



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 759-2010**

**SEWPCC HEADWORKS UPGRADES**

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## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

B1.1 SEWPCC HEADWORKS UPGRADES

### **B2. SUBMISSION DEADLINE**

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, October 27, 2010.

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 1:30 pm on October 18, 2010 to provide Bidders access to the Site.

B3.2 Bidders must be at the front entrance of the SEWPCC facility at 1:30 pm sharp to obtain access.

B3.3 Bidders attending the Site Investigation must wear CSA approved safety footwear, a hard hat, and safety glasses while in the process areas of the Site.

B3.4 The Bidder shall not be entitled to rely on any information or interpretation received at the Site investigation unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

### **B4. ENQUIRIES**

B4.1 All enquiries shall be directed to the Contract Administrator identified in D4.1.

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 a price in Canadian funds for each item of the Work identified on Form B: Prices.

B9.1.1 Notwithstanding C12.2.3(c), prices 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 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.

B9.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B9.4 The mark-up factor for additional material, specified on Form B, Item 18, shall be a multiplier between 1.00 and 1.30, that when multiplied by the base cost, shall represent the total price including the Contractor's additional handling charge and profit to supply the material. The total price for the material shall be the base cost multiplied by the mark-up factor.

- (a) The mark-up factor shall be based upon the Contractor's or Subcontractor's base cost. This base cost shall be the Contractor's or Subcontractor's procurement cost, or if the material is manufactured by the Contractor or Subcontractor, the internal wholesale cost.
- (b) In the event that a mark-up factor greater than 1.30 is indicated, 1.30 will be utilized for bid evaluation and payment.

- (c) The multiplier shall be the same, regardless if the material is supplied by a Subcontractor or directly by the Contractor.

B9.5 The Bidder shall state a labour rate for additional unforeseen labour, associated with work inside the Inlet Chamber, for Form B, Item 19. The rate shall be inclusive of:

- (a) Any potential overtime or night-time work that may be required.
- (b) Additional general requirements including safety, ventilation, etc.

B9.6 The Bidder shall state a labour rate for Form B, Item 20, for additional unforeseen labour associated with the sluice gate refurbishment, but where the work will be performed outside of the Inlet Chamber. The rate shall be inclusive of any potential overtime or night-time work that may be required.

B9.7 The Bidder shall state a labour rate for Form B, Item 21, for additional unforeseen labour associated with any additional work, not associated with the interior of the Inlet Chamber or the sluice gate refurbishment. The rate shall be inclusive of any potential overtime or night-time work that may be required.

B9.8 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);
- (d) have previously carried out confined space entry work of a similar nature to the work specified for the Inlet Chamber in a wastewater treatment plant or facility with similar safety related characteristics; and
- (e) be normally engaged in and fully competent in electrical and instrumentation works of a similar nature and employ qualified journeyman familiar with the equipment and devices being installed.

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.

B12.2 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/default.stm>

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/default.stm>

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 sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices adjusted, if necessary, as follows:.

- (a) if the lowest evaluated responsive Bid submitted by a responsible and qualified Bidder is within the budgetary provision for the Work, no adjustment will be made to the Total Bid Price; or
- (b) if the lowest evaluated responsive Bid submitted by a responsible and qualified Bidder exceeds the budgetary provision for the Work, the Total Bid Prices of all responsive Bids submitted by responsible and qualified Bidders will be adjusted by deducting Item 8, provided that the adjusted amount results in a Total Bid Price within the budgetary provision.

B15.4.1 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each item, the sum of the quantities multiplied by the unit prices for each item shall take precedence.

B15.4.2 Further to B15.1(a), in the event that a unit price is not provided on Form B: Prices, the City will determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.

## **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 structural, mechanical, electrical, and automation upgrades to the Headworks process area of the SEWPCC facility to increase the reliability and availability of the SEWPCC Headworks process.

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

- (a) Provide structural repairs and modifications to the Inlet Structure.
- (b) Perform refurbishment and modifications to two sluice gates in the Inlet Structure.
- (c) Install electric actuators on the two Inlet Structure Sluice Gates.
- (d) Construct a fence around the Inlet Structure and performs some landscaping.
- (e) Construct an isolation wall in the Drywell.
- (f) Install four electric actuators on the raw sewage pump suction valves.
- (g) Replace and upgrade the Grit Pump suction piping, along with the associated valves and fittings.
- (h) Refurbishment of a grit pump.
- (i) Install a flowmeter on the discharge of the grit pump.
- (j) Relocate the raw sewage pump and grit pump seal water solenoid and pressure switch components.
- (k) Electrical and control system modifications to support the above items.
- (l) Perform modifications to the DCS (To be performed by ABB).

#### D3. DEFINITIONS

D3.1 When used in this Bid Opportunity:

- (a) "**SEWPCC**" means South End Water Pollution Control Centre;

#### D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is SNC Lavalin Inc., represented by:

Steven Scribner, P.Eng.  
Manager, Project and Construction Services  
SNC-Lavalin Inc.  
148 Nature Park Way, Winnipeg, MB, R3P 0X7

Telephone No. (204) 786-8080  
Facsimile No. (204) 786-7934

D4.2 Steven Scribner will be away from the office from October 8 to October 15 inclusive. In his absence, the Contract Administrator will be represented by:

Curtis Reimer, P.Eng.  
Project Manager / Lead Automation Engineer

SNC-Lavalin Inc.  
148 Nature Park Way, Winnipeg, MB, R3P 0X7

Telephone No. (204) 786-8080  
Facsimile No. (204) 786-7934

- D4.3 At the pre-construction meeting, Steven Scribner will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

**D5. CONTRACTOR'S SUPERVISOR**

- D5.1 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.

**D6. NOTICES**

- D6.1 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.
- D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3, D6.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D4.1.
- D6.3 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
- D6.4 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: City Solicitor  
185 King Street, 3rd Floor  
Winnipeg MB R3B 1J1  
Facsimile No.: (204) 947-9155

**D7. FURNISHING OF DOCUMENTS**

- D7.1 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**

**D8. AUTHORITY TO CARRY ON BUSINESS**

- D8.1 The Contractor shall be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Contractor does not carry on business in Manitoba, in the jurisdiction where the Contractor does carry on

business, throughout the term of the Contract, and shall provide the Contract Administrator with evidence thereof upon request.

#### **D9. SAFE WORK PLAN**

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>

#### **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;
- (c) all risks course of construction insurance in the amount of one hundred percent (100%) of the total Contract Price, written in the name of the Contractor and The City of Winnipeg, 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 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.

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 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 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.

## **D12. DETAILED WORK SCHEDULE**

D12.1 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.

D12.2 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;
- all acceptable to the Contract Administrator.

D12.3 Further to D12.2(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:

- (a) Mobilization
- (b) Inlet Chamber Structural Repairs and Modifications
- (c) Inlet Chamber Sluice Gate Refurbishment & Modifications
- (d) Inlet Chamber Demobilization and Remobilization
- (e) Inlet Chamber Sluice Gate Actuators
- (f) Inlet Chamber Fence and Landscaping
- (g) Drywell Isolation Wall
- (h) Raw Sewage Pump Suction Valve Actuators
- (i) Grit Pump Suction Piping
- (j) Grit Pump Refurbishment
- (k) Grit Pump Discharge Flowmeter
- (l) Pump Seal Water Relocation
- (m) Electrical and Automation
- (n) Perform modifications to the DCS.
- (o) Substantial Performance
- (p) Total Performance

D12.4 Further to D12.2(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**

### **D13. COMMENCEMENT**

D13.1 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.

D13.2 The Contractor shall not commence any Work on the Site until:

- (a) the Contract Administrator has confirmed receipt and approval of:
  - (i) evidence of authority to carry on business specified in D8;
  - (ii) evidence of the workers compensation coverage specified in C6.15;
  - (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 detailed work schedule specified in D12; 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.

D13.3 The City intends to award this Contract by November 24, 2010.

D13.3.1 If the actual date of award is later than the intended date, the dates specified for Commencement, Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

#### **D14. CRITICAL STAGES**

D14.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:

- (a) The Inlet Chamber work, including E4.5 , E4.6, and E4.7 must be completed by March 1, 2011 to permit the work to coincide with low dry weather flows. The sluice gate actuator installation is not required to be complete at this time, provided that the sluice gates are both held in an open position in a manner acceptable to the Contract Administrator. Specific requirements associated with this date are identified in E4.8.
- (b) The networking cabinets in the Admin Building and Grit Building, as specified in E4.18(o) and E4.18(p), must be completed by March 30, 2011 to allow appropriate coordination with a subsequent project.

#### **D15. SUBSTANTIAL PERFORMANCE**

D15.1 The Contractor shall achieve Substantial Performance by May 27, 2010..

D15.2 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.

D15.3 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.

D15.4 In the event of E7.1, the Substantial Performance for the associated work will be evaluated separately.

#### **D16. TOTAL PERFORMANCE**

D16.1 The Contractor shall achieve Total Performance by July 29, 2010.

D16.2 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.

D16.3 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.

#### **D17. LIQUIDATED DAMAGES**

D17.1 If the Contractor fails to achieve the Critical Stage associated with the Inlet Chamber work, the Contractor shall pay the City the following amounts:

- (a) Fifteen thousand dollars (\$15,000), lump sum, in the case identified in E7.4.
- (b) Twenty thousand dollars (\$20,000), lump sum, in the case identified in E7.4(c).

D17.2 If the Contractor fails to achieve Critical Stages, Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:

- (a) Critical Stage – Networking Cabinets, as per D14.1(b) – one hundred dollars (\$100);
- (b) Substantial Performance – one hundred dollars (\$100);
- (c) Total Performance – one hundred dollars (\$100);

D17.3 The amounts specified for liquidated damages in D17.1 and D17.2 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve critical stages, or Substantial Performance by the days fixed herein for same.

D17.4 The liquidated damages identified in D17.1 and D17.2 are cumulative, with the following exemption:

- (a) The liquidated damages for Substantial Performance and Total Performance will be evaluated based upon the Work, with the exemption of the Inlet Chamber work associated with D14.1(a), which can not be performed during wet weather flows.

D17.5 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

#### **CONTROL OF WORK**

##### **D18. JOB MEETINGS**

D18.1 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.

D18.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

##### **D19. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

D19.1 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**

### **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) A maximum of 50% of Form B, Item 1, or 10% of the Total Bid Price, whichever is less, may be submitted for progress payment after submittals are complete, the Contractor has mobilized on Site, and has initiated the Inlet Chamber work. The remainder of Form B, Item 1 will be paid upon Substantial Performance.
- (b) A maximum of 25% of Form B, Item 2, or 2.5% of the Total Bid Price, whichever is less, may be submitted for progress payment incrementally after the following stages are complete:
  - (i) The Contractor has initiated the Inlet Chamber work.
  - (ii) The Contractor has completed 30% of the Inlet Chamber work.
  - (iii) The Contractor has completed 60% of the Inlet Chamber work.
  - (iv) The Contractor has completed 100% of the Inlet Chamber work.

D21.2 Note that the Builders Liens Act and associated holdbacks will apply to the Work.

## **WARRANTY**

### **D22. WARRANTY**

D22.1 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) 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.

D22.1.1 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 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. 759-2010

SEWPCC HEADWORKS UPGRADES

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 759-2010  
SEWPCC HEADWORKS UPGRADES

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>
013300	Submittal Procedures
014200	References
014500	Quality Control
015200	Construction Facilities
015600	Temporary Barriers And Enclosures
016100	Common Product Requirements
017303	Execution Requirements
017411	Cleaning
017800	Closeout Submittals
031000	Concrete Forming And Accessories
032000	Concrete Reinforcing
033000	Cast-in-place Concrete
036000	Concrete Forming And Accessories
051223	Structural Steel For Buildings
055000	Metal Fabrications
221500	Instrument Air Piping
260501	Common Work Results –Electrical
260521	Wires And Cables (0-1000 V)
260529	Hangers And Supports For Electrical Systems
260531	Splitters, Junction, Pull Boxes And Cabinets
260534	Conduits, Conduit Fastenings And Conduit Fittings
260536	Cable Trays For Electrical Systems
260544	Installation Of Cables In Trenches And In Ducts
260805	Acceptance Testing
262821	Moulded Case Circuit Breakers
262910	Motor Starters to 600 V
323113	Chain Link Fences And Gates
400501	Common Work Results – Automation
408011	Automation Commissioning
409100	Automation – Process Measurement Devices
409513	Control Panels
409533	Process Control Networks
409574	Junction Boxes - Automation
440501	Process Mechanical General Requirements
440505	Installation Of Pipework
440517	Pipe Welding
440520	Electric Valve Actuators

440525 Valves  
 440530 Sluice Gates  
 440554 Mechanical Identification

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
1-0102G-S0010	PLANS - INLET STRUCTURE
1-0102G-S0011	SECTIONS & DETAILS - INLET STRUCTURE
1-0102G-S0012-001	PLAN, SECTIONS, & DETAILS - INLET STRUCTURE
1-0102G-S0012-002	PLAN, SECTIONS, & DETAILS - INLET STRUCTURE
1-0102G-S0013	PLAN & SECTION - INFLUENT SLUICE GATE REFURBISH 3- DIVERSION DEVICE
1-0102G-S0014	PLAN & DETAILS - INLET STRUCTURE FENCING
1-0102G-S0015	PLAN & SECTIONS - DRY WELL CONCRETE ISOLATION WALL
1-0102G-M0001	MECHANICAL PLANS - INFLUENT SLUICE GATE REFURBISHMENT
1-0102G-M0002	MECHANICAL SECTIONS - INFLUENT SLUICE GATE REFURBISHMENT
1-0102G-M0003	PLAN & SECTION - RAW SEWAGE PUMP SUCTION VALVE ACTUATOR
1-0102G-M0004	PIPING ISOMETRIC - GRIT PUMP PIPING UPGRADE
1-0102G-M0005	PLAN & DETAIL - GRIT PUMP FLOW METER INSTALLATION
1-0102A-A0001-001	P&ID - LEGEND AND DETAILS
1-0102A-A0001-002	P&ID - LEGEND AND DETAILS
1-0102A-A0001-003	P&ID - LEGEND AND DETAILS
1-0102G-A0001	P&ID - RAW SEWAGE INTAKE & WET WELLS
1-0102G-A0002	P&ID - RAW SEWAGE PUMP G101-RSP
1-0102G-A0003	P&ID - RAW SEWAGE PUMP G102-RSP
1-0102G-A0004	P&ID - RAW SEWAGE PUMP G103-RSP
1-0102G-A0005	P&ID - RAW SEWAGE PUMP G104-RSP
1-0102G-A0006	P&ID - GRIT REMOVAL PUMP G105-RSP
1-0102G-A0074	P&ID - DRY WELL FLOOD ALARMING AND SUMP PUMPS
1-0102G-A0075	INSTRUMENT LOCATION PLAN - DRY WELL PUMP LEVEL - G101
1-0102G-A0076	INSTRUMENT LOCATION PLAN - DRY WELL SERVICE LEVEL - G108
1-0102G-A0077	INSTRUMENT LOCATION PLAN - MOTOR ROOM - G114
1-0102G-A0078	INSTRUMENT LOCATION PLAN - WET WELL INLET CHAMBER
1-0102G-A0039-001	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP G101 SHEET 1 OF 5
1-0102G-A0039-002	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP G101 SHEET 2 OF 5
1-0102G-A0039-003	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP G101 SHEET 3 OF 5
1-0102G-A0039-004	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP G101 SHEET 4 OF 5
1-0102G-A0039-005	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP G101 SHEET 5 OF 5
1-0102G-A0038-001	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP G102 SHEET 1 OF 4
1-0102G-A0038-002	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP G102 SHEET 2 OF 4
1-0102G-A0038-003	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP G102 SHEET 3 OF 4
1-0102G-A0038-004	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP G102 SHEET 4 OF 4
SEP-2015	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP NO. G103
SEP-2016	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP NO. G103
SEP-2017	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP NO. G103
SEP-2018	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP NO. G103

SEP-2019	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP NO. G104
SEP-2020	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP NO. G104
SEP-2021	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP NO. G104
SEP-2022	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP NO. G104
SEP-2023	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP CONTROL 3- LOOP NO. G104
SEP-2024	INSTRUMENT LOOP DIAGRAM - GRIT REMOVAL SYSTEM 3- LOOP NO. G105
SEP-2025	INSTRUMENT LOOP DIAGRAM - EAST WET WELL LEVEL 3- LOOP NO. G107
SEP-2026	INSTRUMENT LOOP DIAGRAM - WEST WET WELL LEVEL 3- LOOP NO. G109
SEP-2103	INSTRUMENT LOOP DIAGRAM - MISCELLANEOUS SYSTEMS 3- LOOPS G561/G652
SEP-2128	POWER DISTRIBUTION - FDP-G 120 VAC
SEP-2129	POWER DISTRIBUTION - FDP-G 120 VAC, 24 VDC, 12 VDC
1-0102G-A0079	INSTRUMENT LOOP DIAGRAM - DRY WELL FLOOD LEVELS 3- LOOP G563 AND G564
1-0102G-A0080	INSTRUMENT LOOP DIAGRAM - G126 FLOOD MODE SELECTOR SWITCH
1-0102G-A0081	INSTRUMENT LOOP DIAGRAM - G127 AND G128 DEWATERING VALVES
1-0102G-A0082	INSTRUMENT LOOP DIAGRAM - INLET STRUCTURE SLUICE GATE ACTUATORS 3- G117-XV, G118-XV
1-0102G-A0083	INSTRUMENT LOOP DIAGRAM - RAW SEWAGE PUMP SUCTION VALVE ACTUATORS 3- G121-XV, G122-XV, G123-XV, G124-XV
1-0102G-A0088	INSTRUMENT LOOP DIAGRAM - GRIT PUMP PIPING 3- LOOP G105
1-0102G-A0084	INSTALLATION DETAILS - SUMP LEVEL SWITCH & FLOOD LEVEL TRANSMITTERS
1-0102G-A0085	PANEL LAYOUT - FDP-G FRONT VIEW
1-0102G-A0086-001	PANEL LAYOUT - FDP-G REAR VIEW
1-0102G-A0086-002	PANEL LAYOUT - FDP-G REAR VIEW
1-0102G-A0089	TYPICAL PANEL LAYOUT - FIELD JUNCTION BOXES
1-0102M-A0014	NETWORK BLOCK DIAGRAM - ADMIN BUILDING PROCESS NETWORK
1-0102M-A0015	PANEL LAYOUT - NP-M1
1-0102M-A0016	PANEL LAYOUT - NP-M1.PDP
1-0102G-A0048	NETWORK BLOCK DIAGRAM - GRIT BUILDING MODBUS NETWORK
1-0102G-A0087	NETWORK BLOCK DIAGRAM - GRIT BUILDING PROCESS NETWORK
1-0102G-A0072	PANEL LAYOUT - NP-G1
1-0102M-E0006	PLAN LAYOUT - ADMIN BUILDING ELECTRICAL ROOM
1-0102G-E0007	PLAN LAYOUT - GRIT BUILDING ELECTRICAL ROOM
SEP-829	MCC SECTION - MOTOR CONTROL CENTRE 1G
SEP-830	MCC SECTION - MOTOR CONTROL CENTRE 2G
1-0102G-E0026	CABLE TRAY AND CONDUIT ROUTING - GRIT BUILDING
1-0102G-E0009	PLAN LAYOUT - GRIT BUILDING CONTROL ROOM
1-0102G-E0027	MOTOR SCHEMATIC - G105-GRP

<u>Filename.</u>	<u>Document Code</u>	<u>Document Name/Title</u>
759-2010_Electrical_Forms.pdf		Electrical Forms

E1.4 The following existing drawings are provided for reference:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
GA-9768	G-1 Plant Influent Gate, Couplings and Stem Brackets Location For 48x48 Sluice Gate
GA-9769	G-1 Plant Influent Gate, Installation of 48x48 Sluice Gate

141-A-2                      Adjustable Stem Guide, Type II  
128A                         Details of Wedges  
McH-S-6278                McAvity Milwood Gate Valve – Shop Drawing (Raw Sewage Pump Suction Valve)

## GENERAL REQUIREMENTS

### 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. ADDITIONAL INFORMATION

E3.1 Further to C3.1, the following information is available:

- (a) The document entitled "78" Sewer and Sluice Gate Inspection" dated September 29, 2006 and prepared by Dominion Divers (2003) Ltd. is included with this Bid Opportunity.
  - (i) The report filename is: 759-2010\_Inspection\_Report.pdf
- (b) Digital video of the interior of the existing inlet chamber, dated September 29, 2006, showing the general condition. Video is for reference only and is not intended to provide a complete representation of the current condition of the Inlet Chamber.
  - (i) The video will be provided on DVD, upon request.
- (c) Suction Valve Gear Operators – Installation Manual (Crane Convento-Gear)
  - (i) The filename is: 759-2010\_ValveOperator\_Manual.pdf

### E4. SCOPE OF WORK

- E4.1 The Contractor shall provide all materials, fabrications, finishes, temporary installation, documentation, shop drawings, means and methods necessary to fully install all of the new works identified on the contract drawings in a safe manner, fit-for-purpose intended. The description of work provided herein is intended to be a general description of work activities, and is not intended to be an exhaustive listing of all tasks necessary to complete the scope of installations given on the drawings or specifications.
- E4.2 Upon completion of the structural rehabilitation and upgrades associated with the Inlet Structure and prior to demobilizing from site, provide assistance to the Contract Administrator as necessary to review the condition of the existing ladders in the Inlet Structure. Be prepared to provide a quotation for any required ladder repairs.
- E4.3 The Contractor shall exercise care where installing anchors into existing concrete elements so as not to damage existing reinforcing. All anchors shall be installed utilizing carbide tip drill bits. The existing reinforcing shall be located utilizing a reinforcing bar locator and marked out on the surface of the concrete. The drill holes shall be advanced to the required depth for installation of the anchors. Should reinforcement be encountered while drilling the hole shall be terminated and repositioned to clear the reinforcement. Do not use core bits that can easily intercept and damage/cut the reinforcing during drilling. If it is not possible to install the connection plates utilizing the slots in the plates without hitting reinforcing, advise the Contract Administrator immediately and await further instructions.
- E4.4 General Requirements
- (a) Include the following items in the unit price bid for General Requirements:
    - (i) Mobilization;
    - (ii) Demobilization;
    - (iii) Insurance; and

(iv) Bonding.

E4.5 Inlet Chamber Supporting Requirements

- (a) Prepare and submit a diversion scheme to allow work on one gate while the other remains in service.
- (b) Design and submit shop drawings for a flow diversion device which will provide dewatered access to each of the two gates in turn. The flow diversion device shall be suitable for installation during periods of low flow and shall be constructed to withstand an overtopping head. The device shall be designed for future use by the City, with permanent fixtures to be left in place once the work is complete. The device shall generally conform to the configuration shown on the contract drawings but may be modified to suit the Contractor's execution plan and methodology.
- (c) Fabricate and install the flow diversion device. Upon completion of the work on one gate, reconfigure the device to allow work on the second gate. Upon full completion of the work remove those parts of the device that intercept and divert sewage flow. Clean and turn over the device to the City. Store in a location identified by the Contract Administrator.
- (d) Provide a dewatering pump to remove seepage passing the flow diversion device.
- (e) Install supplementary platforms, walkways and access ladders as required to provide safe access to the work area.
- (f) Provide heated, forced ventilation to maintain a safe breathing atmosphere in the work area.
- (g) Provide temporary lifting devices to facilitate disassembly and removal of gate components from the intake structure well.

E4.6 Inlet Chamber Structural Repairs and Modifications

- (a) Provide heated, forced ventilation to maintain a safe breathing atmosphere in the work area.
- (b) Install supplementary platforms, walkways and access ladders as required to provide safe access to the work area.
- (c) Scrape the deposits on the north wall of the inlet chamber up to a height of about 2 m starting from the top of the influent sewer.
- (d) Hydro-demolish the unsound concrete in the scraped area. Taking care that the large chunks of concrete do not fall into the sewage below.
- (e) Inspect the hydro-demolished area to determine the extent of damage to the concrete surface. Inform the Contract Administrator about the extent of damage.
- (f) Clean the exposed steel reinforcement and apply a corrosion inhibiting primer.
- (g) Install epoxy grouted dowels into prepared concrete area on the north wall of the inlet chamber.
- (h) Apply a bonding agent on the hydro-demolished concrete surface.
- (i) Supply and install the reinforcement cage in place using the dowels as supports.
- (j) Install the formwork for concrete repairs. The formwork will be open at top for pouring of concrete. The formwork can be supported from the inlet chamber walls and the base slab.
- (k) Apply the repairs using reinforced concrete as per the drawings.
- (l) Scrape the deposits on all the surfaces of the platform at level 225.857 (741') in the inlet chamber.
- (m) Hydro-demolish the unsound concrete from the nosing of the concrete platform (This area will include, the vertical face, up to 200 mm on the bottom face, and up to 250 mm on the top face). Taking care that large chunks of concrete do not fall into the sewage below.
- (n) Clean the exposed steel reinforcement and apply a corrosion inhibiting primer.

- (o) Apply a bonding agent on the hydro-demolished concrete surface in the nosing area of the platform.
- (p) Supply and install the stainless steel plate assemblies on the platform.
- (q) Grout the nosing area of the platform using the grout holes in the plate assemblies.
- (r) Supply and install the stainless steel guardrail assemblies with toe plates into the sleeves on the stainless steel plate assemblies.
- (s) Remove the asphalt from the sill at the bottom of the sluice gates at level 219.608 (720' 6"). Clean the surface and refill with asphalt after the mechanical parts have been repaired.
- (t) Scrape the deposits from the vertical faces of the slab openings at level 230.124 (755')
- (u) Hydro-demolish the unsound concrete in the scraped area (vertical surfaces only).
- (v) Clean the exposed steel reinforcement and apply a corrosion inhibiting primer on it.
- (w) Apply a bonding agent and epoxy grout on the hydro-demolished concrete surfaces.
- (x) Supply and install a stainless steel grab bar.
- (y) Replace damaged air-tight rubber seals around perimeter of two existing hatchway openings at level 230.124 (755').
- (z) Remove existing hatch covers (305 mm x 305 mm) and pipe sleeves from the roof of the Inlet structure.
- (aa) Install epoxy grouted bent dowels in the roof / walls of the Inlet structure
- (bb) Clean and apply bonding agent on the roof of the Inlet structure.
- (cc) Cast-in-place reinforced concrete beam on the roof of the Inlet structure, with stainless steel anchors and stainless steel pipe sleeves for the two actuator frames, and galvanized anchors for the guardrail base plates.
- (dd) Supply and install galvanized steel guardrails with toe plates and base plates

#### E4.7 Inlet Chamber Sluice Gate Refurbishment and Modifications

- (a) Prepare and submit shop drawings for fabricated components required to carry out the upgrades. Shop drawings for all engineered components, including scaffolding, temporary access platforms and ladders, and temporary lifting devices shall bear the seal of a qualified engineer registered in the Province of Manitoba.
- (b) Prepare and submit a rigging plan for removal of gate component parts to a work site at grade.
- (c) Detail, fabricate and supply new stem sections, couplers, guides, stainless steel anchors, and other parts required to carry out the sluice gate upgrades.
- (d) Disassemble and remove items that are not required for reuse including extension shaft and geared floor stands and turn over to the City.
- (e) Disassemble, remove, clean, and refurbish as required all gate components to be reused and/or modified and reused including gate lifting stems, lifting stem couplers, stem guides, stem block, gate wedges, and sluice gates. Work shall be carried out on one gate assembly at a time, with no work starting on the second gate before the complete and satisfactory completion of work on the first gate.
- (f) The Contractor shall assume that all fasteners will require cutting, burning or drilling to remove. All reassembly for all gate components shall utilize new A320 Grade B8 bolts and A194 Grade 8 nuts.
- (g) The Contract Administrator shall be provided the opportunity to inspect and approve the reuse of all components prior to reassembly of the gates. Damaged or deteriorated components shall be replaced at the Contract Administrator's discretion.
- (h) The sluice gate discs, gate frames and guides may be refurbished in place, but each sluice gate disc must be lifted free from the associated frame and guide assembly. The frame and guide assemblies may remain anchored to the wall.

- (i) The Contractor is advised that the gate discs are currently seized in the frame guides. The methodology by which the Contractor proposes to free the gate discs and carry out the refurbishing shall be described in detail and submitted to the Contract Administrator for approval prior to execution of the work.
- (j) The Contractor shall assume that the gate discs, frames and guides are fundamentally sound and can be returned to serviceable condition by cleaning using hand tools. Should deficiencies requiring more extensive repair be discovered once the gates are disassembled, the Contract Administrator shall be notified immediately, and further work held until alternative repair plans are established.
- (k) Refurbishing of the gate discs shall include, but not be limited to, removal of all surface accretions, power tool cleaning of the key and mating surfaces that run against the vertical gate guides, power tool cleaning of the disc bottom where it rests on the resilient seat, and careful hand scraping of the bronze seating strips by a qualified millwright to achieve a water tight seal with the companion gate frame seating strips.
- (l) Refurbishing of the gate frame and guide assemblies shall include, but not be limited to, removal of all surface accretion, power tool cleaning of the guide slots and mating surfaces that run against the gate discs, and careful hand scraping of the bronze seating strips by a qualified millwright to achieve a water tight seal with the companion gate disc seating strips.
- (m) Refurbishing of the gate wedges shall include removal, cleaning, inspection, and dressing of wedge surfaces.
- (n) Refurbishing of the gate lifting stems (bronze) and couplings shall include removal, cleaning and inspection.
- (o) The Contractor shall remove and replace the urethane resilient seats at the bottom of the gate frames.
- (p) The Contractor shall remove, disassemble, clean and inspect the stem guides and bushings. If the stem diameter to guide bushing diameter clearance exceeds specifications, the Contractor shall supply, fabricate and install new bronze bushings.
- (q) The Contractor shall carefully inspect the lead screws machined into the top section of each gate stem and confirm that they are suitable in design, size and condition for reuse with the new actuators. If the lead screws are judged unsuitable for refurbishing and reuse, the Contractor shall immediately bring the deficiency to the Contract Administrator's attention.
- (r) The Contractor shall reinstall the refurbished gate stems, stem guides and stem blocks along with new stem sections, couplers, guides, and other parts for a complete installation. Stem guide spacing has been reduced from the existing installation.
- (s) The Contractor shall reinstall the refurbished gate discs and gate wedges.
- (t) Upon completion of the work on each gate the entire assembly shall be adjusted and aligned in accordance with the original gate specification and supply documents. The gate shall operate freely, to the satisfaction of the Contract Administrator, through its entire range of movement in both the lifting and lowering directions. Any deficiencies in operation of the refurbished gate shall be rectified to the full satisfaction of the Contract Administrator.
- (u) Test each gate for leakage against a seating head of 3 meters, in accordance with AWWA C501. Develop and submit a testing procedure to the Contract Administrator for approval. The testing procedure is to include several trials starting with no flow and increasing the seating head in increments of 1 meter.

#### E4.8 Inlet Chamber Demobilization and Remobilization

- (a) In the event that the Contract Administrator advises the Contractor to demobilize out of the wet well, there are certain cases where additional payment will be made to the Contractor. See E7 for details.

- (b) The price identified in Form B, Item 5 shall include costs for extensions in insurance, performance security, and all other costs associated with delaying the work.
- (c) Payment for Form B, Item 5 will only be made for the specific case identified in E7.
- (d) The price in Form B, Item 5 will be included in the bid evaluation.

E4.9 Inlet Structure Sluice Gate Actuators

- (a) Supply, and install two new electric actuators (G117-XZ and G118-XZ) for automatic operation of the sluice gates.
- (b) Fabricate, supply and install a support frame for each of the two new electric actuators. Mount the support frames onto a new concrete beam installed on the inlet structure cover.
- (c) Align and level the actuators and support frames and install grout beneath the base plates.
- (d) Engage and pay for the actuator manufacturer's technical representative to attend the site to provide assistance during installation, start-up and commissioning, and operation and maintenance instruction to City personnel.
- (e) Start-up and commission the sluice gate actuators and demonstrate proper performance to the Contract Administrator.

E4.10 Inlet Structure Fence and Landscaping

- (a) Supply and erect a 6' high chain link fence, complete with a 12' wide vehicle access gate, and a 3' wide man gate equipped with emergency exit hardware. The fence shall enclose the surface cover above the inlet structure and shall be installed in accordance with the contract drawings.
- (b) Remove grass/sod from within the new fenced area and provide maintenance free surface including landscape fabric covered with decorative stone to match existing.
- (c) Remove grass/sod and raise grade level on the south side of the Inlet structure and provide maintenance free surface including landscape fabric covered with decorative stone to match existing.

E4.11 Wet Well Cleaning

- (a) Completely clean out grit and debris from the East and West wet wells as per E9.
- (b) Costs for dewatering of the wet wells to perform the work associated with the Grit Pump Suction Piping is to be included under E4.14.
- (c) Note: This work is considered optional by the City. Refer to B15.4(b).

E4.12 Drywell Isolation Wall

- (a) Provide safe access to the work area.
- (b) Relocate pipes and other fixtures interfering with the new wall.
- (c) Roughen the surface of the concrete in the Dry Well at level 216.103 (709'), where the new concrete wall will be constructed.
- (d) Supply and install epoxy grouted dowels in the existing concrete slab as shown in the drawings.
- (e) Apply a bonding agent to the roughened concrete surface.
- (f) Apply water-stop on the roughened concrete surface along the centerline of the new wall.
- (g) Make arrangements for embedding drains, pipes and other inserts in the concrete wall. Coordinate with other trades.
- (h) Install 250 mm x 1 m x 14.5 m (approx) concrete wall.
- (i) Supply and install the two cross-over ladders over the concrete wall.
- (j) Supply and install slide gate valve, terminal backwater valve, and pipe for drainage of seal water from the west side of the dry well through the new dry well divider wall and to the sump located in the east side of the dry well.

#### E4.13 Raw Sewage Pump Suction Valve Actuators

- (a) Supply and install four (4) raw sewage suction valve actuators (G121-XV, G122-XV, G123-XV, and G124-XV).
- (b) Disassemble and remove four existing hand-wheel operators for the existing suction valves and turn over to the City.
- (c) Examine the existing gear drives and design, fabricate, supply and install adapters and fasteners as required to mount and connect the new actuators for proper operation.
- (d) Engage and pay for the actuator manufacturer's technical representative to attend the site to provide assistance during installation, start-up and commissioning, and operation and maintenance instruction to City personnel.
- (e) Start-up and commission the suction valve actuators and demonstrate proper performance to the Contract Administrator.

#### E4.14 Grit Pump Suction Piping

- (a) Coordinate the work schedule for removal of existing grit pump suction piping and installation of new piping, valves, etc. with modifications to the inlet chamber sluice gates. Take all reasonable precautions to avoid flooding of the dry well via. the grit pump suction piping connections to the wet wells and suction piping for the raw sewage pumps.
- (b) Dewater the wet wells one at a time. Raw sewage can be pumped from one wet well to the other once the diversion gate is in place.
- (c) Disassemble and remove existing piping and valves to the extents (tie points) shown on the drawings including misc. vents, drains, and pressure switches which exist but are not shown on the drawings. Remove stem extension for the drain valve located adjacent to the grit removal pump.
- (d) Notify the Contract Administrator when the remaining grit pump discharge piping is available for inspection and wait for authorization to proceed or change notice for replacement of additional piping.
- (e) Supply and install all piping, fittings, valves, gaskets, flange bolts, pipe supports and hangars as shown on the drawings, noted in the project specifications, and as required for a complete installation.
- (f) NDE, testing of welds and hydrostatic testing of piping system.
- (g) Supply and install two dewatering control valves complete with pneumatic actuators.
- (h) Supply and install instrument air lines from the drywell service level to the two new dewatering valves.
- (i) Modify and add two flush water lines complete with isolation valves.

#### E4.15 Grit Pump Refurbishment

- (a) Remove, examine, and refurbish grit pump G105-GRP to sound operating condition including as a minimum shaft seals and bearings.
- (b) Make the grit pump available to the Contract Administrator for independent inspection and wait for authorization to proceed or change notice for additional work.
- (c) Install refurbished grit pump with new intake and discharge gaskets and flange bolts.

#### E4.16 Grit Pump Discharge Flow meter

- (a) Supply and install flow meter magnetic flow meter and transmitter G105-FE and G105-FIT.
- (b) Drain grit removal discharge pipe, cut away section of discharge pipe in Motor Room G114, and supply and install flanges, gaskets, flange bolts, and pipe support as shown on the Drawing 1-0102G-M0005.
- (c) Test and commission to prove proper operation.

#### E4.17 Pump Seal Water Relocation

- (a) Modify the seal water systems for the grit pump G105-GRP and raw sewage pumps G101-RSP, G102-RSP, G103-RSP, and G104-RSP to relocate components affected by submergence to the Drywell Service Level Room G108, at elevation 224.942m.

#### E4.18 Electrical and Automation

- (a) Supply and install power and control wiring to new inlet sluice gate valve actuators (G117-XZ and G118-XZ) and raw sewage suction valve actuators (G121-XV, G122-XV, G123-XV, and G124-XV).
- (b) Supply and install MCC breaker buckets in MCC-1G and MCC-2G for actuator power cables.
- (c) Supply and install cable tray for power and control wiring within Grit Building.
- (d) Modify wiring of Wet Well low level interlocks to use relays on G107-LIT and G109-LIT for low level alarms.
- (e) Modify wiring of Wet Well low level interlocks to separate East and West Wet Wells (G107-LSL and G109-LSL).
  - (i) Add East Wet Well low level signal to DCS.
- (f) Supply and install solenoid valves, speed controls, and pressure switches for Dry Well dewatering valves G127-XV and G128-XV and connect to DCS.
- (g) Supply and install Flood Mode bypass switch (G126-HS) in FDP-G. Rewire FDP-G and VFD panels for G101-RSP, G102-RSP, G103-RSP and G104-RSP as shown on the drawings.
- (h) Disconnect seal water instrumentation for raw sewage pumps at the pump level and reconnect at the service level in the drywell.
- (i) Add fuses to power circuits for pump vibration transmitters in FDP-G.
- (j) Disconnect seal water instrumentation for G105-GRP at the pump level and reconnect at the service level in the drywell.
- (k) Modify the existing MCC bucket or supply and install new MCC bucket for G105-GRP to allow for DCS control of the pump.
- (l) Provide power and control wiring for magnetic flow meter transmitter G105-FIT.
- (m) Supply and install drywell flood level transmitters G563-LT and G564-LT and connect to DCS.
- (n) Replace sump level switch G561-LSH with one that has a longer submersible cable and install junction box.
- (o) Supply and install network panel NP-G1 in Grit Control room and connect power and control wiring. Completely test all Modbus communication links and verify correct operation.
- (p) Supply and install network panel NP-M1 in Admin Building Main Control Room and connect power and control wiring. Completely test all Ethernet communication links and verify correct operation.
- (q) Supply and install network cables connecting NP-G1 and NP-M1.

#### E4.19 DCS Hardware Modifications

- (a) The following work is to be performed by ABB at a fixed cost. The price allowed is based upon a quotation received from ABB, plus 10% Contractor mark-up. Engage ABB to perform the work.

##### E4.19.1 Supply and install redundant HPG800 communication modules in PCU-SH, including:

- (a) 2 x Harmony PCU Gateway Module (PHCHPG80010000)
- (b) Bridge Controller Redundancy Cable – 0.2 m (PMKHRMBRC3000A)
- (c) Base Operating License for HGS 5.0-0 (3BUA001163R01)

- (d) Redundant HPG800 Interface (3BUA001163R042)
- (e) 1500 MODBUS TCP Points (3BUA001163R063)
- (f) Harmony Gateway Software Product Box CD/DVD Media - HGS 5.0-0 (3BUA001162R5)

E4.19.2 Replace the existing MFP processor modules with redundant BRC400 processor modules in PCU-SH, including:

- (a) 2 x Harmony Bridge Controller with Expanded Memory (PHCBRC40000000)
- (b) Bridge Controller Redundancy Cable – 0.2 m (PMKHRMBRC3000A)
- (c) Existing MFP processor modules are to be turned over to the City

E4.19.3 Perform DCS power loading measurements on PCU-SH to confirm that the existing power supplies are adequate. Provide a document indicating the results of the measurements, adequacy of the existing power supplies and recommendations.

E4.20 DCS Composer Software Upgrade

- (a) The following work is to be performed by ABB at a fixed cost. The price allowed is based upon a quotation received from ABB, plus 10% Contractor mark-up. Engage ABB to perform the work.

E4.20.1 Supply an upgrade to the latest version of the Composer Programming software for the SEWPCC facility, including:

- (a) Composer Server:
  - (i) Licence Number: SL609411018251104
  - (ii) Hardware ID: 34688
- (b) Composer Client:
  - (i) Licence Number: SL609411018251104
  - (ii) Hardware ID: 34699

## **E5. WORK BY OTHERS**

E5.1 All DCS programming will be by the City of Winnipeg.

## **E6. FACILITY OPERATION REQUIREMENTS**

E6.1 The facilities related to the Work are critical to the treatment of wastewater for the City of Winnipeg. Under no condition shall equipment or power be shut down without prior permission of the Contract Administrator. Similarly, coordination and approval are required prior to returning the equipment back into service. The Contractor is responsible for preparing shutdown schedules in conjunction with the Contract Administrator and the City. The Contractor shall work within the schedule and any procedures given, and shall advise the Contract Administrator of any issues or concerns, prior to performing the Work.

E6.2 The Work shall be scheduled and performed such that there is minimal disturbance to SEWPCC plant operation.

E6.3 Hot work shall end no less than one (1) hour prior to end of shift and area inspected prior to daily departure by the Contractor's site supervisor and / or tradesman.

E6.4 Some of the work will require shutdown of equipment. Coordinate the work to minimize the amount of time that equipment shutdown will be required. In addition, the Contractor shall be flexible to work around specific City operational requirements. Specific requirements that the Contractor is required to adhere to include:

- (a) At most, two raw sewage pumps may be shut down at one time. However, pumps may only be shut down during the day, and during dry weather. During rainfall events, the



## **E8. DANGEROUS WORK CONDITIONS**

- E8.1 Further to clause C 6.26 of the General Conditions, the Contractor shall be aware that the Inlet Chamber is considered a confined space and shall follow the "Guidelines for confined Entry Work" as published by the Manitoba Workplace Safety and Health Division.
- E8.2 The Contractor shall be aware of the potential hazards that can be encountered in underground chambers, manholes and sewers such as explosive gases, toxic gases and oxygen deficiency. The Contractor's Safe Work Plan should address these issues.
- E8.3 The air in a confined space must be tested before entry and continuously during the time that personnel are inside the space. Equipment for continuous monitoring of gases must be explosion-proof and equipped with a visible and audible alarm. The principal tests are for oxygen deficiency, explosion range and toxic gases. Testing equipment must be calibrated in accordance with manufacturer's specifications.
- (a) The Contractor is responsible for all testing requirements.
- E8.4 The Contractor shall ventilate all confined spaces including underground chambers, tunnels, pipes and shafts as required and approved by the Manitoba Workplace Safety and Health Act (the "Act"). If no ventilation is supplied, a worker must wear a respirator or supplied air to enter the confined space.
- E8.5 Workers must wear a respirator or supplied air at all times when entering an underground chamber, manhole or sewer where live sewage is present.
- E8.6 The Contractor shall provide a photo-ionization detector (PID) and toxic gas detector (H<sub>2</sub>S) on site at all times to monitor potential hydrocarbon vapours and hydrogen sulphide in the confined spaces. The gas detector and safety equipment conforming to the Act shall be made available to the Contract Administrator for his use during inspections.
- (a) Gas detection is required at all times when working in the Inlet Chamber or Wet Well.
- E8.7 The Contract Administrator may issue a stop work order to the Contractor if the above guidelines are not being followed. The Contractor shall not resume operations until the Contract Administrator is satisfied the Contractor is following the appropriate procedures. The Contractor shall have no claim for extra time or costs due to the stop work order for not following these safety guidelines.
- E8.8 Other areas of the SEWPCC facility also have potential hazardous gas concentrations. Consult with the Contract Administrator and on-site City personnel as required to ensure that specific safety requirements are met.

## **E9. WET WELL CLEAN OUT**

- E9.1 Clean out the east and west wet wells. Clean out shall be done by mechanical or manual methods and shall remove grit, tallow and other build-ups to the satisfaction of the Contract Administrator.
- E9.2 The Contractor shall also ensure that all construction material and debris are removed from the wet well after completing the works and prior to re-filling of the wet-well.
- E9.3 The current level of accumulation in the wet wells is not known.