



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 940-2011**

**REPLACEMENT OF RAW SEWAGE PUMP  
P3 PERIMETER ROAD PUMPING STATION**

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## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

- B1.1 REPLACEMENT OF RAW SEWAGE PUMP P3  
PERIMETER ROAD PUMPING STATION

### **B2. SUBMISSION DEADLINE**

- B2.1 The Submission Deadline is 12:00 noon Winnipeg time, December 13, 2011.
- 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 at 10:00 am on November 30, 2011.
- B3.2 The Bidder shall assess the impact of site conditions on the cost of completing project work. This includes outside and inside site conditions, access to permit removal and installation of project demolition and new materials, and other factors affecting project cost or schedule.
- B3.3 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/bidopp.asp>
- 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.
- B5.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.
- B6. SUBSTITUTES**
- B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
  - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
  - (c) identify any anticipated cost or time savings that may be associated with the substitute;
  - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work 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.
- 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 B15.

- B6.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.
- B6.10 Notwithstanding B6.2 to B6.9, and in accordance with B7.6 deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B15.1(a).

## **B7. BID COMPONENTS**

- B7.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
  - (b) Form B: Prices;
  - (c) Bid Security;
    - (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;
- 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 shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.
- B7.4.1 Samples or other components of the Bid which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid.
- B7.5 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.
- B7.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B15.1(a).
- B7.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B7.8 Bids shall be submitted to:
- The City of Winnipeg  
Corporate Finance Department  
Materials Management Division  
185 King Street, Main Floor  
Winnipeg MB R3B 1J1

## **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 12 of Form A: Bid shall be signed in accordance with the following requirements:

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

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

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

## **B9. PRICES**

B9.1 The Bidder shall state 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 Payments to Non-Resident Contractors are subject to 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.

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>

- 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 if required pursuant to The Workplace Safety and Health Act (Manitoba);
- 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/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 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. BID SECURITY**

- B11.1 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.
- B11.1.1 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.
- B11.1.2 All signatures on bid securities shall be original.
- B11.1.3 The Bidder shall sign the Bid Bond.
- B11.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.
- B11.2 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.



- B11.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B11.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.
- B11.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.
- B11.3 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.

## **B12. OPENING OF BIDS AND RELEASE OF INFORMATION**

- B12.1 Bids will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Division, or in such other office as may be designated by the Manager of Materials.
- B12.1.1 Bidders or their representatives may attend.
- B12.1.2 Bids determined by the Manager of Materials, or his designate, to not include the bid security specified in B11 will not be read out.
- B12.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt>
- B12.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt>
- B12.4 The Bidder is advised that any information contained in any Bid may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

## **B13. IRREVOCABLE BID**

- B13.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.
- B13.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly executed and the performance security furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid.

## **B14. WITHDRAWAL OF BIDS**

- B14.1 A Bidder may withdraw his Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.
- B14.1.1 Notwithstanding 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.
- B14.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid, and only such person, has authority to give notice of withdrawal.
- B14.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:

- (a) retain the Bid until after the Submission Deadline has elapsed;
- (b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid; and
- (c) if the notice has been given by any one of the persons specified in B14.1.3(b), declare the Bid withdrawn.

B14.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B13.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law, including the right to retain the Bidder's bid security.

## **B15. EVALUATION OF BIDS**

B15.1 Award of the Contract shall be based on the following bid evaluation criteria:

- (a) compliance by the Bidder with the requirements of the Bid Opportunity, or acceptable deviation 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.

B15.2 Further to B15.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities, if the interests of the City so require.

B15.3 Further to B15.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid or in other information required to be submitted, that he is responsible and qualified.

B15.4 Further to B15.1(c), the Total Bid Price shall be the lump sum price shown on Form B: Prices.

## **B16. AWARD OF CONTRACT**

B16.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B16.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.

B16.2.1 Without limiting the generality of B16.2, the City will have no obligation to award a Contract where:

- (a) the prices exceed the available City funds for the Work;
- (b) the prices are materially in excess of the prices received for similar work in the past;
- (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
- (d) only one Bid is received; or
- (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.

B16.3 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B15.

**B16.3.1** Following the award of contract, a Bidder will be provided with information related to the evaluation of his Bid 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](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 upgrading pump P1 concrete base, installing pump P1, P2 and P3 lifting systems, replacing pump P3 and related inlet and outlet piping and related MCC, providing a new magmeter, and upgrading various automatic and manual valves.

D2.2 The major components of the Work are as follows:

- (a) Upgrade pump P1 concrete support base.
- (b) Provide pump P1, P2 and P3 lifting systems.
- (c) Replace pump P3 and related inlet/outlet valves and piping.
- (d) Replace MCC panel for P2 and P3.
- (e) Replace ultrasonic flow meter with new magmeter.
- (f) Replace 900 mm valve FM-03 with two 450 mm knife gate valves.
- (g) Replace pump 500 mm P1 discharge plug control valve.
- (h) Upgrade controls related to project mechanical system changes.

#### **D3. CONTRACT ADMINISTRATOR**

D3.1 The Contract Administrator is KGS Group, represented by:

Rudy Derksen, P. Eng.  
3<sup>rd</sup> Floor – 865 Waverley Street  
Winnipeg, Manitoba R3T 5P4

Direct Telephone No. (204) 478-3246  
Facsimile No. (204) 896-0754  
Email RDerksen@kgsgroup.com

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 facsimile number:

The City of Winnipeg  
Chief Financial Officer

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  
Legal Services Department  
Attn: Director of Legal Services  
185 King Street, 3rd Floor  
Winnipeg MB R3B 1J1

Facsimile No.: (204) 947-9155

## **D6. FURNISHING OF DOCUMENTS**

D6.1 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.

## **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. SAFE WORK PLAN**

D8.1 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.

D8.2 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. INSURANCE**

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

- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, 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;

D9.2 Deductibles shall be borne by the Contractor.

D9.3 The Contractor shall provide the City Solicitor 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 the date specified in C4.1 for the return of the executed Contract.

D9.4 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.

## **D10. PERFORMANCE SECURITY**

D10.1 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.

D10.1.1 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.

D10.2 If the bid security provided in his Bid was not a certified cheque or draft pursuant to B11.1(c), 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 letter of intent and 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.

## **D11. DETAILED PRICES**

D11.1 The Contractor shall provide the Contract Administrator with a detailed price breakdown (Form I: Detailed Prices) 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.

D11.2 The Contractor shall state a price for each item or sub-item of the Work identified on Form I: Detailed Prices. The detailed prices must be consistent with the price(s) provided in the Contractor's Bid.

## **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 the date specified in C4.1 for the return of the executed Contract.

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

- D13.1 The Contractor shall provide the Contract Administrator with a detailed work schedule one month after receiving a letter of intent 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; and
- 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 activities/tasks making up the Work as well as showing those activities/tasks on the critical path as shown on the draft project schedule attached as Figure 3.1, in the Construction Plan, attached in Appendix A. Also include the following:
- (a) Substantial Performance
  - (b) Total Performance
- 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.

### **SCHEDULE OF WORK**

#### **D14. COMMENCEMENT**

- D14.1 The Contractor shall not commence any Work until he is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.
- D14.2 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 D7;
    - (ii) evidence of the workers compensation coverage specified in C6.15;
    - (iii) the Safe Work Plan specified in D8;
    - (iv) evidence of the insurance specified in D9;
    - (v) the performance security specified in D10;
    - (vi) the detailed prices specified in D11;
    - (vii) the Subcontractor list specified in D12;
    - (viii) the detailed work schedule specified in D13; and
  - (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.
- D14.3 The Contractor shall not commence the Work on the Site before October 1, 2012.
- D14.4 The City intends to award this Contract by February 11 2012.

#### **D15. SCHEDULE RESTRICTIONS**

- D15.1 The Project work involves the scheduling of several partial or complete station shutdowns. Details of station shutdowns are described in detail in the Construction Plan attached as Appendix A.
- D15.2 Perimeter Road Pumping Station (PRPS) shutdown periods are scheduled based on a number of factors including routine maintenance and repair work, sewerage flows and weather. The



Charleswood Interceptor system has limited capacity to store sewerage and extraneous flows. Shutdowns can only be scheduled during periods where risk of wet weather flows and system infiltration is at a minimum, typically late fall and winter. The City shall endeavour to make the specified time periods available to the Contractor to schedule his Work requiring shutdown of the PRPS, without limiting the City's control over the operation of the forcemains to complete other work, maintain adequate system service and maintain the integrity of the infrastructure. The City shall reserve the right to cancel and/or delay these schedule dates at any time, due to any circumstances that could adversely affect system operation, including but not limited to high river levels, abnormal system inflows, abnormal weather, failure of related sewerage system components and/or security concerns.

- D15.3 The Contractor shall provide a minimum of five (5) Working Days notice to the Contract Administrator, in writing, of requiring a shutdown. The City will endeavour to schedule the shutdown as requested, pursuant to D13.1.
- D15.4 Further to D13.1, during complete station shutdown 3, shutdown time is limited to a maximum of six (6) hours, measured from the complete removal of PRPS from service by City forces, to turn over of system back to the City of Winnipeg for the restoration of station operation. This shutdown must be scheduled between the hours of 10:00 pm and 06:00 am. At all times, the Contractor shall be prepared to re-assemble any piping such that PRPS can be placed back in service, within two (2) hours of receiving notification of same.
- D15.5 Further to D13.1 and D13.3 shutdowns will be allowed between November 1, 2012 and March 15, 2013.

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

- D16.1 The Contractor shall achieve Substantial Performance by March 31, 2013.
- 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.

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

- D17.1 The Contractor shall achieve Total Performance by June 30, 2013.
- 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 one

thousand dollars (\$1,000) per Calendar Working 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 bi-weekly job meetings will be held at the Site after on-site work begins September 1, 2012. 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.
- D19.3 Additional meetings to coordinate shutdowns, commissioning and training will also be required.

### **D20. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

- D20.1 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).

## **MEASUREMENT AND PAYMENT**

### **D21. PAYMENT**

- D21.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

## **WARRANTY**

### **D22. WARRANTY**

- D22.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) year thereafter, except where longer warranty periods are specified in the respective Specification sections, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.
- D22.1.1 For the purpose of Performance Security, the warranty period shall be one (1) year.
- D22.2 Notwithstanding C13.2, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if 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.
- D22.2.1 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.

**FORM H1: PERFORMANCE BOND**  
(See D10)

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. 940-2011

REPLACEMENT OF RAW SEWAGE PUMP P3 PERIMETER ROAD PUMPING STATION

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 D10)

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

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 940-2011

REPLACEMENT OF RAW SEWAGE PUMP P3 PERIMETER ROAD PUMPING STATION

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 I: DETAILED PRICES**  
 (See D11)

**REPLACEMENT OF RAW SEWAGE PUMP P3 PERIMETER ROAD PUMPING  
 STATION**

ITEM NO.	DESCRIPTION	SPEC. REF.	AMOUNT
1.	Pump P1 base concrete works		
2.	Pump P1, P2 & P3 lifting systems		
3.	Supply & install Pump P3		
4.	Pump P3 inlet and outlet piping and related valves (Including demolition of existing)		
5.	Electrical MCC & VFD works		
6.	Instrumentation and control works		
7.	New Magmeter & related piping works		
8.	Remove FM-03 and related works		
9.	Replace pump P1 discharge plug valve		





## 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>
--------------------------	----------------------------

1000000	General Requirements
	<b>Mechanical</b>
230500	Mechanical General Provisions
230510	Pump P3
230520	Valves and Piping System
	<b>Electrical</b>
250501	Controls General Requirements
250554	Controls Identification
253002	Controls Instrumentation
260501	Common Work Results – Electrical
260520	Wire and Box Connectors 0 -1000 V
260521	Wires and Cables (0-1000V)
260528	Grounding – Secondary
260529	Hangers and Supports for Electrical Systems
260531	Splitters, Junction, Pull Boxes and Cabinets
260532	Outlet Boxes, Conduit Boxes and Fittings
260534	Conduits, Conduit Fastenings and Conduit Fittings
260536	Cable Trays for Electrical Systems
262417	Panelboard Breakers Type
262419	Motor Control Centres
262716	Electrical Cabinets and Enclosures
262726	Wiring Devices
262814	Fuses – Low Voltage
262821	Moulded Case Circuit Breakers
262823	Disconnect Switches – Fused and Non-Fused
262903	Control Devices
262910	Motor Starters to 600 V
262923	Variable Frequency Drives

<u>City Drawing No.</u>	<u>KGS Group Drawing No.,</u>	<u>Drawing Name/Title</u>
	00	Title Sheet and Drawing List
		<b>Structural</b>
	S01	General Arrangement Plan
	S02	Sections/Details (1 of 2)
	S03	Sections/Details (2 of 2)
	S04	Pump Concrete Base Upgrades
		<b>Mechanical</b>
	M01	Pump P3 and Related Piping Demolition
	M02	Level 200 Additional Demolition
	M03	New Pump P3 & Related Piping
	M04	Level 200 New Piping System
		<b>Electrical</b>
	E01	Existing Single Line Diagram
	E02	New Single Line Diagram
	E03	Existing and New Level 400 Plans
	E04	Level 300 Plan
	E05	Level 200 Plan
	E06	Level 100 Plan
	E20	Process & Instrumentation Diagram (Existing Conditions)
	E21	Process & Instrumentation Diagram (New Modifications)
	E22	Process & Instrumentation Diagram (New Modifications) Sheet 2
	E23	Process & Instrumentation Diagram (New Modifications) Sheet 3
	E24	Miscellaneous Loops Drawing
	E30	Station Discharge Valves Schematic & Wiring Diagram
	E31	Pump M300PP Discharge Valve FV-M300 Schematic & Wiring Diagram
	E32	Pump M300PP VFD Schematic & Wiring Diagram
	E33	Pump M100PP Discharge Valve FV-M100 Schematic & Wiring Diagram
	E34	Pump M200PP Discharge Valve FV-M200 Schematic & Wiring Diagram
	E35	Pump M200PP MCC Starter Schematic & Wiring Diagram
	E36	Pump M810PP Flush Water Schematic & Wiring Diagram
		Electrical Reference Drawings
	ER01	400HP VFD/RVMS Starter Connections
	ER02	400HP VFD/RVMS Control Section Terminals
WEP-680	ER03	Station Flood Interlock WDM 600
WEP-0660	ER04	Minor Alarms
WEP-0661	ER05	Major Alarms

**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. PUMP LIFTING EQUIPMENT – HOISTS AND TROLLEYS**

- E3.1 Supply and install 2 manual hand chain, 2 ton capacity hoists by Columbus McKinnon (CM Hurricane 360°, 15 ft lift, single reeve) with 4 matching 2 ton capacity plain trolleys (CM series 84A).
- E3.2 Supply and install manual hand chain, 8 ton capacity hoist by Columbus McKinnon (CM Cyclone, 20 ft lift, chain container, latchlok hooks, zinc-plated chain) with matching 8 ton capacity plain trolley (CM series 84A).

### **E4. DEMOLITION OF STRUCTURES**

#### **E4.1 Description of Work**

- E4.1.1 The Work required under this section shall include, but is not limited to, the following:
- (a) Demolition of pumping station concrete to specified limits
  - (b) Removal and disposal of construction debris
- E4.1.2 The Work required under this section shall include, but is not limited to, the following: Removal of existing concrete, performing saw cutting, demolition, protection of services to be maintained, demolition and disposal of existing concrete, and clean up of Work Site in anticipation of new Work for those demolition areas indicated on the drawings.
- E4.1.3 The Work to be done by the Contractor under this Section shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as described hereinafter.
- E4.2 References
- E4.2.1 CSA S350-M1980, Code of Practice for Safety in Demolition of Structures.
- E4.2.2 Manitoba Workplace Safety and Health Act, and all applicable National, Provincial, and Municipal regulations.
- E4.3 Protection
- E4.3.1 Prevent movement, settlement or damage of adjacent structures, services, walks, parts of existing structures to remain. Provide bracing, shoring as required. Make good damage caused by demolition.
- E4.3.2 Take precautions to support affected structures and, if safety of structure being demolished or adjacent structures or services appears to be endangered, cease operations and notify the Contract Administrator.
- E4.4 Execution
- E4.4.1 Inspection
- (a) Inspect Site with Contract Administrator and verify extent and location of items designated for removal, disposal, salvage and items to remain.
  - (b) Locate and protect utilities.
  - (c) Notify and obtain approval of Contract Administrator before starting demolition.

#### E4.4.2 Preparation

- (a) Disconnect and re-route electrical and telephone service in accordance with authorities having jurisdiction. Post warning signs on electrical lines and equipment which must remain energized during period of demolition.
- (b) Disconnect and reroute mechanical services, as necessary, in accordance with authorities having jurisdiction.
- (c) Do not disrupt active or energized utilities.

#### E4.4.3 Safety Code and Requirements

- (a) Unless otherwise specified, carry out demolition Work in accordance with the City of Winnipeg Safety Directives and Guidelines.
- (b) Blasting operations shall not be permitted during demolition unless reviewed and approved by the Contract Administrator.

#### E4.4.4 Demolition

- (a) Demolish structures to permit construction of new Work as indicated.
- (b) Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace as Work progresses.
- (c) At end of each day's work, leave Work in safe condition so that no part is in danger of toppling or falling.
- (d) Remove structural framing.
- (e) Do not sell or burn materials on Site.
- (f) Fracturing of concrete that is to remain shall be minimized. Concrete immediately adjacent to concrete which is to remain shall be demolished using hand-held breakers or jack hammers (maximum 10 kgs/20 lbs.). Other methods of performing concrete demolition may be submitted for review and approval to the Contract Administrator. The Contractor shall take measures to ensure that the concrete beyond the limits of demolition is not fractured or shattered. The Contractor shall remove using acceptable methods and replace any concrete which is deemed to be fractured as a result of demolition methods employed by the Contractor. This repair Work shall be performed at no additional cost to the City of Winnipeg.

#### E4.4.5 Demolition Tolerances

- (a) All demolition shall be done using equipment and procedures to prevent over-breakage of the existing structure.
- (b) Final demolition surfaces must remain locally within (25 mm) of the demolition lines, alignments, or limits shown on the drawings. Demolition beyond the limits shown shall be reviewed by the Contract Administrator. The Contractor shall repair excess demolition to the satisfaction of the Contract Administrator, and at no cost to the City where required.
- (c) All protrusions into the defined limits of demolition shall be removed if they interfere with the placement and alignment of embedded components or reinforcing steel.

#### E4.4.6 Abrasive Wiresaw and Sawcutting

- (a) Areas of demolition shall be delineated from existing concrete that is to remain using either abrasive disc sawcutting, or abrasive wiresawing.

- (b) All sawcuts shall be performed straight and normal to the surface being cut, following the locations shown on the drawings, or as directed by the Contract Administrator.
- (c) Overruns at the junctions of sawcuts, and mis-starts shall be cleaned and filled with dry patching mortar of matching colour, as directed by the Contract Administrator.
- (d) Minimum depths of sawcuts shall be 2" (50 mm) unless otherwise shown on drawings.
- (e) Patch existing floor, wall, ceiling assemblies etc. where required due to demolition/renovation Work to match existing construction, materials, textures and finishes unless noted or permitted otherwise.

#### E4.4.7 Disposal of Demolished Material

- (a) The Contractor shall be responsible for removal of debris and waste from the Work area to the location to an appropriate solid waste disposal area approved by the contract administrator.
- (b) Metal debris, which may include structural steel, miscellaneous inserts, and reinforcing steel, shall be removed from Site and disposed of by the Contractor.

### **E5. METAL FABRICATIONS**

#### E5.1 Description

##### E5.1.1 General

- (a) This Specification shall cover the supply, fabrication, transportation, handling, delivery and placement of metal fabrications.

#### E5.2 Materials

E5.2.1 All materials shall be of a type acceptable to the Contract Administrator, and shall be subject to inspection and testing by the Contractor Administrator.

E5.2.2 Material intended for use in the various assemblies shall be new, straight, clean, with sharply defined profiles.

E5.2.3 Steel Sections and Plates: to CAN/CSA G40.20/G40.21, Grade 300 W, except W, HP and HSS sections, which shall be Grade 350 W.

E5.2.4 Steel Pipe: to ASTM A53/A53M, seamless, galvanized, as specified by item.

E5.2.5 Welding materials: to CSA W59.

E5.2.6 Hot dipped galvanized steel repair material: Galvalloy and Gal-Viz

E5.2.7 Stud Anchors: to ASTM A108, Grade 1020.

E5.2.8 Aluminum: to CAN/CSA S157 and the Aluminum Association 'Specifications for Aluminum Structures'. Aluminum for plates shall be Type 6061-T651. Aluminum plate shall have an approved raised oval or multi-grip pattern.

E5.2.9 Isolating sleeves shall be "Nyltite" – headed sleeve as manufactured by Spaenaur of Kitchener, Ontario, or approved equal in accordance with B6.

E5.2.10 Anchor bolts and fasteners: ASTM A276, Type 316 stainless steel, of ample section to safely withstand the forces created by operation of the equipment or the load to which they will be subjected.

### E5.3 Construction Methods

#### E5.3.1 Submittals

- (a) The Contractor shall submit the qualifications of the fabricator and welders to the Contractor Administrator for acceptance. Submit shop drawings clearly indicating materials, core thickness, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details and, accessories. Indicate field measurements on shop drawings.

#### E5.3.2 Fabrication

- (a) Fabricate Work square, true, straight and accurate to required size, with joints closely fitted and properly secured. Assemble Work in such a way that no disfigurements will show in the finished Work, or impair the strength.
- (b) Confirm measurements for all fabrications before fabricating.
- (c) Cut aluminum plate with edges straight and true, and as far as practical, maintain continuity of the pattern at abutting edges.
- (d) Pieces shall be of the sizes indicated on the Drawings and shall not be built up from scrap pieces. Confirm sizes with field measurements.
- (e) Where possible, fit Work and shop assemble, ready for erection.
- (f) Angle frames shall be of the same material as the cover plate (except for existing frames designated on the drawings for re-use), and cover plates shall be hinged and be supplied with lifting handles, as shown on the Drawings. Exterior covers shall be supplied with a hasp for a padlock.
- (g) Remove and grind smooth burrs, filings, sharp protrusions, and projections from metal fabrications to prevent possible injury. Correct any dangerous or potentially harmful installations as directed by Contract Administrator.
- (h) All steel welding shall conform to CSA Standard W.59. Fabricator shall be fully approved by the Canadian Welding Bureau, in conformance with CSA Standard W.47.1. Welding shall be done by currently licensed welders only.
- (i) All aluminum welding shall be in accordance with the requirements of CSA W59.2. The fabricator shall be fully certified in conformance with CSA Standard W47.2. All welding shall be done in a licensed welding shop, and no field welding will be permitted unless approved in writing, in advance, by the Contract Administrator.
- (j) Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.
- (k) Galvanized steel shall be hot-dip galvanizing after fabrication, in accordance with CAN/CSAG164, to a minimum net retention of 600 gm/m<sup>2</sup>.
- (l) Seal exterior steel fabrications to provide corrosion protection in accordance with CAN3-S16.1.
- (m) Use self-tapping shake-proof flat-headed screws on items requiring assembly by screws.

#### E5.3.3 Erection

- (a) Do steel welding Work in accordance with CSA W59 and aluminum welding Work in accordance with CSA W59.2
- (b) Erect metal Work in accordance with reviewed shop drawings, square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

- (c) Provide suitable means of anchorage acceptable to Contract Administrator such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles where not specifically indicated on the Drawings.
- (d) Provide components for building in accordance with shop drawings and schedule.
- (e) Make field connections with bolts to CAN/CSA-S16, or weld.
- (f) Touch-up rivets, bolts and burnt or scratched surfaces that are to receive paint finish, with zinc primer after completion of erection.
- (g) Repair damaged galvanized surfaces and field welds with self-fluxing, low temperature, zinc-based alloy rods in accordance with ASTM A780, Repair of Damaged Hot Dip Galvanizing Coatings. The general procedure shall be to allow a small amount of the repair alloy to flow then spread by brushing briskly with a wire brush. Brushing shall be sufficient to obtain a bright finish. Repeat process three times to ensure a proper thickness is achieved. Temperatures shall be kept below 177°C (350°F) at all times. All heating of structural steel. Work shall be done in the presence of the Contract Administrator.
- (h) Install access hatch frames square and level at the locations show on the Drawings. Embed anchors in concrete as shown on the Drawings. Install covers and adjust hardware to proper function.
- (i) All aluminum surfaces in contact with concrete shall be isolated using alkali resistant bituminous paint meeting the requirements of CGSB 31-GP-3M.
- (j) Install electrochemical isolation gaskets and sleeves to electrically isolate dissimilar metals.

## **E6. CAST-IN-PLACE CONCRETE CONSTRUCTION**

### **E6.1 Description**

- E6.1.1 This specification shall cover construction of cast-in-place concrete and shall supplement, revise and amend CW 2160.

### **E6.2 Materials**

- (a) Concrete Mix Design
  - (i) Concrete mix design shall be as indicated in the Construction Notes on the Drawings.
- (b) Grout
  - (i) Grout shall be Sika Grout 212 or approved equal in accordance with B6.
- (c) Reinforcing Steel
  - (i) Bar accessories:
    - To be made from a non-corroding material.
    - Shall not stain, blemish or spall the concrete surface for the life of the concrete.
    - Shall be approved by the Contract Administrator.
    - Bar chairs shall be PVC.
- (d) Bonding Agent shall be ACRL-STIX or approved equal in accordance with B6.
- (e) Waterstop shall be SikaSwell S-2 (Hydrophilic Polyurethane Sealant) extrudable swelling waterstop.

- (f) Miscellaneous Metals and Accessories in accordance with E5 of this specification and as shown on the Drawings.
- (g) Shop Drawings
  - (i) Provide shop drawings.
  - (ii) Submit shop drawings for reinforcing steel a minimum of two (2) weeks prior to the fabrication of any reinforcing steel.
- (h) Backfill
  - (i) In accordance with CW 2030. Class of backfill to be as shown on the Drawings.

### E6.3 Construction Methods

#### E6.3.1 Construction Method Submission

- (a) No Work shall commence on construction of cast-in-place concrete until after the Contract Administrator's review of the Contractor's Construction Method submission.
- (b) The Contractor shall prepare for the Contract Administrator's review a Construction Method submission detailing:
  - (i) Construction sequence to be followed including all methods to be employed to ensure no damage occurs to existing structures.
  - (ii) Specialized equipment to be used.
  - (iii) Any design revisions proposed to accommodate the Contractor's proposed construction method.
- (c) The Contractor shall respond to any concerns that may be raised by the Contract Administrator after review of Construction Method submission.

#### E6.3.2 Cast in place Concrete Construction

- (a) Construct cast in place concrete in accordance with CW 2160, except as supplemented, revised or amended in this specification and as indicated in the construction notes on the Drawings.
- (b) Adjust the location of reinforcing steel adjacent to openings to frame those openings in accordance with good practice, and maintain the bar spacing intent.
- (c) Do not use welded splices for reinforcing steel.

#### E6.3.3 Grout

- (a) Mix and apply grout in accordance with the manufacturer's instructions. Consistency to be suitable for the intended application.

#### E6.3.4 Miscellaneous Metal Fabrications

- (a) Install miscellaneous metal fabrications as shown on the Drawings and in accordance with E5 of this specification.