THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 694-2008

RAVELSTON LAND DRAINAGE PUMPING STATION UPGRADE

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 RAVELSTON LAND DRAINAGE PUMPING STATION UPGRADE

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, October 7, 2008.

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

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

B3. SITE INVESTIGATION

B3.1 Further to C3.1, the Contract Administrator or an authorized representative will be available at the Site from 9:00 a.m. to 10:00 am on September 30, 2008 to provide Bidders access to the Site.

B3.2 The Bidder is advised that the Site should be viewed to identify any Site restrictions that could impede the Work progress.

B3.3 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 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 internet site at http://www.winnipeg.ca/matmgt.

B5.2.2 The Bidder is responsible for ensuring that he has received all addenda and is advised to check the Materials Management Division internet site 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 four (4) 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 in accordance with B6 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 in accordance with B6, 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 in accordance with B6” 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 in accordance with B6”, any Bidder may use the approved equal in accordance with B6 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 in accordance with B6 or an approved alternative will be considered.

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, may result in the Bid being determined to be non-responsive.

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.

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

B10. QUALIFICATION

B10.1 The Bidder shall:

(a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba; and

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

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

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 internet site 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 internet site 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 internet site 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 internet site 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 (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.

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 nit 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 internet site at 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 the upgrading of the existing pump station to accommodate new submersible propeller pumps.

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

(a) The municipal portion of the Work consists of:
  (i) New 1050 mm concrete pipe with associated connections
  (ii) Abandonment of existing discharge pipe with stabilized fill
  (iii) Repair of existing C.I.P. inlet pipe

(b) The structural portion of the Work consists of:
  (i) Demolition of the existing building and modifications to portions of the substructure.
  (ii) Construction of new cast-in-place concrete walls and slabs including excavation/shoring as required
  (iii) New stainless steel control gate and operator, including field testing
  (iv) Miscellaneous new metal components (ladders, hatches, handrail, trashracks, monorail, etc.)
  (v) Construction of new building including masonry block, brick façade, wood trusses and metal roof

(c) The mechanical portion of the Work consists of :
  (i) Removal of existing pumps and associated piping
  (ii) New ventilation system
  (iii) Three new submersible propeller pumps and sleeves including field testing
  (iv) Miscellaneous mechanical components (drains, piping, sump pump, etc.)

(d) The electrical and instrumentation portion of the Work consists of:
  (i) New 800 A MDP-1 with all associated accessories, hardware and breakers
  (ii) All required co-ordination with Manitoba Hydro for the disconnection and reconnecting of the electrical service.
  (iii) Three new 150 HP soft starters complete with across the line by-pass starters
  (iv) New ultrasonic level controls with all required mounting equipments, accessories and pipe.
  (v) All required phone connection equipment including coordination of phone requirements for SCADA system with City.
  (vi) All new sub-distribution equipment miscellaneous electrical including the transformer, distribution panel “A”, lights and plugs, etc.
  (vii) All required shop manufactured pump control cabinets with all accessories as shown on the drawings.
  (viii) All required power and controls for the new supply fan and unit heaters.
  (ix) All required equipment to provide alarms for the City SCADA system including co-ordination with the City to install the SCADA pack.
  (x) Commissioning for new system and support to City during SCADA commissioning.
  (xi) All required equipment including cabling for Hoka Street level alarm.

D3. CONTRACT ADMINISTRATOR

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

Colin Siepman, P. Eng.
Senior Engineer and Project Manager
865 Waverley Street, 3rd Floor
Winnipeg, Manitoba
R3T 5P4

Telephone No. (204) 896-1209
Facsimile No. (204) 896-0754

D3.2 At the pre-construction meeting, Mr. Siepman 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 C21.3, all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following address or facsimile number:

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

Facsimile No.: (204) 949-1174

D5.4 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following address or facsimile number:

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

Facsimile No.: (204) 947-9155

D6. 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 internet site 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;

(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.

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 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. SUBCONTRACTOR LIST

D11.1 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.

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 Gantt chart for the Work acceptable to the Contract Administrator;

D12.3 Further to D12.2(a), the Gantt chart 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) 1050 mm LDS installation
(c) CIP inlet pipe repairs
(d) Filling of existing discharge pipe
(e) Building demolition and removals
(f) Substructure primary concrete
(g) New building shell
(h) Electrical equipment and controls
(i) Ventilation system
(j) Misc. metal fabrications
(k) Install control gate
(l) Test control gate
(m) Building finishes
(n) Install pump sleeves and secondary concrete
(o) Install propeller pumps
(p) Test propeller pumps
(q) Substantial performance

(r) Site clean-up and restoration

(s) Total performance

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 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 Subcontractor list specified in D11;

(vii) 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 Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.

D13.4 The City intends to award this Contract by October 29, 2008

D13.4.1 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 upgraded Land Drainage Pumping Station must be operational by March 31, 2009 (new pumps and control gate must be ordered immediately upon Contract award as long delivery periods are anticipated).

(b) The intake pipe concrete repairs, new discharge box and new discharge LDS must be constructed by January 31, 2009 to facilitate temporary bypass pumping for pond drawdown if required.

D15. SUBSTANTIAL PERFORMANCE

D15.1 The Contractor shall achieve Substantial Performance by May 30, 2009.

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.

D16. TOTAL PERFORMANCE

D16.1 The Contractor shall achieve Total Performance by June 30, 2009.

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

(a) Pumping Station Operational – one thousand dollars ($1,000.00);

(b) Substantial Performance – one thousand dollars ($1,000.00);

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

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

D17.3 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).

D20. RESPONSIBILITY FOR PLANT AND MATERIALS

D20.1 Further to C10, the City shall assume the risk of and responsibility for the following Plant from the time that the City delivers the Plant to the Site until the Plant is removed from the Site:

(a) Two submersible pumps for temporary bypass pumping, as required, with an approximate capacity of 0.25 m^3/s per pump.

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.

D22. PAYMENT SCHEDULE

D22.1 Further to C12, payment shall be in accordance with the following payment schedule:

(a) Control Gate and Propeller Pumps

(i) 10% payment on approval of shop drawings

(ii) 65% payment on delivery to site

(iii) 25% payment on commissioning

WARRANTY

D23. WARRANTY

D23.1 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.

D23.1.1 For the purpose of Performance Security, the warranty period shall be one (1) year.

D23.2 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.

D23.2.1 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. 694-2008

RAVELSTON LAND DRAINAGE PUMPING STATION UPGRADE

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 694-2008

RAVELSTON LAND DRAINAGE PUMPING STATION UPGRADE

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

_____ ,
(Name of Contractor)

_____
(Address of Contractor)

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

_____

_____ Canadian dollars.

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

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

Partial drawings are permitted.

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

_____
(Address)

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

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

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

_____ .
(Date)

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

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

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

_____
(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

FORM J: SUBCONTRACTOR LIST

(See D11)

RAVELSTON LAND DRAINAGE PUMPING STATION UPGRADE

Name	Address

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 internet site at http://www.winnipeg.ca/matmgt.

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:

Specification N0.	Specification Title
DIVISION 1 – GENERAL REQUIREMENTS	
01005	General Instructions
017800	Closeout Submittals
DIVISION 04 - MASONRY	
04050	Masonry Procedures
04060	Mortar and Masonry Grout
04080	Masonry Reinforcement and Connectors
04090	Masonry Accessories
04211	Brick Masonry
DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES	
06100	Rough Carpentry
06171	Prefabricated Wood Trusses
DIVISION 07 – THERMAL & MOISTURE PROTECTION	
07200	Insulation
07270	Air Barriers
07410	Metal Roof and Wall Panels
07900	Joint Sealers
DIVISION 08 – OPENINGS	
08100	Steel Doors and Frames
08710	Hardware
DIVISION 09 – FINISHES	
09900	Painting
09965	Graffiti-Resistant Coatings
DIVISION 23 – MECHANICAL	
230500	General Provisions
230510	Propeller Pumps and Discharge Pipes
230511	Sump Pump
230530	Piping and Valves
233114	Metal Ducts – Low Pressure to 500 PA
233400	HVAC Fans
233720	Louvres, Intakes and Vents
238240	Unit Heaters - Electric
DIVISION 25 – INTEGRATED AUTOMATION	
250501	Controls – General Requirements
250554	Controls – Identification
253002	Controls – Instrumentation

DIVISION 26 – ELECTRICAL

260501	Common Work Results
260520	Wire and Box Connectors 0-1000V
260521	Wires and Cables (0-1000V)
260528	Grounding - Secondary
260529	Hangers & 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
260544	Installation of Cables in Trenches and Ducts
260573	Short Circuit/Coordination Study and Arc Flash Hazard Study
261217	Dry Type Transformers up to 600 V Primary
262417	Panelboards Breaker Type
262726	Wiring Devices
262821	Moulded Case Circuit Breakers
262823	Disconnect Switches – Fused and Non-Fused
262910	Motor Starters to 600 V
262921	Reduced Voltage Starter (Solid-State)
265000	Lighting

Drawing No.	Drawing Name/Title
694-2008_Drawing_00-R0	Cover Sheet
694-2008_Drawing_LD_5074-R0	Abandon Existing 750 LDS
694-2008_Drawing_LD_5075-R0	New 1050 LDS and Existing Intake
694-2008_Drawing_LD_5076-R0	Structural Floor and Roof Plans
694-2008_Drawing_LD_5077-R0	Structural Station Sections
694-2008_Drawing_LD_5078-R0	Structural Discharge Box Sections
694-2008_Drawing_LD_5079-R0	Structural Building Elevations
694-2008_Drawing_LD_5080-R0	Structural Wall Sections & Details
694-2008_Drawing_LD_5081-R0	Structural Misc. Metal Details (1 of 4)
694-2008_Drawing_LD_5082-R0	Structural Misc. Metal Details (2 of 4)
694-2008_Drawing_LD_5083-R0	Structural Misc. Metal Details (3 of 4)
694-2008_Drawing_LD_5084-R0	Structural Misc. Metal Details (4 of 4)
694-2008_Drawing_LD_5085-R0	Structural Reinforcing Details (1 of 2)
694-2008_Drawing_LD_5086-R0	Structural Reinforcing Details (2 of 2)
694-2008_Drawing_LD_5087-R0	Mechanical Heating & Ventilation
694-2008_Drawing_LD_5092-R0	Mechanical Piping
694-2008_Drawing_LD_5093R0	Electrical Plan
694-2008_Drawing_LD_5094-R0	Electrical Single Line Diagram
694-2008_Drawing_LD_5095-R0	Electrical Pump P-1 Schematic/Wiring Diagram
694-2008_Drawing_LD_5096-R0	Electrical Pump P-2 Schematic/Wiring Diagram
694-2008_Drawing_LD_5097-R0	Electrical Pump P-3 Schematic/Wiring Diagram
694-2008_Drawing_LD_5098-R0	Electrical Control Indication and Alarm Schematics and Wiring Diagram
694-2008_Drawing_LD_5099-R0	Electrical Miscellaneous Electrical Details
694-2008_Drawing_LD_5100-R0	Electrical Schedules

E2. SALVAGE AND DEMOLITION

E2.1 All salvage material and equipment as determined by the Contract Administrator prior to demolition shall remain the property of the City unless specifically noted otherwise.

E2.2 The Contractor shall notify the Contract Administrator at least forty-eight (48) hours prior to delivery of salvaged material.

E2.3 All demolition material and equipment as determined by the Contract Administrator shall be removed from the construction site, hauled and legally disposed of at no additional cost to the City.

E2.4 The existing interior wall board (approximately 300 sq.ft.) contains asbestos and must be removed prior to building demolition. Removal and disposal shall be in accordance with Manitoba Workplace Safety and Health Branch “Guidelines for Working with Asbestos”, Type 1 Operations (low risk).

E3. TEMPORARY USE OF CITY EQUIPMENT

E3.1 City systems and equipment shall not be used during construction without the Contract Administrator's written permission. The Contract Administrator reserves the right to withdraw said permission if, in his opinion, proper care and maintenance are not provided.

E4. DANGEROUS WORK CONDITIONS

E4.1 Further to clause GC 6.26 of the General Conditions, the Contractor shall be aware that underground chambers, manholes, and sewers are considered a confined space and shall follow the "Guidelines for confined Entry Work" as published by the Manitoba Workplace Safety and Health Division.

E4.2 The Contractor shall be aware of the potential hazards that can be encountered in gate chambers, manholes and sewers such as explosive gases, toxic gases and oxygen deficiency.

E4.3 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.

E4.4 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.

E4.5 Workers must wear a respirator or supplied air at all times when entering a chamber, manhole or sewer where live sewage is present.

E4.6 The Contractor shall provide a photoionization detector (PID) on Site at all times to monitor potential hydrocarbon vapours 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. In addition, the Contract Administrator shall collect discrete air samples for laboratory analysis.

E4.7 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 his 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.

E5. CITY ASSISTANCE AND CALLOUTS

E5.1 Water and Waste Department Collection System personnel will be available to provide assistance to the Contractor for station isolation and/or shutdown if required.

E6. MOBILIZATION AND DEMOBILIZATION

E6.1 Mobilization and demobilization will include but not be limited to start-up costs, equipment setup and removal, field office and storage facilities set-up and removal and Site cleanup.

E6.2 Mobilization and demobilization will be measured on a unit basis and paid for at the Contract Unit Price for "Mobilization and Demobilization" in accordance with this specification, accepted and measured by the Contract Administrator.

E6.3 Fifty (50%) percent of the Mobilization and Demobilization unit price will be paid on the first progress payment.

E6.4 The remaining fifty (50%) percent of the Mobilization and Demobilization unit price will be paid subsequent to the completion of the Work and restoration and clean up of the Site.

E7. OFFICE FACILITIES

E7.1 The Contractor shall supply office facilities meeting the following requirements:

(a) The field office shall be for the exclusive use of the Contract Administrator.

(b) The building shall be conveniently located near the Site of the Work.

(c) The building shall have a minimum floor area of 25 square metres, two windows for cross ventilation and a door entrance with a suitable lock.

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

(e) The building shall be adequately lighted with fluorescent fixtures and have a minimum of three wall outlets.

(f) The building shall be furnished with two desks, two drafting tables, table 3m X 1.2m, one stool, one four drawer legal size filing cabinet, and a minimum of 12 chairs.

(g) A portable toilet shall be located near the field office building. The toilet shall have a locking door and be for the exclusive use of the Contract Administrator and other personnel from the City.

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

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

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

E8. PERMITS

E8.1 The Water and Waste Department will apply and pay for the building permit.

E9. SHOP DRAWINGS

E9.1 Description

(a) This Specification provides instructions for the preparation and submission of shop drawings.

(i) The term 'shop drawings' means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, including Site erection drawings which are to be provided by the Contractor to illustrate details of a portion of the Work.

(ii) The Contractor shall submit specified shop drawings to the Contract Administrator for review. All submissions must be in metric units. Where data is in imperial units, the correct metric equivalent shall also be show on all submissions for Contract Administrator review.

(b) Shop Drawings

(i) Original drawings are to be prepared by Contractor, SubContractor, supplier, distributor, or manufacturer, which illustrate appropriate portion of Work; showing fabrication, layout, setting or erection details as specified in appropriate sections.

(ii) Shop drawings for the following structural components shall bear the seal of a registered Engineer of Manitoba.

(a) Metal Fabrications

(b) Shoring

(c) Cofferdam

(c) Contractor's Responsibilities

(i) Review shop drawings, product data and samples prior to submission and stamp and sign drawings indicating conformance to the Contract requirements.

(ii) Verify:

(a) Field Measurements
(b) Field Construction Criteria
(c) Catalogue numbers and similar data

(iii) Coordinate each submission with requirements of Work and Contract Documents. Individual shop drawings will not be reviewed until all related drawings are available.

(iv) Notify Contract Administrator, in writing at time of submission, of deviations from requirements of Contract Documents.

(v) Responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator's review of submission, unless Contract Administrator gives written acceptance of specified deviations.

(vi) Responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.

(vii) The Contractor shall make any corrections required by the Contract Administrator and shall resubmit the required number of corrected copies of Shop Drawings. The Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections requested by the Contract Administrator on previous submission.

(viii) After Contract Administrator's review and return of copies, distribute copies to subtrades as appropriate.

(ix) Maintain one (1) complete set of reviewed shop drawings, filed by Specification Section Number, at the Site of the Work for use and reference of the Contract Administrator and SubContractors.

(d) Submission Requirements

(i) Schedule submissions at least fourteen (14) Calendar Days before dates reviewed submissions will be needed, and allow for a fourteen (14) Calendar Day period for review by the Contract Administrator of each individual submission and re-submission, unless noted otherwise in the Contract Documents.

(ii) Submit two (2) paper prints of shop drawings. The Contractor is advised that the Contract Administrator will retain one (1) copy of all submittals and return one (1) copy to the Contractor.

(iii) Accompany submissions with transmittal letter, containing:

(a) Date
(b) Project title and Bid Opportunity number
(c) Contractor's name and address
(d) Number of each shop drawing, product data and sample submitted
(e) Specification Section, Title, Number and Clause
(f) Drawing Number and Detail/Section Number
(g) Other pertinent data

(iv) Submissions shall include:

(a) Date and revision dates.

(b) Project title and Bid Opportunity number.
(c) Name of:
    (a) Contractor
    (b) SubContractor
    (c) Supplier
    (d) Manufacturer
    (e) Separate detailer when pertinent
(d) Identification of product of material.
(e) Relation to adjacent structure or materials.
(f) Field dimensions, clearly identified as such.
(g) Specification section name, number and clause number or drawing number and detail/section number.
(h) Applicable standards, such as CSA or CGSB numbers.
(i) Contractor's stamp, initialed or signed, certifying review of submission, verification of field measurements and compliance with Contract Documents.

(e) Other Considerations

(i) Fabrication, erection, installation or commissioning may require modifications to equipment or systems to conform to the design intent. Revise pertinent shop drawings and resubmit.

(ii) Material and equipment delivered to the Site of the Works will not be paid for at least until pertinent shop drawings have been submitted and reviewed.

(iii) Incomplete shop drawing information will be considered as stipulated deductions for the purposes of progress payment certificates.

(iv) No delay or cost claims will be allowed that arise because of delays in submissions, re-submissions and review of shop drawings.

E10. FLOW CONTROL

E10.1 During winter months land drainage and storm relief sewers can receive flow of an undetermined amount from groundwater infiltration, watermain breaks, snow melt and other unforeseen sources.

E10.2 Provide flow control measures to contend with and maintain flow in the land drainage and storm relief sewers that are directed to the location where land drainage sewers and concrete chambers are being modified. Flow control measures shall include but not be limited to diversions, flumes, plugs, bulkheads and by-pass pumping.

E10.3 Discharge hoses for by-pass pumping shall not be laid across vehicle or pedestrian traffic areas and must be protected from freezing during winter months. Pumping equipment if used, shall be set-up in a location and in such a way to not be a noise problem for nearby residences

E10.4 The station wetwell and discharge piping must be dewatered to facilitate construction. Water may be pumped into the deep pond or into manhole #1 north of the station. Water pumped into the deep pond shall be performed by methods that do not cause erosion of the pond banks or bottom.

E10.5 Cofferdam

(a) A clay cofferdam or approved equal in accordance with B6 will be required in the deep pond at the end of the existing LDS intake to facilitate dewatering and repair of the LDS pipe

(b) The pond level in November will be drawn down to approximately elev. 222.97 m (4 ft depth). The pond level will gradually increase during winter months due to nominal flow from the land drainage sewers. After February 28, 2009 if the pond level exceeds elev. 224.80 m (10 ft depth) it must be drawn down to elev 224.80 m using temporary bypass pumps in accordance with E19 of this specification.

(c) The cofferdam shall be designed to have minimum freeboard of 0.3 m. If required, drawdown of the pond to maintain the cofferdam design water level (selected by the Contractor) is the responsibility of the Contractor.

(d) Submit Shop Drawings and design calculations for the cofferdam system designed and sealed by a Professional Engineer registered or licensed to practice in the Province of Manitoba and experienced in the design of cofferdam systems. The designer of the cofferdam system shall inspect the system during construction certify, in writing to the Contract Administrator, that construction is in conformance with the approved design.

E10.6 Provide a flow control plan to the Contract Administrator for review before removing any existing sewer pipe or subsurface chamber concrete.

E10.7 Method of Measurement and Payment

E10.7.1 Costs for flow control will be measured and paid for at the Contract Lump Sum Price for "Flow Control".

E11. SITE DEVELOPMENT AND RESTORATION

E11.1 Description

E11.1.1 This Specification shall cover all aspects of the Site Development and restoration Work, including erection, maintenance and removal of safety fencing, snow clearing, access development, access maintenance and removal, and Site restoration.

E11.2 Materials

E11.2.1 Equipment

(b) All equipment, implements, tools and facilities used shall be of a size and type as required to complete the Work in a reasonable time, approved by the Contract Administrator. The Contractor shall keep all equipment in good Working order, and have sufficient standby equipment available at all times, as required.

E11.3 Construction Methods

E11.3.1 Site and Construction Access

(a) The Contractor shall be responsible to develop suitable Site access. This includes but is not limited to, temporary bridging over structures, temporary removal and reinstallation of safety fencing, any landscaping and grading repairs, restoration of vegetation, etc. necessary to restore any Site and construction access areas to their pre-existing condition.

E11.3.2 Existing Fence

(a) The existing fence around the property shall be reconstructed if damaged during construction. New fence materials used for the reconstruction shall be consistent with the existing fence.

(b) The Contractor shall ensure that the existing gates are closed and locked at the end of each Work day.

E11.3.3 Vegetation Removal

(a) Some vegetation (small trees and sod) removal will be permitted in order to facilitate construction. Existing vegetation shall not be removed without prior approval from the Contract Administrator. The Contractor shall load and haul any removed vegetation, and dispose of the material off Site immediately upon collection. Stockpiling shall not be permitted.

E11.3.4 Environmental Regulations

(b) The Contractor shall adhere to all relevant Federal and Provincial environmental regulations.

E11.3.5 Snow and Ice Removal

(a) Snow cover shall be cleared from the construction site prior to commencement of the Work. The methodology to clear the snow shall be subject to the approval of the Contract Administrator.

E11.3.6 General Site Cleanup and Restoration

(a) All areas of the construction Site shall be restored to a condition at least equivalent to its original condition prior to initiation of Work. This may include, but is not necessarily limited to the Contractor's lay down area, the removal of the Contract Administrator Site trailer, and removal of all temporary fencing.

E11.3.7 Topsoil and Sod

(a) All existing grassed areas disturbed by the Contractor during construction, which are not designated for construction of items to be permanently incorporated into the Work, shall be restored by the Contractor to existing condition or better using topsoil and sod at his own cost.

E11.4 Method of Measurement and Payment

E11.4.1 Site Development and Restoration

(a) The Site development and restoration will be measured and paid for at the Contract Lump Sum Price for "Site Development and Restoration", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

E12. DEMOLITION OF STRUCTURES

E12.1 Description of Work

E12.1.1 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

E12.1.2 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.

E12.1.3 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.

E12.2 References

E12.2.1 CSA S350-M1980, Code of Practice for Safety in Demolition of Structures.

E12.2.2 Manitoba Workplace Safety and Health Act, and all applicable National, Provincial, and Municipal regulations.

E12.3 Protection

E12.3.1 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.

E12.3.2 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.

E12.4 Execution

E12.4.1 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.

E12.4.2 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.

E12.4.3 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.

E12.4.4 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.

E12.4.5 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.

E12.4.6 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.

E12.4.7 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.

E12.5 Measurement and Payment

E12.5.1 Concrete Demolition:

(a) Demolition of concrete will be measured on a unit basis and paid for at the Contract Lump Sum Price for “Demolition and Removals”.

(b) No payment shall be made for demolition beyond the limits specified, or those otherwise approved by the Contract Administrator. The separation, as necessary of embedded and structural steel shall be considered incidental to the Work. The installation of temporary supports, shoring or hangers shall also be considered incidental to the Work. Sawcutting of concrete and removal of construction debris shall be considered incidental to the Work.

E13. METAL FABRICATIONS

E13.1 Description

E13.1.1 General

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

E13.2 Materials

E13.2.1 All materials shall be of a type acceptable to the Contract Administrator, and shall be subject to inspection and testing by the Contractor Administrator.

E13.2.2 Material intended for use in the various assemblies shall be new, straight, clean, with sharply defined profiles.

E13.2.3 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.

E13.2.4 Steel Pipe: to ASTM A53/A53M, seamless, galvanized, as specified by item.

E13.2.5 Welding materials: to CSA W59.

E13.2.6 Hot dipped galvanized steel repair material: Galvalloy and Gal-Viz

E13.2.7 Stud Anchors: to ASTM A108, Grade 1020.

E13.2.8 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.

E13.2.9 Isolating sleeves shall be “Nyltite” – headed sleeve as manufactured by Spaenaur of Kitchener, Ontario, or approved equal in accordance with B6.

E13.2.10 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.

E13.3 Construction Methods

E13.3.1 Submittals

(a) The Contractor shall submit the qualifications of the fabricator and welders to the Contractor Administrator for acceptance. Submit shop drawings in accordance with E9 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.

E13.3.2 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) All steel shall be hot-dip galvanizing after fabrication, in accordance with CAN/CSAG164, to a minimum net retention of 600 gm/m^2.

(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.

E13.3.3 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 177ºC (350ºF) 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.

E13.4 Measurement and Payment

E13.4.1 Supply, fabrication, transportation, handling, delivery and placement of metal fabrications will be paid for at the Contract Unit Price for “Miscellaneous Metal Fabrications”.

E14. CAST-IN-PLACE CONCRETE CONSTRUCTION

E14.1 Description

E14.1.1 This specification shall cover construction of cast-in-place concrete and shall supplement, revise and amend CW 2160.

E14.2 Materials

(a) Concrete Mix Design

(i) Concrete mix design shall be as indicated in the Construction Notes on the Drawings.

(b) Lean-Mix Concrete Design

(i) Proportioning of fine aggregate, coarse aggregate, cement, and water for lean mix concrete shall be as follows:

- Cement: Type 50
- Minimum Compressive Strength @ 28 days: 15 MPa
- Slump: 80 mm
- Air Content: nil
- Minimum Cement Content = 240 kg/m3
- Maximum Water/Cement Ratio = 0.49

(c) Grout

(i) Grout shall be Sika Grout 212 or approved equal in accordance with B6.

(d) 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.

(e) Bonding Agent shall be ACRYL-STIX or approved equal in accordance with B6.

(f) Waterstop shall be SikaSwell S-2 (Hydrophilic Polyurethane Sealant) extrudable swelling waterstop.

(g) Miscellaneous Metals and Accessories in accordance with E13 of this specification and as shown on the Drawings.

(h) Shop Drawings

(i) Provide shop drawings in accordance with E9 of this specification.

(ii) Submit shop drawings for reinforcing steel a minimum of two (2) weeks prior to the fabrication of any reinforcing steel.

(i) Backfill

(i) In accordance with CW 2030. Class of backfill to be as shown on the Drawings.

E14.3 Construction Methods

E14.3.1 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) Excavation for the construction of subsurface concrete shall be by the shored excavation method.

(c) 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 or adjacent properties within or adjacent to an excavation.

(ii) Shoring system to be used.

(iii) Proposed method of chamber construction.

(iv) Specialized equipment to be used.

(v) Any design revisions proposed to accommodate the Contractor's proposed construction method.

(vi) Water control considerations including details on the Contractor's proposed method of groundwater and surface runoff control.

(d) The Contractor shall respond to any concerns that may be raised by the Contract Administrator after review of Construction Method submission.

E14.3.2 Excavation

(a) Remove excavated material from the Site immediately. Excavated material shall not be stockpiled on-site unless it will be used as backfill.

(b) Place a minimum 75 millimetre thick lean mix concrete slab in the bottom of the excavation to provide a clean Working base upon completion of the excavation to the required limits.

(c) Lean mix concrete shall be well-tamped and screed to give a level Working platform for setting up forms and placing reinforcing steel. Allow the concrete to set for twenty-four (24) hours before setting up forms or placing reinforcing steel.

(d) Supply and place lean mix concrete, as directed by the Contract Administrator, as backfill for any portions of the excavation, carried beyond the required limits of

excavation. The limits of excavation shall be considered to be the inside face of the shoring system and the underside of the Working base slab.

(e) All Working areas below grade shall be kept adequately and securely supported during and after excavation until the shoring and bracing is in place to prevent loss of ground or injury to any person from falling material.

E14.3.3 Shoring

(a) The type, strength, and amount of shoring and bracing shall be such as the nature of the ground and attendance conditions may require, taking into account property lines, existing slopes, utilities and roadways.

(b) Shoring and bracing shall be so spaced and dimensioned as to prevent caving, loss of ground, surface settlement, or squeezing of the soil beyond the neat lines of excavation. It shall be free from defects that might impair its strength or suitability for the Work. Sheeting/shoring and bracing shall conform to the latest revisions of the “Construction Safety Act” of the Department of Labour of the Government of Manitoba.

(c) Supporting design calculations as required to facilitate review of the submission for conformance with the Contract Documents.

(d) Submit Shop Drawings and design calculations for the shoring/excavation system designed and sealed by a Professional Engineer registered or licensed to practice in the Province of Manitoba and experienced in the structural design of shoring systems. The designer of the shoring system shall inspect the system during construction and certify, in writing to the Contract Administrator, that construction is in conformance with the approved design.

(e) Shoring and bracing shall be installed such that the structure size and wall thickness shown on the drawings can be obtained subsequent to installation of the shoring system.

(f) Shoring and bracing shall remain in place until concrete has attained 75% of the design strength.

E14.3.4 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.

(d) Order all wall reinforcing steel in lengths to best suit the spacing of walers so that reinforcing bars will not be bent or misformed in order to remove the walers.

(e) Install waterstop at all construction joints unless noted otherwise.

E14.3.5 Backfill

(a) Place and compact backfill material as indicated on the Drawings in accordance with CW 2030.

(b) Do not place backfill material in a frozen state.

(c) Supply heating and hoarding in accordance with CW 2160 if required to ensure material does not freeze before compaction is complete.

(d) Notify the Contract Administrator at least one (1) full Working Day in advance of any backfilling operation. No Backfill shall be placed against concrete until approved by the Contract Administrator and in no case before field cured test cylinders show the concrete strength to be 75% of that specified.

E14.3.6 Grout

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

E14.3.7 Miscellaneous Metal Fabrications

(a) Install miscellaneous metal fabrications as shown on the Drawings and in accordance with E13 of this specification.

E14.3.8 Bollards

(a) Install removable bollards at the locations shown and as detailed on the Drawings.

E14.4 Measurement and Payment

E14.4.1 Construction of cast-in-place concrete will be measured and paid for at the Contract Lump Sum Price for "Cast-in-place Concrete". Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification except supply and installation of miscellaneous metal.

E15. COLD WEATHER REQUIREMENTS

E15.1 Description

(a) Should any concrete Work be required to be carried out when the mean daily temperature is below 5°C or anticipated to be below 5°C within the next 24 hours, cold weather requirements will be specified herein.

(b) All freshly placed concrete shall be protected from the elements and from defacements due to construction operations.

E15.2 Construction Methods

(a) The following are minimum requirements for protecting concrete during and after placement during freezing weather, but mere adherence to these requirements will not relieve the Contractor of the necessity for producing concrete which has not been weakened or injured by frost of freezing, or replacing such damaged Work at no additional expense to the City;

(i) Before any concrete is placed, all ice, snow, and frost shall be completely removed from all formWork, and other surfaces against which concrete temperatures of such surfaces raised above 7°C for twenty-four (24) hours minimum prior to concreting. Where concrete Work is to come in contact with the earth, the surface of the earth shall be completely free of frost when concrete is placed thereon.

(ii) Concrete aggregates and water shall be heated to not over 80°C. Concrete shall be not less than 20°C or more than 30°C in temperature when deposited. Concrete when placed during freezing weather, or if freezing is anticipated during curing period, shall be fully enclosed and the temperature of same maintained at not less than 20°C for five (5) days nor less than 5°C for an additional five (5) days.

(iii) Heating enclosures shall be strong and wind-proof, well ventilated with heating units so located as to prevent local overheating or drying of the concrete or damage from combustion gases. Only indirect fired heaters will be accepted. Units must be vented outside the enclosure. No direct fired units will be accepted.

(iv) The Contractor shall inform the Contract Administrator well in advance as to the methods of enclosure and frost protection he proposes to employ.

E15.3 Measurement and Payment

E15.3.1 Cold weather requirements shall be considered incidental to the construction of cast-in-place concrete and no measurement or payment will be made for this item.

E16. STAINLESS STEEL SLIDE GATES

E16.1 Description

E16.1.1 This Specification shall cover the supply and installation of fabricated stainless steel slide gates, operators, stems, wall brackets and mechanical accessories.

E16.2 Materials

E16.2.1 General

(a) Slide gates shall be a fabricated stainless steel flush bottom gate. The slide gate shall be complete with frame suitable for attaching directly to a concrete wall, gaskets, rising stem, stem guides, geared operator, operator pedestal, anchor bolts and all mechanical accessories.

(b) The fabricated stainless steel slide gate shall meet the following leakage rates.

(i) Under seating head leakage not to exceed 0.60 litres per minute per meter (0.05 USgpm per foot) of seating perimeter.

(ii) Under unseating head leakage not to exceed 1.25 litres per minute per metre (0.1 USgpm per foot) of perimeter.

(c) The gates shall be capable of withstanding seating and unseating heads of up to 6 meters (19.7 feet).

E16.2.2 Materials of Construction

(a) Gate: ASTM A-276 Type 304 Stainless Steel

(b) Frame and Extensions: ASTM A-276 Type 304 Stainless Steel

(c) Guides: ASTM A-276 Type 304 Stainless Steel

(d) Fasteners: ASTM A-276 Type 316 Stainless Steel

(e) Wall Thimble: ASTM A-276 Type 304 Stainless Steel

(f) Stem: ASTM A-276 Type 304 Stainless Steel, Solid Round Bar

(g) Bottom Seal: Neoprene Grade 2BC 510

(h) Wall gasket: Full face, resilient Neoprene, minimum 10 millimetres thick

(i) Lateral and Top Seals: ASTM D-2000 UHMW Polyethylene and Neoprene

(j) Threaded Stem Nut: Manganese Bronze, ASTM B584, Alloy 432

(k) Stem Block: ASTM A-276 Type 304 Stainless Steel

(l) Stem Coupling: ASTM A-276 Type 304 Stainless Steel

(m) Stem Guide: ASTM A-276 Type 304 Stainless Steel

(n) Stem Cover: ASTM A-276 Type 304 Stainless Steel with ASTM A-707 Clear Polycarbonate sight glass

(o) Pedestal: Tenzaloy Aluminium

(p) Anchor Bolts: ASTM A-276 Type 316 Stainless Steel suitable for fastening the slide gate to a concrete wall.

E16.2.3 Manufacturer’s Experience

(a) ‘The slide gate, and manual geared operator is to designed and manufactured by a company having at least seven years prior experience in manufacturing these types of products in the size and to the heads specified.

E16.3 Construction Methods

E16.3.1 Slide Gate Construction

(a) General

(i) The gates shall be open frame with rising stem. All structural parts shall be sized and apportioned to withstand the structural loads to which they will be subject without buckling, warping, bending, or otherwise failing. Welding shall be done in accordance with ASME Standards Section IX. Gates and shall be water and sand blasted after fabrication to remove all weld splatter and to polish scratches. After blasting the entire surface shall be of uniform colour and sheen.

(b) Frame

(i) The frame shall be of structural members or formed plate welded to form a rigid one piece unit. The frame shall be of the flange back design suitable for mounting on a concrete wall with extra wide flange. The guide slot shall be of UHMWPE and engage the slide plate a minimum width of 25 millimetres.

(ii) The frame configuration shall be of the flush bottom type and shall allow for the replacement of the top and side seals without removing the gate frame from the wall.

(c) Slide

(i) The slide shall consist of flat plate reinforced with formed plates or structural members to limit its deflection to 1/720 of the span of the gate under the design head.

(d) Guides and Seals

(i) The guides shall be of such length as to retain and support at least two thirds of the vertical height of the slide in the full open position.

(ii) UHMWPE side and top seals shall be of the self adjusting type and shall maintain an efficient seal in any position of the slide.

(iii) The resilient neoprene bottom seal shall be fastened to the face of the bottom edge of the slide and extend 6 millimetres beyond the bottom edge to make a watertight seal with bottom channel when fully closed. The bottom seal shall be readily replaceable by removing the fasteners.

(iv) Holes in wall gasket to be pre-punched to match the gate frame and form a seal on either side of the anchor bolts.

(e) Stem and Couplings

(i) The operating stem shall be sized and designed to transmit in compression at least two times the rated output of the manual geared operator with an 18 kg (40lb) effort on the crank.

(ii) The stem shall be solid and have a slenderness ratio (L/r) of less than 100 and be able to transmit at least two times the loads and torque applied to it.

(iii) The threaded portion of the stem shall be furnished with right-hand, 29 degree modified Acme single threads of sufficient length to allow for full opening of the gate.

(iv) The bottom end of the stem shall be threaded to a connection block on the gate and fitted with double bolts of ample proportion to resist at least two times the loads applied to the stem during opening and closing operation. The connection shall be of greater strength than the stem.

(v) Connect all multi-sectioned stems with a solid coupling. The coupling shall be internally threaded or grooved, keyed and fitted with bolts for locking. Couplings shall be of greater strength than the stem.

(vi) Fit the stem above the operator with an adjustable stop for the fully closed position.

(f) Stem Guides

(i) Fabricate stem guides of Type 304 Stainless Steel with UHMW Polyethylene bushings and be adjustable in both the horizontal and vertical directions.

(ii) Spacing to be as recommended by the gate manufacturer with a minimum of two stem guides provided.

(g) Stem Cover

(i) Provide a 50 millimetre wide slot in the stem extension cover to allow viewing of the position of the gate stem. Fit the slot with a clear polycarbonate cover and clear mylar position indicating tape. Apply the tape in the field after the gate has been installed and positioned.

(ii) Provide a cap and condensation vents on the stem extension cover.

(h) Thrust Nut

(i) Provide a thrust nut at the operator collar.

(i) Enclosed Manual Geared Operator

(i) Provide a pedestal mounted, hand crank operated, enclosed gear operator for the gate.

(ii) All bearings and gears shall be grease lubricated enclosed in a watertight housing. Provide suitable nipples on the housing for the addition of grease.

(iii) Construct pinion shaft of stainless steel and support by roller or needle bearings.

(iv) Design the operator to operate the gate under the maximum seating or unseating condition by not more than a 18 kg (40 lb.) effort on the crank and be able to withstand without damage, an effort of 36 kg (80 lb.).

(v) Provide standard 50mm x 50mm square AWWA operating nut on the operator to facilitate use of portable electric operators.

(vi) Provide removable crank to fit over 50mm x 50mm operating nut. Handle to be corrosion resistant. The maximum crank radius shall be 380 millimetres.

(vii) Indicate the direction of rotation to open the gate on the operator housing in a permanent manner.

(j) Acceptable Product

(i) H. Fontaine Series 20 (CWX) fabricated stainless steel slide gate with Type MNEP operator or approved equal in accordance with B6.

(k) Shop Drawings

(i) Submit Shop Drawings of the gate, operator and accessories to the Contract Administrator for review prior to manufacture. Submit Drawings in accordance with E9.

(ii) Drawings shall clearly indicate general design, materials and arrangement complete with mounting details and dimensions, materials list for gate, frame, stem, seals, slides, operator and all other parts and complete details of operators including type, torque, capacity, gear ratio and number of turns to close.

(l) Operating and Maintenance Manuals

(i) Provide five (5) copies of all the manufacturer's brochures and technical literature detailing correct installation procedure and recommended operating and maintenance instructions.

(ii) Manuals shall be bound with the project title and gate description identified on the front cover.

(iii) Final payment for slide gates will not be made until the above information has been provided to the Contract Administrator.

E16.3.2 Shop Testing

(a) Shop inspect, adjust and test each fully assembled slide gate for operation and leakage at the design head before shipping.

(b) Provide the following information to the Contract Administrator prior to delivery of the gate and operator:

(i) A certified copy of the Chemical and Physical Analysis on all materials used in the manufacture of the gate, operator and accessories or certification that the materials used are in strict accordance with this specification.

(ii) Copies of the test reports for Performance and Leakage Tests. Included in the report shall be the signature of the official who is responsible for the gate assembly and testing.

E16.3.3 Inspection of Slide Gates Before Installation

(a) Arrange with the Contract Administrator for inspection of the slide gates immediately after delivery.

(b) The Contract Administrator will examine the gates, operators and accessories and will reject any equipment that is found to be damaged to the extent that, in the Contract Administrator's opinion, it cannot be put to the use for which it was intended.

(c) Arrange with the gate supplier to repair any superficially damaged equipment to the satisfaction of the Contract Administrator.

(d) Arrange to have any rejected equipment replaced as soon as possible so as to not hold up the project schedule at no extra expense to the City.

E16.3.4 Installation of Slide Gate, Operator and Accessories

(a) Install gates, operators, stem guides, stems and accessories as shown on the drawings and in accordance with the manufacturer's recommendations.

(b) Ensure slide gates are installed plumb, square and centred on opening.

(c) Install anchor bolts in accordance with the manufacturer's written instructions. Anchor bolts should not become loose under repeated installation and removal of the slide gate.

(d) Make arrangements to have a qualified field representative of the gate supplier/manufacturer inspect the gate installations during and after completion and provide a Certificate of Satisfactory Installation to the Contract Administrator.

E16.3.5 Field Testing

(a) Perform leakage tests at the design head for seating conditions in the Contract Administrator's presence once the gates have been installed to ensure compliance with the allowable leakage rate.

(b) Ensure that a qualified field representative of the gate manufacturer is present for the testing to assist in correcting any deficiencies to the satisfaction of the Contract Administrator.

(c) Use water from deep pond, tanker, City hydrant or other source approved by Contract Administrator for field testing of slide gates.

(d) Perform seating head tests by closing the gate, and filling the wetwell chamber with water to the specified head.

(e) Measure the leakage rate through the gate by determining the volume of the fill water and calculating how much fill water leaked through the gate over a period of 1 hour.

(f) Any deficiencies shall be corrected as soon as possible by the Contractor to the satisfaction of the Contract Administrator and retested as described in this specification.

E16.4 Measurement And Payment

(a) Supply, installation and field testing of fabricated stainless steel slide gates, operators and mechanical accessories will be measured and paid for at the Contract Lump Sum Price for "Supply, Installation and Field Testing of Control Gate and Operator".

E17. ALUMINUM SOFFIT

E17.1 Description

(a) This specification shall cover the supply, fabrication and placement of all aluminum soffit work.

E17.2 Materials

(a) Soffit: to CAN/CGSB-93.2, Type B, Class 1, colour to match Vicwest Blue heron VW-6079, medium gloss, plain pattern surface, flat sheet 'V' crimped for stiffness, vented 0.1 m^2 of opening for every 30 m^2 of building area preformed with elongated slits and small perforations.

(b) Exposed trim: inside corners, outside corners, starter strip and trim of same material colour and gloss as soffit, with fastener holes pre-pumched.

(c) Nails: to CSA B111, aluminum alloy, of type recommended by manufacturer.

E17.3 Construction Methods

(a) Install soffit in accordance with CAN/CGSB-93.5M, and manufacturer's written instructions.

(b) Install continuous starter strips, inside and outside corners, trim, and flashings.

(c) Maintain joints true to line, tight fitting, hairline joints.

(d) Attach components in manner not restricting thermal movement.

E17.4 Measurement and Payment

(a) The supplying and placing of aluminium soffit shall be paid for under the unit price for "Thermal and Moisture Protection", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work.

E18. INTAKE SEWER CRACK AND SPALLING REPAIR

E18.1 Description

(a) This Special Provision shall amend and supplement Standard Specification CW 2130.

E18.2 Material

(a) The Contractor shall implement the materials and construction methods as described below to complete the works. Equivalent products and/ or alternative construction methods shall be approved by the Contract Administrator prior to repairs. The Contractor shall supply to the Contract Administrator, Material Data Sheets and Product Information prior to commencing repairs for review and approval.

E18.3 Construction Methods

(a) Concrete Pipe Crack Repairs

(i) Identify all cracks scheduled for repair as identified by the Contract Administrator.

(ii) Remove any loose material from concrete surface adjacent to cracks by wire brushing a 2 to 3 inch wide strip along the cracks, and vacuuming all dust from the surface.

(iii) Install surface ports for injection along the cracks at spacing ranging from 4 to 12 inches depending on the width of the crack. The base plate of each entry port shall be adhered onto the concrete surface using Kemko 022 paste (or approved equivalent). The ports shall be coated with the same material over

the top of the base plate to assure a good seal and stability of the port during the injection process.

(iv) Surface seal material (Kemko 022 or approved equivalent) shall be applied to the face of the crack between injection ports to build a confinement area for the liquid epoxy resin.

(v) After curing of the surface seal, a two-component epoxy resin / hardener, suitable for the structural repair of cracks and delaminations in concrete; Kemko 038 or Kemko 068 epoxy resin (or approved equivalent) shall be injected in the crack starting at the lowest injection port. The injection will continue at the same port until there is an appearance of epoxy adhesive at the next port adjacent to the entry port being pumped. The injection epoxy resin shall be selected based on the thickness of the crack (for hairline cracks Kemko 068 will be used).

(vi) When epoxy adhesive travel is indicated by appearance at the next adjacent port, injection can be discontinued on the entry port being pumped and epoxy injection shall be transferred to next adjacent port where epoxy adhesive has appeared. The first entry port must be plugged. The epoxy injection on any intermediate entry port being pumped shall not be discontinued unless the injection pressure reaches 150-160 psi or directed by the Contract Administrator. The above steps will be repeated until cracks are completely filled along their length.

(vii) As soon as the crack is full and all injection ports are blocked, the pump shall be run for several seconds to create a pressure of 100 psi in the crack that will be maintained for one (1) minute. Once the epoxy adhesive in the crack is pressurized and no leaks are observed, the pump shall be disconnected from the port and the injection port shall be plugged.

(viii) The above steps shall be repeated for all cracks or set of cracks that are connected, until all cracks are injected.

(ix) For every day that injection work is performed, an Injection Report shall be completed to document type of injection equipment, location, quantity of materials, and amount of crack length injected each day.

(x) After all injection work is completed and cured, the crack seal shall be removed (after 12 hours) by grinding to obtain a smooth concrete surface.

(xi) Cleanup work area and demobilize.

(b) Concrete Pipe Spalling Repairs

(i) Identify all spalled areas scheduled for repair as identified by the Contract Administrator.

(ii) Saw cut the perimeter of the patch to a minimum of 13 mm outside the limits of the spalled / deteriorated area designated for repair.

(iii) Chip and remove the delaminated concrete until sound concrete is encountered to provide a solid bond.

(iv) Remove a minimum of 25 mm of concrete from around all encountered rebar to provide a solid bonding area.

(v) Repair overhead and sidewall patches using a non-shrink, sulphate resistant mortar; Emaco S88 SR (or approved equivalent) if depth of patch is 50 mm or less. The approved product shall be prepared and installed according to the Manufacturer's instructions.

(vi) For patches 50 mm or deeper, use a non-shrink, cementitious grout; Sika 212 HP (or approved equivalent). This procedure shall require that the repair area be formed and the approved product be prepared and pumped into place as per the Manufacturer's instructions.

E18.4 Method of Measurement and Basis of Payment

(a) Concrete Pipe Crack Repairs will be measured on a linear basis and paid for at the Contract Unit Price for "Concrete Pipe Crack Repairs". Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification.

(b) Concrete Pipe Spalling Repairs using Overhead Patching will be measured on a square metre basis and paid for at the Contract Unit Price for "Concrete Pipe Spot Repairs Using Overhead Patching". Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification.

(c) Concrete Pipe Spalling Repairs using Overhead Grouting will be measured for payment on a square metre basis and paid for at the Contract Unit Price for "Concrete Pipe Spot Repairs Using Overhead Grouting". Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification.

E19. TEMPORARY BYPASS PUMPING FOR POND DRAWDOWN

E19.1 During winter months the pond level will gradually increase due to nominal flow from the land drainage sewers.

E19.2 After February 28, 2009, if the pond level exceeds Elev. 224.80 m (10.0 ft depth) it must be drawn down to Elev. 224.8 musing a temporary bypass pumping system and maintained until the station is operational.

E19.3 Temporary Bypass Pumps for Pond Drawdown

(a) The City shall permit the Contractor to utilize the two existing submersible pumps for temporary bypass pumping of the deep pond, or the contractor may submit an alternate pumping system (such as a portable diesel pump), with a similar discharge capacity, to the Contract Administrator for approval.

(b) The existing submersible pumps are 3-phase ABS submersible drainage pumps Model No. J604 ND (medium head) and have an approximate discharge capacity of 0.25 m^3/s per pump. The pumps are 94 HP, 575 Volt, 60 Hz 3-phase 4-pole squirrel-case inductor motors with a nominal current rating of 91A. Pump curves and additional data may be found at www.absgroup.com.

(c) The Contractor shall provide all temporary power and discharge hoses for the bypass pumps, as required.

(d) The Contractor shall locate the submersible bypass pumps in the station wetwell, if completed, or in the existing manhole located immediately south of the station. The bypass pumps shall discharge into manhole #1 located north of the station.

E19.4 Provide a temporary bypass pumping plan to the Contract Administrator for approval before removing any existing sewer pipe or subsurface chamber concrete.

E19.5 The temporary bypass pumping system does not have to be on-site at all times but must be mobilized and operational within 48 hours notice.

E19.6 The City of Winnipeg must be given 24 hours notice before the bypass pumping system discharges any flow to the discharge LDS.

E19.7 Method of Measurement and Payment

E19.7.1 Temporary Bypass Pumping for Pond Drawdown

(a) The temporary bypass pumping for pond drawdown will be measured and paid for on a time and material basis upon approval from the Contract Administrator.

(b) The preparation of a temporary bypass pumping system plan shall be considered incidental to the Contract Lump Sum Price for "Flow Control".

DIVISION 01 – GENERAL REQUIREMENTS

DIVISION 04 – MASONRY

DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES

DIVISION 07 – THERMAL & MOISTURE PROTECTION

DIVISION 08 – OPENINGS

DIVISION 09 – FINISHES

DIVISION 23 – MECHANICAL

DIVISION 25 – INTEGRATED AUTOMATION

DIVISION 26 – ELECTRICAL