



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 470-2009**

**SUPPLY AND INSTALLATION OF COMPUTERIZED BUILDING CONTROL SYSTEM**

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## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

B1.1 SUPPLY AND INSTALLATION OF COMPUTERIZED BUILDING CONTROL SYSTEM

### **B2. SUBMISSION DEADLINE**

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, July 2, 2009.

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

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

### **B3. SITE INVESTIGATION**

B3.1 Further to C3.1, the Contract Administrator or an authorized representative will be available at the Site from 9:00 a.m. to 10:00a.m. on June 22, 2009 to provide Bidders access to the Site.

B3.2 The Bidder shall not be entitled to rely on any information or interpretation received at the Site Meeting unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

### **B4. ENQUIRIES**

B4.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.

B4.2 If the Bidder finds errors, discrepancies or omissions in the Bid Opportunity, or is unsure of the meaning or intent of any provision therein, the Bidder shall notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.

B4.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator to all Bidders by issuing an addendum.

B4.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator only to the Bidder who made the enquiry.

B4.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B4 unless that response or interpretation is provided by the Contract Administrator in writing.

### **B5. ADDENDA**

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

B5.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.

B5.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt>

- B5.2.2 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.
- B5.2.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 8 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

## **B6. SUBSTITUTES**

- B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
  - (b) include a mock-up capable of demonstrating seamless integration into the existing Metasys extended architecture operator interface. Integration demonstration must be performed at least three (3) Business Days prior to the Submission Deadline, and must be acceptable to the Contract Administrator;
  - (c) 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;
  - (d) identify any anticipated cost or time savings that may be associated with the substitute;
  - (e) 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;
  - (f) 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.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.
- B6.6.1 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.
- B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his Total Bid Price upon the specified item but may

also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B14.

- B6.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.
- B6.10 Notwithstanding B6.2 to B6.9, and in accordance with B7.7, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B14.1(a).

## **B7. BID COMPONENTS**

- B7.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
  - (b) Form B: Prices;
- B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.
- B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Bid.
- B7.4 The Bid Submission may be submitted by mail, courier or personal delivery, or by facsimile transmission.
- B7.5 If the Bid Submission is submitted by mail, courier or personal delivery, it shall be enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address, and shall be submitted to:
- The City of Winnipeg  
Corporate Finance Department  
Materials Management Division  
185 King Street, Main Floor  
Winnipeg, MB R3B 1J1
- B7.5.1 Samples or other components of the Bid Submission which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid Submission.
- B7.6 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.
- B7.7 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B14.1(a).
- B7.8 If the Bid Submission is submitted by facsimile transmission, it shall be submitted to (204) 949-1178.
- B7.8.1 The Bidder is advised that the City cannot take responsibility for the availability of the facsimile machine at any time.
- B7.8.2 Bids submitted by internet electronic mail (e-mail) will not be accepted.

## **B8. BID**

- B8.1 The Bidder shall complete Form A: Bid, making all required entries.
- B8.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:

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

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

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

B8.4 Paragraph 10 of Form A: Bid shall be signed in accordance with the following requirements:

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

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

B8.4.2 All signatures shall be original.

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

## **B9. PRICES**

B9.1 The Bidder shall state the lump sum price in Canadian funds for the Work on Form B: Prices.

B9.1.1 Notwithstanding C12.2.3(c), the price on Form B: Prices shall not include the Manitoba Retail Sales Tax (MRST, also known as PST), which shall be extra where applicable.

B9.2 Prices from Non-Resident Bidders are subject to a Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

## **B10. QUALIFICATION**

B10.1 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; 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; and

B10.2 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>; and

B10.3 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 pursuant to The Workplace Safety and Health Act (Manitoba);
- (d) have experience with building automation installations.

B10.4 Further to B10.3(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/Subcontractors 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 website at <http://www.winnipeg.ca/matmgt>).

B10.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B10.6 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

## **B11. OPENING OF BIDS AND RELEASE OF INFORMATION**

B11.1 Bids will not be opened publicly.

B11.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/bidopp.asp>

B11.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract Amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt>

B11.4 The Bidder is advised that any information contained in any Bid 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.

## **B12. IRREVOCABLE BID**

B12.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 9 of Form A: Bid.



B12.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work for the time period specified in Paragraph 9 of Form A: Bid.

### **B13. WITHDRAWAL OF BIDS**

B13.1 A Bidder may withdraw his Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

B13.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.

B13.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 10 of Form A: Bid, and only such person, has authority to give notice of withdrawal.

B13.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:

- (a) retain the Bid until after the Submission Deadline has elapsed;
- (b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 10 of Form A: Bid; and
- (c) if the notice has been given by any one of the persons specified in B13.1.3(b), declare the Bid withdrawn.

B13.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B12.2 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.

### **B14. EVALUATION OF BIDS**

B14.1 Award of the Contract shall be based on the following bid evaluation criteria:

- (a) compliance by the Bidder with the requirements of the Bid Opportunity or acceptable deviation there from (pass/fail);
- (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B10 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B6.

B14.2 Further to B14.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities, if the interests of the City so require.

B14.3 Further to B14.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid or in other information required to be submitted, that he is responsible and qualified.

B14.4 Further to B14.1(c), the Total Bid Price shall be the lump sum price shown on Form B: Prices.

- (a) If there is any discrepancy between the lump sum price written in figures and the lump sum price written in words, the price written in words shall take precedence.

B14.5 This Contract will be awarded as a whole.

**B15. AWARD OF CONTRACT**

- B15.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B15.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.
- B15.2.1 Without limiting the generality of B15.2, the City will have no obligation to award a Contract where:
- (a) the prices exceed the available City funds for the Work;
  - (b) the prices are materially in excess of the prices received for similar work in the past;
  - (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
  - (d) only one Bid is received; or
  - (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.
- B15.3 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B14.
- B15.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his Bid upon written request to the Contract Administrator.
- B15.4 Notwithstanding C4, the City will issue a Purchase Order to the successful Bidder in lieu of the execution of a Contract.
- B15.5 The Contract, as defined in C1.1, in its entirety shall be deemed to be incorporated in and to form a part of the Purchase Order notwithstanding that it is not necessarily attached to or accompany said Purchase Order.

## 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](http://www.winnipeg.ca/matmgt/gen_cond.stm)
- C0.2 A reference in the Bid Opportunity to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for 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 Work to be done under the Contract shall consist of supply and installation of a computerized building control system.

D2.2 Standard of Acceptance: Johnson Controls Metasys System Extended Architecture, MS-NAE supervisory controllers, FEC field controllers.

D2.3 The major components of the Work are as follows:

(a) Work in Building A:

- (i) Decommission and remove the entire existing standalone Johnson Controls Metasys system. All decommissioned equipment is the property of the City and shall be turned over to the Contract Administrator;
- (ii) Supply and installation of new computerized building control system;
- (iii) Final commissioning of the computerized building control system.

(b) Work in Building B:

- (i) Decommission and remove the entire existing ALC system. All decommissioned equipment is the property of the City and shall be turned over to the Contract Administrator;
- (ii) Supply and installation of new computerized building control system;
- (iii) Final commissioning of the computerized building control system.

(c) Final documentation and drawings shall be signed and sealed by a professional engineer.

D2.4 Contractor shall remove the existing control panel field and supply and install a new controller.

D2.5 Investigate the Site and become familiar with the function and purpose of the existing standalone system, and how it controls the facility at 421 Osborne Street.

(a) **Building A** is located at 421 Osborne Street, and is more commonly known as the Administration and Repair Building.

(b) **Building B** is located at 421 Osborne Street, and is more commonly known as the Storage Tracks or Bus Garage.

D2.6 The new computerized building control system shall integrate seamless into the City's existing Metasys extended architecture operator interface, and shall replace the existing system and its components (such as, but not limited to, NCM's, XRL's, DCM's, DC9100 controllers, UNT controllers, etc.).

D2.7 The new system will be interfaced back to the City of Winnipeg's Central Control office through Metasys Extended Architecture (MSEA) using the City's existing IT infrastructure.

D2.8 The Contractor shall arrange and pay for all necessary permits and inspections, and obtain all necessary approvals of the installation and operation, including but not limited to fire alarm panels, by all Authorities Having Jurisdiction.

D2.9 Work will take place while the facility is open and operational. The Contractor shall schedule the Work to minimize or eliminate any interruptions to equipment or process.

- D2.10 Where existing field sensors are found to be defective, and with the approval of the Contract Administrator, the Contractor shall repair or replace the defective component.
- D2.11 The Work shall consist of the provision of all labour, materials, special tools, equipment, enclosures, power supplies, software, software licenses, project specific software, configurations and database entries, interfaces, wiring, tubing, installation, labelling, engineering, calibration, documentation, submittals, testing, verification, training, permits and licenses, transportation, shipping, handling, administration, supervision, management, insurance, workers compensation, security clearances, warranty, specified services, and items required by the Contract that are required for the functional turn-key operation of the complete and fully functional computerized building control system.

**D3. CONTRACT ADMINISTRATOR**

- D3.1 The Contract Administrator is:

Kathy Roberts  
Project Officer II  
100 Main Street, Winnipeg MB R3C 1A4  
Telephone No. (204) 470-7380  
Facsimile No. (204) 986-7311

- D3.2 At the pre-construction meeting, the Contract Administrator will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

**D4. CONTRACTOR'S SUPERVISOR**

- D4.1 At the pre-construction meeting, the Contractor shall identify his designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

**D5. NOTICES**

- D5.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.
- D5.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D5.3, D5.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D3.1.
- D5.3 Notwithstanding C21., all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following address or 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
- D5.4 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following address or facsimile number:  
The City of Winnipeg  
Internal Services Department

Legal Services Division  
Attn: City Solicitor  
185 King Street, 3rd Floor  
Winnipeg MB R3B 1J1  
Facsimile No.: (204) 947-9155

## **D6. CONFIDENTIALITY AND OWNERSHIP OF INFORMATION**

- D6.1 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.
- D6.2 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.
- D6.3 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 consent of the Contract Administrator.

## **SUBMISSIONS**

### **D7. AUTHORITY TO CARRY ON BUSINESS**

- D7.1 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.

### **D8. WORKERS COMPENSATION**

- D8.1 The Contractor shall be registered with the Workers Compensation Board of Manitoba, shall provide and maintain Workers Compensation coverage throughout the term of the Contract, and shall provide the Contract Administrator with evidence thereof upon request.

### **D9. SAFE WORK PLAN AND SITE SAFETY**

- D9.1 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.
- D9.2 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>
- D9.3 Contractor shall designate a Safety Supervisor for the Project.
- D9.4 Contractor shall ensure that all Subcontractors have a Safe Work Plan in place that covers their scope of work, and shall provide the Subcontractor Safe Work Plan(s) to the Contract Administrator at least five (5) Business Days prior to the commencement of any Work on the Site by that Subcontractor.
- D9.5 Contractor shall ensure that protection from the Contractor's operations is afforded to City employees and equipment at the Site.

## **D10. INSURANCE**

- D10.1 The Contractor shall provide and maintain the following insurance coverage:
- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
  - (b) automobile liability insurance for owned automobiles used for or in connection with the Work in the amount of at least two million dollars (\$2,000,000.00) at all times during the performance of the Work and until the date of Total Performance.
- D10.2 Deductibles shall be borne by the Contractor.
- D10.3 The Contractor shall provide the Contract Administrator with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than seven (7) Calendar Days from notification of the award of Contract by Purchase Order.
- D10.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

## **D11. PERFORMANCE SECURITY**

- D11.1 If the Contract Price exceeds twenty-five thousand dollars (\$25,000.00), 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.
- D11.1.1 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.
- D11.2 The Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of Purchase Order and prior to the commencement of any Work on the Site.

## **D12. SUBCONTRACTOR LIST**

- D12.1 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 seven (7) Calendar Days from notification of the award of Contract.

### **D13. DETAILED WORK SCHEDULE**

- D13.1 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 but in no event later than the date specified in C4.1 for the return of the executed Contract.
- D13.2 The detailed work schedule shall consist of the following:
- (a) a critical path method (C.P.M.) schedule for the Work;
  - (b) a Gantt chart for the Work based on the C.P.M. schedule;
  - (c) a daily manpower schedule for the Work;
- all acceptable to the Contract Administrator.
- D13.3 Further to D13.2(a), 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:
- D13.4 Further to D13.2(b), 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.
- D13.5 Further to D13.2(c), the daily manpower schedule shall list the daily number of individuals on the Site for each trade.

### **D14. SECURITY CLEARANCE**

- D14.1 Each individual proposed to perform Work under the Contract shall be required to obtain a Criminal Record Search Certificate from the police service having jurisdiction at his place of residence.
- D14.2 Prior to the commencement of any Work, and during the term of the Contract if additional or replacement individuals are proposed to perform Work, the Contractor shall supply the Contract Administrator with a Criminal Record Search Certificate obtained not earlier than one (1) year prior to the Submission Deadline, or a certified true copy thereof, for each individual proposed to perform Work.
- D14.3 Any individual for whom a Criminal Record Search Certificate is not provided, or for whom a Criminal Record Search Certificate indicates any convictions or pending charges related to property offences or crimes against another person, will not be permitted to perform any Work.
- D14.4 Any Criminal Record Search Certificate obtained thereby will be deemed valid for the duration of the Contract subject to a repeated records search as hereinafter specified.
- D14.5 Notwithstanding the foregoing, at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated criminal records search. Any individual who fails to provide a satisfactory Criminal Record Search Certificate as a result of a repeated criminal records search will not be permitted to continue to perform any Work.

### **SCHEDULE OF WORK**

#### **D15. COMMENCEMENT**

- D15.1 The Contractor shall not commence any Work until he is in receipt of a Purchase Order from the Award Authority authorizing the commencement of the Work.
- D15.2 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 D6;



- (ii) evidence of the workers compensation coverage specified in D8;
    - (iii) the Safe Work Plan specified in D9;
    - (iv) evidence of the insurance specified in D10;
    - (v) the performance security specified in D11;
    - (vi) the Subcontractor list specified in D12;
    - (vii) the detailed work schedule specified in D13; and
    - (viii) the security clearances specified in D14.
  - (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.
- D15.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the Purchase Order.
- D15.4 The City intends to award this Contract by July 23, 2009.
- D15.4.1 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

#### **D16. SUBSTANTIAL PERFORMANCE**

- D16.1 The Contractor shall achieve Substantial Performance by October 30, 2009.
- D16.2 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.
- D16.3 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.
- D16.4 Requirements for Substantial Performance: Computerized Building Control System shall be fully installed and operational. System must be commissioned and demonstrated to be fully operational to the Contract Administrator's satisfaction.**

#### **D17. TOTAL PERFORMANCE**

- D17.1 The Contractor shall achieve Total Performance by November 27, 2009.
- D17.2 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.
- D17.3 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.

#### **D18. LIQUIDATED DAMAGES**

- D18.1 If the Contractor fails to achieve Substantial Performance in accordance with the Contract by the day fixed herein for Substantial Performance, the Contractor shall pay the City five hundred dollars (\$500.00) per Calendar Day for each and every Calendar Day following the day fixed herein for Substantial Performance during which such failure continues.

- D18.2 The amount specified for liquidated damages in D18.1 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Substantial Performance by the day fixed herein for same.
- D18.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

## **CONTROL OF WORK**

### **D19. JOB MEETINGS**

- D19.1 Regular weekly 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.
- D19.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

## **MEASUREMENT AND PAYMENT**

### **D20. PAYMENT**

- D20.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

### **D21. PAYMENT SCHEDULE**

- D21.1 Further to C12, payment shall be in accordance with the following payment schedule:
- (a) 80% on completion of Substantial Performance;
  - (b) 20% on completion of Total Performance.

## **WARRANTY**

### **D22. WARRANTY**

- D22.1 Warranty is as stated in C13.

## **PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

### **D23. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

- D23.1 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).

**FORM H1: PERFORMANCE BOND**  
(See D11)

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

BID OPPORTUNITY NO. 470-2009

SUPPLY AND INSTALLATION OF COMPUTERIZED BUILDING CONTROL SYSTEM

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 D11)

\_\_\_\_\_  
(Date)

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 470-2009

SUPPLY AND INSTALLATION OF COMPUTERIZED BUILDING CONTROL SYSTEM

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)



## 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 are applicable to the Work:

<u>Specification No.</u>	<u>Specification Title</u>
	Metasys EA Product Specification

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
	Cover Sheet
1501-01	Metasys Facility Management System Drawing Index
1501-01A	Fort Rouge Garage Site Plan, Buildings A & B Plan View
1501-32A	Fort Rouge G Section, N2 Communication Bus Layout
1501-32B	Fort Rouge G Section, Equipment & Conduit Layout
1501-32C	Panel TT Exhaust Fan Wiring Details
1501-32C-i	Fort Rouge Garage MCC 'TT' Front Elevation
1501-32D	Fort Rouge Garage Typical Exhaust Fan Starter MCC 'TT' (Metasys Only) Wiring Diagram
1501-32E	Fort Rouge Garage Exhaust Fan 1 thru 39, MCC 'TT' Termination Wiring Diagram
1501-33	Fort Rouge Garage Metasys Equipment Installation in Boiler Room Admin Building
1501-34	Ft. Rouge Administration NCU / NEU / DC-9100 Communication Terminations
1501-35	Fort Rouge Garage Administration NCU-4 / Slots 1 to 4 Layout Sheet
1501-36	Fort Rouge Garage Admin/G-Section NEU-4-3 / Slots 5 to 8 Layout Sheet
1501-37	SF-1 Ventilation System
1501-38	SF1 Wiring Details
1501-39	Ft. Rouge Administration Hot Water/Chilled Water System
1501-40	Ft. Rouge Administration Hot Water/Chilled Water Wiring Details
1501-41A	Ft. Rouge G Section MUA-1
1501-41B	Ft. Rouge G Section MUA Units Typical of MUA-2/3/5
1501-41C	Ft. Rouge G Section MUA Units Typical of MUA-4, 6 & 7
1501-42A	Ft. Rouge G Section MUA-1 Control Panel Layout
1501-42B	Ft. Rouge G Section MUA-2, 3 & 5 Control Panel Layout
1501-42C	Ft. Rouge G Section MUA-4, 6 & 7 Control Panel Layout
1501-43	Fort Rouge Garage Admin/G-Section MUA-01 to 07 DDC CNTLR Point Layout
1501-44	Ft. Rouge G Section DC-9100 DDC Controller Keypad & Display Functions
1501-45A	Ft. Rouge G Section MUA-1 Control Panel Wiring Detail
1501-45B	Ft. Rouge G Section MUA-2, 3 & 5 Control Panel Wiring Detail
1501-45C	Ft. Rouge G Section MUA-4, 6 & 7 Control Panel Wiring Detail
1501-46A	Ft. Rouge G Section – ICG – Makeup Air Unit MUA-1 Wiring Detail
1501-46B	Ft. Rouge G Section -National Champ (aka Temprite) Make-Up Air Units MUA-2 & 5 Wiring Detail



1501-46C	Ft. Rouge G Section –Bulloch- Make-Up Air Unit Wiring Detail MUA-3
1501-46D	Ft. Rouge G Section –Thermal Air (aka Temprite)- Make-Up Air Units MUA-4, 6 & 7 Wiring Details
1501-46D-i	Ft. Rouge G Section –Thermal Air (aka Temprite)- Make-Up Air Units MUA-4, 6 & 7 Wiring Details
1501-46D-MUA1	Fort Rouge Garage G Section: Machine Shop MUA-1 Wiring Details
1510-46D-MUA6	Fort Rouge Garage G Section: Paint Shop MUA-6 Wiring Details
1501-46D-MUA7	Fort Rouge Garage G Section: Stores MUA-7 Wiring Details
1501-47	Facility Management Syste Operator Interface
1501-48	SF-2 Ventilation System
1501-49	Administration Building SF-2 Wiring Schematic
1 of 27	Integrated Control Systems As-Built Diagrams Cover Page
2 of 27	Integrated Control Systems Table of Contents
3 of 27	Integrated Control Systems Symbol Legend
4 of 27	Integrated Control Systems Summary Bill of Materials
5 of 27	Integrated Control Systems Network Architecture
6 of 27	Integrated Control Systems Network Wiring Layout
7 of 27	Integrated Control Systems LGR Controller
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10 of 27	Integrated Control Systems MUA 1-4 Schematic
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12 of 27	Integrated Control Systems MUA(1-4) Sequence of Operations
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14 of 27	Integrated Control Systems EF Controller(s)
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16 of 27	Integrated Control Systems EF Controller(s) cont'd
17 of 27	Integrated Control Systems Exhaust Fan Wiring Details
18 of 27	Integrated Control Systems Misc. Schematic(s)
19 of 27	Integrated Control Systems F-1, East Cyclone 1 Schematics
20 of 27	Integrated Control Systems F-2, West Cyclone 2 Schematics
21 of 27	Integrated Control Systems HF & Cyclone Fans Seq. of Oper.
22 of 27	Integrated Control Systems MUA1 and MUA4 Wiring Details
23 of 27	Integrated Control Systems MUA2 and MUA3 Wiring Details
24 of 27	Integrated Control Systems MUA5 to MUA19 Wiring Details
25 of 27	Integrated Control Systems MUA20 to MUA26 Wiring Details
26 of 27	Integrated Control Systems EF Control Panel Layouts
27 of 27	Integrated Control Systems MUAs Control Panel Layouts

## **E2. HAZARDOUS MATERIALS**

- E2.1 If asbestos or other hazardous materials are encountered during the Work of the Contract, the Contractor shall stop all work and notify the Contract Administrator immediately. Removal of hazardous materials shall be dealt with by the City and the Contractor shall await further instruction by the Contract Administrator.

## **E3. MATERIAL AND EQUIPMENT**

- E3.1 Contractor shall be responsible for all transportation, handling, protection and storage of materials and equipment.

## **E4. QUALITY OF WORK**

- E4.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Contract Administrator if required Work is such as to make it impractical to produce required results.
- E4.2 Do not employ anyone unskilled in his or her required duties. Contract Administrator reserves right to require dismissal from SITE, workers deemed incompetent or careless.

E4.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Contract Administrator, whose decision is final.

## **E5. USE OF SITE AND PREMISES**

E5.1 Contractor shall allow for continued access throughout the construction period and shall ensure the Site's entering and exiting is maintained to the approval of the Local Authorities having Jurisdiction, local by-laws, and Work Place Safety and Health Policies. This will also be applicable for parking lot accesses and other such requirements to assist the City in maintaining normal operations.

E5.2 Contractor's personnel must use only designated entrances for access to Work areas, delivery of materials and/or equipment and removal of construction debris.

E5.3 Restrict equipment, Work and workers to designated areas and established routes to and from Work areas.

E5.4 Storage of construction materials, tools, equipment, etc. in areas outside designated Work areas is not permitted.

E5.5 Keep all fire lanes, egress, and access routes clear at all times.

E5.6 Parking restrictions may be applied and on Site parking will only be allowed at the City's discretion.

## **E6. HOUSEKEEPING**

E6.1 The Contractor shall maintain the Site and the Work in a tidy condition and free from the accumulation of waste products and debris.

E6.2 Total Performance of the Work shall not be attained until the Contractor has cleaned up the Site and has removed all plant and surplus products, tools, construction materials and equipment. The Contractor shall also have removed waste products and debris

## **E7. GENERAL SPECIFICATION FOR METASYS CONTROL**

E7.1 Controls must be able to interface to MSEA technology on the field device network using either the N2Open or BACnet protocols. No LON protocols are to be accepted.

E7.2 User interface will be Internet Explorer to the existing ADX server.

E7.3 Contractor to develop user views in conjunction with City technical staff.

E7.4 Graphics are to be programmed and reside on the existing ADX server, not in any field or supervisory controllers.

E7.5 Field Controller: Duplicate existing sequence of operations. Re-use existing field devices where possible.

E7.6 Communications: Duplicate existing communication trunk. Communication shall be via existing City of Winnipeg backbone. City technical staff will provide IP and routing information.

E7.7 Point labelling shall be as per existing system.

E7.8 Software version must match existing ADX server and require no upgrades.

E7.9 Contractor to provide commissioning sheets for all points on field devices as well as head end equipment.

E7.10 Contractor to communicate with equipment provider (new HVAC equipment only) to ensure proper field point integration as well as controllability of the equipment, if not package controls.

- E7.11 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.
- E7.12 The use of either N2Open or BACnet to be determined based on type of building where the work is being performed. If the construction is a brand new facility, then BACnet can be used. The term BACnet should then be defined properly in its use, see E7.14. If the work is an addition to and the new work is to be tied into the existing controls, then the Contractor should contact City of Winnipeg technical staff to determine the best protocol to use based on existing equipment.
- E7.13 Equipment Details:
- (a) Rooftop Units Make-Up Air / Air Handling Unit (MUA/AHU):
    - (i) Where possible, the manufacturer of the equipment should be contacted to see if an N2Open or BACnet protocol equipped package controller is available from the factory.
    - (ii) If no interface from the factory is available then we would as a minimum expect the following points to monitor:
      - (i) Start/Stop
      - (ii) Fan Status
      - (iii) Economizer Status
      - (iv) Cooling Mode
      - (v) Heating Mode
      - (vi) Supply Air Temperature
      - (vii) Room Temperature for Single Zone Unit
      - (viii) Return Air Temperature for Multizone Unit
      - (ix) Supply Air Low Limit Status (Freeze Stat)
  - (b) Exhaust Fans:
    - (i) Exhaust fans will have start/stop/status points.
  - (c) Boilers:
    - (i) Boilers to come with own package controls and outdoor air temperature for reset control.
    - (ii) A Metasys Interface for the controls to be part of the package for direct connection on either the N2Bus or BACnet.
    - (iii) If no interface package exists, the following points are required as a minimum:
      - (i) Hot Water Supply Temperature
      - (ii) Hot Water Return Temperature
      - (iii) Boiler Status
      - (iv) Boiler Alarm, this is to be a generic alarm for all mechanical safeties or other related devices, which would cause the boiler to be shut down.
  - (d) Chillers:
    - (i) Chillers to come with own package controls and outdoor air temperature for reset control.
    - (ii) A Metasys Interface for the controls to be part of the package for direct connection on either the N2Bus or BACnet.
    - (iii) If no interface package exists, the following points are required as a minimum:
      - (i) Chilled Water Supply Temperature
      - (ii) Chilled Water Return Temperature
      - (iii) Chiller Status
      - (iv) Chiller Alarm, this is to be a generic alarm for all mechanical safeties or other related devices, which would cause the chiller to be shut down.

- (v) Condenser Water Supply Temperature
  - (vi) Condenser Water Return Temperature
  - (vii) Water Tower fans/pumps Status
- (e) Pumps:
- (i) Pumps will have a start/stop/status as a minimum.
- (f) Variable Speed Drives:
- (i) All VFD/VSD to have N2/BACnet interface built into the device, supplied by the manufacturer.
- (g) Lighting Controls:
- (i) No LON lighting controls are to be accepted. No exceptions.
- (h) VAV Boxes:
- (i) VAV boxes to have digital controller mounted directly to the VAV box actuator. This is to have a digital room thermostat and proportional control on the damper. This controller to use either N2Open or BACnet.
- (i) Sump Pits:
- (i) Sump puts shall have high alarm status installed.
- (j) Generic Inputs from the Facility:
- (i) Room temperatures in corner office/rooms on each floor, especially if there are windows present.
  - (ii) If used, building static pressure.
- E7.14 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.

## **E8. RE-USE OF WIRING AND EQUIPMENT**

- E8.1 Where practicable and allowable by code, the new installation may re-use existing field wiring.
- E8.2 The new installation shall not re-use any enclosures not suitable for the environment in which they are installed.

## **E9. AS-BUILT DRAWINGS AND MANUALS**

- E9.1 At the completion of the Project, the Contractor shall submit three (3) sets of as-built documentation to the Contract Administrator which shall include the following as a minimum:
- (a) As-built drawings;
  - (b) Licenses, inspection certificates, guarantees and warranty documents for all equipment and systems;
  - (c) Include sections dedicated to software, that include a system overview and a detailed description of each software feature. The manual shall instruct the user on programming or re-programming any portion of the Controls System. Include complete documentation on all control programs, algorithms, setpoints, alarms, etc.;
  - (d) Individual system schematics, including sequences of operation;
  - (e) Complete bill of materials;
- E9.2 The as-built documentation shall be tabbed and submitted in three (3) 3-ring binders.

E9.3 Contractor shall also submit one copy of the as-built drawings on CD in AutoCAD format.

## **E10. CONTROLS SYSTEM ARCHITECTURE**

**E10.1 If the Contractor has authorization to install an Approved Equal or Approved Alternate, in accordance with B6, to the Standard of Acceptance, then E10 is applicable. If the Contractor is installing equipment accordance with D2.2 then E10 should be disregarded in its entirety.**

E10.2 The Controls System shall consist of at least one Operator Workstation located in the office of the Facilities Maintenance Engineer.

E10.3 The Controls Systems shall:

- (a) Consist of one (1) portable workstation, as a minimum;
- (b) Include a complete tool set, operational information displays, multi-window displays, and other interactive aids to assist interpretation and ease of use;
- (c) Include licenses for all software residing on and used by the Controls Systems, and shall be transferred to the City prior to completion;
- (d) Be modular in nature and shall permit easy expansion through the addition of software and hardware;
- (e) Support 100% expansion capacity of all types of nodes and point types included in the initial installation.

## **E11. VERIFICATION AND COMMISSIONING**

E11.1 Contractor shall verify operation of the computerized building control system by fully testing and verifying all inputs and outputs, both digital and analog, for proper display and function.

E11.2 All software programs shall be fully tested to eliminate any glitches.

E11.3 The computerized building control system shall be considered commissioned when all alarms and system values are appropriate for the control sequence defined.

## **E12. TRAINING**

E12.1 Contractor shall provide the following training:

- (a) Review of project documentation control system software layout and naming conventions;
- (b) Basic controls system operation;
- (c) System reporting and alarm management;
- (d) Scheduling and point trending.

## **E13. APPENDIX A**

E13.1 Appendix A contains hardware and software counts for existing Johnson Controls Metasys system, Network Configuration for NC-4 located in Building A.

E13.2 Any reference to NC-1 Building B should be ignored.