureds or owned by others for which the Insured is held responsible.

(b) The Contractor shall be responsible for deductibles up to $50,000 maximum of any one loss.

D16.1.2 Wrap-up liability insurance in an amount of no less than ten million dollars ($10,000,000) inclusive, covering bodily injury, personal injury, property damage and products and completed operations consistent with industry standard insurance policy wordings.

(a) The Contractor shall be responsible for deductibles up to $50,000 maximum of any one loss

(b) The City of Winnipeg will carry such insurance to cover the Owner, Construction Manager and all consultants and contractors as Insureds. Provision of this insurance by the City of Winnipeg is not intended in any way to relieve the Contractor from his obligations under the terms of the Contract. Specifically, losses relating to deductibles for insurance, as well as losses in excess of limits of coverage and any risk of loss that is not covered under the terms of the insurance provided by the City of Winnipeg remains with the contractor.

(c) Wrap-up liability insurance shall be maintained from the date of the commencement of the Work until the date of Substantial Performance of the work and shall include an additional 24 months completed operation coverage which will take affect after Substantial Performance. If Total Performance has not been met within the time period for which this insurance is purchased, the responsibility for payment of additional insurance premiums shall transferred to the Contractor. The City may reduce any payment to the Contractor by the amount of such additional insurance premiums.

D16.1.3 The Contractor, sub-contractor, consultants and sub-consultants shall provide and maintain the following insurance coverage at all times during the performance of the work:

(a) General liability in an amount of no less than five million ($5,000,000) inclusive per occurrence limit for bodily injury, personal injury, property damage and products and completed operations, with a minimum five million ($5,000,000) general aggregate.

(b) Professional liability covering all architects, engineers, and other design professionals involved in the Project in an amount not less than five million ($5,000,000.00) per claim subject to a minimum five million ($5,000,000.00) annual aggregate and shall include an extended reporting period of not less than twelve (12) months from Substantial Performance.

(c) Automobile Liability Insurance on all vehicles owned, operated or licensed in the name of the Contractor in an amount of not less than five million dollars ($5,000,000.00); the Contractor shall further require and ensure that each of its Subcontractors, consultants and sub-consultants engaged for the Project also maintains automobile liability insurance in an amount of not less than five million dollars ($5,000,000.00).

(d) Contractor's pollution liability with a limit of $1,000,000. Deductibles not to exceed $25,000.

(e) Workers compensation or employment insurance coverage must be in place in accordance with provincial legislation.

(f) The Contractor, and all Subcontractors, consultants and sub-consultants engaged by the Contractor for the Project are responsible for insuring their own equipment and tools used on the Project;

(g) Any other insurances, carrying suitable limits and deductibles, as may be required to cover the scope of the Project;

(h) In addition to the wrap-up liability insurance, all insureds named in the wrap up insurance shall continue to carry general liability for twelve months after the substantial total completion of the project.

D16.2 All policies shall be taken out with insurers duly licensed to carry on business in the Province of Manitoba or as determined to be acceptable by the Contract Administrator in consultation with the Insurance Supervisor of the City of Winnipeg.

D16.3 The Contractor shall not cancel, or cause any such policy or policies to lapse without a minimum thirty (30) days prior written notice to the City.

D16.4 The Contractor shall provide written notice to the City of Winnipeg of any material changes to their policies within thirty (30) days of the change taking effect.

D16.5 Upon execution of the Contract, the Contractor shall provide the City with certificates of insurance evidencing general liability, professional liability, automobile liability and any other insurance that would be appropriate to obtain prior to commencement of construction. These certificates shall be in a form satisfactory to the City Solicitor and will stipulate that the City will be notified of cancellation or termination (endeavouring to notify the City will not be acceptable). Certified copies of the applicable policies will follow within 60 days of actual commencement of construction.

D16.6 All policies shall be in a form satisfactory to the City of Winnipeg and shall be kept in full force during the Work.

D17. PERFORMANCE SECURITY

D17.1 The Contractor shall provide and maintain performance security until the expiration of the warranty period in the form of:

(a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; or

(b) an irrevocable standby letter of credit issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form attached to these Supplemental Conditions (Form H2: Irrevocable Standby Letter of Credit), in the amount of fifty percent (50%) of the Contract Price; or

(c) a certified cheque or draft payable to "The City of Winnipeg", drawn on a bank or other financial institution registered to conduct business in Manitoba, in the amount of fifty percent (50%) of the Contract Price.

D17.1.1 Where the performance security is in the form of a certified cheque or draft, it will be deposited by the City. The City will not pay any interest on certified cheques or drafts furnished as performance security.

D17.2 The Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award and prior to the commencement of any Work on the Site.

D18. SUBCONTRACTOR LIST

D18.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D19. DETAILED WORK SCHEDULE

D19.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the commencement of any Work on the Site.

D19.2 The detailed work schedule shall consist of the following:

(a) a critical path method (C.P.M.) schedule for the Work; and

(b) a Gantt chart for the Work based on the C.P.M. schedule

all acceptable to the Contract Administrator.

D19.3 Further to D19.2, the C.P.M. schedule shall clearly identify the start and completion dates of all of the following activities/tasks making up the Work as well as showing those activities/tasks on the critical path including, but not limited to:

(a) Milestone dates referenced in D3

(b) Design Development Process

(c) Construction Document Completion

(d) Construction Start

(e) Commissioning Period

D19.4 Further to D19.2, the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

SCHEDULE OF WORK

D20. COMMENCEMENT

D20.1 The Contractor shall not commence any Work until he is in receipt of a notice of award from the City authorizing the commencement of the Work.

D20.2 The Contractor shall not commence any Work on the Site until:

(a) the Contract Administrator has confirmed receipt and approval of:

(i) evidence of authority to carry on business specified in D14;

(ii) evidence of the workers compensation coverage specified in C6.15;

(iii) the Safe Work Plan specified in D15;

(iv) evidence of the insurance specified in D16;

(v) the performance security specified in D17;

(vi) the Subcontractor list specified in D18;

(vii) the detailed work schedule specified in D19; and

(b) the Contractor has attended a project initiation meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for such meeting.

D20.3 The City intends to award this Contract by April 5, 2012

D20.3.1 If the actual date of award is later than the intended date, the dates specified for Commencement, Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D21. CRITICAL STAGES

D21.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:

(a) Host public open house as described in E9.2 by May 11, 2012.

D22. SUBSTANTIAL PERFORMANCE

D22.1 The Contractor shall achieve Substantial Performance by June 28, 2013.

D22.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.

D22.3 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

D23. TOTAL PERFORMANCE

D23.1 The Contractor shall achieve Total Performance by July 26, 2013.

D23.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.

D23.3 The date on which the Work has been certified by the Contract Administrator as being totally performed to the requirements of the Contract through the issue of a certificate of Total Performance is the date on which Total Performance has been achieved.

D24. LIQUIDATED DAMAGES

D24.1 If the Contractor fails to achieve critical stages, Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Calendar Day for each and every Calendar Day following the days fixed herein for same during which such failure continues:

(a) Critical Stage D21.1(a) – One hundred dollars ($100.00);

(b) Substantial Performance – Two thousand five hundred dollars ($2,500.00);

(c) Total Performance – One thousand dollars ($1,000.00).

D24.2 The amounts specified for liquidated damages in D24.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve critical stages, Substantial Performance or Total Performance by the days fixed herein for same.

D24.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

CONTROL OF WORK

D25. JOB MEETINGS

D25.1 Regular bi-weekly (or weekly as required) job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one

representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

D25.2 The Contractor shall coordinate and chair the meetings, providing timely meeting minutes for all parties.

D25.3 Agenda items for the meetings to include at a minimum:

(a) Progress to date

(b) Expected progress forecast for one month period

(c) Review of issues, Site instructions, change orders

(d) Project cost update

(e) Quality Control results

(f) Site safety

D25.4 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

D26. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

D26.1 Further to C6.24, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

D27. SAFETY

D27.1 Further to C6, the Contractor shall be solely responsible for safety at the Site and for compliance with all laws, rules, regulations and practices required by the applicable safety legislation.

D27.2 The Contractor shall be solely responsible for securing the Site, and any existing facility thereon, and for the proper care and protection of the Work already performed.

D27.3 The Contractor shall do whatever is necessary to ensure that:

(a) no person, property, right, easement or privilege is injured, damaged or infringed by reason of the Contractor's activities in performing the Work;

(b) the health and safety of all persons employed in the performance of the Work or otherwise is not endangered by the method or means of its performance;

(c) adequate medical services are available to all persons employed on the Work and at all times during the performance of the Work;

(d) adequate sanitation measures are taken and facilities provided with respect to the Work.

(e) pedestrian and other traffic on any public or private road or waterway is not unduly impeded, interrupted or endangered by the performance or existence of the Work or Plant; and

(f) fire hazards in or about the Work are eliminated.

D28. SITE CLEANING

D28.1 The Contractor shall maintain the Site and the Work in a tidy condition and free from the accumulation of waste and debris, other than that caused by the City or by other contractors.

D28.1.1 As the Work progresses, the Contractor shall remove any Plant and Material not required for the performance of the remaining Work. He shall also remove waste and debris other

than that caused by the City or other contractors, and leave the Site and the Work clean and suitable for occupancy by the City unless otherwise specified.

D28.1.2 Total Performance shall not be considered to have been achieved until the Contractor has cleaned up the Site and has removed all Plant, surplus Material, waste and debris, other than that left by the City or other contractors.

D29. INSPECTION

D29.1 The Contractor shall arrange for any and all required inspections by outside agencies.

D29.2 The Contractor shall provide access to Work by the Contract Administrator at any point, notwithstanding access to areas where the Contract Administrator does not have appropriate safety training or personal protective equipment (ie. Trenching, confined spaces). Inspection by the Contract Administrator does not relieve the Contractor from responsibility of proper construction or workmanship and does not constitute acceptance of the Work.

D30. SUMMARY REPORTS

D30.1 Minimum requirements for bi-weekly summary reports shall include, but not be limited to , certification reports, testing reports, deficiency reports, progress reports which are required to be produced at all meetings and reflected within meeting minutes. Other items and the format may be added as defined by the Proponent in their proposal submission.

D31. DEFICIENCIES

D31.1 Further to C11, the Contract Administrator may order the Contractor to alter or improve his methods, to increase or improve his Plant, to furnish additional or more suitable Material, or to employ additional or more qualified labour if, at any time, the Contract Administrator determines that:

(a) the Work is not being, or will likely not be, performed satisfactorily; or

(b) progress is not being, or will likely not be, maintained in accordance with the work schedule.

D31.2 If the Work or any part thereof is taken out of the Contractor's control pursuant to C18.7, all Plant and Material, and the interest of the Contractor in all licences, powers and privileges acquired, used or provided by the Contractor under the Contract shall be assigned by the Contractor to the City without compensation to the Contractor.

D31.3 The City shall have the right to take possession of and use any of the Contractor’s material and property of every kind provided by the Contractor for the purpose of the Work, and to procure other Plant or Material for the completion thereof.

D31.4 When the Contract Administrator certifies that any Plant, Material or any interest of the Contractor referred to in D31.2, is no longer required for the purposes of the Work, or that it is not in the best interest of the City to retain that Plant, Material or interest, it shall revert to the Contractor.

MEASUREMENT AND PAYMENT

D32. PAYMENT

D32.1 Further to C12, the Contractor is encouraged to provide appropriate backup information for monthly progress reports on each item in Form B: Prices. This information will be used to assist the Contract Administrator in preparing the monthly progress estimate.

D32.2 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor’s banking institution.

WARRANTY

D33. WARRANTY

D33.1 Notwithstanding C13.2, the warranty period shall begin on the date of Substantial Performance and shall expire one (1) year thereafter unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D33.2 Notwithstanding C13.2 or D33.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Substantial Performance if:

(a) a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use; or

D33.2.1 In such case, the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

D33.2.2 Manufacturer's warranties for fixtures, process equipment, or other features that are shorter than that specified by D33.1 shall be extended by the Contractor to match the overall warranty period

D33.2.3 Further to C13.3, manufacturer's warranties for fixtures, process equipment, or other features that are longer than that specified by D33.1 shall be honoured and are exclusive to the overall warranty period.

D33.2.4 Refer to E15.9(e) for planting warranties.

D33.2.5 For seasonal equipment, components and systems which are not normally used continuously throughout the year, the warranty period shall include at least one full season of satisfactory operation

D33.3 Notwithstanding D33.1 through D33.2.5 the following is applicable to the mechanical and electrical specifications found in E24 and E25 respectively:

D33.3.1 Mechanical and Electrical Equipment Warranties

(a) No certificate issued, payment made, or partial or entire use of the system(s) by the City, shall be construed as acceptance of defective work or material.

(b) Include copies of all warranty and guaranty certificates and declarations in the Operating and Maintenance Manuals, in the appropriate sections.

(c) Provide a certificate or declaration indicating the warranty and conditions.

(d) Warranty satisfactory operation of all work and equipment installed under this contract. Repair or replace at no charge to the City, all items which fail or prove to be defective within the Warranty period, provided that the failure is not due to improper usage by the City. Make good all damages incurred as a result of the failure and of the repair of the system(s).

(e) The warranty shall be for all parts and labor. Do not expect any participation from the City's personnel in the correction of warranty related work.

(f) The City retains the right to demand, and to receive, an extension of the original construction warranty for any equipment, component or system which consistently fails to perform, or which requires repeated repair or adjustment.

(g) Wherever manufacturer's warranties in excess of the Contractor's warranty are provided, furnish the City with copies of the Certificates, dated and acknowledged, and inserted in the O and M Manuals. The Contractors Warranty shall include a list of the Manufacturer's extended warranties.

(h) Warranty work shall be carried out within a reasonable time period following the reporting of the problem. Should the repair time for any failed component be unreasonably long, as determined by the City, make alternate arrangements to have a temporary replacement component made available until such time that the original

component is repaired and re-installed. There shall be no additional cost to the City for any temporary replacement component or for any labor required to implement the work.

FORM H1: PERFORMANCE BOND
(See D17)

KNOW ALL MEN BY THESE PRESENTS THAT

_____
(hereinafter called the "Principal"), and

_____ ,
(hereinafter called the "Surety"), are held and firmly bound unto **THE CITY OF WINNIPEG** (hereinafter called the "Obligee"), in the sum of

_____

_____ dollars ($_____.____)

of lawful money of Canada to be paid to the Obligee, or its successors or assigns, for the payment of which sum the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has entered into a written contract with the Obligee for

RFP NO. 901-2011

DESIGN-BUILD OF TRANSIT BUS PARKING AND SERVICING GARAGE

which is by reference made part hereof and is hereinafter referred to as the “Contract”.

NOW THEREFORE the condition of the above obligation is such that if the Principal shall:

(a) carry out and perform the Contract and every part thereof in the manner and within the times set forth in the Contract and in accordance with the terms and conditions specified in the Contract;
(b) perform the Work in a good, proper, workmanlike manner;
(c) make all the payments whether to the Obligee or to others as therein provided;
(d) in every other respect comply with the conditions and perform the covenants contained in the Contract; and
(e) indemnify and save harmless the Obligee against and from all loss, costs, damages, claims, and demands of every description as set forth in the Contract, and from all penalties, assessments, claims, actions for loss, damages or compensation whether arising under "The Workers Compensation Act", or any other Act or otherwise arising out of or in any way connected with the performance or non-performance of the Contract or any part thereof during the term of the Contract and the warranty period provided for therein;

THEN THIS OBLIGATION SHALL BE VOID, but otherwise shall remain in full force and effect. The Surety shall not, however, be liable for a greater sum than the sum specified above.

AND IT IS HEREBY DECLARED AND AGREED that the Surety shall be liable as Principal, and that nothing of any kind or matter whatsoever that will not discharge the Principal shall operate as a discharge or release of liability of the Surety, any law or usage relating to the liability of Sureties to the contrary notwithstanding.

IN WITNESS WHEREOF the Principal and Surety have signed and sealed this bond the

_____ day of _____ , 20____ .

SIGNED AND SEALED
in the presence of:

_____
(Witness as to Principal if no seal)

_____
(Name of Principal)

Per: _____ (Seal)

Per: _____

_____
(Name of Surety)

By: _____ (Seal)
(Attorney-in-Fact)

FORM H2: IRREVOCABLE STANDBY LETTER OF CREDIT
(PERFORMANCE SECURITY)
(See D17)

_____
(Date)

The City of Winnipeg
Legal Services Department
185 King Street, 3rd Floor
Winnipeg MB R3B 1J1

RE: PERFORMANCE SECURITY – RFP NO. 901-2011

DESIGN-BUILD OF TRANSIT BUS PARKING AND SERVICING GARAGE

Pursuant to the request of and for the account of our customer,

_____ ,
(Name of Contractor)

_____
(Address of Contractor)

WE HEREBY ESTABLISH in your favour our irrevocable Standby Letter of Credit for a sum not exceeding in the aggregate

_____

_____ Canadian dollars.

This Standby Letter of Credit may be drawn on by you at any time and from time to time upon written demand for payment made upon us by you. It is understood that we are obligated under this Standby Letter of Credit for the payment of monies only and we hereby agree that we shall honour your demand for payment without inquiring whether you have a right as between yourself and our customer to make such demand and without recognizing any claim of our customer or objection by the customer to payment by us.

The amount of this Standby Letter of Credit may be reduced from time to time only by amounts drawn upon it by you or by formal notice in writing given to us by you if you desire such reduction or are willing that it be made.

Partial drawings are permitted.

We engage with you that all demands for payment made within the terms and currency of this Standby Letter of Credit will be duly honoured if presented to us at:

_____
(Address)

and we confirm and hereby undertake to ensure that all demands for payment will be duly honoured by us.

All demands for payment shall specifically state that they are drawn under this Standby Letter of Credit.

Subject to the condition hereinafter set forth, this Standby Letter of Credit will expire on

_____ .
(Date)

It is a condition of this Standby Letter of Credit that it shall be deemed to be automatically extended from year to year without amendment from the present or any future expiry date, unless at least 30 days prior to the present or any future expiry date, we notify you in writing that we elect not to consider this Standby Letter of Credit to be renewable for any additional period.

This Standby Letter of Credit may not be revoked or amended without your prior written approval.

This credit is subject to the Uniform Customs and Practice for Documentary Credit (1993 Revision), International Chamber of Commerce Publication Number 500.

_____
(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

FORM J: SUBCONTRACTOR LIST
(See D18)

DESIGN-BUILD OF TRANSIT BUS PARKING AND SERVICING GARAGE

Project Component	Name

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

E1.1 These Specifications shall apply to the Work.

E1.2 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.

E1.2.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at: http://www.winnipeg.ca/matmgt/Spec/Default.stm.

E1.2.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.

E1.2.3 Further to C2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.

E1.3 The following drawings are applicable to the Work:

Drawing No.	Drawing Name/Title
Figure 1	Existing Property Limits
Figure 2.1	Existing Base Plan
Figure 2.2	Existing Base Plan
Figure 3.1	Contour Plan
Figure 3.2	Contour Plan
Figure 4	Site Concept Diagram

E2. CITY SUPPLIED DATA

E2.1 The Contractor will ensure that work is coordinated and all provisions are made in the construction documents as required to incorporate the requirements, systems, technologies and general recommendations of the City as outlined in this RFP, and as discussed in the subsequent design and construction stages. To the degree that the scope of these services is limited, the selected Proponent will provide all additional selected Proponent services necessary to achieve the completion of the project.

E2.2 To the Contractor, the City will provide all available Site data and drawings that pertain to the project at hand including:

(a) CAD versions of drawings listed in E1.3

(b) CAD LBIS data

(c) Geo-corrected aerial photos of the Site

E2.3 No interpretation of the data will be provided. The data is provided as-is and no guarantee is made to its accuracy. It is the responsibility of the Contractor to verify the information provided, and seek out additional information as needed to complete the project.

E2.4 During the project the Contractor will specify and any additional geotechnical, survey, environmental, and/or site assessment information needed for design and secure these services as part of the project.

E3. VISION

E3.1 Vision Statement

E3.1.1 Our Vision for the Transit Bus Parking and Servicing Garage: A valued Transit resource which, while being seamlessly integrated into its host community of Lord Roberts, is an independent asset which blends into the urban fabric while serving its main purpose as a storage and maintenance garage, achieved through:

(a) INTEGRATION INTO THE COMMUNITY, which means that the size, massing, colours and textures of the building are made to blend into the size, scale, and materials for the existing neighboring residential properties. Other assets such as screening, building orientation, views into and out of the Site, Site signage and green elements such as berms, shrubs, trees and other natural decorative elements shall be used to achieve harmonization with the residential character of the community.

(b) INDEPENDANT AND ISOLATED FUNCTIONING, which means that the activities of the garage cannot impact upon the residential character of the existing neighbourhood. This is achieved by: shielding activities from view; assuring that no crossover exists between bus movement and local pedestrian or vehicular traffic; that noises and smells generated by the daily activities of the garage are shielded from the community; that staff activities, be they parking, access to Site or others, have no impact on the community.

(c) A HEALTHLY WORKING FACILITY that provides a healthy and comfortable environment for its staff. The facility must provide access to natural light, high levels of fresh clean air and create a positive and progressive working environment, taking special care to protect staff from the potential liabilities that may be caused by regular bus movement.

(d) SUSTAINABILITY of the overall design, construction and operation of the facility. The design must be efficient and flexible; recognizing and adapting to changes in bus management; be responsive to changes in bus maintenance protocols as well as the sizes and configurations of larger buses.

E4. KEY PROJECT OBJECTIVES

E4.1 The new Transit Bus Parking and Servicing Garage is intended to:

(a) be operated and staffed by City of Winnipeg Transit personnel.

(b) utilize a number of adaptable and flexible program spaces to support a wide range of work-related and wellness programs focused on operational efficiency and staff well-being.

(c) service and administrative space to accommodate up to 11 staff.

(d) driver waiting areas to accommodate up to 35 staff

(e) wellness related space to accommodate up to 60 staff

(f) function as a fully integrated facility, ideally with a single control point.

(g) employ consistent way-finding and signage throughout the facility.

(h) address accessibility and universal design in the all of the areas.

(i) incorporate LEED or Green technologies wherever possible.

(j) incorporate connections and site improvements within the Site limits.

(k) be considerate of the neighbouring residential community in the planning of the functionality of the complex.

(l) aesthetically integrate into the neighbouring community.

(m) limit disruption or disturbance of the neighbouring community throughout the construction phases of the project as well as through he ongoing operation of the facility.

E5. BUILDING CODE AND ZONING/BYLAW REQUIREMENTS

E5.1 The Contractor is responsible to check and adhere to all zoning, building, traffic, safety codes, rivers and streams approvals, elevation considerations, any and all by-laws, conditions or statutes in order to assure agreement and conformity with all pertinent requirements. The Contractor is required to make application and to obtain the required building permit. The cost of the permit is the responsibility of the Contractor.. .

E5.2 Specific consideration should be paid to providing a sound pollution management plan which exceeds the minimum standards set by City of Wpg, By-Laws. Such management should consider bus engines as generating a noise level of 102dBa of sound pressure at a distance of 10 feet from the bus engine compartment.

E6. CITY OF WINNIPEG UNIVERSAL DESIGN POLICY

E6.1 The City of Winnipeg has adopted their own Universal Design Policy and Guidelines. The Contractor will use these guidelines along with the National Building Code requirements on Barrier Free Design to develop their Proposal and subsequent contract documents. A copy of the Accessibility Standards can be found at the following url; http://www.winnipeg.ca/ppd/Universal_Design.stm

E7. OFFICE FACILITIES

E7.1 The Contractor shall supply a Site office facility meeting the following requirements:

(a) The office shall be conveniently located near the Site of the Work.

(b) The building shall have a minimum floor area of 15 square metres, a height of 2.4m with two windows for cross ventilation and a door entrance with a suitable lock.

.

(c) The building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between either 16-18^{o}C or 24-25^{o}C.

(d) The building shall be adequately lighted with fluorescent fixtures..

(e) The building shall be furnished with one desk, one meeting table, and minimum 8 chairs..

(f) A portable toilet shall be located near the field office building.

(g) The field office building and the portable toilet shall be cleaned on a weekly basis immediately prior to each Site meeting. The Contract Administrator may request additional cleaning when deemed necessary.

E7.2 The Contractor shall be responsible for all installation and removal costs, all operating costs, and the general maintenance of the office facilities.

E7.3 The office facilities will be provided from the date of the commencement of the Work to the date of Total Performance.

E8. GENERAL INSTRUCTIONS TO CONTRACTOR

E8.1 The project must be designed to the requirements defined in the Request for Proposal. Submissions shall be in accordance with the specifications for the design outlined herein.

E8.2 The design drawings and specifications shall be issued in metric notation unless directed otherwise.

E8.3 Four sets of the proposed plans and specifications developed for each review stage (consisting of at least but not limited to the authorization of the preliminary designs, detailed designs, and pre-permit package) must be submitted to the City one week prior to each review meeting. The review meetings will be organized by the Contractor and attended by the City, the Contract Administrator, and the Contractor.

E8.4 The Contractor will supply the City with monthly progress updates, inspection reports and testing results, or as indicated in their successful Proposal.

E8.5 The drawings, specifications, design, copyright, etc. of all the professional design disciplines for the design of this facility shall become the property of the City of Winnipeg.

E8.6 Any project identification sign proposed for the Site must be approved by the City.

E8.7 The Contractor shall not provide information whatsoever to any form of media, including but not limited to, radio, print, television, cyber, advertising, etc. without written permission of the City..

E9. NEIGHBOURHOOD FIT CRITERIA

E9.1 The Contractor shall address the following criteria in the Site and building design for the Transit Garage that will ensure the Site and building fit and respect the adjacent residential neighbourhood:

E9.1.1 Building and Site development along the entire Argue Street length of the subject property that **mitigates** sensory and environmental impacts to the adjacent neighbours, including noise, lighting, aesthetics, safety, traffic, and environmental considerations. Treatments may include:

(a) Landscaping, including a vegetated berm, discrete security fencing, site and sound attenuation, traffic calming;

(b) All lighting must be full cut-off;

(c) All site features must incorporate CPTED principles (Crime Prevention through Environmental Design);

(d) Location of all human elements of the Transit Garage, including office space, lunchroom, etc along the Argue Street frontage; and,

(e) Location of the building as far back from the Argue Street frontage as possible and location of all intensive site and building uses to the rear of the Site, including traffic flow, fuel servicing.

E9.1.2 Building and site development along the entire Argue Street length of the subject property that **enhances** the sensory and environmental impacts to the adjacent neighbourhood, including:

(a) Create a park-like setting on the property with the Argue Street frontage that may include a multi-use pathway, naturalized vegetation and native species, coniferous trees; and,

(b) Incorporate building articulation, an Argue Street façade, and/or raised ground plane to minimize building massing and create an interesting and aesthetically pleasing Argue Street frontage that relates to the neighbourhood.

E9.2 Plan and undertake a meeting with neighbourhood residents to present their design as submitted in the Request for Proposal. The meeting should include:

(a) Invitations to all residents west of Nassau and north of Morley, including the south side of Morley;

(b) Descriptions and illustrations of all Site and building design features that mitigate neighbourhood impacts and enhance neighbourhood amenities using a minimum of plan view, building elevations, and landscape plan from the design submission, and,

(c) If necessary an explanation as to why certain aspects of the Neighbourhood Fit Criteria could not be met, and

(d) A list and description of significant LEED qualifying features of the Site and building; and

(e) Provide an avenue for resident comments, such as feedback sheets, and compile a summary of such and submit to the City.

PROPERTY AND SITE

E10. SITE SERVICES

E10.1 It is the Contractors responsibility to determine all required site services and utilities with respect to the project. Services are part of the Contractor's cost.

E10.2 The overall site services may include, but are not limited to the following:

(a) water supply (both domestic and fire, with metering and backflow prevention);

(b) sewage disposal (both sanitary and storm, with oil separation);

(c) telephone system;

(d) natural gas (complete with metering);

(e) Cable/IT system connection to City;

(f) Electricity supply;

(g) Storm Water Management;

(h) Lighting/Security

(i) Automated Vehicle Access Control Gate at west end of Brandon Avenue

E10.3 It is the responsibility of the Contractor to arrange and procure service from outside agencies for the installation of site services where necessary.

E10.4 Where existing City services permit, the site services shall be separate from existing Transit buildings. This is to ensure this facility continues to operate in the event utilities are compromised at the existing buildings.

E10.5 No existing/proposed utilities shall be located under the building except required building services (sewer, water, etc.). To that end, there is an existing 219mm gas line that must be relocated away from the building footprint. The Contract Administrator has obtained a budget estimate of $95,000 from Manitoba Hydro to relocate the gas line assuming an alignment generally along Argue Street. The Contractor is to confirm and refine this estimate as part of their design. Manitoba Hydro contact is Tanis Guyot at (204) 360-7285.

E11. HAZARDOUS MATERIALS

E11.1 If asbestos or other hazardous materials are encountered during the Work of the Contract, the Contractor shall stop all work and notify the City immediately. Removal of hazardous materials shall be dealt with by the City and the Contractor shall await further instruction by the Contract Administrator.

E12. ENVIRONMENTAL REPORT

E12.1 This report has been issued for information only to assist in the understanding of impact to local soils from previous Site use. It is the responsibility of the Contractor to obtain further information as necessary to complete the project.

E12.2 The environmental investigation is included in Appendix B.

E13. GEOTECHNICAL REPORT

E13.1 This report has been issued for information only to assist in the understanding of local soils, and design of foundations. It is the responsibility of the Contractor to obtain further information as necessary to complete the project.

E13.2 The geotechnical investigation is included in Appendix C.

E14. LEGAL DESCRIPTION OF PROPERTY AND LIMITS OF WORK

E14.1 Property and parcel limits, including adjacent properties are shown in Figure 1. It is expected that the work Site will include construction on Parcel A and E of Plan No. 49761, and Parcel A8 of Plan No. 41210.

E14.2 A legal plan of Parcel A and E of Plan No. 49761 where most of the construction will be occurring was commissioned by the City in October 2011. The plan is shown in Appendix A – Legal Plan.

E14.3 The Contractor shall make an effort to contain the main building within Parcel A of Plan No. 49761, but it may be necessary to utilize Parcel A8 of Plan 41210 up to the rapid transit corridor, which is also owned by the City.

E14.4 It is not recommended that the building itself impinge on Parcel E of Plan No. 49761 as this has a different zoning designation, which would result in a zoning application.

E14.5 Parcel's not explicitly listed above are not available for this project, although some Site work will be necessary at the south end of Transit's existing maintenance garage area to connect internal roadways to the new Transit Garage Site. Reduction to the size of Transit's existing parking lot and Traffic Service's storage compound immediately west of the maintenance garage is expected, but should be minimized.

E14.6 The Contractor is responsible for all applications for changes to property limits, parcel changes, and building permits.

E15. LANDSCAPE ARCHITECTURE

E15.1 Aesthetics: Site landscape design should create a welcoming and aesthetically pleasing Site.

E15.2 Berming: Where berms are designed to enrich the Site context, such berms should be used to raise the ground plane and visually reduce the scale of the building.

E15.3 CPTED: Site planning should consider 'Crime Prevention Through Environmental Design' (CPTED) principles to ensure adequate sight lines and lighting to deter crime, vandalism and graffiti.

E15.4 Entrances: Main building entrance should include outdoor seating/waiting areas, bike racks, and waste receptacles.

E15.5 Maintenance: The entire outdoor planted area shall be designed to be completely maintenance-free.

E15.6 Paths: Where paths are designed, they shall be identified as walking paths, cycling paths or multi-modal paths and designed to respect governing criteria and by-law requirements for each application. It is acceptable to utilize portions of the existing adjacent Argue bike path and Rapid Transit Corridor paths.

E15.7 Parking

E15.7.1 General

(a) All fencing shall be designed to provide headlight shielding (light-proof fencing).

(b) All general lighting shall feature downcast fixtures with full cut-off shields to eliminate light trespass.

(c) Where parking block heater plugs are provided they shall be in weatherproof housing and on timers.

(d) Parking areas should be landscaped and screened from public streets in accordance with the most recent Zoning By-law 200/06.

(e) Parking stalls to be provided on site to meet anticipated building occupancy and programming requirements.

(f) Handicapped parking stalls and drop-off area/lane to be provided in close proximity to entrance.

E15.7.2 South Parking Lot

(g) Provide employee parking on south end of Site. Block heater plugs shall not be provided.

(h) South Parking Lot surface may be designed to incorporate Green technologies including, but not limited to, turf-stone and other permeable draining surfaces.

E15.7.3 Service Vehicle Parking

(i) Provide nominal parking for service and delivery vehicles, and/or visitors at appropriate locations. Suggested location shown on the Space Function Relationship Diagram in Appendix E.

E15.8 Planning: The Site shall be planned in such a way as to assure a net zero cut and fill profile. This is to say that the proposed site design shall be accomplished with no soils being removed from Site and no fill being brought to Site. It is highly recommended that available soil is used to create onsite berms.

E15.9 Planting: Where planting is designated, such planting shall conform to the following:

(a) The Site shall be designed to LEED Zero-Scape standards, meaning that no watering, beyond naturally occurring water and water features shall be accepted.

(b) Where trees are planted these shall be largely evergreen in order to maximize visual shielding and minimize the presence of autumn leaf drops.

(c) All planting shall be designated to a hardiness level of Zone 2. No non-native or invasive species shall be specified.

(d) No standard sod shall be used. All ground cover shall be either naturalized or native species. Where these species (i.e. prairie grasses) grow taller, it is recommended that these be used as natural buffers to help define the limits of public access to the Site.

(e) All planting materials to be warrantied for two full calendar years from summer installation. Any items which perish during this period shall be replaced, maintained for one additional year and

warrantied for one full year from the time of planting. Such warrantee and maintenance shall continue until such time as every planted item has survived one full growing season.

E15.10 Retention Ponds: Retention ponds shall be designed in order to promote percolation of rainwater and rainwater storage on site, thereby limiting the drainage load on the local combined sewer system.

E15.11 Site Design: Shall be designed in such a way as to promote on-site rainwater percolation, especially at locations where roof drains land as the site surface.

E15.12 Sound Dampening: Where possible, natural elements shall be used to dampen sources of noise, especially those areas closest to large transit garage doors and the turning aprons area located at either end of the proposed building.

E16. SITE DEVELOPMENT

E16.1 General

E16.1.1 Refer to Figure 4 – Site Concept Diagram for anticipated general layout of Site features.

E16.2 Vehicular Access

E16.2.1 Transit buses are not to access Site from Brandon Avenue, or other residential streets to the east of the Site.

E16.2.2 Transit buses to access existing Transit yards using extension of interior service road near existing maintenance building.

E16.2.3 Transit buses will utilize the recently constructed rapid transit corridor to enter or exit the City's road network. Buses will enter the Site from the Fort Rouge Station south of the Site on a one way lane. Buses will exit the north end of the Site and enter the rapid transit corridor at the extension of Brandon Avenue.

E16.2.4 Buses will enter the south end of the storage garage, and exit at the north. A contra-flow service lane shall be provided such that buses can then immediately re-enter the garage without driving around.

E16.2.5 Adequate bus aprons must be provided at the north and south end of the garage to facilitate numerous turning movements at any one time.

E16.2.6 A two-way roadway is to be provided on the west side of the building to allow traffic to access both ends of the Site without travelling through the building.

E16.2.7 Provide access through Site to VIA compound on west side for VIA personnel vehicles and emergency vehicle access. Maintain access at all times during project construction to the VIA compound. Temporary alternate crossing locations of the rapid transit corridor for VIA vehicles are permitted, but travel on the corridor itself is not.

E16.2.8 Consider and include any code requirements including the provision of a fire lane, if deemed necessary.

E16.2.9 Loading area(s) for supply and equipment deliveries, maintenance and emergency vehicles to be provided. Loading area for B-Train trucks to be provided at tank farm that does not impede bus circulatory traffic.

E16.2.10 The Contractor is responsible for the geometric design of all Site roadways, such that the existing Transit fleet, service vehicles, and future fleet vehicles such as articulated buses are able to navigate the Site at a reasonable speed. Typical Transit bus vehicle turning radii is provided in Appendix F. The information is provided as-is and it is the responsibility of the Contractor to confirm the turning radii and appropriate design vehicles.

E16.2.11 No vehicular access allowed along east side to minimize impact to adjacent residential neighbourhood

E16.3 Pedestrian Access

E16.3.1 Provide sidewalks/crosswalks from bus garage to north end of Site for Transit employees to access the existing Transit yards. Provide sidewalks/crosswalks to south end of Site for Transit employees to access south parking lot area. Provide sidewalk along west side of bus garage along two-way lane.

E16.4 Barriers and Fencing

E16.4.1 Secure Site on east side to minimize access points for pedestrians. The Site should be secured from the new access at the Fort Rouge Station, around the east side of the Site, to the vehicular access at the extension of Brandon Avenue.

E16.4.2 Full Site enclosure is not required, rather the intent is to minimize opportunities for pedestrians/vehicles to mistakenly access the Site, where the constant heavy traffic poses a significant danger.

E16.4.3 The east building face may be used a barrier. Naturalized barriers along the east side of the bus aprons and south parking lot at the south are encouraged.

E16.4.4 Enclose exterior mechanical equipment. Fencing shall be designed to discourage climbing onto Transit garage.

E16.4.5 Automated Vehicle Access Control Gate at west end of Brandon Avenue

(a) An automated gate, actuated by vehicle detection on both sides is required at the access point from Brandon Avenue. The intent of the gate is to provide a visual deterrent to vehicles that do not have business with either Transit or VIA. It is not intended to secure the Site. The gate shall have the ability to be disabled and operated manually in an emergency. The gate shall automatically open in the event of a power failure or other emergency.

(b) In addition to the City, VIA must be satisfied with the design and operation of the gate before construction commences.

(c) Preliminary discussions carried out by the Contract Administrator to date were with the following contact:

NAME	ORG/POSITION	PHONE	E-MAIL
Kyle Cuthbert	Via Rail (Wpg Maintenance Mgr)	(204) 924-4716	Kyle_Cuthbert@viarail.ca

(d) It is the responsibility of the City to produce and erect adequate signage for instruction on accessing VIA and the Transit Garage Site at the gate location (and other areas).

E16.5 Civil Infrastructure Design

E16.5.1 Design features in accordance with City of Winnipeg Standard Construction Specifications as noted in E1.2.1 such as, but not limited to:

(a) Gravity sewers

(b) Water services

(c) Manholes and catchbasins

(d) Pavement structures

(e) Earthwork

(f) Sidewalks

E16.5.2 Pavement structures shall be adequately designed to provide a minimum 30 years of service without major rehabilitation. Major rehabilitation is defined as requiring more than 10% of the pavement surface area to be reconstructed due to pavement cracking, rutting, or sub-base failure.

E16.5.3 Concrete pavements shall be plain dowelled concrete pavements, with concrete thickness a minimum of 230mm.

E16.5.4 Asphalt pavements shall not be permitted for any pavements utilized by buses or heavy service vehicles.

E16.6 Other

E16.6.1 Stockpiles of limestone sub-base left over from the Rapid Transit Corridor construction are available for use by the Contractor. They are generally located at the north end of the Site, south of Brandon Avenue.

E16.6.2 Channelized runoff such as from downspouts from the building shall not be directed across the surface of roadways/sidewalks as this may cause icing in winter.

E17. VIA RAIL WATER SERVICE METER BUILDING RELOCATION

E17.1 An existing facility housing the water meter and associated appurtenances for Via Rail's fire suppression system is located adjacent to Brandon Avenue at the north end of the Site. It is likely that this location will impede bus movements from the new Transit Garage.

E17.2 It is desirable to relocate the building. Preliminary discussions by the Contract Administrator with City and VIA stakeholders revealed that current practices by the City's Water and Waste Department would require a more robust design, and thus a larger building footprint. While the current infrastructure is adequate, it cannot be reused. Appendix D has schematic requirements of the new facility.

E17.3 The City and VIA have suggested two possible building locations. These are illustrated in Figure 4 - Site Concept Diagram. The Contractor may suggest alternate locations, but these must be approved by both stakeholders. The building shall be a standalone facility, separate from the Transit Bus Parking and Storage Garage.

E17.4 The building must be secure, but accessible by both the City and VIA personnel. The building must be located on City of Winnipeg property.

E17.5 The City will lead discussions with VIA regarding joint use/access of the building.

E17.6 Preliminary discussions carried out by the Contract Administrator to date were with the following contacts:

NAME	ORG/POSITION	PHONE	E-MAIL
Kyle Cuthbert	Via Rail (Wpg Maintenance Mgr)	(204) 924-4716	Kyle_Cuthbert@viarail.ca
Jason Enns	City of Wpg (W&W Dept)	(204) 986-2207	JEnns@winnipeg.ca

BUILDING

E18. FACILITY/BUILDING PROGRAM & ROOM DATA SHEETS

E18.1 Please note that the space summary below is to serve as a guideline only. It does not remove the responsibility of Bidders to exercise design due diligence in sizing of spaces. Areas described are measured from the inside face of either wall (or screen). Areas do not include allowances from chases or wall widths. Net to gross factor provides for circulation, chases and wall widths.

E18.2 Refer to the suggested Space Function Relationship Diagram in Appendix E.

Space Reference Number and Name	Approx. Square Feet
A-1.1 Bus Service Bays (approximately 295 x 25)	7,375
A-2.1 Main Garage (approximately 135 x 715)	96,525
A-2.2 Bus Parking Assignment Kiosk	40
A-3.1 Vehicle Inspection/Repair (approximately 280 x 20)	5,600
A-4.1 Storage	2,700
A-5.1 M&E Room	1,000

A-6.1 Service Lunchroom	500
A-6.2 Large Locker Room	300
A-6.3 Small Locker Room	200
A-7.1 Multi-use Space	1,500
A-7.2 Large Change Room	500
A-7.3 Small Change Room	300
A-8.1 Dispatch Office/Drivers Waiting Area	2,000
E-1.1 Tank Farm (exterior space, 3,625 sf)	
Subtotal	118,540
Net to Gross Factor 15%	17,781
Total Estimate Interior Space	136,321

A-1.1
ROOM DATA SHEET
Preliminary Programming

Space Ref No.	Space Name	No. of Units	Approx.Net Area	Net Total	Location / Adjac
A-1.1	Bus Service Bays	1	7,375 s.f.	1	BRT side/ A-2.1 & E-1.1

Activity Description

Fuelling, washing / drying, cleaning, fluid fill, fare revenue collection & advert replacement

Acoustic Treatment

Sound Iso. Yes **DBA** N/A
Sound Ins. Yes **Rev. Time** Reduced.

Occupancy / Loading Standards

Up to (5) five staff at various locations

Access

Locked exterior, unrestricted interior man doors, secured garage doors (2)

Security

Building perimeter security as per existing bus garage

Flexibility

Single purpose space

Structure

Height 20 clr u/s str **ft**
Clear Span minimal interior post or pillars
Floor Loading industrial **psf**
Spec. Req.
Structure must provide unobstructed single central bus lane

Environment

Temp. 18c **View Out Ext.** Yes
Humidity Std **View Out Int.** Yes
View In Yes
Spec. Req: Garage environment must have fume and odor control as well as humidity and temperature control

Equipment
Floor anchored vault, Computer / printer, supervisors Plexiglas protected low partition desk enclosure, Fluid fill station, Cyclone Cleaner, Bus Washer and Bus Dryer, fluids storage tanks in M&E room (see mechanical), 2 sets of single bus garage doors c/w automatic door actuators (see specs. & existing garage for complete list of requirements)

Electrical Services

Power Yes **TV** No
Comp Yes **AV** No
Tel Yes **PA** Yes
CCTV Yes **Wireless** Yes
Other for heavy draw equipment as specified

Illumination

Ft. Candles Std **Daylight** Yes
Flour. Yes **Quartz** No
Incand. No **Special** No
Other Task lighting at counter space as well as general lighting that will provide lighting between busses w/o causing canyon shadows

Room Finishes

Floor: sealed concrete
Walls: bottom 4 feet to be of robust construction, capable of resisting and redirecting a low speed bus impact
Ceiling: exposed

Mechanical Services
Hot W. Yes **Cold W.** Yes
Drain Floor Drain System c/w separator system **Exhaust** Diesel fume evacuation **Air** Std
Other 6 compr. air drops, 6 hose bibs, drinking fountain, Emerg. Shwr/Eye/Face washer, hand wash sink, Infra-red heaters, rainwater harvest.

Comments

Space divided into three sections, each of which must accommodate two busses in a single row: 1) fuel/fluids/revenue/advert. 2) cyclone cleaner, bus washer & dryer. 3) fluids storage All bidders will be responsible to attend existing bus garage to provide same type, quantity and quality of infrastructure, equipment, fitments, fixtures and furnishings as per existing bus garage unless otherwise specified. Fare collection safe to match existing. Heat traced slab at exit and 20 feet beyond exit c/w catch basin for melt water. Fluids storage must be in separate M&E room along outside wall within this space which must have outside access and acoustic separation.

A-2.1
ROOM DATA SHEET
Preliminary Programming

Space Ref No.	**Space Name**	**No. of Units**	**Approx.Net Area**	**Net Total**	**Location / Adjac**
A-2.1	Main Garage	1	96,525 s.f.	1	Center of complex adj to all spaces

Activity Description Storage of busses	**Acoustic Treatment** **Sound Iso**. N/R **DBA** N/A **Sound Ins.** Std **Rev. Time** reduced	**Occupancy / Loading Standards** Up to (5) five staff at various location and a max. of 35 drivers
Access Locked exterior, unrestricted interior man doors, secured garage doors	**Security** Building perimeter security as per existing bus garage	**Flexibility** Single purpose space
Structure **Height** 20 clr u/s str **ft** **Clear Span** minimal interior post or pillars **Floor Loading** industrial **psf** **Spec. Req.** One single central row of columns in direction of bus travel acceptable.	**Environment** **Temp.** 18c **View Out Ext.** Yes **Humidity** Std **View Out Int.** Yes **View In** Yes **Spec. Req:** Garage environment must have fume and odor control as well as humidity and temperature control	**Equipment** Numbered single width bus garage doors c/w automatic door actuators (i.e. non-contact such as ultrasonic). All doors to permit forklift access.
Electrical Services **Power** Yes **TV** No **Comp** Yes **AV** No **Tel** No **PA** Yes **CCTV** Yes **Wireless** Yes **Other** for heavy draw equipment as required	**Illumination** **Ft. Candles** Std **Daylight** Yes - clerestory **Flour**. Yes **Quartz** No **Incand**. No **Special** No **Other** General lighting that will provide lighting between busses w/o causing canyon shadows	**Room Finishes** Floor: sealed concrete Walls: bottom 4 feet to be of robust construction, capable of resisting and redirecting a low speed bus impact Ceiling: exposed
Mechanical Services **Hot W**. Yes **Cold W.** Yes **Drain** Floor Drain c/w Separator system **Exhaust** Diesel fuel evacuation **Air** Std **Other** Providing winter heat curtains and summer A/C. Provide hose bibs and Compressed Air Outlets.	**Comments** Capacity to store 135 standard length busses or equivalent combination articulated/std. bus. Current optimized configuration use to illustrate footprint: 9 rows of 15 busses each w 5 foot wide cross-aisle every third bus, 10 foot clearance form both entry and exit doors to closest bus, 5 foot wide aisle full length on side of garage. Three sided concrete-built sand storage area at exit door location (see existing main base garage). Design must permit that functioning bus can manoeuver around bus stalled at any doorway.	

A-2.2
ROOM DATA SHEET
Preliminary Programming

Space Ref No.	**Space Name**	**No. of Units**	**Approx.Net Area**	**Net Total**	**Location / Adjac**
A-2.2	Bus Parking Assignment Kiosk	1	5 x 8 = 40 s.f.	1	BRT entry drive and apron

Activity Description Provide space for one staff to direct buses to appropriate garage door	**Acoustic Treatment** **Sound Iso**. Std **DBA** N/A **Sound Ins.** Std **Rev. Time** N/A	**Occupancy / Loading Standards** Up to 1 staff per shift x 3 shifts
Access Unrestricted	**Security**	**Flexibility** Single purpose space
Structure **Height** 8 **ft or m.** **Clear Span** N/A **Floor Loading** 100 **psf** **Spec. Req.**	**Environment** **Temp.** 20c **View Out Ext.** Yes **Humidity** Std **View Out Int.** n/a **View In** Yes **Spec. Req:**	**Equipment** One build-in counter
Electrical Services **Power** Yes **TV** No **Comp** Yes **AV** No **Tel** Yes **PA** Yes **CCTV** No **Wireless** Yes **Other**	**Illumination** **Ft. Candles** Std **Daylight** Yes **Flour**. Yes **Quartz** No **Incand**. No **Special** No **Other**	**Room Finishes** Floor: sheet vinyl Walls: sheet drywall (painted) Ceiling: exposed
Mechanical Services **Hot W**. No **Cold W.** No **Drain** No **Exhaust** Std **Air** Std **Other**	**Comments** Small inexpensive relocatable kiosk built w/o foundation, directly onto concrete apron. Must have openable windows that allow occupant to open and call out garage door numbers to drivers of passing buses approaching from two directions.	

A-3.1
ROOM DATA SHEET
Preliminary Programming

Space Ref No.	**Space Name**	**No. of Units**	**Approx.Net Area**	**Net Total**	**Location / Adjac**
A-3.1	Vehicle Inspection / Repair	1	5,600 s.f.	1	LRC side/ A-2.1

Activity Description Limited maintenance & offline repair, secure cleaning, application of vinyl wrap advert.	**Acoustic Treatment** **Sound Iso**. Yes **DBA** N/A **Sound Ins.** Yes **Rev. Time** Reduced	**Occupancy / Loading Standards** Up to (3) three staff at various locations
Access Locked exterior, unrestricted interior man doors, secured garage door (1)	**Security** Building perimeter security as per existing bus garage	**Flexibility** Single purpose space
Structure **Height** 20 clr u/s str **ft** **Clear Span** minimal interior post or pillars **Floor Loading** industrial **psf** **Spec. Req.** Structure must provide unobstructed single central bus lane	**Environment** **Temp.** 18c **View Out Ext.** Yes **Humidity** Std **View Out Int.** Yes **View In** Yes **Spec. Req:** Garage environment must have fume and odor control as well as humidity and temperature control	**Equipment** (see specs. & existing garage for complete list of requirements). Doors to permit forklift access.
Electrical Services **Power** Yes **TV** No **Comp** Yes **AV** No **Tel** Yes **PA** Yes **CCTV** No **Wireless** Yes **Other** for heavy draw equipment as specified. 3 welding plugs	**Illumination** **Ft. Candles** workshop **Daylight** Yes - clerestory **Flour**. Yes **Quartz** No **Incand**. No **Special** No **Other** Task lighting at counter space as well as general lighting that will provide lighting between busses w/o causing canyon shadows	**Room Finishes** Floor: sealed concrete Walls: bottom 4 feet to be of robust construction, capable of resisting and redirecting a low speed bus impact Ceiling: exposed
Mechanical Services **Hot W**. Yes **Cold W.** Yes **Drain** Floor Drain System c/w separator system **Exhaust** Diesel fume evacuation **Air** Std **Other** Providing winter heat curtains and summer A/C. High mounted tailpipe exhaust system on rail (Neiderman), handwash sink	**Mechanical Services (cont'd):** Local fume extraction unit, 4 Hose Bibs 4 compressed air drops, drinking fountain, Emerg. Shwr/eye/face washer, Bulks fluids, waste oil and fluids dispensing reel type system **Comments** Space could be 20 feet wide to accommodate a sing row of busses with access on both sides. 6 compressed air drops @ 40' apart. Outdoor drive-in.	

A-4.1
ROOM DATA SHEET
Preliminary Programming

Space Ref No.	Space Name	No. of Units	Approx.Net Area	Net Total	Location / Adjac
A-4.1	Storage	1	2,700 s.f.	1	LRC side/ A-2.1

Activity Description Storage of garage related items	**Acoustic Treatment** **Sound Iso**. No **DBA** N/A **Sound Ins.** No **Rev. Time** No	**Occupancy / Loading Standards** Unoccupied
Access From interior	**Security** Locked	**Flexibility** Single purpose space
Structure **Height** 20 clr u/s str **ft** **Clear Span** N/R **Floor Loading** industrial **psf** **Spec. Req.**	**Environment** **Temp.** 20c **View Out Ext.** No **Humidity** Std **View Out Int.** No **View In** No **Spec. Req:** Fume and Odor control as well as Temp control	**Equipment** Double Doors for forklift access. Compressor to serve bldg..
Electrical Services **Power** Yes **TV** No **Comp** No **AV** No **Tel** No **PA** Yes **CCTV** No **Wireless** Yes **Other**	**Illumination** **Ft. Candles** Std **Daylight** No **Flour**. Yes **Quartz** No **Incand**. No **Special** No **Other**	**Room Finishes** Floor: sealed concrete Walls: bottom 4 feet to be of robust construction, capable of resisting and redirecting a low speed vehicle impact Ceiling: exposed
Mechanical Services **Hot W**. No **Cold W.** Yes, washdown hose & spigot **Drain** Floor Drain System c/w seperator system **Exhaust** Std **Air** Std **Other** 6 Compressed air drops & 6 hose bibs	**Comments** Access from inside only.	

A-5.1
ROOM DATA SHEET
Preliminary Programming

Space Ref No.	**Space Name**	**No. of Units**	**Approx.Net Area**	**Net Total**	**Location / Adjac**
A-5.1	M&E Room	1 (as req'd)	1,000 s.f.	1	LRC side/ A-2.1

Activity Description Location for Mechanical & Electrical equipment	**Acoustic Treatment** **Sound Iso**. No **DBA** N/A **Sound Ins.** Yes **Rev. Time** No	**Occupancy / Loading Standards** Unoccupied
Access Locked exterior door set	**Security** Locked	**Flexibility** Single purpose space
Structure **Height** 20 clr u/s str **ft** **Clear Span** Yes **Floor Loading** industrial **psf** **Spec. Req.**	**Environment** **Temp.** 20c **View Out Ext.** No **Humidity** Std **View Out Int.** No **View In** No **Spec. Req:** Temperature Control	**Equipment** Double Doors for forklift access. Mechanical and Electrical equipment and compressors as required by individual system design. HWT, cable trays, etc.
Electrical Services **Power** Yes **TV** No **Comp** Yes **AV** No **Tel** No **PA** Yes **CCTV** Yes **Wireless** Yes **Other**	**Illumination** **Ft. Candles** Std **Daylight** No **Flour**. Yes **Quartz** No **Incand**. No **Special** No **Other**	**Room Finishes** Floor: sealed concrete Walls: bottom 4 feet to be of robust construction, capable of resisting and redirecting a low speed vehicle impact Ceiling: exposed
Mechanical Services **Hot W**. Yes **Cold W.** Yes **Drain** Floor Drain system c/w separator system **Exhaust** Std **Air** Std **Other** 4 Compr. air drops, hose bibs HVAC req'd for Emerg. Generator, free cooling for M&E rooms, Combustion air for fuel fired appliances.	**Comments** Location for City's Fibre optic, Metasys & Pegasus systems. Location for following systems: - Compressed air system(s) - Domestic Hot Water System(s) - Water Service Entry/Water Meter - Fire Sprinkler tree(s) - Indoor Bulk Fluids Storage - Possible Air Handling Units/Fans Other secondary IT or M&E rooms or closets as req'd by design	

A-6.1
ROOM DATA SHEET
Preliminary Programming

Space Ref No.	Space Name	No. of Units	Approx.Net Area	Net Total	Location / Adjac
A-6.1	Service Lunchroom	1	500 s.f.	1	LRC side/A-2.1, 6.2 ,6.3

Activity Description Provide space for garage staff to take lunch & work breaks	**Acoustic Treatment** **Sound Iso**. N/R **DBA** N/A **Sound Ins.** Std **Rev. Time** N/A	**Occupancy / Loading Standards** Up to 5 staff per shift x 3 shifts & shift overlap – total 8 staff seating (2 table of 4)
Access Unrestricted	**Security**	**Flexibility** Single purpose space
Structure **Height** 8 **ft or m.** **Clear Span** N/A **Floor Loading** 100 **psf** **Spec. Req.**	**Environment** **Temp.** 20c **View Out Ext.** Yes **Humidity** Std **View Out Int.** No **View In** Limited size **Spec. Req:** Temperature Control	**Equipment** Lower and upper kitchen style cabinetry. Full size fridge, sink, microwave
Electrical Services **Power** Yes **TV** No **Comp** No **AV** No **Tel** Yes **PA** Yes **CCTV** No **Wireless** Yes **Other** For appliances	**Illumination** **Ft. Candles** Std **Daylight** Yes **Flour**. Yes **Quartz** No **Incand**. No **Special** No **Other** Task lighting at counter space	**Room Finishes** Floor: sheet vinyl Walls: sheet drywall (painted) Ceiling: acoustic tile
Mechanical Services **Hot W**. Yes **Cold W.** Yes **Drain** Kitchen drain **Exhaust** Std **Air** Std **Other** Water & drain for vending machines and countertop coffee machine Energy Recovering Ventilator	**Comments** Space should have direct access to exterior and have exterior eating area. Vending Machine Area	

A-6.2
ROOM DATA SHEET
Preliminary Programming

Space Ref No.	Space Name	No. of Units	Approx.Net Area	Net Total	Location / Adjac
A-6.2	Large Locker Room	1	300 s.f.	1	LRC side / A-6.1

Activity Description Provide space for garage staff to change into work clothes	**Acoustic Treatment** **Sound Iso**. Std **DBA** N/A **Sound Ins.** Std **Rev. Time** N/A	**Occupancy / Loading Standards** Up to 5 staff per shift x 3 shifts
Access Unrestricted	**Security**	**Flexibility** Single purpose space
Structure **Height** 8 **ft or m.** **Clear Span** N/A **Floor Loading** 100 **psf** **Spec. Req.**	**Environment** **Temp.** 20c **View Out Ext.** No **Humidity** Std **View Out Int.** No **View In** No **Spec. Req:** Temperature & Humidity Control	**Equipment** 15 Full Height 16 inch wide lockers, one shower, water closets, urinals and sinks as per code
Electrical Services **Power** Yes **TV** No **Comp** No **AV** No **Tel** No **PA** Yes **CCTV** No **Wireless** Yes **Other** Electric in-floor heat	**Illumination** **Ft. Candles** Std **Daylight** Yes **Flour**. Yes **Quartz** No **Incand**. No **Special** No **Other**	**Room Finishes** Floor: sheet vinyl (heated) Walls: sheet drywall (painted) Ceiling: acoustic tile
Mechanical Services **Hot W**. Yes **Cold W.** Yes **Drain** for fixtures **Exhaust** Std **Air** Std **Other** Drinking fountain, Energy Recovering Ventilator	**Comments** Natural Clerestory lighting. Space could have direct access to Service Lunch Room. If Multi Use Space is eliminated from project, washroom functions of this space to remain to serve Dispatch Office requirements. Lockers and shower facilities only to be removed.	

A-6.3
ROOM DATA SHEET
Preliminary Programming

Space Ref No.	Space Name	No. of Units	Approx.Net Area	Net Total	Location / Adjac
A-6.3	Small Locker Room	1	200 s.f.	1	LRC side / A-6.1

Activity Description Provide space for garage staff to change into work clothes	**Acoustic Treatment** **Sound Iso**. Std **DBA** N/A **Sound Ins.** Std **Rev. Time** N/A	**Occupancy / Loading Standards** Up to 1 staff per shift x 3 shifts
Access Unrestricted	**Security**	**Flexibility** Single purpose space
Structure **Height** 8 **ft or m.** **Clear Span** N/A **Floor Loading** 100 **psf** **Spec. Req.**	**Environment** **Temp.** 20c **View Out Ext.** Yes **Humidity** Std **View Out Int.** No **View In** No **Spec. Req:** Temperature & Humidity Control	**Equipment** 3 Full Height 16 inch wide lockers, one shower stall, water closets and sinks as per code
Electrical Services **Power** Yes **TV** No **Comp** No **AV** No **Tel** No **PA** Yes **CCTV** No **Wireless** Yes **Other** Electric in-floor heating	**Illumination** **Ft. Candles** Std **Daylight** Yes **Flour**. Yes **Quartz** No **Incand**. No **Special** No **Other**	**Room Finishes** Floor: sheet vinyl Walls: sheet drywall (painted) Ceiling: acoustic tile
Mechanical Services **Hot W**. Yes **Cold W.** Yes **Drain** for fixtures **Exhaust** Std **Air** Std **Other** Drinking fountain, Energy Recovering Ventilator	**Comments** Natural Clerestory lighting. Space could have direct access to Service Lunch Room. Benches in front of locker as required. If Multi Use Space is eliminated from project, washroom functions of this space to remain to serve Dispatch Office requirements. Lockers and shower facilities only to be removed.	

A-7.1
ROOM DATA SHEET
Preliminary Programming

Space Ref No.	Space Name	No. of Units	Approx.Net Area	Net Total	Location / Adjac
A-7.1	Multi-use Space	1	1,500 s.f.	1	LRC side/A-2.1, 7.2 ,7.3

Activity Description Provide space for all transit staff to exercise and attend fitness classes	**Acoustic Treatment** **Sound Iso**. High **DBA** N/A **Sound Ins.** High **Rev. Time** N/A	**Occupancy / Loading Standards** Up to 10 individuals using fitness equipment or 30 individuals taking fitness classes
Access Unrestricted	**Security**	**Flexibility** Single purpose space
Structure **Height** 10 **ft or m.** **Clear Span** N/A **Floor Loading** 100 **psf** **Spec. Req.**	**Environment** **Temp.** 20c **View Out Ext.** Yes **Humidity** Std **View Out Int.** No **View In** Yes **Spec. Req:** Temperature Control	**Equipment** Cushioned aerobic sports flooring, mirrors on two walls, vending machine for juices.
Electrical Services **Power** Yes **TV** Yes **Comp** Yes **AV** No **Tel** Yes **PA** Yes **CCTV** Yes **Wireless** Yes **Other** 4 duplex outlets along front window c/w coaxial (tv) cabling	**Illumination** **Ft. Candles** Std **Daylight** Yes **Flour**. Yes **Quartz** No **Incand**. No **Special** No **Other**	**Room Finishes** Floor: sports floor (above) Walls: sheet drywall (painted) Ceiling: acoustic tile
Mechanical Services **Hot W**. No **Cold W.** Yes **Drain** Fountain only **Exhaust** High air exchange **Air** Std **Other** Drinking Fountain w ater bottle spigot, ventilated stereo shelf	**Comments** Bottom of windows at 4' above ff. Vertical blinds on windows. Space should have direct access to exterior. Recessed, vented and lockable stereo recess. 4 recessed ceiling mounted speakers wired back to stereo recess. Shelf for pre-moistened equipment wipes.	

A-7.2
ROOM DATA SHEET
Preliminary Programming

Space Ref No.	**Space Name**	**No. of Units**	**Approx.Net Area**	**Net Total**	**Location / Adjac**
A-7.2	Large Change Room	1	500 s.f.	1	LRC side / A-7.1

Activity Description Provide space for transit staff to change and shower	**Acoustic Treatment** **Sound Iso**. Std **DBA** N/A **Sound Ins.** Std **Rev. Time** N/A	**Occupancy / Loading Standards** Up to 40 staff
Access Unrestricted	**Security**	**Flexibility** Single purpose space
Structure **Height** 8 **ft or m.** **Clear Span** N/A **Floor Loading** 100 **psf** **Spec. Req.**	**Environment** **Temp.** 20c **View Out Ext.** Yes **Humidity** Std **View Out Int.** No **View In** No **Spec. Req:** Temperature & Humidity Control	**Equipment** 40 Half Height 16 inch wide lockers, 10 showers, water closets, urinals and sinks as per code
Electrical Services **Power** Yes **TV** No **Comp** No **AV** No **Tel** No **PA** Yes **CCTV** No **Wireless** Yes **Other** Electric in-floor heat	**Illumination** **Ft. Candles** Std **Daylight** Yes **Flour**. Yes **Quartz** No **Incand**. No **Special** No **Other**	**Room Finishes** Floor: sheet vinyl (heated) Walls: sheet drywall Ceiling: sheet drywall
Mechanical Services **Hot W**. Yes **Cold W.** Yes **Drain** for shower **Exhaust** Std **Air** Std **Other** Drinking Fountain, Energy Recovering Ventilator	**Comments** Natural Clerestory lighting. Space could have direct access to Multi-use Space. Benches in front of lockers as required.	

A-7.3
ROOM DATA SHEET
Preliminary Programming

Space Ref No.	**Space Name**	**No. of Units**	**Approx.Net Area**	**Net Total**	**Location / Adjac**
A-7.3	Small Change Room	1	300 s.f.	1	LRC side / A-7.1

Activity Description Provide space for staff to change and shower	**Acoustic Treatment** **Sound Iso**. Std **DBA** N/A **Sound Ins.** Std **Rev. Time** N/A	**Occupancy / Loading Standards** Up to 20 staff
Access Unrestricted	**Security**	**Flexibility** Single purpose space
Structure **Height** 8 **ft or m.** **Clear Span** N/A **Floor Loading** 100 **psf** **Spec. Req.**	**Environment** **Temp.** 20c **View Out Ext.** Yes **Humidity** Std **View Out Int.** No **View In** No **Spec. Req:** Temperature & Humidity control	**Equipment** 20 Half Height 16 inch wide lockers, 5 showers, water closets, urinals and sinks as per code
Electrical Services **Power** Yes **TV** No **Comp** No **AV** No **Tel** No **PA** Yes **CCTV** No **Wireless** Yes **Other** Electric in-floor heat	**Illumination** **Ft. Candles** Std **Daylight** Yes **Flour**. Yes **Quartz** No **Incand**. No **Special** No **Other**	**Room Finishes** Floor: sheet vinyl (heated) Walls: drywall Ceiling: drywall
Mechanical Services **Hot W**. Yes **Cold W.** Yes **Drain** for fixtures **Exhaust** Std **Air** Std **Other** Drinking fountain, Energy Recovering Ventilator	**Comments** Natural Clerestory lighting. Space could have direct access to Multi-use Space	

A-8.1
ROOM DATA SHEET
Preliminary Programming

Space Ref No.	Space Name	No. of Units	Approx.Net Area	Net Total	Location / Adjac
A-8.1	Dispatch Office / Drivers Waiting Area	1	2,000 s.f.	1	LRC side / A-2.1

Activity Description Dispatch office space (to assign drivers their routes) & area for drivers awaiting start of shift	**Acoustic Treatment** **Sound Iso.** Std **DBA** N/A **Sound Ins.** Std **Rev. Time** N/A	**Occupancy / Loading Standards** Up to 4 office staff & up to 40 driver waiting to depart or relaxing after a shift
Access Unrestricted	**Security** N/A	**Flexibility** Single purpose space
Structure **Height** 10 **ft or m.** **Clear Span** N/A **Floor Loading** std office **psf** **Spec. Req.**	**Environment** **Temp.** 20c **View Out Ext.** Yes **Humidity** Std **View Out Int.** Yes **View In** Yes **Spec. Req:** Temperature Control	**Equipment** Lounge - Lower and upper kitchen style cabinetry. 2 Full size fridge, sink, 2 microwave, coffee maker, 2 televisions, 2 water fountains. Office – bulletin space and corkboard (to match existing)
Electrical Services **Power** Yes **TV** Yes **Comp** Yes **AV** No **Tel** Yes **PA** Yes **CCTV** Yes (office) **Wireless** Yes **Other** For appliances. 3 data connections in office.	**Illumination** **Ft. Candles** Std **Daylight** Yes **Flour.** Yes **Quartz** No **Incand.** No **Special** No **Other** Task lighting at counter space	**Room Finishes** Lounge & dispatch area floor: sheet vinyl Office, relaxation lounge & private office floor: carpet Walls: drywall Ceiling: acoustic tile
Mechanical Services **Hot W.** Yes **Cold W.** Yes **Drain** Kitchen drain **Exhaust** Std **Air** Std **Other** Water & drain for Vending Machine and countertop coffee machine, 2 drinking fountains	**Comments** This area is to have four cells. A 3 person office(approx. 350 sf) component with 15' long millwork counter, lost and found locker and 135 pigeon-hole slot cabinet for driver assignments (replicate similar millwork at existing installation), a relaxation lounge 250 sf (adjacent to main staff lounge but acoustically isolated) and a private office (100sf. which can be located off corridor) and staff lounge (1300sf) located close to lockers so staff can use these for day use. Staff lounge to have areas for table seating, 3 online computer stations, area for 4 vending machines (c/w power) and games area (for foosball, etc.). Visually screened outdoor smoking area 25' from bldg. and NOT along path others must use to access bldg.	

E-1.1
ROOM DATA SHEET
Preliminary Programming

Space Ref No.	Space Name	No. of Units	Approx.Net Area	Net Total	Location / Adjac
E1.1	Tank Farm	1	3,625 s.f.	1	BRT side/A-1.1 & A-2.1

Activity Description Storage of Diesel Fuel and Windshield Washer Fluid. Refueling and replenishing windshield washer reservoirs with wiper fluid (winter) or water (summer) all piped to indoor fill stations	**Acoustic Treatment** **Sound Iso**. N/A **DBA** N/A **Sound Ins.** NO **Rev. Time** N/A	**Occupancy / Loading Standards** 1 staff & 1 driver
Access Unrestricted	**Security** All reservoirs and tanks are secured with locking mechanisms.	**Flexibility** Single purpose space
Structure **Height** N/A **ft or m.** **Clear Span** N/A **Floor Loading** N/A **psf** **Spec. Req.**	**Environment** **Temp.** N/A **View Out Ext.** N/A **Humidity** N/A **View Out Int.** N/A **View In** Required **Spec. Req:** Must meet all hazardous materials storage and containment requirements.	**Equipment** Two (2) x 50,000 litre above ground diesel fuel storage tanks c/w all curbing, spill containment/capture and pumphouse. One (1) 2,500 litre windshield fluid storage tank. (see mech. Specs.)
Electrical Services **Power** Yes **TV** _____ **Comp** No **AV** Yes **Tel** No **PA** Yes **CCTV** Yes **Wireless** Yes **Other**	**Illumination** **Ft. Candles** N/A **Daylight** Yes **Flour**. N/A **Quartz** N/A **Incand**. N/A **Special** Yes **Other** Exterior Grade Wall packs w cut-offs or equivalent. Lighting at tank fuelling refill location for evening reloading of tanks.	**Furnishing**
Mechanical Services **Hot W**. N/A **Cold W.** N/A **Drain** Draining tank base with separator system. **Exhaust** N/A **Air** N/A **Other**	**Comments** Hazardous materials spill containment. Spill containment at tank and bus fill areas.	

E19. BUILDING GENERAL REQUIREMENTS

E19.1 Building Services Division is responsible for the short and long term maintenance of all City-owned facilities which emphasizes maximum life cycling of equipment. The various building codes are considered to be a minimum guideline. Where feasible, upgrade of equipment and construction details is most desirable for all design considerations.

E19.2 The City of Winnipeg is currently committed to a 10 year (2002 to 2012) Manitoba Hydro Power Smart Program for all potential utility savings (electrical, natural gas or water). All equipment specified must be reviewed by Manitoba Hydro prior to tender and installation. Specific information and details will be provided during project process.

E19.3 Unless otherwise specified within this RFP, the Contractor shall, at a minimum replicate the systems, including, but not limited to mechanical systems, fluid fill/movement systems, desk millwork details of the existing Fort Rouge Transit Base.

E19.4 Consideration of ease of maintenance and accessibility for all equipment installed shall be assessed and form part of the review criteria.

E19.5 Beyond information provided to the Proponent as part of the RFP process, the Contractor shall be required to obtain all necessary certificates e.g. “Building Location Certificate”, “Occupancy Load Certificate” “Occupancy Load Card”, “Surveyor’s Certificate”, etc,.

E19.6 Provide specific information on quality control testing, i.e. concrete, compaction, pile inspection, pressure testing etc.

E19.7 Beyond Lifecycle and replacement assessment, vandalism resistance, climbability resistance and graffiti control and removal shall be considered for selection of all building components.

E19.8 Graffiti control and removal shall be considered for selection of all building components.

E19.9 A Building Commissioning audit shall be performed upon completion of the facility by a professional recognized agency. Mechanical and electrical Building Systems Commissioning shall be based on the National Environmental Balancing Bureau (NEBB Procedural Standards 2000).

E19.10 Upon completion of project, update or develop a new Fire Safety Plan to meet current Fire Department regulations shall be provided and this plan(s) located within facility at all required locations.

E19.11 “Friendly Finishes” shall be incorporated where it is practical and economically feasible for all aspects of the project.

E20. LEED SILVER CERTIFICATION PROCESS

E20.1 Achieve a minimum level of LEED Silver Certification.

E20.2 Lead the project though the entire process of LEED certification, including but not limited to project registration, documentation, application and submittals, and any credit interpretations and audits. The Contractor shall be solely responsible to collect and remit all required information from all parties.

E20.3 The Contractor is responsible for all costs associated with the certification process.

E20.4 The Contractor must provide independent third party services including, but not limited to, Building Energy Modeling and enhanced commissioning.

E20.5 An amount of $250,000.00 shall be held back pending award of the final LEED Silver Certification of the project. This amount shall, however, be gradually disbursed in accordance to the percentage of completion of certification duties. Upon submission of the completed Accreditation Package to CaGBC, only the last $50,000 shall be withheld until final certification is awarded.

E21. ARCHITECTURAL

E21.1 New contemporary standards of energy efficiency (LEED) and facility security must be incorporated.

E21.2 A critical functional component shall be an emergency power supply.

E21.3 Mandatory requirements of ASHRAE 90.1 and 189.1 (latest edition) will be fully incorporated within the design.

E21.4 Construction of the new facility shall be coordinated in order to not interfere with normal operations of the existing Site operations to the north.

E21.5 Non climbable Structure (minimize areas of building that can be climable)

E21.6 Min. finished ceiling heights – interior 9'-0" (to reduce vandalism)

E21.7 Min. exterior height of building – 10'-0" (to reduce vandalism)

E21.8 Sump Pit to be complete with high level alarm (PIL alarm switch). Ensure adequate numbers of sump pits and minimize long lengths of weeping tile.

E21.9 All exterior windows shall be commercial grade aluminum or fiberglass

E21.10 Optimize natural light with high level perimeter windows and sky lights

E21.11 Steel Door & Frames – heavy-duty grade, minimum 14 gauge welded seams for frames, 16 gauge welded seams for doors (mechanical seams not acceptable).

E21.12 Main Garage Doors: one insulated metal garage door per track, minimum 12' wide, each door prominently numbered on the exterior of the building above the door with numbers starting at 1 on the west side of the parking garage. Every door must be equipped with a warning light with operations as follows:

(a) Door closed, lights off

(b) Door operating in opening or closing cycle, red light on

(c) Door fully open and in hold open position, green light on

(d) Doors to include an auto setting for normal operations with the automatic door openers. Also to include a manual setting that would allow a person to set the door to open or closed from the controller inside the building adjacent to the door. Each door must include a power kill switch with provision for a lock at the door for servicing

E21.13 "Best Lock" Exterior, "Schlage" locks Interior, all equipment and fencing that require padlocks shall incorporate the use of "Master Lock" model 3KA.

E21.14 The keying system for the facility shall be standardized for use of master and sub-master keys for appropriate personnel usage. All keying to match Transit's existing MP35A system.

E21.15 Where drywall panels are specified for high traffic areas, corridors or wall surfaces that are subjected to vandalism, Abuse-resistant VHI Abuse Resistant drywall panel shall be used. Fiberock brand

E21.16 Sound attenuation consideration shall be provided for MPR, Lounge, mechanical areas, etc.

E21.17 Toilet partitions shall be solid core, approved manufacturers : Comtec series S200, Capitol Partitions Poly-Pro P3 - Congress Basic, Santana Poly-Mar HD or equal.

E21.18 Sheet Vinyl flooring shall be Tarkett brand, rolled flooring, mechanically seam sealed with integrated 4 inch base. Where used in wet areas, floor shall be slip resistant and heated.

E21.19 All concrete floors shall be sealed.

E21.20 Ceilings in wet areas shall be painted with moisture and mildew resistant paint.

E21.21 Exposed ceilings shall have acoustic treatment.

E21.22 Millwork shall be plastic laminate on 5/8 inch plywood substrate, melamine is not permitted.

E21.23 Change Rooms and Locker rooms Rooms – collapsible clothes hooks to be provided.

E21.24 Contractor to provide 10% inventory of replacement parts and materials for all interior and exterior finishes as applicable. Items to be turned over to client upon Substantial Completion.

E21.25 Provide appropriate sized access doors for servicing of mechanical components.

E21.26 Storage for ad material on washrack. – Require space and racking for interior and exterior ads.Bus Maintenance, Service and Storage

E21.26.1 The following elements are included in, but not limited to, in the design of the Maintenance section.

(a) **Vehicle Inspection and Repair:**

(i) Drive through track for light maintenance (i.e. A Inspection including oil drainage. Minimum capacity three 12-metre, or two 19-metre articulated buses

(ii) Common Tools Lock-up/display board area

(iii) Mechanic tool boxes area

(iv) Wheel (w tire) Storage Rack area

(v) Storage cupboards area

(vi) Work benches area

(vii) Grinder, parts washer, area

(viii) Air drops, water, electrical outlets, communications, computer connections as per Room Data Sheets

(ix) Technical manuals area

(x) Tail pipe exhaust system

(xi) Plumbed eye wash station and emergency shower

(xii) Drinking fountain

(b) **Bus Service Bay**

(i) One drive through Service Bays configured similar to existing north garage with one common bus washer

(ii) Adequate space along one side for storage of bulk fluids, materials and supplies required in the service bay

(iii) Fuelling Area in service bay

(iv) Storage for advertising materials – interior and exterior

(v) Cleaning Area

(vi) Fare Drop Vault Access

(vii) Fluid dispensing reel type system

(viii) Compressed air drops and hose bibbs

(ix) Water recycle system w dissolved salts removal capability

(x) One bus washer, (no high pressure sprays to prevent water ingress through windows and seams) – PSECO Model DT412

(xi) Ross& White Cyclone Vacuum Bus Interior Cleaning System (as per attached specifications)(includes air filtration and recycling)

(xii) Drying system for buses exiting bus washer

(xiii) Water fountain

(xiv) Plumbed eye wash station and emergency shower

(c) **Bus Storage Garage**

(ii) Accommodate a minimum of 135 12-metre transit buses

(iii) Configured to accommodate three 12-metre, or two 19-metre buses (with bike racks) between emergency cross aisles

(iv) A maximum of 1 column line near the centre of the bus storage area, but preferably no columns. Columns are to be spaced to allow buses to change tracks through the column line.

(v) Adequate space at the entrance and exit for door controller (IR/sonar/induction loop, etc. rather than wand for control to door).

(vi) Wide tracks for easy access between the buses

(vii) Air drops, electrical outlets and hose bibbs

E21.26.2 The Bus Bays, Main Garage and Vehicle Inspection/Repair section contains key spatial requirements.

(a) Fleet bus quantity

(i) Current - 135 conventional 12-metre transit buses

(ii) Future – some 12-metre buses will be replaced with 19 metre articulated buses.

(b) Bus envelope sizes for design purposes

(i) A nominal 12-metre (40 feet) bus with bike rack, mirrors and roof mounted Air Conditioning is 12.8m L x 3m W x 3.4m H.

(ii) A nominal 19m/60' articulated bus w bike rack, mirrors and roof mounted A/C is 19.4m L x 3m W x 3.4m H.

(iii) Also see Appendix F for design purposes.

(c) Height clearances at ceiling: Bus storage area – 4.5 metres minimum

(d) Door height – To match existing doors. Consider high speed doors for service lane entrances and exits.

(e) Emergency cross walks – 1.5 metres wide.

(f) Clearance (non cross walk) between the front and rear of buses in the storage area – 1 metre.

(g) Width of tracks in bus storage area – See Appendix F.

(h) Length clearances must accommodate the 12.8 metres conventional buses, and the 19.4 metre articulated buses in all bays and areas.

(i) All corridor turns, whether in the repair, the service, the storage or the exterior areas must accommodate the 12.8m conventional buses, and 19.4m articulated buses without reversing.

(j) The Storage Room should have, if practical, an overhead door and proper road access to the loading area from the outside for deliveries with a docking capability to unload from high trucks

(k) The configuration of the Vehicle Inspection/Repair area should be designed for easy access to the tools and equipment along the wall.

(l) The configuration of the Bus Service Bays should be designed for the systematic functions of the garage and located in the following order from beginning to end: Fuelling / Cleaning / Washing / Drying.

E22. ROOFING COMPONENTS

E22.1 If used, all flat roof construction shall be TORCH-ON roofing.

E22.2 If Metal Roof construction used, it shall incorporate a snow/ice guard system to prevent avalanching to ground.

E22.3 Provide commercial grade eaves troughs and downpipes.

E22.4 After placement of mechanical equipment on roof curbs, flood test the equipment to ensure watertight seal.

E22.5 THALER Jack Stacks shall be used on all plumbing vents.

E22.6 Roof may be designed to promote rainwater capture and cycling into bus wash system.

E22.7 Proponent shall engage an independent roofing consultant to review proposed design and provide assessment of design to City. Upon acceptance of design, roofing consultant to inspect works in progress (minimum 5 inspections) as well as upon Substantial Completion of roofing and shall provide reports and photographic documentation to the City. Such works found to be unacceptable or deficient shall be remedied to the satisfaction of the roofing consultant and such costs associated to the works borne by the Proponent.

E23. STRUCTURAL BASE BUILDING REQUIREMENTS

E23.1 Geotechnical Report

E23.1.1 Proponents may reference the Geotechnical Investigation Information attached to this RFP in Appendix C – Geotechnical Investigation.

E23.1.2 Each Proponent is responsible to engage their own geotechnical engineer, licensed to practice in the Province of Manitoba, to prepare a geotechnical report and system design recommendations that address the piling system alternatives, slab / subgrade design and pavement design. A copy of the design recommendations, sealed by the geotechnical engineer, is to be included in the Proponent's RFP submission.

E23.1.3 The Proponent's attention is drawn to the existence of various fill materials, organics and silt.

E23.2 Foundations

E23.2.1 Piling type and design parameters to be in accordance with the recommendations of the geotechnical report and accepted industry standards.

E23.2.2 Unless the Proponent can demonstrate strong reasons to the contrary, the new building shall be supported by a single foundation type. (ie. do not mix pile types).

E23.2.3 Provide cast-in-place reinforced concrete pile caps under all interior columns.

E23.2.4 Provide cast-in-place reinforced concrete grade beams under all perimeter walls and interior load bearing walls. Include pilasters where required to accommodate perimeter columns. Minimum grade beam dimensions to be 200mm wide x 600 mm deep --- greater dimensions may be required to suit specific Site conditions or structural details).

E23.2.5 Provide cast-in-place reinforced concrete pits and trenches as per project requirements and the Room Data Sheets. Pit and trench walls and bases to be minimum 150 mm thick.

E23.2.6 Void form to be as per recommendations of the geotechnical report. Void form material to be cardboard or compressible polystyrene product.

E23.2.7 Sub-surface drainage system (ie weeping tile) to be as per recommendations of the geotechnical report (if required). Coordinate with architectural and mechanical disciplines.

E23.3 Floor Slabs

E23.3.1 Refer to floor loading outlined in "Design Loads" below.

E23.3.2 Slab-on-grade floor systems, if proposed, shall be designed in accordance with the current edition of "Concrete Floors on Ground" by PCA (Portland Cement Association – EB075). Subgrade Modulus "k" shall be as determined by the Proponents geotechnical engineer, and must be consistent with the subgrade preparation and engineered fill outlined within the Proponent's design.

E23.3.3 Minimum slab-on-grade floor thickness to be 150 mm.

E23.3.4 Proposal submission to clearly spell out depth of excavation, sub-grade preparation, geo-textile (if required), silt removal (if required), sub-base parameters, compaction requirements, concrete thickness, concrete strength and reinforcement.

E23.3.5 Provide non-metallic trowelled-in hardener to all floor slabs subjected to vehicle traffic. Hardener to provide, as a minimum, protection against moderate abrasion, moderate impact, and resistance to oils and greases.

E23.3.6 Provide structural slabs to all office/administrative areas.

E23.3.7 Acceptable structural slab systems include: i) cast-in-place reinforced concrete over void form, ii) cast-in-place reinforced concrete over crawl space, iii) precast concrete (ie hollowcore with topping) over crawl space, or iv) approved equivalent "all-concrete" system.

E23.4 Concrete Strengths (minimum) & Exposure Class

Pile Caps	32 MPa	Class S-2
Grade Beams	25 MPa	Class F-2

Pits & Trenches	32 MPa	Class C-2
Slab on Grade	32 MPa	Class C-2
Exterior Aprons	32 MPa	Class C-2
Sidewalks	32 MPa	Class C-2
Topping	25 MPa	Class N

E23.5 Framing – Administration Area

E23.5.1 Acceptable structural framing elements include: steel deck, open web steel joists, structural steel beams, structural steel columns, precast concrete systems ("all precast" or in combination with steel), cast-in-place concrete, or load-bearing concrete block walls.

E23.5.2 Wood framing and/or light gauge steel structures are not acceptable.

E23.5.3 Refer to Room Data Sheets for minimum clear heights and any clear span / column free area requirements.

E23.6 Framing – Bus Garage Area

E23.6.1 Acceptable structural framing elements include: steel deck, open web steel joists, structural steel beams, structural steel columns, precast concrete systems ("all precast" or in combination with steel), or cast-in-place concrete.

E23.6.2 Pre-engineered steel buildings, wood framing and/or light gauge steel structures are not acceptable.

E23.6.3 All wall panels within 1200 mm of the finished floor, are to be of robust construction, capable of withstanding the low speed impact of a transit bus.

E23.6.4 All structural components in close proximity to typical bus traffic areas (including Overhead doors, interior columns, etc.) are to be protected by minimum 150mm concrete filled steel bollards. Bollards to be embedded in concrete below grade (not bolted to top of floor).

E23.6.5 Lateral bracing located to accommodate building functions.

E23.6.6 Refer to Room Data Sheets for minimum clear heights and any clear span / column free area requirements.

E23.7 Design Loads

E23.7.1 NOTE: ALL BUILDING COMPONENTS TO BE DESIGNED TO ACCOMMODATE "NORMAL" IMPORTANCE FACTORS

E23.7.2 Administration Area

(a) Main Floor (all areas)
  (i) Live Load = 4.8 kPa
  (ii) Live Load = 7.2 kPa storage space

(b) Second Floor (if applicable)
  (i) Live Load = 2.4 kPa general office space
  (ii) Live Load = 4.8 kPa corridors, stairs, washrooms, and assembly areas
  (iii) Live Load = 7.2 kPa storage space

E23.7.3 Bus Garage Area

(a) Ground Floor (all areas) --- design to the greater of:
  (i) Live Load = 24.0 kPa, or
  (ii) Bus Axle Loads (refer to typical bus axle dimensions in Appendix F) = 110.0kN, or
  (iii) Maximum point load of 11.0 kN

E23.8 General

E23.8.1 Roof Snow Load as per National Building Code.

E23.8.2 Snow drift loads as per National Building Code and Structural Commentaries.

E23.8.3 Wind loads as per National Building Code.

E23.8.4 Seismic loads not applicable --- as per Manitoba Amendment 2(39) to 2010 NBC.

E23.8.5 Refer to Room Data Sheets for any special floor loading or other unique requirements. Include all required house-keeping pads, pits, trenches, oil/water separators, etc. Coordinate with other disciplines.

E23.9 Means of marking bus parking lanes to be permanently embedded in concrete.

E24. MECHANICAL

E24.1 Definitions

E24.1.1 Notwithstanding any definition elsewhere in the contract documents, wherever the term "Sub-Contractor" is used in the Mechanical specification section, it means the firm having a contract with the "Contractor" to perform, supervise and coordinate all work of that particular Division. This Sub-contractor shall be wholly responsible to the "Contractor" for all work of that Division.

E24.1.2 Notwithstanding any definition elsewhere in the contract documents, wherever the term "Provide" is used in relationship to equipment, piping etc., in this Section, it means "Supply, Install and Connect".

E24.1.3 Whenever "Drawings and Specifications" are referred to in these documents, it means "the Contract Drawings and Specifications" (including all addenda and post contract revisions) of all Disciplines (Architectural, Structural, Mechanical and Electrical).

E24.2 Trade Definitions

E24.2.1 All work called for in the Contract Documents shall be considered to be within the scope of the Contract, and shall be the responsibility of the Contractor.

E24.2.2 The arrangement of the Drawings and Specifications into Divisions, Sections, and Trades is purely arbitrary, with the sole intention of clarifying the scope and content of the work required to complete the project. The actual division of the work amongst the sub-contractors shall be the responsibility of the Contractor, and the actual division of the work between the sub-sub-contractors shall be the responsibility of the sub-contractors.

E24.2.3 The Contractor, at his option and as per his contracts with the Sub-Contractors, may delegate responsibility to the Sub-contractors for the division of the work.

E24.2.4 The Sub-contractors, at their option and as per their contracts with the sub-sub-contractors, may delegate responsibility to the sub-sub-contractors for the division of the work.

E24.2.5 Sections of the Mechanical specifications, and specific but arbitrary responsibility divisions noted in the Mechanical Specifications, are not intended to delegate functions nor to delegate work to any specific trade, but may be useful to the Contractor or Sub-contractor when dividing the work amongst the Trades and Sub-trades.

E24.2.6 In the event of a dispute regarding the responsibilities of the various trades and sub-trades, the Contractor and Sub-contractors may request information or a recommendation from the Contract Administrator. However, the Contractor and Sub-contractor shall be responsible for determining the final division of work.

E24.3 Scope of Work

E24.3.1 Provide (Design, Supply, Install, Connect, Start Up and Commission) a ‘Design Build’ package of mechanical systems to provide the Plumbing and HVAC requirements for the proposed building as described herein.

(a) The Mechanical Contractor will be responsible for designing and laying out the mechanical systems subject to the Contract Administrator’s review.

(b) Include all items required to provide complete working systems.

(c) ensure complete compliance with the City’s objectives prior to Proposal submission

(d) The selected techniques, methods of fabrication and installation, and the size of the labor force shall be suitable to meet the completion schedule.

(e) The contractors shall be responsible for determining the most appropriate construction techniques and methods of installation for their portions of the work.

(f) Ensure compliance with all parts B, D, and E of this RFP.

E24.4 General Requirements

E24.4.1 Allow for general Site conditions and duties as per the requirements set forth for the General Contractor, especially with regard to Safety, Health and LEED Requirements, and as supplemented below:

E24.4.2 Codes, Permits, Fees and Inspections

(a) Comply with the most stringent requirements of the latest editions of the applicable building codes, local regulations, by-laws, C.S.A. standards, the requirements of the Authorities Having Jurisdiction, Federal, Provincial and Municipal Codes, and the applicable standards of the Underwriters' Association. These codes and regulations constitute an integral part of these specifications.

(b) In case of conflict, the codes take precedence over the Contract Documents. In no instance reduce the standard or scope of work or intent established by the drawings and specifications by applying any of the codes referred to herein.

(i) It is expected that the minimum code compliance will be superseded by specific requirements laid out in this RFP and in subsequent documentation. The City's requests will not supersede code compliance.

(c) Before starting any work, submit the required number of copies of Drawings and Specifications to the Authorities for their approval and comments. Comply with any changes requested as part of the contract, but notify the Contract Administrator immediately of such changes, for proper processing of these requirements. Prepare and furnish any additional drawings, details or information as may be required. Information such as heat loss calculations, and other data that may be required, must be provided. Should the authorities require the information on specific forms fill in these forms by transcribing the information as required.

(d) Apply for, obtain, and pay for all required permits, licenses, inspections, examinations, and fees.

(e) Arrange for the inspection of all the work by the Authorities Having Jurisdiction over the work. On completion of the work, present to the Contract Administrator the final unconditional certificate of approval of the inspecting authorities. When the Authorities Having Jurisdiction do not normally issue certificates, provide a declaration confirming that the Authorities have inspected and accepted the work

E24.4.3 Coordination and Cooperation

(a) All contractors are expected to co-operate fully with all other contractors whenever necessary.

E24.4.4 Shop Drawings

(a) Provide preliminary information as requested during the Request for Proposal process.

(b) Provide Complete Shop Drawings after award of Contract. Shop Drawings shall include all necessary information for a complete review. Shop Drawings shall be provided in a timely fashion.

(c) Shop Drawing Review:

(i) This review by the Contract Administrator is for the sole purpose of ascertaining conformance with the general design concept.

(ii) This review shall not mean that the Contract Administrator approved the detail design inherent in the shop drawings, the responsibility for which shall remain with the Contractor/Sub-contractor submitting same, and such review shall not relieve the Contractor/Sub-contractor of his responsibility for errors or omissions in the shop drawings, or of his responsibility for meeting all the requirements of the contract documents. The contractors are responsible for confirming and correlating dimensions

at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation, and for coordination of the work of all sub-trades, as well as compliance with codes and inspection authorities such as C.S.A., etc.

- Bind one complete set of final shop drawings in each operating and maintenance instruction manual.

E24.4.5 Shop Drawings shall include:

(a) Project Information such as Name and Address

(b) Contractor Information such as Name, Address, Phone Numbers

(c) Supplier Information such as Name, Address, Phone Numbers

(d) A set of Specifications, hardbound, based on the NMS numbering system

(e) A set of drawings, sealed and signed by an Engineer in Good Standing with APEGM, suitable for Permit Application and Construction.

(i) Fire Protection Drawings under separate seal will be acceptable.

(f) A complete List of all Equipment and Devices.

(i) Provide Manufacturers information for a complete review.

(ii) Equipment Identification shall use the same System Name and Identification Number as the Contract Documents.

(iii) Equipment Information may contain standard manufacturer's brochures, catalogue sheets, schematics, diagrams performance charts, illustrations, etc., but must have:

- Information which is not applicable crossed off
- Available listed options which are being provided clearly marked

(g) A complete controls system description.

(h) Manufacturer's information shall include all Equipment Information required for the Contract Administrator to assess the suitability such as:

(i) Make, Model, Size

- including schedules where numerous similar items are provided

(ii) Physical Data such as:

- Dimensions
- Materials
- Weights
- Installation Requirements
- Installation Clearances

(iii) Performance Data such as:

- Volume
- Pressure
- Capacity
- Performance Curves (with specified performance clearly marked)

(iv) Motor Data such as:

- Horse Power
- Voltage/Phases
- Efficiency

(v) Specialty Items such as:

- Bearings
- Filters
- Internal Controls including safety lockouts
- Safety Items such as relief valves and regulators
- Options

(vi) Wiring and Control Diagrams

E24.4.6 As-Built Drawings

(a) Shop Drawings shall be revised at the end of the Project to indicate the 'As Constructed' installation, and shall be dated and labeled as such.

(b) On two sets of white prints, as the job progresses, mark the prints to accurately indicate the installed work. Have the white prints available for inspection at the Site at all times, and present for scrutiny at each job meeting.

(c) At the completion of the work, submit these sets of "as-built" drawings as part of the requirements of E27.1.2.

E24.4.7 Supervision

(a) Maintain at this job site qualified personnel and supporting staff with proven experience in erecting, supervising, testing and adjusting projects of comparable nature and complexity.

(b) Supervision personnel and their qualifications are subject to the approval of the Contract Administrator.

E24.4.8 Engineering Site Review

(a) The Sub-Contractor's work will be reviewed periodically by the Contract Administrator, or their representatives, solely for the purpose of determining the general quality of the work. Guidance will be offered to the contractors in regard to interpretation of plans and specifications, to assist them in carrying out the work. Inspections, and directives given to the contractors, do not relieve the Contractor, and his agents, servants and employees, of his responsibility to provide the work in all of its parts, in a safe and workmanlike manner, and in accordance with the plans and specifications, nor impose upon the Contract Administrator or their representatives, any responsibility to supervise or oversee the erection or installation of any work.

(b) The Contract Administrator will issue inspection reports and deficiency lists from time to time. All deficiencies shall be cleared up to the satisfaction of the Contract Administrator within a reasonably short time.

E24.4.9 Temporary and Trial Usage

(a) The City has the privilege of trial usage of mechanical systems, or parts thereof, for the purpose of testing and learning the operational procedures.

(b) Assist in the trial usage over a length of time, as deemed reasonable by the Contract Administrator, at no extra cost, and do not waive any responsibility because of trial usage.

(c) Trial usage shall not be construed as acceptance by the City.

(d) Provide and pay for all testing required on the system components where, in the opinion of the Contract Administrator, Manufacturer's ratings or specified performance is not being achieved.

E24.4.10 Temporary Heating and Hoarding

(a) Coordinate and Cooperate with all other Contractors in order to provide Temporary Heating and Hoarding as required.

(b) Do not use any of the new permanent mechanical systems during construction unless specific written approval is obtained from the Contract Administrator.

(c) The use of permanent facilities for temporary construction service shall not affect, in any way, the commencement date of the warranty period.

(d) If the permanent mechanical systems are used during construction, the equipment and systems shall be cleaned and refurbished as required to bring them back to a new/unused condition.

E24.4.11 Standard of Equipment, Materials and Components

(a) Single Source Manufacturer/Supplier

(i) In general, in order to allow for competitive bidding, all manufacturers/suppliers are considered equal, to the point that their equipment is suitable for the intended purpose. To this effect, most equipment Specifications are written generically.

(ii) Certain equipment has been specified by Make and Model in order to match the existing equipment on site, in order to facilitate continuity of the existing maintenance requirements.

- This equipment must be included in the Bidder’s base price.

- Alternates to this equipment must be clearly identified as an alternate, with a price value for its substitution.

(b) All equipment, materials and components shall be new and of first class quality.

(c) All equipment, materials and components shall be of proven design, and of current models with published ratings, for which replacement parts are available.

(d) All equipment, materials and components shall be tested, certified and labeled by ULC and/or CSA for use in Canada. The certification and labeling shall be appropriate for the intended function of the item being supplied, as dictated by the relevant codes and standards.

(e) All similar equipment and or materials shall be by the same manufacturer.

(f) The Maximum Design Noise Levels shall be as per ASHRAE Standards.

(i) All equipment, components and systems shall be selected and installed with the intent of not exceeding these noise levels.

(ii) Where the equipment, components and systems fail to meet the noise level criteria, modifications shall be made as required, at no additional cost to the City.

(g) If required, as determined from the review of the preliminary balancing report, changes to the equipment drives shall be carried out in order to provide balanced systems consistent with the design intent.

(h) Use only Copper, Bronze, Brass and Stainless Steel (no iron) for materials coming in contact with Domestic Water Systems.

E24.4.12 Acceptable Manufacturers

(a) Trane, Lennox, Carrier, Bryant, Modine, Engineered Air, AAON, Keeprite, York.

(i) A minimum 10 year warranty on all equipment installed.

(ii) All equipment shall have lockable doors or vandal proof locking devices to prevent unauthorized access.

E24.4.13 Wiring And Electric Motors

(a) Electrically operated equipment shall bear a C.S.A. approval label.

(b) Electric power wiring for equipment provided by mechanical trades is to be provided by the Electrical Contractor.

(c) Electric power and control wiring for equipment provided by mechanical trades shall meet the requirements of the Electrical Section Specifications, and shall be provided in a continuous system of EMT conduit, or waterproof conduit where applicable.

(d) Generally all motors 375 watt (1/2 H.P.) and smaller to be 120 volt, single phase, 60 cycle. Motors shall meet NEMA standard for maximum sound level ratings under full load and have a 1.15 service factor. Single phase motors to be permanent split capacitor type.

(e) All motors 375 watts to 37.5 kilowatts (1/2 Hp to 50 Hp) supplied under this contract must meet or exceed the following minimum criteria:

(i) Shall be Cema Design Normal torque, low starting current with Class B insulation for operation in maximum ambient of 40°C (105°F).

(ii) Bearings to be rated for minimum B-10 life of 20,000 hours with a V-belt drive.

(iii) Service factor shall be 1.15.

(iv) Motors shall be drip proof unless otherwise specified.

E24.4.14 Air Filters

(a) Unless specifically noted otherwise, all filters shall be replaceable panel type, for slide-in application, into galvanized steel racks.

(i) All equipment outdoor filters shall be of a permanent type, washable and long lasting under normal usage.

- Provide complete spare set for changeout/washdown purposes.

(b) All filter panels shall be pleated media type in cardboard frames.

(c) All filter media shall be constructed of unbreakable synthetic micro-fibres in 3 stage variable density media.

(d) Filters shall be listed at least Class II UL flammability.

(e) No filter shall contain asbestos, micro-glass of Urea-formaldehyde.

E24.4.15 Piping

(a) Use all metallic piping, except where explicitly required for a specific fluid.

E24.4.16 Valves

(a) It is generally preferable that ball valves and butterfly valves be used in place of gate valves providing they meet the pressure, temperature, and fluid handling requirements of the system.

(b) Provide Drain Down valves with caps and chains.

(c) Natural Gas, Propane and Fuel Oil valves shall be approved plug type.

(d) Provide appropriate Back Flow Prevention where required.

(e) Provide appropriate Pressure and Temperature Relief where required.

E24.4.17 General Installation

(a) Install equipment, ductwork, conduit and piping in a workmanlike manner to present a neat appearance and to function properly. Install ducts and pipes parallel and perpendicular to building planes. Install piping and ductwork concealed in chases, behind furrings or above ceilings. Install exposed systems neatly, and group to present a neat appearance.

(b) Install all equipment and apparatus requiring wiring, maintenance, adjustment or eventual replacement with due allowance therefore.

(c) Leave space clear and install all work to accommodate future materials and/or equipment, and to accommodate equipment and/or materials supplied by other trades. Verify spaces in which work is to be installed. Install pipe runs etc., to maintain maximum headroom and clearances and to conserve space in shaft and ceiling spaces.

(d) Install control devices to guarantee proper sensing. Shield elements from direct radiation and avoid placing them behind obstructions.

(e) Provide access doors as required to install, maintain and adjust equipment and controls.

(i) Size access doors to provide adequate access and commensurate with the type of structure and architectural finish.

(ii) Ensure proper rating of doors in fire separations.

(f) Provide Pipe Accessories such as Strainers, Thermometers, Pressure Gauges, Dielectric Couplings, Unions, Air Vents, Drains, Flow Measurement Venturis, etc.

(i) Air Vents

- Provide air vents on closed-loop water piping at all high points in the system and at each piece of equipment. Provide shut off cocks to automatic vents.
- Provide automatic air vents on piping mains except where a possibility from water damage would occur, in which case, use manual vents.
- Provide manual air vents at each piece of equipment.

(g) During construction, open ended Piping and Ductwork shall be temporarily capped to prevent the entry of dirt and debris.

(i) On completion, piping systems shall be flushed to remove any foreign material, and ductwork shall be Vacuum Cleaned.

(h) Provide Sleeves where pipes and ducts pass through walls and floors. Seal sleeved openings as required, and provide escutcheon plates.

(i) Replace all work unsatisfactory to the Contract Administrator without extra cost.

E24.4.18 Piping Installation

(a) Install all piping in the best workmanlike manner in accordance with the best practices of the trade.

(b) Install brass and copper pipe tubing free from surface damage. Replace damaged pipe or tubing.

(c) Lay copper tubing so that it is not in contact with dissimilar metal and will not be kinked or collapsed.

(d) Where steel piping is required to be buried, apply two coats of flint-guard 410-02 (or equal) bituminous paint to all buried surfaces after assembly and testing.

(e) Install groups of piping parallel to each other on trapeze hangers, spaced to permit service access, application of insulation, and identification.

(f) Install piping straight, parallel and close to walls and ceilings, with required pitch. Use manufactured fittings for direction changes.

(g) Install piping to avoid any interference with the installation of equipment, other piping, ducts etc. Where it is necessary to offset piping to avoid obstructions, use 45 degree rather than 90 degree elbows.

(h) Provide long turn pipe fittings not less than pipe wall thickness. Provide line size tees, and where branch lines are more than two sizes smaller than the main, weldolets may be used.

(i) Allow for Piping Expansion and Contraction.

(j) Install systems so that they can be thoroughly drained and all air eliminated. Install eccentric reducers in horizontal piping to permit drainage and eliminate air pockets.

(k) Provide hose end valves at all low points for complete system drainage.

(l) Slope all condensate drip drains, and provide suitable cleanouts on every other change in direction.

(m) Ream the ends of pipes and tubes before installation. Clean the ends of pipes/tubing, and the recesses of fittings to be brazed or soldered. Assemble joints without binding.

(n) Make all threaded pipe joints using a thread paste or teflon tape applied to the male thread. Use only non-toxic lubricants which are non-injurious to the gasket material, and suitable for the service for which the pipe is to be used.

(o) Place all valves and specialties to permit easy operation and access.

(p) Install gauges and thermostats to permit easy observance.

(q) Where pipe sizes differ from connection sizes of equipment, install reducing fittings close to equipment. Reducing bushings are not permitted.

(r) Regulate and adjust all packing glands, regulating valves and relief valves on completion of the work.

E24.4.19 Piping System Tests

(a) Do not insulate piping systems until completed, perfected, and proven tight.

(b) Should leaks develop in any part of the piping system, remove and replace defective sections, fittings, etc.

(c) Test piping systems and prove tight.

(i) Test piping system in sections as required by the progress of this and other contractors work and provide all required isolating valves.

(ii) Test all drain and vent piping pneumatically to a pressure of 14 kPa (2 psi) and prove tight for a period of 1 hour.

(iii) Test all domestic water piping hydraulically to a pressure of 518 kPa (75 psi) and prove tight for a period of 4 hours.

(iv) Test all chilled water, heating water, glycol, steam, and steam condensate piping hydraulically to a pressure of 690 kPa (100 psi) and prove tight for a period of 8 hours.

(v) Test all compressed air piping pneumatically to a pressure of 1035 kPa (150 psi) and prove tight for a period of 4 hours.

(vi) For sprinkler, propane and fuel oil piping, test as required to the satisfaction of the Authorities Having Jurisdiction.

E24.4.20 Chemical Treatment

(a) Provide all required equipment, piping, and chemicals, for the flushing, cleaning and degreasing of all piping systems.

(b) Provide all required equipment, piping, and chemicals, for scale, corrosion, algae, and bacteriological control of closed-loop circulating piping system(s).

(c) Where used, glycol shall be Propylene Glycol, and shall be mixed in sufficient quantity to provide 60% propylene glycol / 40% water solution, suitable for -43°C (-45°F).

E24.4.21 Pump and Equipment Connections

(a) Install piping connections to pumps and all other equipment without strain at the pipe connection to this equipment. Where requested by the Contract Administrator, remove the bolts in flanged connections, or disconnect the piping after the installation is complete, to demonstrate that the piping has been so connected.

(b) Equipment Connections:

(i) All fittings N.P.S. 2 and below connecting to equipment: use unions, extra heavy duty pattern, having ground joints, brass seats and diagonal screw.

(ii) Connections to equipment N.P.S. 2½ and above: Flanged, standard weight provided with ring gaskets.

(iii) Install the shut-off valves and flanges/unions, in locations so as to permit the removal of the equipment without disturbing the piping systems.

E24.4.22 Drains

(a) Pipe all discharge from relief valves to the floor.

(b) Pipe all discharge from drain pans and drain valves to the nearest floor drain or suitable receptacle.

(c) Provide N.P.S. 3/4 gate valves with hose end outlets at strainers, all low points, at pumps, coils and at each piece of equipment.

E24.4.23 Vibration Isolation

(a) Provide Vibration Isolation for all Motor Driven Equipment.

(i) The work under this section shall include furnishing all labor, materials, tools, appliances and equipment, and performing all operations necessary for the complete execution of the installation of vibration isolation devices and systems as shown, detailed, and/or scheduled on the drawing and/or specified in this section of the specifications. This work in general shall include but not necessarily be limited to the following:

- All motor driven mechanical equipment shall be isolated from the building structure by means of vibration isolators.
- All piping connected to isolated equipment shall be supported on the first three support points by spring hangers.
- All ductwork connected to isolated equipment shall be isolated using flexible duct connectors, provided under Section 15800.

(b) System Design:

(i) The isolation materials manufacturer shall be responsible for the proper selection of isolators to accomplish the specified minimum static deflections, for all isolators, based on the actual weight distribution of the equipment and pipe to be isolated, and the piping layout.

(ii) It is a requirement of this Specification that the Mechanical equipment be designed and installed so that the average noise criteria curves as outlined in the latest edition of the ASHRAE guide for this type of project are not exceeded. Where objectionable noise or vibration is encountered due to faulty equipment or inefficient vibration reduction devices, as determined by the Contract Administrator, make necessary tests, change and provide additional equipment as may be required and approved, without extra charge.

(iii) Give consideration to side loading of equipment when calculating maximum loads on isolators; provide pairs of side snubbers and/or restraining springs where side torque or

thrust may develop. When properly adjusted, the equipment shall be level when operating.

(iv) Provide all spring isolators with height and levelling adjustment and set on neoprene antisound pads 6 mm (1/4") or thicker. Do not use sponge rubber for side snubbers.

(v) All hardware shall be corrosion resistant.

E24.4.24 Hangers and Supports

(a) Hanger rods may be attached to beam or joist clamps, brackets, or concrete inserts. Do not weld to structural steel unless the Contract Administrator's approval is given.

(b) Neatly and Securely hang from the structure or support all services and equipment. Do not hang Services and Equipment from other services.

(c) Hoisting and placing of mechanical equipment shall be the responsibility of the sub-contractor providing the equipment. All costs are to be included within the Proposal price.

(d) Provide adjustable clevis type hangers and horizontal trapeze style supports with redi-rod and angle iron.

(e) On copper piping, provide copper plated type hanger or separate piping from hanger with an approved insulating tape or plastic coating.

(f) Provide oversized hangers to pass over insulation on all insulated water piping. Use insulation saddles to protect insulation.

(g) All exterior pad mounted mechanical equipment shall be located a minimum of 3 feet above grade.

(h) Mechanical Equipment and piping shall be installed in a manner and location that will allow regular maintenance without affecting the normal path of travel of the busses.

(i) Roof Mounted Fans and Air Systems would be allowed to affect this end.

(ii) Catwalks would be allowed to affect this end.

(iii) Scissor Lifts blocking bus or foot travel will not be considered.

(iv) Floor Drainage System Oil and Grit Separators shall be located in spaces such as column aisleways in order to allow regular maintenance without encroaching on bus parking/travel.

(v) no switchgear or standpipes in garage area.

E24.4.25 Fire Stopping

(a) Fire Stop Materials such as firestopping and/or intumescent donuts shall be provided at all penetrations through fire and smoke separations.

(b) Fire Stop Materials shall be as approved by the Authorities Having Jurisdiction.

(c) Fire Stop Material installation shall be as per Manufacturer’s recommendations.

E24.4.26 Thermal Insulation

(a) Insulation thicknesses shall meet the requirements of the Model National Energy Code (MNECB), and any additional requirements for LEED Certification.

(b) Definitions

(i) The word "exposed" where used in this section means any work which is not concealed in walls, shafts, cavities, ceilings or crawlspaces. Work behind doors, in closets or cupboards, or under counters is considered exposed. Work in Mechanical and Boiler Rooms is considered exposed.

(ii) The term 'cold piping' refers to the following systems: Chilled Water, Well/Ground Water, Domestic Cold Water, Plumbing Vents, and Condensate Drip Drains.

(iii) The term 'hot piping' refers to Domestic Hot Water Supply and Recirc piping, Tempered Water Supply and Recirc piping, High Temperature Domestic Hot Water Supply and Recirc piping, Steam and Steam Condensate piping, Glycol Supply and Return piping, and Heating Water Supply and Return piping.

(c) Pre-Molded Pipe Insulation for Cold Piping

(i) Provide sectional fibreglass pipe insulation in pre-molded sections 900 mm (36") long; split and ready for application; with a maximum "K" factor of 0.035 at 24ºC (75ºF) mean temperature; and be capable of use on service from -40ºC to 260ºC (-40ºF to 500ºF); and with factory applied vapour seal jacket of foil craft laminate with reinforcing of open mesh glass fibre.

(d) Pre-Molded Pipe Insulation For Hot Piping

(i) Provide sectional fibreglass pipe insulation in pre-molded sections 900 mm (36") long; split and ready for application; with a maximum "K" factor of 0.035 at 24ºC (75ºF) mean temperature; and be capable of use on service from -40ºC to 260oC (-40ºF to 500ºF); and with factory applied vapour all service jacket of paper with reinforcing of open mesh glass fibre.

(e) Insulation for Ductwork

(i) Exposed rectangular:
- 25 mm (1") thick, 48 kg/m3 (3.0 lbs/ft3) density, foil faced fibreglass board.

(ii) Concealed rectangular:
- 25 mm (1") thick, 48 kg/m3 (3.0 lbs/ft3) density, foil faced fibreglass board; or
- 25 mm (1") thick, 12 kg/m3 (0.75 lbs/ft3) density, flexible fibreglass blanket with open mesh, glass fibre reinforced, foil facing.

(iii) Round ductwork:
- 25 mm (1") thick, 12 kg/m3 (0.75 lbs/ft3) density, flexible fibreglass blanket with open mesh, glass fibre reinforced, foil facing.

(iv) Ductwork exposed to outdoors or handling outdoor air:
- 2 layers of 25 mm (1") thick, 48 kg/m3 (3.0 lbs/ft3) density, foil faced fibreglass board. [Note: Duct sections lined with 25 mm (1") thick duct liner need only have 25 mm (1") exterior insulation applied].

(f) Insulation for Equipment

(i) Water meters, roof drain bodies, domestic cold water booster pumps, and chilled water pumps:
- 25 mm (1") thick, 12 kg/m3 (0.75 lbs/ft3) density, flexible fibreglass blanket with open mesh, glass fibre reinforced, foil facing; or
- Flexible rubber, adhesive securement.

(ii) Shell and Tube Heat Exchangers:
- 50 mm (2") thick, 48 kg/m3 (3.0 lbs/ft3) density, fibreglass board.

(g) Miscellaneous Applications

(i) Provide 'Trap-Wrap' or equal insulation on all P-traps on all Lavatories, whether noted as handicap accessible or not.

(ii) Refrigerant Systems:
- Pre-formed, 12 mm (1/2") thick, closed cell rubber, Armaflex or Imcolock, pipe insulation.

(iii) Diesel Engine Exhaust Pipes, from 150 mm (6") off the manifold connection to 150 mm (6") beyond the exterior wall or roof penetration, (including the muffler, but excluding any flexible connectors):
- 50 mm (2") calcium silicate, high temperature, pre-formed pipe insulation.

(h) Finishes

(i) Piping (concealed):
- factory applied jacket.

(ii) Piping (exposed):
- 170 g/m2 (6 oz/yd2) U.L. labeled canvas with PVC fitting covers.
- In wet and harsh locations, provide additional PVC, stainless steel or aluminum jacket.

(iii) Ductwork (concealed):

- factory applied jacket.

(iv) Ductwork (exposed):
- 170 g/m2 (6 oz/yd2) U.L. labeled canvas.
- In wet and harsh locations, provide additional PCV, stainless steel or aluminum jacket.

(v) Ductwork (exposed outdoors):
- two layers of felt paper, tarred and sealed to make weatherproof; or 'Blueskin' poly-type bitumen membrane.
- Dimple finish 016 aluminum jacket.

(vi) Water meters and pump casings:
- factory applied jacket.

(vii) Roof Drain Bodies (exposed):
- 170 g/m2 (6 oz/yd2) U.L. labeled canvas.

(viii) Roof Drain Bodies (concealed):
- factory applied jacket.

(ix) Shell and Tube Heat Exchangers:
- 170 g/m2 (6 oz/yd2) U.L. labeled canvas.

(x) Refrigerant Piping:
- none.

(xi) Diesel Engine exhaust pipes:
- dimple finished 016 aluminum jacket with aluminum fitting covers.

(i) Insulation – Installation

(i) Apply insulation at a temperature of approximately 18°C (65°F) over clean, dry surfaces. Butt adjoining sections of insulation firmly together with the longitudinal seam of the jacket located on the bottom half of the pipe.

(ii) On cold piping, insulate and finish all valves, fittings and flanges in the same manner and same thickness as the piping. Use mitred sections of the specified pipe covering.

(iii) On hot piping, do not insulate valves, unions and flanges, and where concealed, do not insulate any fittings - straight runs of pipe only.

(iv) For cold piping, seal longitudinal lap joints with suitable vapour barrier adhesive. Cover all joints with foil faced self-adhesive tape.

(v) For hot piping, seal longitudinal lap joints with a suitable adhesive/cement capable of withstanding the service temperature. Cover butt joints with a strip of the same material as the jacket, and cement as required.

(vi) Concealed insulated items require no further finish than provided in factory applied jacket.

(vii) All adhesives and finishes: Fire retardent or fire resistent when dry, and acceptable to the Authorities Having Jurisdiction.

(viii) For cold piping, seal end joints and perforations with factory furnished 100 mm (4") wide vapour barrier strips applied with the same adhesives and cements as previously specified.

(ix) Seal valves, fittings and flanges on cold piping in a manner as specified for end joints.

(x) On all cold piping where oversized hangers are used: Protect insulation with a sheet metal saddle installed over the vapour barrier. For piping N.P.S. 1.5" and larger, provide a section of rigid insulation or non-compressible material under the vapour barrier, the same length as the saddle.

(xi) Ductwork
- Do not insulate ductwork prior to duct sealant being applied.
- Exposed rectangular ductwork: Impale fibreglass board on weld pins and speed washers 300 mm (12") o.c. with a minimum of two rows per side on any side greater than 300 mm (12"). Cut pins flush with surface of insulation and cover with foil faced tape. Cover all joints with foil faced adhesive tape.

- Concealed ductwork and exposed round: Apply flexible blanket insulation with an approved adhesive brushed on in 100 mm (4") wide strips 300 mm (12") o.c. and at all joints. Seal all joints and perforations with foil faced adhesive tape.
- Where interior lined ductwork is required to be insulated, the thickness of the liner may be deducted from the total thickness of the exterior insulation.

E24.4.27 Identification

(a) All equipment, including motors shall come with proper nameplates affixed thereto, showing the manufacturer, make, model, size, serial number, horsepower, voltage, cycles, and all other pertinent data usually provided.

(b) Identify all new equipment, panels and controls with lamacoid nameplates indicating Identification Name and Number.

(c) Identify all new piping and ductwork with direction-of-flow-arrows and service.

(d) Identify all new valves with brass or Lamacoid numbered tags.

(e) Provide Special Signage as required.

E24.4.28 Mechanical Systems Clean-up

(a) Maintain the Worksite in a condition of General Cleanliness and Tidiness.

(b) Neatly store all materials, and clean up refuse on a regular basis.

(c) Protect and maintain all work until the project has been completed and turned over to the City.

(d) At the completion of the project, leave all systems in full operation, the exterior of all new and renovated systems clean, and the work areas cleaned to the satisfaction of the Contract Administrator and Occupants.

(e) The City reserves the right to inspect the Mechanical Systems to determine the effectiveness of the cleaning. Where cleaning is deemed to be unacceptable, the cleaning shall be re-done at no extra charge to the City.

E24.4.29 Safety Device Testing

(a) Make complete inspections of all safety devices such as: back flow preventors, fire extinguishers, hose cabinets; freeze protection devices; fire dampers, smoke dampers, fire stops, and the like to ensure:

(i) That safety devices are complete in accordance with the specifications and Manufacturer's recommendations.

(ii) That the safety devices are connected and operating according to all local regulations, and appropriate access is provided.

(b) On completion of the inspections, provide letters and/or certificates, confirming that inspections have been completed. Insert in each O & M Manual.

E24.4.30 Start-up and Commissioning shall include:

(a) LEED Commissioning

(b) Pressure Testing for piping

(c) Start-up, including Factory Representative

(d) Pipe Cleaning and Chemical Treatment

(i) Clean and Degrease all Piping

(ii) Provide complete Chemical Charge

(e) Measurements, adjustments and balancing.

(i) Air balancing is required on all HVAC equipment, and shall conform to ASHRAE Standard 111, SMACNA'S HVAC Systems, Testing, Adjusting and Balancing 2nd Edition.

(ii) After completion of air balancing, mechanically fix the adjusted dampers by taping or securing dampers to prevent tampering or movement.

(f) Load Testing

(g) Operator Training (Include first year operation assistance and operator training)

(h) O & M Manuals, As-built Drawings, and Spare Parts

(i) Furnish Certificates confirming that the work has been done to the satisfaction of the Authority Having Jurisdiction.

E24.4.31 Special Tools and Spare Parts

(a) Prepare a List of Recommended Spare Parts

(b) Provide enough Spare Parts for a minimum of 1 year of operation.

(c) Provide spare parts as follows:

(i) One set of drive belts for each piece of machinery.

(ii) One set of filters for each filter section installed.

(iii) One set of pump seals for each pump.

(iv) One casing joint gasket for each size of pump.

(v) One head gasket for each Shell and Tube Heat Exchanger.

(vi) One glass for each gauge glass.

(vii) One cartridge for each thermostatic mixing valve.

(viii) Two screens for each size of strainer.

(ix) One spare rim gasket for each Hydraulic Filter Housing Installed.

(d) Identify spare parts containers as to contents and replacement parts number.

(e) Provide one set of all specialized tools required to service equipment as recommended by the Manufacturers.

E24.4.32 Instructions to City

(a) Documentation And System(s) Acceptance

(i) The Contractor shall prepare a suitable document to be signed by the City or his representative, confirming:

- The City has received satisfactory instruction in the operation and maintenance of all equipment and systems.
- The Operation and maintenance manuals have been received and reviewed by the City.
- The "As-Built" drawings have been received and reviewed by the City.
- Specified spare parts, components, keys, removable handles, tools and the like, have been accepted by the City.

(ii) Prepare a suitable list/sign-off sheet to indicate the instructions and materials have been provided

- List shall Include all Systems.
- List shall Include all Materials.
- List shall include spaces for Sign-off Names and Dates for the City’s Representative.

(b) Instruct the City's representatives in all aspects of the operation of the systems and equipment.

(c) Arrange and pay for the services of Manufacturers' Representatives required for the instruction on specialized portions of the installation.

(d) Assemble four copies of the final Operation and Maintenance Manuals in three ring binders with index tabs, and present to the City.

(i) Present all copies of the Operation and Maintenance Manuals to the Contract Administrator for review. The Contract Administrator will review the manuals and return them with comments. The Sub-contractor shall make all requested changes. This process shall continue until the Manuals are deemed complete by the Contract Administrator. The Sub-contractor shall turn over the completed manuals to the City.

(e) Operation and Maintenance Manuals shall contain the following:

(i) the Sub-contractor's and suppliers names and telephone numbers,
(ii) a complete set of reviewed shop drawings,
(iii) brochures,
(iv) data sheets,
(v) operating, maintenance, and lubricating instructions,
(vi) valve charts,
(vii) wiring diagrams,
(viii) air and water testing and balance reports,
(ix) controls 'As-Built' shop drawings,
(x) commissioning information,
(xi) warrantee certificates.

E24.4.33 Warranties

(a) No certificate issued, payment made, or partial or entire use of the system(s) by the City, shall be construed as acceptance of defective work or material.

(b) Include copies of all warranty and guaranty certificates and declarations in the Operating and Maintenance Manuals, in the appropriate sections.

(c) Provide a certificate or declaration indicating the warranty and conditions.

(d) Warranty satisfactory operation of all work and equipment installed under this contract. Repair or replace at no charge to the City, all items which fail or prove to be defective within the Warranty period, provided that the failure is not due to improper usage by the City. Make good all damages incurred as a result of the failure and of the repair of the system(s).

(e) The warranty shall be for all parts and labor. Do not expect any participation from the City's personnel in the correction of warranty related work.

(f) For systems, equipment and components which are used continuously throughout the year, the normal warranty period shall be one calendar year from the date of Substantial Completion. For seasonal equipment, components and systems which are not normally used continuously throughout the year, the warranty period shall include at least one full season of satisfactory operation.

(g) When equipment or systems are put into use subsequent to the acceptance of the building, or a portion of the building, the warranty period for seasonally used equipment and systems shall be deemed to commence from the date of satisfactory operation, not from the date of final acceptance by the City.

(h) The City retains the right to demand, and to receive, an extension of the original construction warranty for any equipment, component or system which consistently fails to perform, or which requires repeated repair or adjustment.

(i) Wherever manufacturer's warranties in excess of the Contractor's warranty are provided, furnish the City with copies of the Certificates, dated and acknowledged, and inserted in the O and M Manuals. The Contractors Warranty shall include a list of the Manufacturer's extended warranties.

(j) Warranty work shall be carried out within a reasonable time period following the reporting of the problem. Should the repair time for any failed component be unreasonably long, as determined by the City, make alternate arrangements to have a temporary replacement component made available until such time that the original component is repaired and re-installed. There shall be no additional cost to the City for any temporary replacement component or for any labor required to implement the work.

E24.4.34 Completion

(a) The Contractor shall be aware that it is the Contract Administrator's intention to withhold recommendations for payment of progress claims totalling more than 90% of the mechanical contract until the project is declared Substantially Complete.

(b) Substantial Completion

(i) The project will be ready for a Substantial Completion inspection only when it is ready for the City to occupy and utilize the building for it's intended purpose.

(ii) At Substantial Completion, the City will realise that some deficiencies may still exist.

(iii) In preparation for the inspection to determine Substantial Completion for all or a portion of the project, the Contractor shall ensure and declare in writing that:

- Except for seasonal deficiencies, the Start-up and Verification of the Commissioning Process has been completed, and all systems are fully functional.
- All systems and equipment have been cleaned.
- All systems and equipment have been identified and labelled.
- The preliminary As-built Drawings have been submitted for review.
- One set of preliminary O and M Manuals have been submitted for review.
- One copy of the preliminary Balancing Report has been submitted for review.
- Instructions to the City's Representative have been given.
- Maintenance Materials and Spare Parts have been provided.

(iv) When the Contractor is satisfied that the entire project is completed, and after making his own inspection, he shall apply, in writing, to the Contract Administrator, for an inspection to determine if the project can be deemed to be Substantially Complete.

(v) In the letter of request, a date shall be specified upon which the project can be delivered and be Substantially Complete.

(vi) During the inspection, a deficiency list will be compiled and a report will be issued. These deficiencies shall be corrected or completed in a satisfactory and timely manner.

(vii) Based on the inspection report, the City will retain a sum of money, sufficient in his estimation to cover the cost of completing the deficiencies.

(c) Total Completion

(i) When the Contractor has determined that the deficiencies noted during the Substantial Completion inspection have been completed or corrected, he shall apply, in writing, to the Contract Administrator, for a final inspection to determine if the project can be deemed to Totally Complete.

(ii) In the letter of request, a date shall be specified upon which the project can be delivered and be Totally Complete.

(iii) In preparation for the inspection to determine Total Completion for all or a portion of the project, the Contractor shall ensure and declare in writing that:

- All aspects of the Commissioning Process have been completed.
- The final Record and As-Constructed drawings have been submitted, reviewed and accepted.
- The final O and M Manuals have been submitted, reviewed and accepted.
- The final Balancing Reports have been submitted, reviewed and accepted.
- The deficiencies noted during the Substantial Completion inspection have been corrected or completed.

(iv) During the inspection, a deficiency list will be compiled and a report will be issued. These deficiencies shall be corrected or completed in a satisfactory and timely manner.

(v) Based on the inspection report, the City will retain a sum of money, sufficient in his estimation to cover the cost of completing the deficiencies.

(vi) Final Payment will only be made after the project has been determined to be Totally Complete, with all deficiencies satisfactorily corrected.

E24.5 General Building Description

E24.5.1 Refer to the Architectural Information provided with this RFP, and modify as required to suit the design-build Proposal.

(a) The Building is expected to be single storey.

E24.5.2 The Building will be described as being 'Building C' on the Site.

E24.5.3 The Building is expected to qualify for LEED Silver Certification.

E24.5.4 The Building is expected to operate similar to the existing Transit Operation(s).

E24.6 Plumbing

E24.6.1 Allow for LEED Silver Accreditation as required

(a) A Water Use Reduction Credit is expected for low-flow fixtures.

(b) Credit(s) should be available for rainwater harvesting for the buswash.

E24.6.2 Room Data sheets have been prepared as comprehensive data and included in an alternate area of this Specification.

(a) The Room Data Sheets are to be read in conjunction with the information within this Mechanical Specification Section. Requirements of both the Room Data Sheets and these Mechanical Specifications shall be met.

(b) Refer to the following Room Data Sheets attached with this RFP:

(i) A-1.1 Bus Service Bays:

- Provide Fuel Dispensing with modified OPW fuel nozzles same as existing.
- Provide Bus Washing similar to existing, c/w water, drain and rainwater harvesting. Bus Wash shall be a PSECO model DT412 in order to provide maintenance continuity.
  - Buswash water recycling system must contain a dissolved salts removal capability
  - Alternate Ross and White Four Bus Transit bus wash system Model BAR-1055 M
- Fluid top-up stations must have a 5 nozzle rack (2 @ engine oils, windshield washer fluid, diesel emission fluid/DEF, and 1 spare.).
  - Minimum 2 stations required.
- Provide Hot and Cold Water Hosebibbs. Minimum 6 locations.
- Provide Compressed Air Outlets. Minimum 6 locations.
- Provide Spot and Trench Drain Systems with oil and grit separators.
- Provide Drinking Fountain
- Plumbed Emergency Shower and Eye/Face Wash station

(ii) A-2.1 Main Garage

- Provide Hot and Cold Water Hosebibbs. Maximum 23m (75') travel.
- Provide Compressed Air Outlets. Maximum 23m (75') travel.
- Provide Spot and Trench Drain Systems with oil and grit separators.

(iii) A-2.2 Bus Parking Assignment Kiosk

- See Room Data Sheet.

(iv) A-3.1 Vehicle Inspection/Repair

- Provide Hot and Cold Water Hosebibbs. Minimum 6 locations.
- Provide Compressed Air Outlets. Minimum 6 locations.
- Provide Spot and Trench Drain Systems with oil and grit separators.
- Provide Drinking Fountain
- Plumbed Emergency Shower and Eye/Face Wash station

(v) A-4.1 Storage

- Provide Hot and Cold Water Hosebibbs. Minimum 6 locations.
- Provide Compressed Air Outlets. Minimum 6 locations.
- Provide Spot and Trench Drain Systems with oil and grit separators.

(vi) A-5.1 M&E Room

- Provide Hot and Cold Water Hosebibbs.
- Minimum 1 per room. 2 in larger rooms.
- Provide Compressed Air Outlets.
- Minimum 1 per room. 2 in larger rooms.
- Provide Spot and Trench Drain Systems with oil and grit separators.

- M and E Rooms house central systems and equipment.
- Mechanical Equipment expected to be housed in indoor M and E rooms include Air Compressors, Domestic Water Heaters, Bulk Fluids, HVAC Equipment, Electrical Transformers and MCCs, etc.

(vii) A-6.1 Service Lunchroom
- Kitchen Sink
- Vending Machine Area with water and drain for Coffee/Hot Chocolate Vending Machine
- Water and Drain for countertop Coffee Machine

(viii) A-6.2 Large Locker Room
- Showers and Washrooms
- Drinking Fountain
- Provide Spot and Trench Drain Systems.

(ix) A-6.3 Small Locker Room
- Showers and Washrooms
- Drinking Fountain
- Provide Spot and Trench Drain Systems.

(x) A-7.1 Multi-use Space
- Drinking Fountain

(xi) A-7.2 Large Change Room
- Shower
- Drinking Fountain
- Provide Spot and Trench Drain Systems.

(xii) A-7.3 Small Change Room
- Shower
- Drinking Fountain
- Provide Spot and Trench Drain Systems.

(xiii) A-8.1 Dispatch Office/Drivers Waiting Area
- Kitchen Sink
- Vending Machine Area with water and drain for Coffee/Hot Chocolate Vending Machine
- Water and Drain for countertop Coffee Machine
- 2 Drinking Fountains

(xiv) E-1.1 Tank Farm
- 2 @ 50,000 litre above ground diesel fuel oil storage tanks
- Double wall construction for spill containment.
- 1 @ 2500 litre above ground windshield washer fluid storage tank
- Double wall construction for spill containment.
- Pumphouse with diesel fuel and windshield washer fluid pumps
- Veeder Root Tank Monitor Systems for level, temperature and leak.
- Tanks shall be Westeel Fuel Vaults and pumps shall be Viking, same as existing in order to retain maintenance continuity. Confirm exact makes, models and sizes on site.

E24.6.3 Provide necessary humidification and/or dehumidification as required for occupancy use.

E24.6.4 Plumbing Fixtures shall be Water Saving Type, including:

(a) Ultra-low Water Usage

(b) Lavs with Push-button Metering Controls with Tempered Water Mixing Valves

(c) Low Flush Toilets (dual-flush not acceptable)

(d) Automatic Electronic Flush with override button for urinals and public water closets

(e) Waterless Urinals are not acceptable.

E24.6.5 In addition to Plumbing Fixtures and trim for Standard Washrooms and Changerooms, allow for:

(a) Commercial grade fixtures

(b) Vandal Proof Fixtures

(c) All plumbing fixtures shall have service valves for maintenance purposes.

(d) Additional Hose Bibbs (both interior and exterior)

(e) Floor Drains for Mechanical Rooms and Locker/Change Rooms

(f) Kitchenette and Bar Sinks for Lunchrooms, Meeting Rooms, First Aid, and other miscellaneous areas.

(g) Mop Sinks with hose end spouts and vacuum breakers

(h) Concealed arm carriers with foot support for all wall mounted lavs.

(i) Institutional Style Shower Heads, or Handicap Style Shower Wands where required

(i) Pressure balance, scald guard devices for all showers

(ii) Vandal Proof Shower Heads

(j) One-piece acrylic or fibreglass shower surrounds c/w dome and light

(k) Drinking Fountains shall be ADA compliant, refrigerated, with S.S. shrouds and bottle filler.

(l) Combination Hot and Cold Water Hose Bibbs shall have 12mm (1/2") inlets, a common hose thread outlet, and shall have integral vacuum breaker.

(m) Trench Drains shall have Grate Loading Capacities suitable for Highway Traffic.

(n) Compressed Air Outlets shall be c/w isolation valve, dirt leg, filter, regulator and quick connect.

(o) Roof Drains shall have cast metal bodies and domes.

E24.6.6 Provide Service Meters as required.

(a) Install all metering equipment in accordance with municipal or utility requirements

E24.6.7 Provide Building Backflow Prevention, and Local Backflow Prevention as required.

E24.6.8 Natural Gas:

(a) Natural gas piping shall be schedule 40 steel, with screwed or welded joints and fittings as per code.

(b) Allow for natural gas piping to all gas-fired Equipment

(c) Gas-fired appliances are preferred over Electric.

E24.6.9 Roof Drainage:

(a) Allow for Roof Drains on Flat Roofs, with interior Rain Water Leaders.

(b) Allow for rainwater harvesting for the buswash

E24.6.10 A Domestic Hot Water System will be required, c/w recirc.

E24.6.11 Allow for weeping Tile Sump Pit(s) with Duplex Pumps.

(a) Sump Pits to be c/w High Level Alarm (separate power circuit)

E24.6.12 Compressed Air System will require redundancy.

E24.6.13 Minimum 3/4" Compressed Air Pipe sizing (including outlet drops) in all rooms.

E24.6.14 Bulk Fluids

(a) Minimum 2 @ 2500 litre double-wall containment tanks for engine oils

(b) Replacement Carboy style container for DEF

(c) Pumps as required

(d) Tanks and Pumps shall be same as existing in order to retain maintenance continuity. Confirm exact makes, models and sizes on site.

E24.7 Fire Protection

E24.7.1 Allow for LEED Silver Accreditation as required

E24.7.2 The Entire Building shall be fully sprinklered.

E24.7.3 A full wet system is expected, with local dry-pipe heads or glycol anti-freeze loops as required to prevent freezing at small individual locations.

E24.7.4 The Sprinkler System shall be Hydraulically Designed by the Contractor, and Sealed and Signed by a Professional Engineer.

E24.7.5 Fire Protection piping shall be metallic, as allowed by code, including copper and steel.

E24.7.6 Sprinkler heads shall be recessed type where exposed to the public in finished areas, and upright type where there are no finished ceilings.

E24.7.7 Sprinkler heads shall be chrome plated where exposed to the public in finished areas, and brass in unfinished areas.

E24.7.8 Sprinkler heads shall be installed in even rows and columns. They shall be centered both ways in T-bar ceilings.

E24.7.9 Hand held fire extinguishers shall be provided as required, and shall be 5 lb. ABC dry chemical type. Wall-mounted Cabinets and Recessed Cabinets are to be provided in key areas. Locations and styles shall be clearly marked on floor plans.

E24.8 Heating System

E24.8.1 Allow for LEED Silver Accreditation as required

(a) Credits may be available for Low Energy Use due to high-efficiency combustion.

(b) Credit(s) may be available for Energy Recovering Ventilators.

E24.8.2 Room Data sheets have been prepared as comprehensive data and included in an alternate area of this Specification.

(a) The Room Data Sheets are to be read in conjunction with the information within this Mechanical Specification Section. Requirements of both the Room Data Sheets and these Mechanical Specifications shall be met.

(b) Refer to the following Room Data Sheets attached with this RFP:

(i) A-1.1 Bus Service Bays
- Ceiling Mounted, gas-fired, ultra-high efficiency, low intensity, infra-red heaters.
  - Equal to Roberts Gordon/Co-Ray-Vac condensing unit with modulating burner.
- Electric in-floor Heating at bus doors at exit

(ii) A-2.1 Main Garage

(iii) A-2.2 Bus Parking Assignment Kiosk

(iv) A-3.1 Vehicle Inspection/Repair

(v) A-4.1 Storage

(vi) A-5.1 M&E Room

(vii) A-6.1 Service Lunchroom

(viii) A-6.2 Large Locker Room
- Electric in-floor Heating

(ix) A-6.3 Small Locker Room
- Electric in-floor Heating

(x) A-7.1 Multi-use Space

(xi) A-7.2 Large Change Room
- Electric in-floor Heating

(xii) A-7.3 Small Change Room
- Electric in-floor Heating

(xiii) A-8.1 Dispatch Office/Drivers Waiting Area

E24.8.3 HVAC as required for Diesel Driven Emergency Power

E24.8.4 Gas-fired appliances are preferred over Electric.

E24.8.5 Indirect Fired Make-up Air Units are preferred over Direct Fired.

(a) Energy Conservation must be investigated.

E24.9 Ventilating And Cooling

E24.9.1 Allow for LEED Silver Accreditation as required

(a) A Credit for Building Ventilation Flush may be available.

(b) Credit(s) may be available for Energy Recovering Ventilators.

E24.9.2 Design to ASHRAE 62 Ventilation Requirements, and provide calculation chart within the Construction Documents.

E24.9.3 Room Data sheets have been prepared as comprehensive data and included in an alternate area of this Specification.

(a) The Room Data Sheets are to be read in conjunction with the information within this Mechanical Specification Section. Requirements of both the Room Data Sheets and these Mechanical Specifications shall be met.

(b) Refer to the following Room Data Sheets attached with this RFP:

(i) A-1.1 Bus Service Bays
- Make-up Air and Exhaust Air for General Fume and Odor Control
- Make-up Air and Exhaust Air for Diesel Refuelling Stations
- Make-up Air and Exhaust Air for Bus Wash Humidity Removal
- Make-up Air and Exhaust Air for Bus Drying System
  - Drying system for buses exiting washrack.
- Make-up Air and Exhaust Air for Bus Vacuum Cleaning System
  - Ross and White Cyclone Vacuum Bus Interior Cleaning System ICS-VA-30-23000 (including air filtration and recycling)

(ii) A-2.1 Main Garage
- Make-up Air and Exhaust Air for General Fume and Odor Control

(iii) A-2.2 Bus Parking Assignment Kiosk

(iv) A-3.1 Vehicle Inspection/Repair
- Make-up Air and Exhaust Air for General Fume and Odor Control
- Make-up Air and Exhaust Air for Diesel Tailpipe Exhaust System and Dust/Fume Extraction
  - Tailpipe connections are at high level.
  - Existing System is Nederman.
  - Allow for flexible arm supports
  - Provide adjustable welding hood inlet with flexible arm support, for Dust/Fume Extraction

(v) A-4.1 Storage
- Make-up Air and Exhaust Air for General Fume and Odor Control

(vi) A-5.1 M&E Room
- Provide free-cooling for electrical rooms
- Provide combustion air for rooms containing fuel-fired appliances.

(vii) A-6.1 Service Lunchroom

(viii) A-6.2 Large Locker Room
- Energy Recovering Ventilator

(ix) A-6.3 Small Locker Room
- Energy Recovering Ventilator

(x) A-7.1 Multi-use Space
- Ventilated Stereo Shelf

(xi) A-7.2 Large Change Room
- Energy Recovering Ventilator

(xii) A-7.3 Small Change Room

- Energy Recovering Ventilator

(xiii) A-8.1 Dispatch Office/Drivers Waiting Area

(xiv) E-1.1 Tank Farm

E24.9.4 Provide necessary humidification and/or dehumidification as required for occupancy use.

E24.9.5 Ventilation Capacity shall be 1.5 times minimum required.

(a) HOA Controls, including count-down timers, event scheduled timers, and NOX monitoring and CO monitoring, shall be provided in parallel to allow for quiet periods, servicing periods and dispatch periods.

E24.9.6 Exterior ductwork is strongly discouraged.

E24.9.7 Ductwork and Accessories

(a) All ductwork and related accessories shall be installed as per the latest SMACNA standards.

(b) Ductwork shall be galvanized sheet metal unless noted otherwise.

(i) Use Aluminum or Stainless Steel for high humidity areas.

(ii) Balancing dampers shall be provided for each supply air outlet and return/exhaust air inlet.

(iii) All ductwork shall be sealed with duct sealant.

(iv) Provide internal acoustic insulation at the Inlets and Outlets of Fans.

(v) Fire dampers shall be installed at all locations where ductwork passes through a rated separation.

(vi) Provide duct access doors at all locations required for installation, maintenance or adjustment of equipment or controls.

(c) HVAC as required for Diesel Driven Emergency Power

E24.10 Controls

E24.10.1 Allow for LEED Silver Accreditation as required

E24.10.2 Room Data sheets have been prepared as comprehensive data and included in an alternate area of this Specification.

(a) The Room Data Sheets are to be read in conjunction with the information within this Mechanical Specification Section. Requirements of both the Room Data Sheets and these Mechanical Specifications shall be met.

(b) Refer to the following Room Data Sheets attached with this RFP:

(i) A-1.1 Bus Service Bays

- Temperature, humidity and fume controls.
- Where NOX monitoring is used for multiple stage or modulating air flows, additional manual controls and time-of-day scheduling controls shall also be run in parallel.
- Make-up Air and Exhaust Air systems shall have manual and automatic start applications.
  - Automatic start controls shall include time-of-day scheduling, thermostats, humidistats, NOX sensors, and/or others to suit.

(ii) A-2.1 Main Garage

- Temperature, humidity and fume controls.
- Where NOX monitoring is used for multiple stage or modulating air flows, additional manual controls and time-of-day scheduling controls shall also be run in parallel.
- Make-up Air and Exhaust Air systems shall have manual and automatic start applications.
  - Automatic start controls shall include time-of-day scheduling, thermostats, humidistats, NOX sensors, and/or others to suit.

(iii) A-2.2 Bus Parking Assignment Kiosk

(iv) A-3.1 Vehicle Inspection/Repair

- Temperature, humidity and fume controls.
- Where NOX monitoring is used for multiple stage or modulating air flows, additional manual controls and time-of-day scheduling controls shall also be run in parallel.
- Make-up Air and Exhaust Air systems shall have manual and automatic start applications.
  - Automatic start controls shall include time-of-day scheduling, thermostats, humidistats, NOX sensors, and/or others to suit.

(v) A-4.1 Storage
- Temperature control.

(vi) A-5.1 M/E Room
- Temperature control.

(vii) A-6.1 Service Lunchroom
- Temperature control.

(viii) A-6.2 Large Locker Room
- Temperature and humidity controls.
- Energy Recovering Ventilator shall energize based on occupancy, humidity, and time-of-day scheduling

(ix) A-6.3 Small Locker Room
- Temperature and humidity controls.
- Energy Recovering Ventilator shall energize based on occupancy, humidity, and time-of-day scheduling

(x) A-7.1 Multi-use Space
- Temperature control.
- Ventilated Stereo Shelf
- Energy Recovering Ventilator shall energize based on occupancy, humidity, and time-of-day scheduling

(xi) A-7.2 Large Change Room
- Temperature and humidity controls.
- Energy Recovering Ventilator shall energize based on occupancy, humidity, and time-of-day scheduling

(xii) A-7.3 Small Change Room
- Temperature and humidity controls.
- Energy Recovering Ventilator shall energize based on occupancy, humidity, and time-of-day scheduling

(xiii) A-8.1 Dispatch Office/Drivers Waiting Area
- Temperature control.

(xiv) E-1.1 Tank Farm

E24.10.3 Scope Of Work

(a) Provide a Computerized Control System for monitoring and controlling of all space temperature and humidity functions, control of all FCU's and HRV's including CO control of HRV's, and control of Heating system including terminal heat transfer units.

(i) System Hardware shall include a computer, monitor, keyboard, printer, sensors and wiring.

(ii) System must be capable of complete interaction with Existing Johnson/Metasys Building Control System, and with the City of Winnipeg Pegasus access system.

(b) Provide labour, materials, equipment and services necessary for, and incidental to the supply and installation of the controls systems as required and as described in this specification, so as to leave the the City with a complete and fully functioning system.

(i) Provide both office and field engineering to develop a complete and comprehensive control system, based on the outline specifications and system schematics.

(c) In general terms, the scope of work comprises the provision of a complete DDC system, integrated with local electric/electronic controls, and allowing for automatic functioning, manual override, and monitoring of all new equipment.

E24.10.4 Shop Drawings

(a) Submit shop drawings consisting of product and sizing data for all equipment and components, and proposed control software and sequences including, but not limited to:

(i) Schematic diagrams showing the system architecture;

(ii) System schematic diagrams and wiring layouts;

(iii) Sensors and control components;

(iv) Valves, dampers and actuators;

(v) Air Compressor/Dryer;

(vi) Miscellaneous components;

(vii) Control panel locations and layout;

(viii) List of packaged software;

(ix) Detailed written sequences of operation;

- Clearly indicate the programming sequences.

(x) Logic flow charts;

(xi) Lists of menus and alarms;

(xii) Sample menu and alarm formats.

(b) Submit with the shop drawings a Project Test Plan, indicating how the installed system will be tested and verified to be found operating in accordance with the plans and specifications. Include a sample of the trend logs and check sheets to be submitted.

(c) The Contractor shall provide two copies of the preliminary shop drawings directly to the Contract Administrator's office for review and comment.

(i) Allow for technically qualified personnel to attend meetings at the Contract Administrator's office to discuss and clarify the preliminary shop drawings.

(ii) The review of the shop drawings is for the sole purpose of ascertaining conformance with the general design concept. The review shall not mean approval of the detailed design inherent in the equipment, the responsibility for which shall remain with the Contractor. The review shall not relieve the Contractor of the responsibility to meet the requirements of the contract documents. The Contractor shall remain responsible for confirming and correlating the dimensions on the jobsite, and for information that pertains to the fabrication process, construction techniques, and installation details, and for coordinating the work with the other Contractors.

E24.10.5 Operation And Maintenance Data

(a) Provide detailed operation and maintenance data.

(b) The shop drawings shall be enhanced and revised to 'as-built' status, and shall include the following:

(i) List of all software programs including versions and dates;

(ii) One spare copy of all software on diskette;

(iii) Printed copies of all computer programs;

(iv) Details of adjustments of devices and components;

(v) All information necessary for the operation, maintenance, parts procurement and replacement for each component of the entire system;

(vi) Specific part numbers;

(vii) Complete recommended spare parts inventory list, with lead time and expected frequency of use;

(viii) Instructions and schedules for inspection, cleaning, lubrication and calibration.

(ix) At the completion of the installation, provide one marked-up copy of the Proposal drawings for record purposes. Provide operation and maintenance manuals. Pay all costs associated with the production of the "record" drawings and the manuals. Prior to system acceptance testing, submit the documents to the Contract Administrator for review, and make any requested changes before delivering them to the City.

E24.10.6 Instructions To City's Representatives

(a) Provide the services of qualified personnel to instruct the City's personnel in the complete operation and maintenance of every aspect of the controls systems, including recalibration of sensors.

(b) Review the operation and maintenance of the systems with the City's maintenance personnel and provide written and/or verbal instructions as required.

(c) Within the scope of the contract, on-site instructions are to be scheduled as follows:

(i) For two full working days (total 16 hours) within one month of Final Acceptance. This may be scheduled as two consecutive days, two non-consecutive days, four half days or other as mutually agreeable to suit both parties.

(ii) Follow up instructions of 3 days during the first year following Final Acceptance. This can be done in conjunction with regularly scheduled maintenance service.

(iii) One additional day following the heating season testing and verification.

E24.10.7 System Acceptance

(a) Complete the system installation, start up, calibration and verification prior to acceptance testing by the City. Submit a letter to the Contract Administrator certifying that the controls have been installed, the software programs have been exercised, and requesting system acceptance. Include all verification data and certificates confirming that the work has been installed to the satisfaction of the authorities having jurisdiction.

(b) Acceptance testing will commence on a mutually agreeable time within 14 calendar days of request.

(c) At the time of acceptance testing, turn over to the City the revised Operation and Maintenance data and a pre-paid Warranty and Service Agreement. The system will not be accepted without complete documentation.

(d) Provide operating and maintenance personnel, and tools and material, as required to operate and adjust the system(s), and coordinate with the Contract Administrator, to completely test and verify the operation of the system(s). It is expected that this testing will take place during the cooling season. Allow for additional testing and verification at the beginning of the heating season.

(e) When the system has been deemed satisfactory for beneficial use, the warranty period will commence.

E24.10.8 Warranty/Service Agreement

(a) Provide a written warranty, signed and issued to the City, stating that the control systems are warranted against faulty material and/or workmanship for a period of one (1) year from the date of Final Acceptance.

(b) No certificate issued, payment made, or partial or entire use of the systems by the City, shall be construed as acceptance of defective work or materials.

(c) Promptly correct any defects in workmanship or material during the warranty period at no charge to the City, provided that the failure is not due to improper usage by the City. Make good all damages incurred as a result of the failure and of the repairs. When correcting defects and maintaining the system, take precautions to minimize disruption to the tenants.

(d) Provide preventative maintenance at 3 month intervals. Coordinate exact dates and times with the City, to allow for the maintenance personnel to be present. Maintain a log on site, accessible to authorized personnel, of tasks performed at each visit. The City's representative shall sign the log at the time of the visit as evidence that the Warranty Service Agreement is being maintained.

(e) Incorporate system hardware and software modifications, operating parameter changes and setpoint changes into the Operating and Maintenance manuals. Save database changes on disk for backup.

(f) Implement software upgrades on the anniversaries of the start of the warranty period. Provide all the enhancements offered by the software manufacturer(s).

(g) Use service personnel directly in the employ of the Controls Contractor to perform service work.

(h) Provide warranty and maintenance service under 'emergency repair' service provisions. Third party service or services only during specific working hours is not acceptable.

(i) Provide 'on-site' service for the computer hardware and software.

E24.10.9 Vandal Proof Covers

(a) Provide vandal proof covers (guards) on all wall mounted controllers.

E24.10.10 Piping/Tubing And Power And Control Wiring And Accessories

(a) Control wiring and conduit shall meet or exceed the requirements of C.S.A., U.L.C., the current edition of the Canadian Electrical Code, and all local Code requirements as well as the requirements as specified in Electrical.

(b) All control wiring, regardless of voltage, shall be installed in a continuous, dedicated system of rigid metal tubing (EMT). Maximum lengths of 7 feet of flexible metal conduit will be accepted for final connections to devices and equipment.

E24.10.11 General Software Requirements

(a) NOTE: The term BACnet refers to an industry standard protocol that basically states that all devices using the BACnet technology will be able to communicate to each other. This is not necessarily the case. The BACnet protocol is comprised of several layers interoperability and intercommunications. The controls contractor performing the supervisory controller installation should confirm that all devices specified are able to communicate to the proposed devices using the BACnet PIC statement and then supply documentation such that all devices supplied will communicate to each other as required for proper operation of the system.

(b) System Software shall include Password Protection, Multi-level Access Regulation, Interactive Graphics, adjustable setpoints, Run-time Accumulation, Alarm Monitoring and annunciation, Auto-dialer/Modem, and Trend Logging.

(c) Communication shall be password protected with 3 levels:

(i) Level 1 (operator level) shall allow interface to the system for password access, alarm handling, point addressing, manual commands and display of statistical data.

(ii) Level 2 (program level) shall allow operation for command control and definition of energy management parameters.

(iii) Level 3 (configuration level) shall allow database entry and modification.

(d) Point functions and alarm messages shall have English language descriptions.

(e) Each of the controlled systems shall operate independently (i.e.: calls for heat/cool/fan for one system will not affect another system)

(f) Provide a minimum of one O/A temperature sensor.

(g) Provide software for start/stop optimization.

(h) Provide auto restart after power failures.

(i) Provide system viewing and programmable trending analysis as follows:

(i) The status of all setpoints and the readout of all sensors shall be polled every 2 minutes (adjustable) in order to provide a snap-shot view or a trend log of the systems. Status will be monitored without the need to have the Operator's terminal running;

(ii) Automatic printout will be available for each snap-shot or trend log on an adjustable time schedule;

(iii) Snap-shot views shall be available for each system, providing complete information regarding setpoints and readouts.

(iv) Trend logs shall be available for each controlled point, indicating setpoint and readout.

(j) Provide run time accumulators for all new equipment

(i) Accumulators shall have a range of 0-65,000 hours and shall provide an alarm indication on the operator's terminal at an adjustable trip point selected by the operator.

(ii) Accumulators shall be capable of operation without the operator's terminal being turned on.

(iii) Provide a separate alarm for each accumulator.

(k) Provide alarm monitoring and annunciation as follows:

(i) Alarm functions shall be capable of operation without the operator's terminal being turned on. These alarm conditions shall be immediately annunciated on the local operator terminal and associated alarm printer, or when the terminal is first turned on, if it has been turned off.

(ii) Alarm conditions shall be capable of being deemed 'maintenance' or 'critical' by the Operator. Alarm lists shall be capable of being revised by the Operator.

(iii) Alarm conditions which indicate a serious malfunction of the mechanical systems, which require immediate attention, shall be designated as "Critical Alarms".

(iv) In addition to being annunciated on the local operator terminal, 'critical' alarms shall also initiate the autodial alarm.

(v) Monitor and annunciate alarms for systems, conditions and equipment such as follows:

- Fan failure (critical);
- Heating mode out of nominal range (critical);
- Cooling mode out of nominal range (critical);
- Low space temperature (critical);
- High space temperature (critical);
- Run time accumulator reached;
- Pump failure (critical).

(vi) When the air systems are running, supply air temperatures above 120 deg. F (adjustable) will provide an alarm.

(vii) When the air systems are running, supply air temperatures below 55 deg. F (adjustable) on a call for heat will provide an alarm. Provide adjustable time delay software as required to ensure that false alarms are prevented on initial heating call.

(viii) When the air systems are running, supply air temperatures below 47 deg. F (adjustable) will shut the system down and provide an alarm.

(ix) At any time, when any zone temperature sensor senses temperature below 55 deg. F (adjustable) or above 90 deg. F (adjustable) the DDC system shall signal an alarm. Each sensor shall provide a separate alarm.

(x) When a run time accumulator has reached it's setpoint, an alarm shall be signalled. Each accumulator shall provide a separate alarm.

(xi) When a pump is scheduled to be operational, a lack of signal from a current sensing switch will provide an alarm. Provide adjustable time delay software as required to ensure that false alarms are prevented on initial start-up. Each sensor shall provide a separate alarm.

(l) Provide Set Back Thermostats and Spring Wound Timers to override Thermostats.

(m) Ventilation Capacity shall be 1.5 times minimum required.

(i) HOA Controls, including count-down timers, event scheduled timers, and NOX monitoring and CO monitoring, shall be provided in parallel to allow for quiet periods, servicing periods and dispatch periods.

(n) All Controlled equipment shall have the capability of multi-function energizing from such items as count-down timers, event scheduled timers, and NOX monitoring and CO monitoring, controlled in parallel.

E24.10.12 General System Requirements

(a) Generic input/output for Metasys Control.

(b) Controls must be able to interface to MSEA technology on the field device network using either the N2Open or BACnet Protocols.

(c) No LON protocols are to be accepted.

(d) Controls contractor to provide commissioning sheets for all points on field devices as well as head end equipment.

(e) Controls contractor to communicate with equipment provider to ensure proper field point integration as well as controllability of the equipment, if not package controls.

(f) Controls contractor to supply all drawings/graphics/sequence of operations in both a hard and soft copy. Drawings and graphics to be able to be read and modified by City of Winnipeg Staff using Microsoft Visio software.

E25. ELECTRICAL

E25.1 Electrical General Requirements

E25.1.1 General Requirements

(a) Comply with the requirements set out for the General Contractor.

E25.1.2 Definitions

(a) Notwithstanding any definition elsewhere in the contract documents, wherever the term "Sub-Contractor" is used in the Electrical outline specifications, it means the firm having a contract with the "Contractor" to perform, supervise and coordinate all work of that particular Division. This Sub-contractor shall be wholly responsible to the "Contractor" for all work of that Division.

(b) Notwithstanding any definition elsewhere in the contract documents, wherever the term "Provide" is used in relationship to equipment, piping etc., in this Division, it means "Supply, Install and Connect, test, commission and put into working order all materials and necessary equipment, wiring, supports, access panels, etc., as necessary for item or system indicated".

(c) Notwithstanding any definition elsewhere in the contract documents, wherever the term "Inspection Authority" is used in the Electrical outline specifications, agent of any authority having jurisdiction over construction standards associated with any part of electrical work on site.

(d) Notwithstanding any definition elsewhere in the contract documents, wherever the term "Electrical Code" is used in the Electrical outline specifications, it means the Local Code in force at Project location.

(e) Notwithstanding any definition elsewhere in the contract documents, wherever the term "Indicated" is used in the Electrical outline specifications, it means “as shown on contract drawings or noted in Contract Documents”.

E25.1.3 Trade Definitions

(a) All work called for in the outline specifications shall be considered to be within the scope of the Contract, and shall be the responsibility of the Contractor.

(b) Arrangement of Drawings and Specifications into Divisions, Sections, and Trades is arbitrary, with the sole intention of clarifying the scope and content of the work required to complete the project. The actual division of the work amongst the sub-contractors shall be the responsibility of the Contractor, and the actual division of the work between the sub-sub-contractors shall be the responsibility of the sub-contractors.

(c) The Contractor, at his option and as per his contracts with the Sub-Contractors, may delegate responsibility to the Sub-contractors for the division of the work.

(d) The Sub-contractors, at their option and as per their contracts with the sub-sub-contractors, may delegate responsibility to the sub-sub-contractors for the division of the work.

(e) Electrical outline specifications, and specific but arbitrary responsibility divisions noted in the electrical outline specifications, are not intended to delegate functions nor to delegate work to any specific trade, but may be useful to the Contractor or Sub-contractor when dividing the work amongst the Trades and Sub-trades.

(f) In the event of a dispute regarding the responsibilities of the various trades and sub-trades, the Contractor and Sub-contractors may request information or a recommendation from the Contract Administrator. However, the Contractor and Sub-contractor shall be responsible for determining the final division of work.

E25.1.4 Scope Of Work

(a) Provide (Design, Supply, Install, Connect, Start Up and Commission) a ‘Design Build’ package of electrical systems to provide equipment, wiring, supports, access panels etc for the proposed building as described herein.

(i) The Electrical Contractor will be responsible for designing and laying out the mechanical systems subject to the Contract Administrator's review.

(ii) Include all items required to provide complete working systems.

(iii) Ensure complete compliance with the City's objectives prior to Proposal submission

(iv) The selected techniques, methods of fabrication and installation, and the size of the labour force shall be suitable to meet the completion schedule.

(v) The contractors shall be responsible for determining the most appropriate construction techniques and methods of installation for their portions of the work.

(vi) Ensure compliance with all parts B, D, and E of this RFP.

E25.1.5 Electrical Drawings

(a) Provide drawings and book specifications for the electrical work to convey the scope of work.

E25.1.6 Site Review

(a) Provide review of the Sub-Contractor's work solely for the purpose of determining the general quality of the work.

(b) Provide guidance will where required to interpret plans and specifications.

(c) Provide inspection reports and deficiency lists from time to time. All deficiencies shall be cleared up to the satisfaction of the Contract Administrator within a reasonably short time.

E25.1.7 Patents

(a) Pay all royalties and license fees, and defend all suits or claims, for infringement of any patent rights, and save the City and Contract Administrator harmless of loss or annoyance on account of suit, or claims of any kind for violation or infringement of any letters patent or patent rights, by this Contractor or anyone directly or indirectly employed by him, or by reason of the use by him or them of any part, machine, manufacture or composition of matter on the work, in violation or infringement on such letters patent or rights.

E25.1.8 Construction Drawings

(a) Where requested, prepare drawings in conjunction with all trades concerned, showing sleeves and openings for passage through structures, and all inserts, equipment bases, sumps and pits, supports, etc.

E25.1.9 Utility Site Services

(a) Provide all necessary arrangements and coordination with the applicable supply authorities (MB Hydro, MTS, Shaw Cable, etc.) in order to ensure service availability when required.

(b) Coordinate, arrange, and pay for all utility relocations, terminations and connections as required, complete with all required metering.

(c) Test all services and provide report(s) as required by the Authorities Having Jurisdiction.

E25.1.10 Codes, Permits, Fees And Inspections

(a) Comply with the most stringent requirements of the latest editions of the applicable C.S.A. standards; NFPA70 and the requirements of the Authorities Having Jurisdiction; Federal, Provincial and Municipal Codes; and the applicable standards of the Underwriters' Association. These codes and regulations constitute an integral part of these specifications.

(b) In case of conflict, the codes take precedence over the Contract Documents. In no instance reduce the standard or scope of work or intent established by the drawings and specifications by applying any of the codes referred to herein.

(c) Before starting any work, submit the required number of copies of Drawings and Specifications to the Authorities for their approval and comments. Comply with any changes requested as part of the contract, but notify the Contract Administrator immediately of such changes, for proper processing of these requirements. Prepare and furnish any additional drawings, details or information as may be required.

(d) Apply for, obtain, and pay for all required permits, licenses, inspections, examinations, and fees.

(e) Arrange for the inspection of all the work by the Authorities Having Jurisdiction over the work. On completion of the work, present to the City the final unconditional certificate of approval of the inspecting authorities. When the Authorities Having Jurisdiction do not normally issue certificates, provide a declaration confirming that the Authorities have inspected and accepted the work.

E25.1.11 Shop Drawings

(a) Provide preliminary information as requested during the Tender and Review Process.

(b) Provide Complete Shop Drawings after award of Contract. Shop Drawings shall include all necessary information for a complete review. Shop Drawings shall be provided in a timely fashion.

(c) Shop Drawings submitted by the Contractor shall contain:

(i) Project Information such as Name and Address

(ii) Contractor Information such as Name, Address, Phone Numbers

(iii) Supplier Information such as Name, Address, Phone Numbers

(iv) A set of Specifications, hardbound, based on the NMS numbering system.

(v) A set of drawings, sealed and signed by an Engineer in Good Standing with APEGM, suitable for Permit Application and Construction.

(vi) All Equipment Information required for the City to assess the suitability such as:

- Make, Model, Size
  - including schedules where numerous similar items are provided
- Physical Data such as:
  - Dimensions
  - Materials
  - Weights
  - Installation Requirements
  - Installation Clearances
- Performance Data such as:
  - Volume
  - Pressure
  - Capacity
  - Performance Curves (with specified performance clearly marked)
- Motor Data such as:
  - Horse Power
  - Voltage/Phases
  - Efficiency
- Wiring and Control Diagrams

(d) Equipment Information may contain standard manufacturer's brochures, catalogue sheets, schematics, diagrams performance charts, illustrations, etc., but must have:

(i) Information which is not applicable crossed off.

(ii) Available listed options which are being provided clearly marked

E25.1.12 Shop Drawing Review

(a) In addition to project identification, date, etc., the form of stamp used in shop drawing review shall contain the following format:

(i) Drawing:

- Reviewed
- Reviewed As Noted
- Revise and Re-Submit
- Not Reviewed

(b) This review by the City is for the sole purpose of ascertaining conformance with the general design concept.

(c) This review shall not mean that the Contract Administrator approved the detail design inherent in the shop drawings, the responsibility for which shall remain with the Sub-contractor submitting same, and such review shall not relieve the Sub-contractor of his responsibility for errors or omissions in the shop drawings, or of his responsibility for meeting all the requirements of the contract documents. The contractors are responsible for confirming and correlating dimensions at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation, and for coordination of the work of all sub-trades, as well as compliance with codes and inspection authorities such as C.S.A., etc.

(d) Bind one complete set of final shop drawings in each operating and maintenance instruction manual.

(e) Refer to the Architectural General Specifications for additional information.

E25.1.13 Coordination

(a) All contactors are expected to co-operate fully with all other contractors whenever necessary.

E25.1.14 Temporary Services

(a) Do not use any of the permanent Electrical systems during construction unless specific written approval is obtained from the City.

(b) The use of permanent facilities for temporary construction service shall not affect, in any way, the commencement date of the warranty period.

(c) If the permanent Electrical systems are used during construction, the equipment and systems shall be cleaned and refurbished as required to bring them back to a new/unused condition.

E25.1.15 Temporary And Trial Usage

(a) The City has the privilege of trial usage of electrical systems, or parts thereof, for the purpose of testing and learning the operational procedures.

(b) Assist in the trial usage over a length of time, as deemed reasonable by the City, at no extra cost, and do not waive any responsibility because of trial usage.

(c) Trial usage shall not be construed as acceptance by the City.

(d) Provide and pay for all testing required on the system components where, in the opinion of the Contract Administrator, Manufacturer's ratings or specified performance is not being achieved.

E25.1.16 Electrical Systems Clean-up:

(a) At the completion of the project, leave all systems in full operation, the exterior of all new and renovated systems clean, and the work areas cleaned to the satisfaction of the City and Occupants.

(b) Clean exposed surfaces of new and renovated electrical equipment, light fixtures, panelboards, control panels, etc.

(c) The level of cleaning shall be consistent with the intended use of the building and the electrical systems.

(d) The City reserves the right to inspect the electrical systems to determine the effectiveness of the cleaning. Where cleaning is deemed to be unacceptable, the cleaning shall be re-done at no extra charge to the City.

E25.1.17 Instructions To City

(a) Prepare a Suitable List/Sign-off Sheet to indicate the Instructions and Materials provided.
  (i) List shall include all Systems.
  (ii) List shall include all Materials.
  (iii) List shall include spaces for Sign-off Names and Dates for the City’s Representative.

(b) Instruct the City's representatives in all aspects of the operation of the systems and equipment.

(c) Arrange and pay for the services of Manufacturers' representatives required for the instruction on specialized portions of the installation.

(d) Present all copies of the Operation and Maintenance Manuals to the City for review. The City will review the manuals and return them with comments. The Sub-contractor shall make all requested changes. This process shall continue until the Manuals are deemed complete by the City. The Sub-contractor shall turn over the completed manuals to the City.

(e) Present all copies of the Final As-built Drawings to the City.

E25.1.18 Start-up and Commissioning shall include:

(a) LEED Commissioning

(b) Start-up, including Factory Representative

(c) Load Testing

(d) Operator Training (Include first year operation assistance and operator training)

(e) O & M Manuals, As-built Drawings, and Spare Parts

(f) Furnish Certificates confirming that the work has been done to the satisfaction of the Authority Having Jurisdiction.

E25.1.19 Special Tools And Spare Parts

(a) Prepare a Suitable List/Sign-off Sheet to indicate the Materials provided.

(i) List shall include all Materials.

(ii) List shall include spaces for Sign-off Names and Dates for the City's Representative.

(b) Provide spare parts as follows:

(i) Circuit breakers and fuse as indicated in panelboard schedules and single line drawings.

(ii) Motor starters as indicated.

(iii) 10 % spare lamps of each type and rating or a minimum of two.

(iv) Other systems as indicated.

(c) Identify spare parts containers as to contents and replacement parts number.

(d) Provide one set of all specialized tools required to service equipment as recommended by the Manufacturers.

E25.1.20 Warranties

(a) No certificate issued, payment made, or partial or entire use of the system(s) by the City, shall be construed as acceptance of defective work or material.

(b) Include copies of all warranty and guaranty certificates and declarations in the Operating and Maintenance Manuals, in the appropriate sections.

(c) Provide a certificate or declaration indicating the warranty and conditions.

(d) Warranty satisfactory operation of all work and equipment installed under this contract. Repair or replace at no charge to the City, all items which fail or prove to be defective within the Warranty period, provided that the failure is not due to improper usage by the City. Make good all damages incurred as a result of the failure and of the repair of the system(s).

(e) The warranty shall be for all parts and labour. Do not expect any participation from the City's personnel in the correction of warranty related work.

(f) For systems, equipment and components which are used continuously throughout the year, the normal warranty period shall be one calendar year from the date of Substantial Completion. For seasonal equipment, components and systems which are not normally used continuously throughout the year, the warranty period shall include at least one full season of satisfactory operation.

(g) When equipment or systems are put into use subsequent to the acceptance of the building, or a portion of the building, the warranty period for seasonally used equipment and systems shall be deemed to commence from the date of satisfactory operation, not from the date of final acceptance by the City.

(h) The City retains the right to demand, and to receive, an extension of the original construction warranty for any equipment, component or system which consistently fails to perform, or which requires repeated repair or adjustment.

(i) Wherever manufacturer's warranties in excess of the Contractor's warranty are provided, furnish the City with copies of the Certificates, dated and acknowledged, and inserted in the O and M Manuals. The Contractors Warranty shall include a list of the Manufacturer's extended warranties.

(j) Warranty work shall be carried out within a reasonable time period following the reporting of the problem. Should the repair time for any failed component be unreasonably long, as determined by the City, make alternate arrangements to have a temporary replacement component made available until such time that the original component is repaired and re-installed. There shall be no additional cost to the City for any temporary replacement component or for any labour required to implement the work.

E25.1.21 Documentation And System(s) Acceptance

(a) The Contractor shall prepare a suitable document to be signed by the City or his representative, confirming:

(i) The City has received satisfactory instruction in the operation and maintenance of all equipment and systems.

(ii) The Operation and maintenance manuals have been received and reviewed by the City.

(iii) The "As-Built" drawings have been received and reviewed by the City.

(iv) Specified spare parts, components, keys, removable handles, tools and the like, have been accepted by the City.

E25.1.22 Completion

(a) The Contractor shall be aware that it is the City's intention to withhold recommendations for payment of progress claims totalling more than 90% of the electrical contract until the project is declared Substantially Complete.

(b) Substantial Completion:

(i) The project will be ready for a Substantial Completion inspection only when it is ready for the City to occupy and utilize the building for it's intended purpose.

(ii) At Substantial Completion, the City will realise that some deficiencies may still exist.

(iii) In preparation for the inspection to determine Substantial Completion for all or a portion of the project, the Contractor shall ensure and declare in writing that:

- Except for seasonal deficiencies, the Start-up and Verification of the Commissioning Process has been completed, and all systems are fully functional.
- All systems and equipment have been cleaned.
- All systems and equipment have been identified and labelled.
- The preliminary As-Built Drawings have been submitted for review.
- One set of preliminary O and M Manuals have been submitted for review.
- Instructions to the City's Representative have been given.
- Maintenance Materials and Spare Parts have been provided.

(iv) When the Contractor is satisfied that the entire project is completed, and after making his own inspection, he shall apply, in writing, to the City, for an inspection to determine if the project can be deemed to be Substantially Complete.

(v) In the letter of request, a date shall be specified upon which the project can be delivered and be Substantially Complete.

(vi) During the inspection, a deficiency list will be compiled and a report will be issued. These deficiencies shall be corrected or completed in a satisfactory and timely manner.

(vii) Based on the inspection report, the City will retain a sum of money, sufficient in his estimation to cover the cost of completing the deficiencies.

(c) Total Completion:

(i) When the Contractor has determined that the deficiencies noted during the Substantial Completion inspection have been completed or corrected, he shall apply, in writing, to the City, for a final inspection to determine if the project can be deemed to Totally Complete.

(ii) In the letter of request, a date shall be specified upon which the project can be delivered and be Totally Complete.

(iii) In preparation for the inspection to determine Total Completion for all or a portion of the project, the Contractor shall ensure and declare in writing that:

- All aspects of the Commissioning Process have been completed.
- The final As-Built drawings have been submitted, reviewed and accepted.
- The final O and M Manuals have been submitted, reviewed and accepted.
- The deficiencies noted during the Substantial Completion inspection have been corrected or completed.

(iv) During the inspection, a deficiency list will be compiled and a report will be issued. These deficiencies shall be corrected or completed in a satisfactory and timely manner.

(v) Based on the inspection report, the City will retain a sum of money, sufficient in his estimation to cover the cost of completing the deficiencies.

(vi) Final Payment will only be made after the project has been determined to be Totally Complete, with all deficiencies satisfactorily corrected.

E25.2 Electrical Materials and Methods

E25.2.1 Quality Assurance

(a) The Contactor to complete all electrical installations in accordance with local standard.

(b) While not identified and specified by number in this Division, comply with CSA Electrical Bulletins in force at time of Proposal submission. Comply with the requirements of all Provincial and local laws, rules, ordinances and codes.

(c) Electrical installation shall be in accordance with the current edition of the Electrical Code, Provincial and other codes, rules and regulations. Supply material and labour required to meet the requirements of these codes, rules and regulations even though the work is not shown on the drawings or mentioned in the specifications. Where the electrical installation calls for better quality materials or construction than the minimum requirements of these codes, rules and regulations, the electrical installation shall be as shown on the drawings and as specified.

E25.2.2 Submittals

(a) Indicate details of construction, dimensions, capacities, weights and electrical performance characteristics of equipment or material.

(b) Where applicable, include wiring, single line and schematic diagrams.

(c) Include wiring drawings or diagrams showing interconnection with work of other Sections.

(d) Submit samples in accordance with General Conditions. Pay all transportation costs to ship samples to the Contract Administrator's office and return. Approved samples will be retained until after Proposal closing, then all samples will be returned except for the sample submitted by the manufacturer who has been listed by the successful Contractor in the Proposal Documents. This sample will be used for comparison with the actual production run of successful manufacturer.

E25.2.3 Operations and Maintenance Data

(a) Provide operation and maintenance data for incorporation into Maintenance Manuals.

(b) Include details of design elements, construction features, component function and maintenance requirements and schedules to permit effective start-up, operation, maintenance, repair, modification, extension and expansion of any portion or feature of installation.

(c) Include technical data, product data, supplemented by bulletins, component illustrations, exploded views, technical descriptions of items, and parts lists. Advertising or sales literature not acceptable.

(d) Include wiring and schematic diagrams and performance curves.

(e) Include names and addresses of local suppliers for items included in Maintenance Manuals.

(f) Submit Maintenance Manuals to the Contract Administrator for review. Manuals that are incomplete shall be returned to the Electrical Subcontractor for completion. Completed manuals must be submitted, to the satisfaction of the Contract Administrator, before final payment may be considered to be due.

E25.2.4 Maintenance Manuals

(a) Assemble Operation and Maintenance Manuals in three ring binders with index tabs, each containing:

(i) The Sub-contractor's and suppliers names and telephone numbers,

(ii) A complete set of reviewed shop drawings,

(iii) Brochures,

(iv) Data sheets,

(v) Operating, maintenance, and lubricating instructions,

(vi) Wiring diagrams,

(vii) Controls 'As-Built' shop drawings,

(viii) Commissioning information,

(ix) Warrantee certificates.

(b) Provide maintenance materials and information as specified.

(c) Turn materials over to the City in an orderly fashion upon completion of installation.

(d) Maintenance manuals shall contain a copy of the final verification report and certificate, as well as a copy of the electrical inspection certificate.

E25.2.5 Pricing of Changes After Proposal

(a) The consultant reserves the right to review costing using accepted Contractor's Pricing Standards.

E25.2.6 Other Trades

(a) Include in cost all work by sub-trades, such as painting, coring, plastering, access doors etc. to restore all finished areas to original finish.

(b) Schedule execution of electrical work with associated work specified in other Divisions.

E25.2.7 Delivery, Storage and Handling

(a) Deliver all materials to Site in an orderly fashion and in accordance with schedule.

(b) Provide additional protection such as tarps, padding, wood skids, etc., where such is required to ensure protection of equipment and as directed by the City.

E25.3 Products

E25.3.1 Materials and Equipment

(a) Provide labour, materials, transportation, equipment and facilities, etc., required for the complete electrical installation as indicated or implied on the drawings and specifications.

(b) Electrical equipment shall be new and of type and quality specified.

(c) Equipment and material to be CSA certified, and manufactured to standards described. Where there is no alternative to supplying equipment which is not CSA certified, obtain special approval from the appropriate Inspection Departments.

E25.3.2 Voltage Ratings

(a) Operating voltages: to CAN3-C235.

(b) Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard. Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

E25.4 Execution

E25.4.1 Inspection

(a) Furnish a Certificate of Acceptance from the Inspection Authorities on completion of work. Copies of Certificate to be included in Maintenance Manuals.

(b) Certificate of Inspection and Approval must be submitted before final payment may be considered to be due.

E25.4.2 Care, Operation and Start-Up

(a) Instruct the Building Manager's personnel in the operation, care and maintenance of equipment. Arrangement of such instructional sessions to be done at a time convenient to the City.

(b) Arrange and pay for services of manufacturer's factory service engineer to supervise start-up of installation, check, adjust, balance and calibrate components.

(c) Provide these services for such a period, and for as many visits as necessary to put equipment into operation, and ensure that operating personnel are conversant with all aspects of its care and operation.

E25.4.3 Finishes

(a) Clean and touch up surfaces of shop-painted equipment, scratched or marred during shipment or installation, to match original paint.

(b) Clean, prime and paint exposed hangers, racks, fastenings to prevent rusting.

(c) Equipment Identification

(d) Identify all electrical equipment with lamacoid nameplates.

(e) Wording on nameplates to be approved prior to manufacturing. Submit schedule of nameplates and wording to the City.

(f) Use red nameplates with white lettering for fire alarm equipment and emergency power circuits. Use blue nameplates with white lettering for UPS power circuits.

(g) Use heat shrink type markers or CAB-3 cable marking system for all conductors and cables. Mark cables at both ends. Mark fire alarm, card access and LAN cables.

E25.4.4 Location of Outlets

(a) Change location of outlets at no extra cost or credit, providing distance does not exceed 10'-0" (3 m) and information is provided before installation.

E25.4.5 Mounting

(a) Mounting height of equipment is from finished floor to centerline of equipment unless specified or indicated otherwise.

(b) If mounting height of equipment is not indicated, verify with Consultant before proceeding with installation.

(c) Install electrical equipment at the following heights unless indicated or directed otherwise (to bottom of outlet).

(i) Outlets above counters: 6" (150 mm); splashbacks: 4" (100 mm).

(ii) General receptacles, telephone and television outlets: 16" (400 mm).

(iii) Receptacles in mechanical and shop areas: 40" (1 m).

(iv) Switches, dimmers, push buttons, Luxo bracket: 48" (1.2 m).

(v) Fire alarm pullstations, thermostats: 47" (1.2 m).

(vi) End of line resistors: 64" (1.6 m).

(vii) Fire alarm bells, horns, speakers 90" (2.3 m).

(viii) Panelboards, annunciators, etc.: 78" (2.0 m) to top.

(ix) Clock outlets: 84" (2.15 m).

(x) Handicap suite switches, dimmers, pushbuttons 40" (1 m).

(xi) Handicap suite receptacles, television, telephone: 24" (600 mm).

(xii) Handicap suite thermostats: 47" (1.2 m).

(xiii) As per Architectural elevations.

(xiv) Heights as above or at bottom of nearest block or brick course.

(xv) Wall mounted telephone: 60" (1525mm).

(d) All transformers, motor control centres and floor-mounted distribution panels shall be mounted on 4" (100 mm) concrete housekeeping pads. The Electrical Contractor shall be responsible for provision of these pads. Where ceiling heights will not allow housekeeping pads to be installed below distributions, and where pre-approved by the Consultant, 1 ½" (38 mm) galvanized cantruss shall be provided in place of the pad.

E25.4.6 Firefproofing

(a) Where cables or conduits pass through floors, block or concrete walls and fire rated walls, provide fire stop to maintain rating. Acceptable manufacturers are Dow Corning Firestop 2000 Sealant, A/D Fire Barrier Silicone Sealant, Ener Stop - Ancron Corporation. Install fire stop with strict attention to manufacturer's directions. Include directions in maintenance manuals.

(b) Fireproofing of electrical cables, conduits, trays, etc., passing through fire barriers shall conform to local codes and inspection authorities.

E25.4.7 Tests

(a) Conduct and pay for tests including, but not limited to, the following systems:

(i) Systems: new electrical distribution system, fire alarm system(s), card access system, UPS system, standby generator system, low voltage lighting control.

(ii) Furnish Manufacturer's Certificate or letter confirming that entire installation, as it pertains to each system, has been installed to manufacturer's instructions. Include letters in maintenance manuals.

(iii) Carry out tests in presence of Consultant where directed.

(iv) Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.

(v) Submit test results in Maintenance Manuals.

(b) Obtain the approval of the Consultant, Building Manager and the City before arranging for any cutting. Patching shall restore the affected area to the original condition; materials and methods used for patching shall match existing.

E25.4.8 Workmanship

(a) Install equipment, conduit and cables in a workmanlike manner to present a neat appearance to the satisfaction of the Consultant. Install conduit and cable runs parallel and perpendicular to building lines in chases, behind furring or above ceilings, where such concealment is possible. In areas where systems are to be exposed, install neatly and group in a tidy appearance.

(b) Install equipment and apparatus requiring maintenance, adjustment or eventual replacement, with adequate clearances and accessibility for same.

(c) Include, in the work, all requirements shown on the shop drawings or manufacturer's installation instructions.

(d) Replace work unsatisfactory to the Consultant without extra cost.

E25.5 Electrical Systems – Scope of Work

E25.5.1 General

(a) Provide all work and equipment as described in electrical outline specifications.

(b) The project has been registered with the Canadian Green Building Council with the objective of achieving a LEED certification level of Silver.

E25.5.2 Electric Utility

(a) All necessary arrangements and coordination must be made with the Electrical Supply Authority in order to ensure availability to service when required.

(b) Include all utility cost including any primary ducts, cables, trenches, etc: as may be required by the electric utility. Arrange for, and provide all necessary details for required transformer pads. Provide grounding loop around pad to utility standards.

E25.5.3 Telephone Utility

(a) Coordinate with Telephone Utility to provide a telephone service.

(b) Provide one 4" PVC ducts from telephone service pedestal to main telephone backboard. Provide buried PVC pull pits every 60m, with suitable drainage and water tight bolt on underground covers.

(c) Coordinate installation of lines supplied to the building to facilitate all voice requirements.

(d) Provide one 4'x8' ¾" plywood backboard in Telecommunications Equipment Room. Secure plywood backboard to the wall near or behind the 19" telecommunications rack. Provide a 4" conduit, stubbed out of building 1m (and sloping away from building) for MTS service entrance. Coordinate work with all utilities.

(e) Provide a ¾" conduit from main telephone outlet in each suite to the telephone backboard, c/w pull cord. Soft-wire (4 pair UTP) from main telephone outlet to other outlets in suite.

(f) Provide a conduit system (minimum ¾"C) c/w CAT5E cable from Main Tel BB to each main telephone outlet in office or administration space. Coil 6" spare cable and provide blank cover plates on all spare outlets.

E25.5.4 Cable Utility

(a) Coordinate with Cable Utility to provide cable services.

(b) Provide one 4" PVC ducts from property line to main telephone backboard. Provide buried PVC pull pits every 60m, with suitable drainage and water tight bolt on underground covers.

(c) Coordinate installation of lines supplied to the building to facilitate all cable requirements to each in office or administration space.

E25.5.5 Main Distribution

(a) Main distribution design shall incorporate provisions for emergency generator, including separate auto transfer switches for each fire pump (where applicable), life safety system and non-life safety system as specified by the City.

(b) Main service entrance switchboard to incorporate incoming wireway section (underground preferred), fixed main breaker complete with built-in coordinated ground fault, CT section for customer metering c/w central distribution panel (for public panel load requirements of 400A and higher), multiple meter socket sections (quantity to suit total number of suites), factory assembled in one enclosure and sprinkler proof (to the satisfaction of electrical inspection Department).

(c) Power supply must be 347/600V 3ph 4W, grounded neutral, 60 Hz. The main distribution shall be sized in accordance to the Canadian Electrical Code (CEC), conforming to classifications for size and usage found in the CEC and the Manitoba Building Code (NBC). The short Circuit) interrupting capacity shall be conforming to final SCCAF) study as specified in section 5.6.

(d) The main circuit breaker shall be fixed mounted molded case. Main circuit breaker must be equipped with solid state o/c relay to provide the following time/current curve shaping adjustments: Long Time Pickup Setting, Long Time Delay, Short Time Pickup, Short Time Delay, Ground Fault Pickup, Ground Fault Time Delay, 4 wire residual ground fault, Instantaneous Pickup.

(e) The switchboard shall be completed with digital customer metering that monitors and capable of communicating the following parameters: RMS sensing, line voltage, phase current, frequency, KW, KVA, KW-hours, KVAR, KVAR hours, power factor, Harmonic THD for voltage and current and max/minimum values.

(f) Main breaker shall be set up and adjusted on site by the manufacturer to provide complete selective coordination with upstream transformer, utility line side fusing and all main distribution breakers.

Provide two (3) 4" conduit stub outs from every electrical, mechanical and data rooms for future additions/expansion complete with pull cords and 12 AWG tracer wire.

E25.5.6 Short Circuit, Coordination & Arc Flash

(a) Provide a complete short circuit and coordination study and Arc flash analysis (SCCAF)for the electrical distribution system including: Determination of maximum available short circuit current at main bus, ensure that equipment supplied under this contract is suitable for required ratings, examine degree of protective coordination for selective tripping for all main feeder breakers, and make all necessary adjustments to devices and submit two copies of short-circuit and coordination study complete with Engineer's seal to the City for their review.

(b) The short circuit study and SC rating of electrical distribution equipment shall be based on the calculation of the utility transformer with one standard size larger of the actual size and at the infinitive fault availability.

(c) The Coordination study and arc flash analysis shall be based on the actual utility transformer sizing, and actual utility fault level availability at the utility transformer. primary side.

E25.5.7 Sub-Distribution

(a) The distribution section shall consist of a one section distribution (integral with the main breaker) having space for all required branch feeder breakers and a minimum space of four 400A frame breakers.

(b) Feeder breaker equal to 400A or greater to be equipped with solid state o/c relay to provide fully adjustable the following time/current curve shaping adjustments: Long Time Pickup Setting, Long Time Delay, Short Time Pickup, Short Time Delay, Ground Fault Pickup, Ground Fault Time Delay, 4 wire residual ground fault, Instantaneous Pickup

(c) All the primary protective breakers of all transformers 75KVA or greater shall be LSI fully adjustable type and shall be withstand the transformer inrush current.

(d) Branch circuit panels for: site lighting, main garage, wash bay, lighting/receptacles, public corridor lighting and public air handling and mechanical equipment will be provided electrical room (or where permissible). Each panel will be 120/208V, 225A, 42 Circuit, will all necessary breakers – plus 20% spare (15A-1P). Panel shall be NBLP or similar type with 1" wide breakers. Load centres are not acceptable for any public panel. KAIC rating shall be based on the SCCAF study as specified in section 5.6.

(e) All electrical panels with carrying capacity of greater 250KVA, electrical panels for lighting, HVAC system, service water heating, elevators and any special equipment or systems more than 20KW must be c/w provision for electrical consumption monitoring means conforming to Model National Energy Code of Canada for buildings (MNECB).

E25.5.8 Emergency Generator

(a) Provide separate pricing for emergency generator.

(b) The emergency generator shall be capable of handling all required life safety equipment loads and non - essential loads as required by the City:

(c) Bus Dispatcher's Office including lighting and all office equipment.

(i) All Garage Door Operators.

(ii) UPS Loads.

(iii) Mechanical equipment vital to maintain normal operation of the facility.

(iv) 50% of the lights in the Parking Garage area.

(v) Lighting levels in all remaining areas of the building as per National Building Code (latest revision).

(d) Provide separate auto transfer switches for each fire pump (where applicable), life safety system, non-life safety system.

(e) The emergency set design and installation shall be conforming to classification and specification of CSA-C282-09 standard (Emergency Electrical Power Supply for Buildings) and CEC section 46.

E25.5.9 Hazardous Area

(a) All electrical design and installation shall be conforming to CEC rules 20-100 to 20-114 and section 18 inclusively in areas classified as hazardous.

(b) All electrical design and installation in the dispensing and diesel storage areas shall be conforming to hazardous areas as specified in CEC section 18 and section 20.

(c) Provide all necessary bonding/grounding design and installation to prevent ignitions arising due to static and stray current conforming to API 2008 – Protections against Ignitions Arising out of Static, Lightning, and Stray Current.

E25.5.10 Wash Bay Areas

(a) The electrical apparatus and associated hardware located in the wash bay area and the areas in which excessive moisture are likely to be present shall be conforming to CEC section 22. Refer to Appendix G for more information.

E25.5.11 Tank Monitoring System – Veeder Root

(a) Provide all necessary wiring, sealing, bonding as specified in CEC sections 18 and 20 for hazardous class I location. Refer to Appendix G for more information.

E25.5.12 Mechanical Equipment Connections

(a) Wire and connect all office and public area mechanical equipment, including, but not limited to: roof top condensing units, fan coils furnaces, public air handling fans, sump pumps, exhaust fans, entrance force flow heaters. See mechanical specification for further details.

(b) Wire and connect all line voltage thermostats for heating and cooling.

(c) Electric space heating devices to be supplied and installed by electrical contractor (typically: baseboard heaters, force flow heaters, unit heaters).

E25.5.13 Building Management System - Metasys®

(a) Wire and connect all power and communication cables, including but not limited to controllers, computers, communication interfaces. See mechanical specification for further details.

E25.5.14 Power - Miscellaneous

(a) Dry-type transformers must be supplied to provide 120 V and 208 V power for receptacles, small mechanical fans, incandescent lighting and miscellaneous other equipment as required. All transformers shall be rated minimum K-13.

(b) Panelboards (and CDP's) must be the product of one manufacturer. Acceptable manufacturers are Cutler Hammer, Square D, Group Schneider and Siemens.

(c) Wire and connect all automatic door openers c/w ultrasonic, non-contact sensors.

(d) Provide dedicated neutral for all isolated ground receptacles and dimmer circuit.

(e) Make provisions to wire and connect all pop machines, fridges, microwaves and other kitchen equipment.

(f) Provide in floor electric heating in locker rooms. Refer to room datasheets.

(g) Provide Dyson Air Blade or Mitsubishi Hand Dryers, or equivalent (Nova not allowed).

(h) Wire and connect all public area equipment, including, but not limited to: integrated shower stall lights, hand dryers and electronically controlled plumbing fixtures.

(i) Refer to room data sheet A-7.1 – Multiuse space: Provide wall-mounted, recessed cabinet for audio equipment complete with air vents, power and data terminations inside.

(j) Conductors in conduits must be solid copper #10 AWG and smaller and stranded #8 AWG and larger. Insulation cross link polyethylene RW-90 or RWU-90 90°C, 600 V must be provided as required. The minimum conductor size must be #12 AWG.

(k) Armored cables (AC-90) must be solid copper #10 AWG and smaller and stranded #8 AWG and larger. Insulation cross link polyethylene (XLPE) AC-90 may be used for luminaires drop connections in drop ceilings and receptacles in metal stud walls ONLY.

(l) Armored cables (Teck) must be solid copper #10 AWG and smaller and stranded #8 AWG and larger. Insulation cross link polyethylene (RW-90) 90?C, 600 V FT4 flame rating must be provided as required. Cable must be utilized for mechanical equipment connection for vibration isolation and weatherproofing as required. (Watertight flex conduits can also be utilized).

(m) Low voltage cables for systems must be multi-conductor type, and minimum 24 AWG complete with FT4 sheathing. All conductors must be in conduit.

(n) Provide one hour fire rated cable (MI Cable) for feeder to fire pump (where applicable). Provide fusing and disconnects as required.

E25.5.15 Fire Alarm System

(a) Provide a multiplex/addressable fire alarm system with the following components:

(i) Main fire alarm panel FACP (at main entrance)

(ii) LED and LCD Enunciators (LED to show grouped detection per floor/fire compartment, vertical (stair/elevator) shaft etc.)

(iii) Manual pull station at all points of egress, and where egress leads from one fire compartment to another.

(iv) Smoke detectors down all corridors and the top of each exit stair shaft.

(v) Input/detection module for all sprinkler systems components including flow switches and tamper-proof valve switches. Also for any of the following required sprinkler components: loss of excess water pressure switch. See mechanical for sprinkler details.

(vi) Fan shot-down / on-off control at FACP for each major (public) air handling system.

(vii) Automatic shut down of central vacuum systems throughout building on any alarm.

(viii) Fire alarm – Central Station connection for alarm and trouble.

(ix) Release of all hold-open or security system held doors on any fire alarm.

(x) Fire alarm speakers or horns c/w strobes, in general are locations throughout the building. All strobes shall be synchronized.

(xi) All required supervision of fire pump. Including: loss of power, phase rotation, pump running, and valve tamper conditions.

(b) Provide battery back-up and sealed no-maintenance batteries in fire alarm enclosure to provide, upon loss of AC power: 24 hours of supervision on all devices, and full signal output for 30 minutes.

(c) Provide Elevator home run control as specified in section 5.15.

(d) Where applicable, provide Mag lock release contacts at main Fire Alarm panels for all mag locks in the building. Mag lock release shall be conforming to MBC requirement.

(e) Include all necessary testing and VI reports.

(f) New system to be tied to existing systems in Buildings A and B.

(g) Acceptable manufacturers are: Simplex, Edwards, Mircom and Notifier.

E25.5.16 CO Detection System

(a) Provide (supply & install) a design fort Carbon Monoxide Alarm/Detection System as required by 6.2.4.2 of the Manitoba Building Code as described below:

(b) Excerpt from Manitoba Building Code:

6.2.4.2. Carbon Monoxide Alarms — Other Occupancies
1) A building *subject to this Part, but that is not subject to Article 6.2.4.1., must have installed in it a carbon monoxide (CO) alarm that is*
a) installed *in conformance with NFPA-720 Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment, and*

b) interconnected *to the fire alarm system where a fire alarm is required under Article 3.2.4.1.*

(c) The Carbon Monoxide Alarm/Detection System shall be interconnected to the fire alarm system.

(d) Carbon Monoxide Detectors shall be installed and located in accordance with NFPA-720, "Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment".

(i) Note the following excerpts from NFPA-720 regarding locations & installation:

5.5.5.3 Requirements for *Carbon Monoxide Detectors.*
5.5.5.3.1 Carbon monoxide detectors shall be installed in accordance with the manufacturer's published instructions in the following locations:
(1) On the ceiling in the same *room as permanently installed fuel-burning appliances*
(2) Centrally located on *every habitable level and in every HVAC zone of the building*

(ii) Note the following excerpts from NFPA-720 regarding Occupant Notification:

5.5.6.2 Occupant Notification.
5.5.6.2.1 Except as permitted in 5.5.6.2.2, occupant notification shall be throughout the protected premises.
5.5.6.2.2 Where carbon monoxide alarm signals are transmitted to a constantly attended on-site location or off-premises location in accordance with Chapter 7, selective public mode occupant notification shall be permitted to be limited to the notification zone encompassing the area where the carbon monoxide alarm signal was initiated.

E25.5.17 Service Vehicle Parking

(a) Branch circuit panels for parking receptacles will be provided from designated suite panelboards.

(b) Provide IPLC (power smart approved) receptacles at exterior parking stall (one outlet per 2 stalls). Allow for 5 exterior parking stalls as per Space Function Relationship Diagram.

E25.5.18 Emergency Lighting

(a) Provide a complete 24V DC powered battery backup system for the entire building to provide emergency lighting in the event of a loss of AC power to the normal lighting system.

(b) Provide LED type emergency lighting heads at each exit and along all means of egress or access to egress. Energi-lite, Lumacell, Beghelli or approved equal.

(c) Provide self-contained battery banks.

(d) Exit lighting must be provided as required by the National Building Code. Exit lights must be LED type maximum 2 watts per exit with 25-year life expectancy.

E25.5.19 Exit Signs

(a) Provide self-contained LED type exit signs. Energi-lite, Lumacell, Beghelli or approved equal.

(b) Exit signs must be provided as required by the National Building Code. Exit signs must be LED type with 25-year life expectancy. Must meet CSA-860.

(c) Connect EXIT signs to local corridor or general lighting circuit to ensure conformance with CEC Section 46.

E25.5.20 Lighting

(a) Provide lighting in each room, typically linear and/or compact fluorescent, wall or ceiling fixtures.

(b) Fixtures shall contain PL lamps with ELECTRONIC ballasts. Switching for public areas shall be in the electrical room.

(c) At each exterior door, provide vandal resistant wall fixture over door. Fixtures to be photocell controlled.

(d) Light levels to IES Standards (based on usage criteria – refer to room data sheets).

(e) 347V light fixtures are allowed.

(f) Bus Wash to be treated as separate area. Provide local light controls for this area.

E25.5.21 Lighting Controls

(a) Centralized and area specific lighting control systems are allowed. System design to conform to ASHRAE Releases 90.1-2010-Part 2.

(b) If relay panels are used, light controls for the main garage to be installed in the electrical/room with wall mounted switch in a central, easily accessible location.

(c) Provide occupancy sensors to control lights in public areas

(d) Provide wall mounted combination switches (occupancy sensors c/w dimmer switches) to control lights in the following areas.

(e) LON lighting controls are not accepted.

E25.5.22 Uninterrupted Power Supply System (UPS)

(a) Coordinate all requirements with the City's IT department representative.

(b) Wire and connect all power and communication cables, including but not limited to controllers, computers, and communication interfaces.

E25.5.23 Security Camera Systems

(a) Provide security camera system consisting of 12 cameras. Install the cameras on the exterior of the building. Coordinate exact camera locations with the City and provide central monitoring station in Dispatcher's Office.

(b) The system shall be capable of monitoring the entire facility and be integrated into buildings security system.

E25.5.24 Card Access System

(a) Provide a centralized Card Access and Security System including:

(i) Proximity type Card Readers (with controllers) at every entrance including main floor.

(ii) Cards/Tags for access.

(iii) All necessary hardware and software, in a sprinkler-proof enclosure in electrical room.

(iv) Each access door shall have a flush door contact for monitoring feedback.

(v) Use electric strikes for door control (magnetic locks not allowed).

(vi) Auto dial up and central reporting features for remote alarm monitoring.

(vii) The systems shall utilize "BACNet" or "N2Bus" networking technologies. System shall be able to operate as a stand-alone entity with the option of using a web server device so that programming and viewing of status can be accomplished by any PC connected to the same LAN or via the internet.

(b) Provide card access at all personnel doors.

(c) All video surveillance and card access systems to be tied with existing City of Winnipeg Pegasys System.

E25.5.25 Public Address System

(a) Provide a centralized public address system throughout the building. The system to be integrated with and controlled by the telephone system. The system operation to be such that it is accessible from any room in the building.

(b) The systems shall utilize "BACNet" or "N2Bus" networking technologies. System shall be able to operate as a stand-alone entity with the option of using a web server device so that programming and viewing of status can be accomplished by any PC connected to the same LAN or via the internet.

E25.5.26 Data/Communication Systems

(a) Coordinate all IT System Requirements and Specifications with:

NAME	ORG/POSITION	PHONE	E-MAIL
Randall P. Wiebe-	The City of Winnipeg	(204) 986-6845	RPWiebe@winnipeg.ca

Dembowski	/Enterprise Network Analyst		

(b) Provide full WiFi coverage throughout entire facility to allow *Infodev* radio system access for buses.

(c) Refer to room data sheet for additional wireless router requirements for each area.

(d) New building to be connected both to 421 Osborne Building-A (basement datacenter) and to the communications pedestal at the Transit Corridor Ft. Rouge Station using Single Mode Fibre Optic Cable.

(e) Telecommunications Cabling Installation General Guidelines:

(i) Data cabling shall accommodate distance limitations. Internal layout of the building to allow for four (4) data distribution cabinets (Telecommunication rooms).

(ii) Any conduit runs through fire rated walls shall be provided with fire stop to maintain rating. See fireproofing section.

(iii) Copper Category 6 network cabling not to exceed 100m runs including patch cables and service coils.

(iv) Multimode fibre optic cable not to exceed 500m in length (OM3 50µm).

(v) Conduits shall be permanently labelled with a designation that indicates the start and end locations of the conduit. Labels at each end of the conduit to be identical.

(vi) Fibre optic cables shall be permanently labelled with a designation that indicates the start and end locations of the cable. The labels at each end of the conduit to be identical.

(vii) Fibre optic patch panels shall be permanently labelled and identify each cable and strand number of each cable. A chart shall be attached to the fibre optic enclosure identifying the start and end of each cable and each strand within the cable.

(viii) All copper building cables shall be labelled with a sequential number. Provide a floor plan and indicate all locations of the end points of all cable runs. In a large installation a zone-and-cable# label may be used (eg. 01-23 indicates zone 01 cable #23).Cable numbers shall not be repeated – only sequential numbering throughout the buildings is allowed.

(ix) Copper Cat6 patch panels in the telecommunications room shall be labelled with the sequential numbers identifying the building drop cable.

(x) Copper Cat6 work area face plates shall be labelled with the sequential number identifying the building drop cable.

(xi) A labelling naming standard shall be provided to the installer at a later date designating start/end locations and numbering following TIA/EIA-606-A Administration Standard guidelines.

(f) Telecommunication Rooms

(i) Provide at least four (4) wiring distribution locations (Telecommunication Room or telecommunication Enclosure). Connect each telecommunication room to the main Telecommunications Equipment Room (via Cat 6 or Fibre Optic Cable).

(ii) Provide a 19” communications rack in each telecommunication room. Secure it to the floor using lug bolts and bond to building ground. With every 19” telecommunication rack, include a 19” x 19” flush mount shelf with minimum 200 lbs capacity and vertical cable management on both sides.

(iii) Telecommunications cabling shall be run through EMT Conduit between wiring closets and main Telecommunications room.

(iv) All Telecommunication Room shall have environmental controls to maintain normal room temperature for electronic equipment.

(v) Provide one 4’x8’ ¾” plywood backboard in Telecommunications Equipment Room. Secure plywood backboard to the wall near or behind the 19” telecommunications rack to provide a mounting location for telephone BIX blocks and other telecommunications company’s demarcation equipment.

(g) Alternatives to standard wiring closets

(i) Standalone network cabinets are allowed. Cabinets shall be easily accessible for changes or servicing of equipment. Environmental controls requirement shall be determined by cabinet location.

(ii) In the absence of sufficient environmental controls, hardened network electronics are allowed. Location will determine whether such cabinets will need their own environmental controls.

(h) Power

(i) Provide two separately fused duplex power circuits for telecommunications equipment at each wiring closet.

(ii) Provide additional duplex power outlet for miscellaneous use.

(i) Inside Plant Copper Cabling

(i) Copper Category 6 cabling is recommended for wiring network attached devices.

(ii) Building drop cables shall be terminated in standard 19" wiring racks on RJ45 patch panels.

(iii) Work area jack face plates shall have protective covers against water and dirt. Provide dust plugs (plastic or rubber) for all unused jacks.

(iv) All cables in garage area shall be installed in EMT conduit. The conduit shall be filled no greater than 40% at all times.

(v) Label all pull boxes containing the telecommunications cabling with permanent adhesive labels with the word 'TELECOMMUNICATION'.

(vi) Provide two (2) Cat 6 cable per building drop. Provide the following network cables:

- One (1) computer workstation at the bus fuelling lane (2 cables required).
- One (1) computer workstation in the bus parking kiosk (2 cables required).
- 1 network access for a stationary revenue vault at the bus fuelling lane (2 cables required)
- 2 network accesses for fuel meters at the bus fuelling lane (4 cables required)
- 1 computer workstation in the vehicle inspection/repair area (2 cables required)
- 6 computer workstations in the dispatch office/driver waiting area (12 cables required)
- All of the HVAC and other equipment on Metasys (4 cables required)
- Card access (12 cables required)
- 12 security cameras on the building exterior (12 cables required)
- 5 WiFi access spots located to provide full coverage of the garage assuming a maximum 150 ft. radius of coverage (10 cables required)
- Wall mounted WiFi hot spots must be on cantilevered arms. Mounting height to be sufficient to avoid any interference with a bus. The arm shall accommodate the antenna to be at least one foot away from the wall.
- Provide a 120VAC duplex receptacle adjacent to each network connection. (excludes WiFi hot spots).

(vii) Accurate As-built Drawings shall be provided to the owner showing the location of telecommunications ducts/cables.

(viii) Cat6 cables to be tested and certified to Cat6 standards, test results to be provided in electronic format (PDF or Word Document).

(ix) Refer to Winnipeg Transit Cat6 Cabling Specification in Appendix G.

(j) Inside Plant Fibre Optic Cabling

(i) Multimode fibre optic cable to be 500 meters in length (50 micron).

(ii) All conduit bends, transitions, and pull boxes shall be of sufficient size to maintain the fibre manufacturer's specification for minimum bend radius. In absence of manufacturer's specifications, maintain bending radius at 10 times the outer diameter of the cable.

(iii) Conduits shall not be filled with cabling over 40% at all times (allow 60% spare capacity).

(iv) Label all conduits containing fibre optic cabling with permanent adhesive labels. Provide black lettering on orange background, with the words 'FIBRE OPTIC'. Apply labels at each end of the conduit as well as along the conduit spaced no greater than 10 meters apart. Label all pull boxes containing fibre optic cables in the same fashion.

(v) Use a 24 strand cable of 50/125 µm OM3 Multimode Fibre, terminated in a 19" rack mount splice tray, connector type SC.

(vi) After termination, provide OTDR test results, bi-directional, at wavelengths 850nm and 1300 nm, for each strand to be supplied in electronic format (file format *.SOR). Consistent file naming should be used to identify the strand, direction, and wavelength of the test. OTDR tests shall be performed using a launch cable sufficient in length to stabilize the beginning of the trace (100m minimum, 500m recommended).

(vii) The maximum allowable attenuation for any splice or termination is 0.3 dB.

(viii) Tests must ensure that the measured link loss for each strand does not exceed the "worst case" allowable loss defined as the sum of the connector loss (based on the number of mated connector pairs at the EIA/TIA-568 B maximum allowable loss of 0.75 dB per mated pair) and the optical loss (based on the performance standard below)

(ix) OM3 Multimode Fibre 50/125 µm

(x) Performance:

- Wavelength 850nm - Max attenuation 3.0 dB/Km
- Wavelength 1,300nm - Max attenuation 0.9 dB/Km
- Transmission Properties
- Wavelength 850nm - Bandwidth 1500MHz-km
- Wavelength 1300nm – Bandwidth 500 MHz-km

(k) Connecting the Building C to the City of Winnipeg fibre network

(i) East End: Provide connection to 421 Osborne building via a Single Mode Fibre Optic cabling (Corning SMF28e). Running a full 24-strand cable terminated in a fibre splice tray with SC type connectors is recommended. Contact Bjorn Radstrom for information on the location of available conduits of the Transit Corridor.

(ii) West End: Transit Corridor's Ft. Rouge Station which will have fibre connectivity to the City's fibre network. Provide a fibre connection to the communications pedestal at Transit's Corridor Ft. Rouge Station for future redundant link into the City's fibre network. This connection shall use a Single Mode Fibre (Corning SMF28e), 24 strands, terminated in a fibre splice tray with SC type connectors.

(l) Fibre Optic Installation, Test and Certification

(i) Trenched minimum 1 meter below ground. The fibre optic cable shall be contained in high density polyethylene (HDPE) conduit. Conduit shall be sized appropriately (2" or 3" recommended) to meet future requirements allowing for maximum fill volume should additional cables be added.

(ii) Provide pull string for future cable pulls. Install a 12-guage tracer wire in the conduit for future location of the conduit.

(iii) All conduit bends, transitions, and pull boxes should be of sufficient size to maintain the fibre manufacturer's specification for minimum bend radius.

(iv) Use a 24 strand cable of outdoor rated Corning SMF28e fibre, terminated in a 19" rack mount splice tray, connector type SC. For Telecommunications Enclosures with no environmental controls, terminating hardware (including fibre patch cords) shall be rated for extreme environments.

(v) After termination, provide OTDR test results bi-directional, at wavelengths 1300nm and 1550 nm, for each strand to be supplied in electronic format (file format *.SOR). Consistent file naming should be used to identify the strand, direction, and wavelength of the test. OTDR tests shall be performed using a launch cable sufficient in length to stabilize the beginning of the trace (100m minimum, 500m recommended).

(vi) The maximum allowable attenuation for any splice or termination is 0.3 dB.

(vii) Tests must ensure that the measured link loss for each strand does not exceed the "worst case" allowable loss defined as the sum of the connector loss (based on the number of mated connector pairs at the EIA/TIA-568 B maximum allowable loss of 0.75 dB per mated pair) and the optical loss (based on the performance standard below)

(viii) Performance Singlemode, Outside plant

- Wavelength 1,310nm - Max attenuation 0.35 dB/Km
- Wavelength 1,550nm - Max attenuation 0.2 dB/Km
- OLTS (Optical Loss Test Set) test results to be provided with an itemized report for each strand on the length and attenuation.

(ix) Provide accurate As-built Drawings showing the location of the Outside Plant buried duct/cable.

E25.5.27 Garage Doors:

(a) Ensure operation of garage doors and equip with a warning/pilot light with operations as follows:

(i) Door closed, lights off

(ii) Door operating in opening or closing cycle, red light on

(iii) Door fully open and in hold open position, green light on.

(b) Doors to include an auto setting for normal operations with the automatic door openers.

(c) Include a "manual" setting to allow a person to set the door to open or closed from the controller inside the building adjacent to the door.

(d) Each door shall include a power kill switch with provision for a lock at the door for servicing.

E25.5.28 Power Smart Incentives

(a) Manitoba Hydro Power Smart rebates, where applicable, will be applied for under this contract. The contractor shall submit all necessary paperwork – on behalf of the building Owner, and shall not include this as a credit against the work in this contract. Provide the Project Manager with a copy of the application forms, and obtain direction for Payee from the City before making application.

E25.5.29 LEED Silver Requirements:

(a) Lighting design documentation conforms to Model National Energy Code of Canada for Buildings (MNECB), article 4.2.6.1.

(b) Exterior entrances/exits must meet the requirement of MNECB table 4.2.1.2 and article 4.2.1.2-2.

(c) Exterior lighting and control designs conform to MNECB articles 4.2.1.1, 4.2.1.3-1, and 4.2.2.1-1.

(d) Interior light and controls conform to MNECB articles 4.2.3.1, 4.2.4.2-1, 4.2.4.2-3, 4.2.4.3, 4.2.4.1-3, and 4.2.4.4.

(e) Transformers and their power loss characteristics must comply with equipment efficiency act or CAN/CSA-C802.

(f) Motors must comply with equipment efficiency act or CAN/CSA-C390, article 4.10.

E26. COMMISSIONING AND TRAINING

E26.1 Refer to E24 and E25 for mechanical and electrical commissioning and training requirements. Commissioning and training specified herein do not preclude specific requirements of the LEED process.

E26.2 Accommodate a maximum of ten (10) Transit employees for their respective training.

E27. PROJECT RECORDS

E27.1 Prior to Total Performance of the contract, the Contractor is to prepare and deliver to the Contract Administrator:

E27.1.1 Operations and Maintenance Manuals

(a) As noted throughout the specifications, four (4) hard copy sets (3 rings binders with index tabs) and one (1) set on electronic media (CD-ROM) in PDF format of operations and maintenance manuals each consisting of installation data, parts list, operating instruction and recommended maintenance procedures.

(b) Four (4) sets of warrantee documents, outlining items warrantied, the conditions of the warrantee and the limits of the warrantee.

(c) Manuals to include mechanical and electrical requirements listed in E24.4.32, E24.10.5, E25.1.17, E25.2.3, and E25.2.4.

E27.1.2 As-Built Drawings

(a) Two (2) hard copy sets (paper) and one (1) copy on electronic media (CD-ROM) in .dwg and PDF format of all disciplines Architectural, Landscape Architectural, Civil Engineering, Structural, Mechanical, and Electrical.

E27.1.3 Specifications

(a) Two (2) hard copy sets (paper) and one (1) copy on electronic media (CD-ROM) in PDF format of all disciplines Architectural, Landscape Architectural, Civil Engineering, Structural, Mechanical, and Electrical.

E27.2 Receipt of these items is mandatory to be awarded Total Performance of the contract.