THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 901-2008

REHABILITATION OF BOURNAIS WASTEWATER PUMPING STATION

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 REHABILITATION OF BOURNAIS WASTEWATER PUMPING STATION

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, April 16, 2009.

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

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

B3. SITE INVESTIGATION

B3.1 Further to C3.1, the Bidder shall attend one of two Site Investigations from 2:00 pm to 3:00 pm on April 8, 2009 and April 10, 2009 . Attendance is not mandatory, however Bidders are advised to attend.

B3.2 The Bidder is advised that the site investigation is for the bidder to assess the scope of Works, existing conditions of the Work, to learn of the security risks and safety precautions required, and clarifications to questions that will aid the bidder in submitting a bid price.

B3.3 The Bidder shall not be entitled to rely on any information or interpretation received at the Site Meeting unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

B4. ENQUIRIES

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

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

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

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

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

B5. ADDENDA

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

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

B5.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Branch 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 Branch 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 five (5) Business Days prior to the Submission Deadline.

B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:

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

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

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

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

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

B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.

B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.

B6.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he wishes to inform.

B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.

B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B15.

B6.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

B6.10 Notwithstanding B6.2 to B6.9, and in accordance with B7.6, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B15.1(a).

B7. BID COMPONENTS

B7.1 The Bid shall consist of the following components:

(a) Form A: Bid;

(b) Form B: Prices;

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

B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.

B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Bid.

B7.4 The Bid shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.

B7.4.1 Samples or other components of the Bid which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder’s Bid.

B7.5 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.

B7.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B15.1(a).

B7.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.

B7.8 Bids shall be submitted to:

The City of Winnipeg
Corporate Finance Department
Materials Management Branch
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 City 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 The City of the business name, or by the registered The City's authorized officials if The City is a partnership or a corporation.

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

B8.4.2 All signatures should be witnessed, except where a corporate seal has been affixed.

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.

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

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 three (3) 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 Branch 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, and shall be witnessed or sealed as required.

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 Branch, or in such other office as may be designated by the Manager of Materials.

B12.1.1 Bidders or their representatives may attend.

B12.1.2 Bids determined by the Manager of Materials, or his designate, to not include the bid security specified in B11 will not be read out.

B12.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Branch 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 Branch 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, or acceptable deviation therefrom (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 Evaluated 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 unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.

B16. AWARD OF CONTRACT

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

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

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

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

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

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

(d) only one Bid is received; or

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

B16.3 Subject to B16.2, 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.

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

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 rehabilitation of a the Bournais Wastewater Pumping Station, complete with ventilation and electrical fixtures.

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

(a) demolition of the existing superstructure.

(b) cast-in-place concrete floor slabs at ground level.

(c) masonry block and brick cavity wall pump house with metal roof.

(d) safety lighting and associated electrical accessories.

(e) ventilation system and accessories.

(f) site restoration and clean up.

D3. CONTRACT ADMINISTRATOR

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

Grantley King, P.Eng.
Project Engineer
Suite 111-93 Lombard Ave

Telephone No. (204) 943-3178
Facsimile No. (204) 943-4948

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

D4. CONTRACTOR'S SUPERVISOR

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

D5. NOTICES

D5.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.

D5.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D5.3, D5.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D3.1.

D5.3 All notices of appeal to the Chief Administrative Officer shall be sent to the following address or facsimile number:

The City of Winnipeg
Chief Administrative Officer Secretariat
Attn: Chief Administrative 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
Corporate 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 Branch internet site at http://www.winnipeg.ca/matmgt.

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) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies, and/or materials intended to enter into and form part of any installation.

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 fifteen (15) Calendar Days prior written notice to the Contract Administrator.

D10. PERFORMANCE SECURITY

D10.1 The Contractor shall provide and maintain performance security until the expiration of the warranty period in the form of:

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

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

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

D10.1.1 Where the performance security is in the form of a certified cheque or draft, it will be deposited by the City. The City will not pay any interest on certified cheques or drafts furnished as performance security.

D10.2 If the bid security provided in his Bid was not a certified cheque or draft pursuant to B11.1(c), the Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of letter of intent and prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D11. DETAILED PRICES

D11.1 The Contractor shall provide the Contract Administrator with a detailed price breakdown (Form I: Detailed Prices) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

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

D12. SUBCONTRACTOR LIST

D12.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D13. DETAILED WORK SCHEDULE

D13.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D13.2 The detailed work schedule shall consist of the following:

(a) a Gantt chart for the Work acceptable to the Contract Administrator.

D13.3 Further to D13.2 (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) Demolition of existing superstructure.

(c) Pump house concrete floor slab.

(d) Pumping Station superstructure, including finishing.

(e) Ventilation.

(f) Electrical.

(g) Substantial Performance.

(h) Site clean-up and restoration.

(i) Total Performance.

SCHEDULE OF WORK

D14. COMMENCEMENT

D14.1 The Contractor shall not commence any Work until he is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.

D14.2 The Contractor shall not commence any Work on the Site until:

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

(i) evidence of authority to carry on business specified in D7;

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

(iii) the Safe Work Plan specified in D8;

(iv) evidence of the insurance specified in D9;

(v) the performance security specified in D10;

(vi) the detailed prices specified in D11;

(vii) the Subcontractor list specified in D12; and

(viii) the detailed work schedule specified in D13.

(b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.

D14.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.

D14.4 The City intends to award this Contract by May 15, 2009.

D14.4.1 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.

D15. SUBSTANTIAL PERFORMANCE

D15.1 The Contractor shall achieve Substantial Performance by August 31, 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 September 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 Substantial Performance or Total Performance in accordance with the Contract by the dates fixed herein for Substantial Performance and Total Performance, the Contractor shall pay the City the following amounts per Calendar Day for each and every Calendar Day following the dates fixed herein for Substantial Performance and Total Performance during which such failure continues.

(a) Substantial Performance – five hundred dollars ($500.00)

(b) Total Performance - one thousand dollars ($1000.00)

D17.2 The amount specified for liquidated damages in D17.1 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Substantial Performance and Total Performance by the day fixed herein for same.

D17.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D18. SCHEDULED MAINTENANCE

D18.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

(a) Landscape maintenance as specified in CW3510 of the City of Winnipeg Standard Construction Specifications.

D18.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

CONTROL OF WORK

D19. JOB MEETINGS

D19.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

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

D20. OFFICE FACILITIES

D20.1 The Contractor shall supply office facilities for the Contract Administrator meeting the following requirements:

(a) Conveniently located at or near the job site.

(b) Minimum floor area of 20 square metres, with windows and a door entrance complete with suitable lock satisfactory to the Contract Administrator.

(c) Suitable for all-weather use and capable of maintaining a temperature range between 20 and 25 degrees C.

(d) Equipped with fluorescent lights and 120 volt ac electrical wall outlets

(e) One holding tank toilet to be provided.

(f) Furnished with one desk, one drafting table, one filing cabinet and six chairs, all satisfactory to the Contract Administrator.

(g) All of the temporary structures provided by the Contractor for this project shall be stabilized in a sufficient manner to prevent the temporary structure from being overturned by wind forces as defined in the National Building Code (NBC). The stabilization provided shall be designed by a Professional Engineer registered in the Province of Manitoba. Detailed drawings and design notes for the stabilization works bearing the Engineer's seal shall be provided to the Contract Administrator for review.

The Contractor shall be responsible for installation, maintenance, removal, operating costs, and service installation costs for the field office as described herein.

D21. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

D21.1 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).

D22. TRAFFIC CONTROL AND MAINTENANCE OF ACCESS

D22.1 Traffic control shall be carried out in accordance with Section 3.7 of CW 1130

D22.2 Further to D19.1, should the Contract Administrator require that Work on Regional Streets be carried out at night, on Sundays, on public holidays or that Work be restricted or suspended during peak traffic hours, the Contractor shall comply without additional compensation being considered to meet these requirements.

D22.3 Regional Streets in this Contract are:

(a) Bournais Avenue

D22.4 Construction activities on Regional Streets shall be restricted to the closed lanes between 07:00 to 09:00 hours and 15:0 to 17:30 hours Monday to Friday and other hours as directed by the Contract Administrator.

D22.5 The Contractor will have access to the open lanes of traffic during non-restricted hours provided flag person are used in accordance with Section 3.12 of The City of Winnipeg, “Manual of Temporary Traffic Control in Work Areas on City Streets” to maintain traffic safety.

D22.6 Further to Section 3.6 of CW 1130, the Contractor shall maintain safe pedestrian crossing at intersections at all times. If possible, only one pedestrian crossing is blocked by construction at an intersection at the same time the Contractor shall provide flag persons to safely escort pedestrians across the intersection. The Contractor shall leave pedestrian crossing location safe and free of equipment that many hamper pedestrians when no construction activities are ping performed at a particular crossing location.

D22.7 The Contractor shall not park company or private vehicles inside the barricaded work zone in a manner that will block sightlines for vehicles and pedestrians approaching and crossing intersections.

D22.8 Buss traffic is to be maintained at all times.

MEASUREMENT AND PAYMENT

D23. PAYMENT

D23.1 Further to C12, effective January 1, 2007 the City may at its option pay the Contractor by direct deposit to the Contractor’s banking institution.

D24. PAYMENT SCHEDULE

D24.1 Further to C12, payment shall be in accordance with the following payment schedule:

(a) Payment shall be pro rated against the Unit Bid Prices based on percentage completion of each of the items of work identified on Form B: Prices, including percentage completion of major items of work identified on Form I: Detailed Prices.

WARRANTY

D25. WARRANTY

D25.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire two (2) year thereafter, except where longer warranty periods are specified in respective Specification sections, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

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 dated the

_____ day of _____ , 20____ , for:

BID OPPORTUNITY NO. **901-2008**

REHABILITATION OF BOURNAIS WASTEWATER PUMPING STATION

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

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

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

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

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

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

_____ day of _____ , 20____ .

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SIGNED AND SEALED
in the presence of:

_____
(Witness)

_____
(Name of Principal)

Per: _____ (Seal)

Per: _____

_____
(Name of Surety)

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

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FORM H2: IRREVOCABLE STANDBY LETTER OF CREDIT
(PERFORMANCE SECURITY)
(See D10)

_____
(Date)

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. **901-2008**

REHABILITATION OF BOURNAIS WASTEWATER PUMPING STATION

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

_____ ,
(Name of Contractor)

_____
(Address of Contractor)

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

_____

_____ Canadian dollars.

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

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

Partial drawings are permitted.

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

_____
(Address)

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

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

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

_____ .
(Date)

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

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

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

_____
(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

Template Version: C020070404

FORM I: DETAILED PRICES

(See D11)

REHABILITATION OF BOURNAIS WASTEWATER PUMPING STATION

ITEM NO.	DESCRIPTION	AMOUNT
1.	Mobilization & Demobilization	
2.	Demolition of existing superstructure	
3.	Backfilling	
4.	Construction of new superstructure	
5.	Supply of concrete piles	
6.	Driving concrete piles	
7.	Construction of concrete grade beam	
8.	Construction of concrete floor slab	
9.	Electrical, including maintenance during construction	
10.	Ventilation including demolition of existing	
11.	Mechanical	
Total of Items 1 thru 11 above = Bid Price for Items 1 thru 4 on Form B: Prices.		

FORM J: SUBCONTRACTOR LIST
(See D12)

REHABILITATION OF BOURNAIS WASTEWATER PUMPING STATION

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 Branch 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:

DIVISION 15

Specification No.	Specification Title
NMS - Section 15010	Mechanical General Provisions
NMS - Section 15051	Acceptable Materials and Equipment
NMS - Section 15180	Insulation
NMS - Section 15722	AHU/ Ventilator
NMS - Section 15800	Air Distribution
NMS - Section 15900	Controls/Instrumentation
NMS - Section 15990	Testing, Adjusting and Balancing

DIVISION 16

NMS - Section 16010	Electrical General Requirements
NMS - Section 16106	Installation of Cables in Trenches and in Ducts
NMS - Section 16107	Direct Buried Underground Cable Ducts
NMS - Section 16111	Conduits, Conduit Fastenings and Conduit Fittings
NMS - Section 16122	Wires and Cables
NMS - Section 16131	Splitters, Junctions, Pull Boxes, Cabinets, and CSTE'S
NMS - Section 16132	Outlet Boxes, Conduit Boxes and Fittings
NMS - Section 16151	Wire and Box Connectors-0-1000 V
NMS - Section 16191	Fastenings and Supports
NMS - Section 16192	Mechanical Equipment Connections
NMS - Section 16195	Work in Existing Building
NMS - Section 16402	Underground Service
NMS - Section 16440	Disconnect Switches – Fused and Non-Fused Up to 1000 V
NMS - Section 16450	Grounding - Secondary
NMS - Section 16461	Dry Type Transformers Up to 600 V Primary
NMS - Section 16471	Panelboards Breaker Type
NMS - Section 16477	Moulded Case Circuit Breakers
NMS - Section 16478	Fuses – Low Voltage
NMS - Section 16505	Lighting Equipment
NMS - Section 16592	Lighting Control Equipment - Photoelectric
NMS - Section 16811	Motor Starters to 600 V
	Luminaire Schedule

Drawing No.	Drawing Name/Title
	Cover Sheet
8746	Site and Lot Plans
8747	Main Floor and Roof Plans
8748	Roof Framing Plan
8749	Building Sections and Elevations
8750	Wall Sections and Details
8751	Electrical Symbol Legend and General Notes
8752	Wet Well, Intermediate and Main Level Floor Plan Electrical Demolition
8753	Wet Well and Intermediate Level Floor Plan Electrical New Construction
8754	Main Floor Plan Electrical New Construction
8755	Electrical Single Line Diagram and Details
8756	Mechanical Symbol Legend
8757	Mechanical Demolition
8758	Mechanical New Construction
8759	Structural Details

E2. SOILS INVESTIGATION REPORT

E2.1 Further to C3.1, of the General Conditions, the Contractor is advised that a geotechnical soil investigation has not been carried out and the Consultant has assumed a Skin Friction Coefficient of 14.4KN/m^2 in the pile design.

E2.2 Bidders are expected to make any investigation of the soil, as they feel necessary at their own cost.

E2.3 Any test borings made by the Bidder shall be done in accordance with the requirements of the appropriate authorities of the City of Winnipeg. Bidders shall notify the Contract Administrator prior to starting any soil boring operation.

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. MOBILIZATION AND DEMOBILIZATION

E4.1 Mobilization and Demobilization will include but not be limited to start-up costs, equipment set-up and removal, field office and storage facilities set-up and removal site cleanup.

E4.2 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.

E4.3 50% of the Mobilization and Demobilization unit price will be paid on the first progress payment.

E4.4 The remaining 50% 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.

E5. DANGEROUS WORK CONDITIONS

E5.1 Further to clause C 6.26 of the General Conditions, the Contractor shall be aware that pumping stations, 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.

E5.2 The Contractor shall be aware of the potential hazards that can be encountered in a wastewater pumping station such as explosive gases, toxic gases, and oxygen deficiency.

E5.3 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.

E5.4 The Contractor must ventilate all confined spaces at least 15 minutes prior to entry and continue while the confined space is occupied, and as approved by the Manitoba Workplace Safety and Health Act. If no ventilation is supplied, the worker must wear a respirator or supplied air to enter the confined space.

E5.5 The Contractor shall provide photoionization detector (PID) on site at all times to monitor potential hydrocarbon vapours in the confined spaces. The gas detector(s) and safety equipment conforming to the Manitoba Workplace Safety and Health Act shall be made available to the Contract Administrator for his use during inspection. In addition, the Contract Administrator shall collect discrete air samples for laboratory analysis.

E5.6 The Contract Administrator may issue a Stop Work Order to the Contractor if he determines 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 Stop Work Order for not following these safety guidelines.

E6. SHOP DRAWINGS

E6.1 Description

(a) This Specification shall revise, amend, and supplement the requirements of CW 1100.

(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 Engineering review.

(b) Shop Drawings

(i) Original drawings are to be prepared by the 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 components shall be sealed, signed and dated by a Professional Engineer licensed to practice in the Province of Manitoba.

(a) Reinforcing steel.

(b) Roof truss.

(c) Metal fabrications.

(d) Structural connection details.

(e) Electrical details.

(f) Ventilation details.

(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 all corrections required by the Contract Administrator and shall resubmit the required number of corrected copies of Shop Drawings for review. 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 the Contract Administrator has reviewed and return of copies, distribute copies to sub-trades 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 14 Calendar days before dates reviewed submissions will be needed, and allow for a 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 five (5) paper prints of shop drawings. The Contractor is advised that the Contract Administrator will retain three (3) copies of all submittals and return two (2) copies 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:

(i) Contractor

(ii) Subcontractor

(iii) Supplier

(iv) Manufacturer

(v) 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, initialled 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.

(v) If the Contract Administrator requests details or items on shop drawings, which the Contractor believes, require extra payment or contract time, the Contractor shall make any claims forthwith and receive acceptance, as extra work, or rejection, before fabrication proceeds.

E6.2 Measurement and Payment

(a) Preparation, submission, and revisions of shop drawings shall be incidental to the Work and no separate payment will be made.

E7. SURFACE RESTORATION

E7.1 Prior to construction, inspect the grassed, pavement and gravel surfaces within and adjacent to the Site with the Contract Administrator to record the current condition. After construction and Site cleanup is complete, re-inspect the condition with the Contract Administrator.

E7.2 Restoration of grassed areas damaged as result of construction activities will be restored in accordance with CW 3510. Restoration of grassed areas will not be measured for payment and shall be included as part of the Work being done.

E7.3 Pavement damaged as a result of construction activities will be restored in accordance with CW 3230 and CW 3410. Restoration of the pavement will not be measured for payment and shall be included as part of the Work being done.

E7.4 Gravel surfacing damaged as a result of construction activities will be restored in accordance with CW 3150. Restoration of the gravel surfacing will not be measured for payment and shall be included as part of the Work being done.

E8. PROTECTION OF EXISTING TREES

E8.1 The City of Winnipeg, Public Works, Forestry Branch will remove all trees and bush from the site within the limits indicated on the Drawings and prior to the commencement of the Work.

E8.2 The Contractor shall not remove or damage trees or bush beyond the limits indicated on the Drawings. The Contractor shall take the following precautionary steps to avoid damage from his construction activities to existing trees within the limits of the construction area.

(a) Do not stockpile materials and soil or park vehicles and equipment on boulevards within 2 metres of trees.

(b) Strap mature tree trunks with 25 x 150 x 2400 wood planks. Smaller trees shall be similarly protected using appropriate sized wood planks.

(c) Excavations shall be carried out in a manner to minimize damage to existing root systems. Where roots must be cut to facilitate an excavation they shall be neatly pruned at the face of the excavation.

(d) Work on site shall be carried out in a manner to minimize damage to existing tree branches. Where damage to tree branches does occur, the Contractor shall neatly prune the damaged branch.

(e) American elm trees shall not be pruned between April 1st and August 1st and Siberian elm trees between April 1st and July 1st of any year under provisions of The Dutch Elm Disease Act.

(f) All damages to existing trees due to the Contractor's construction activities shall be repaired to the requirements and satisfaction of the City of Winnipeg, Parks and Recreation Department, Forestry Branch.

(g) Protection of existing trees and related Work specified herein shall be considered incidental to the Contract Lump Sum Price for “Mobilization and Demobilization”, and no separate measurement or payment will be made.

E9. BOURNAIS WASTEWATER PUMPING STATION OPERATION DURING CONSTRUCTION

E9.1 The Contractor is advised that the Bournais Wastewater Pumping Station will remain in operation while the Work is being completed and the Contractor shall plan his activities around the continued operation of the station.

E9.2 The existing pumps shall remain active and connected to the electrical system until it is required to be disconnected to allow reinstallation to the new superstructure.

E9.3 The Contractor shall cooperate with and provide full access at all times for City personnel to carry out maintenance and operational duties in the building.

E9.4 Only authorized City personnel will operate the electrical and mechanical systems in the building and wastewater pumping station.

E10. TEMPORARY SHUTDOWN OF THE WASTEWATER PUMPING STATION

E10.1 Temporary shutdown of the wastewater pumping station will be allowed for the following work activities.

E10.2 Disconnection of transfer switch wiring for the existing stand-by generator in the existing MCC.

E10.3 Wiring connections from the transfer switch for the new stand-by generator to the existing MCC.

E10.4 System testing.

E10.5 Only authorized City personnel are authorized to operate the electrical and mechanical systems in the building and wastewater pumping station.

E10.6 Provide the Contract Administrator with at least 48 hours notice prior to a proposed temporary shutdown to allow time to make arrangements with City operating personnel for the shutdown.

E10.7 Coordinate several items of work to done during the same shutdown to minimize the number of shutdowns.

E10.8 Plan the work to be done during allowable shutdowns in such a manner that power can be restored to the wastewater pumping station within 30 minutes of being notified by the Contract Administrator that the pumping station needs to be operated to reduce flow levels in the system.

E10.9 Allowable shutdown time under peak dry weather flow (PDWF) conditions will be approximately 6 hours. Allowable shutdown time may be less due to unforeseen flow conditions due to groundwater conditions, watermain breaks, snow melt and other unforeseen sources.

E10.10 More than the approximate 6 hours of allowable shutdown time may be available during the night when flows are generally reduced.

E10.11 The Contract Administrator will provide a paint mark indicating the critical basement elevation in a manhole at a convenient upstream location for reference. The critical basement elevation in the Bournais Sewer District is 227.762.

E10.12 The Contract Administrator will monitor the upstream system at all times during a shutdown to ensure the stored level of wastewater will not exceed the critical basement elevation.

E10.13 Water and Waste Department, Collection System personnel will be available to provide assistance to the Contractor for temporary shutdown of the wastewater pumping station to facilitate completion of the Work.

E10.14 There will be no charge to temporarily shutdown the wastewater pumping station for each Work activity listed.

E10.15 If an unreasonable number of station shutdowns are required to complete the same Work activity due to the Contractor's method of operation, a fee of $300.00 per hour for Collection System personnel may be charged to the Contractor and deducted from future Progress Payments.

E10.16 The Contract Administrator reserves the right to cancel a planned station shutdown if in his opinion, flow conditions or the weather forecast would not allow for a shutdown of sufficient duration to complete the Work activity. The Contractor shall reschedule the Work activity to a more suitable time.

E10.17 Consecutive back-to-back station shutdowns will not be allowed until the sewer system has returned to normal.

E11. PUMPING STATION SUPERSTRUCTURE

E11.1 Description

(a) This Specification shall cover the reconstruction of a pumping station superstructure as shown on the Drawings.

E11.2 Materials

(a) All materials shall conform to the requirements of this Specification and the requirements of the latest edition of the City of Winnipeg Standard Construction Specification.

(b) Concrete

(i) Concrete mix design shall be as indicated in the Construction Notes on the Drawings and in accordance with Specifications CW 2160 and E12.

(c) Reinforcing Steel

(i) Reinforcing Steel shall conform to Specification CW 2160 and E13.

(d) Metal Fabrications

(i) Metal Fabrications shall conform to E14.

(e) Shop Drawings

(i) Provide shop drawings in accordance with E6 of this specification.

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

(f) Grout

(i) Grout, if required, shall be Sika Grout 212 or an approved equal, mixed and applied in accordance with the manufacturers instructions and of a consistency suitable for the intended application, as approved by the Contract Administrator.

(g) Bonding Agent

(i) The bonding agent, if required, shall be ACRYL-STIX or an approved equal.

(h) Masonry

(i) Masonry shall confirm to E15.

(i) Carpentry

(i) Carpentry shall confirm to E16.

(j) Prefabricated Wood Trusses

(i) Prefabricated wood trusses shall confirm to E17.

(k) Sheet Vapour Barrier

(i) Sheet vapour barrier shall confirm to E18.

(l) Air barrier

(i) Air barrier shall confirm to E19.

(m) Board Insulation

(i) Board insulation shall confirm to E20.

(n) Batt and Blanket Insulation

(i) Batt and blanket insulation shall confirm to E21.

(o) Aluminum Soffit

(i) Aluminum soffit shall confirm to E 22.

(p) Metal Roofing System

(i) Metal roofing system shall confirm to E23.

(q) Joint Sealers

(i) Joint sealers shall confirm to E24.

(r) Steel Hollow Metal Doors and Frames

(i) Steel hollow metal doors and frames shall confirm to E25.

(s) Portland Cement Parging

(i) Portland cement parging shall confirm to E26.

(t) Painting

(i) Painting shall confirm to E27.

(u) Graffiti Resistant Coating

(i) Graffiti resistant coating shall confirm to E28.

(v) Electrical

(i) Electrical works shall conform to Sections 16010 - 16811.

(w) Mechanical/Ventilation

(i) Mechanical/Ventilation works shall conform to Sections 15010 – 15990 and 15722.

E11.3 Measurement and Payment

(a) Pumping Station Superstructure will be measured on a lump sum basis and paid for at the Contract Unit Price for "Pumping Station Superstructure, Including Finishing", 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. CAST-IN-PLACE CONCRETE

E12.1 Description

(a) This Specification shall cover the construction of cast-in-place concrete for the wastewater pumping station floor, which the Contractor shall carry out in accordance with Specification CW 2160 and CSA A23.1, except as amended or supplemented herein.

E12.2 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

Lean mix concrete design shall be in accordance with performance specification and shall have the following properties:

(i) Cement: Type 50

(ii) Minimum Compressive Strength @ 28 days: 15 MPa

(iii) Slump: 80 mm

(iv) Air Content: nil

(v) Maximum Water/Cement Ratio = 0.49

(c) Grout

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

(d) Bonding Agent

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

E12.3 Construction Methods

E12.3.1 Construction Method Submission

(a) No work shall commence on construction of wastewater pumping station floor until after the Contract Administrator's review of the Contractor's Construction Method submission.

(b) The Contractor shall prepare for the Contract Administrator's review a Construction Method submission detailing:

(c) 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 the Works.

(d) Proposed method of pumping station superstructure construction.

(e) Specialized equipment to be used.

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

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

E12.4 Measurement and Payment

(a) Supply and placement of cast-in-place concrete shall be included with wastewater pumping station and paid for under the Contract Unit Price for “Pumping Station Superstructure, Including Finishing”, 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.

E13. REINFORCING STEEL

E13.1 Description

(a) This Specification shall cover all reinforcing steel work, in accordance with Specification CW 2160, except as amended or supplemented herein.

E13.2 Materials

E13.2.1 Reinforcing Steel

(a) Further to CW 2160 Sentence 2.6 Materials: Reinforcing Steel, all reinforcing steel shall conform to the requirements of CSA G30.18, Grade 400.

E13.2.2 Bar Accessories

(a) Bar accessories shall be of type approved by the Contract Administrator. They shall be made from a non-corroding material, and they shall not stain, blemish, or spall the concrete surface for the life of the concrete. Bar chairs are to be PVC; galvanized bar chairs are not acceptable.

(b) Bar accessories shall include bar chairs, spacers, clips, wire ties, wire (18 gauge minimum), or other similar devices that may be approved by the Contract Administrator. Bar accessories are not shown on the Contract Drawings. The supply and installation of bar accessories shall be considered incidental to the supply and placing of reinforcing steel.

E13.3 Construction Methods

E13.3.1 Placing of Reinforcing Steel

(a) Reinforcing steel shall be placed accurately in the positions shown on the Contract Drawings. Carefully adjust the location of reinforcing steel adjacent to openings to frame those openings in accordance with good practice, and maintain the bar spacing intent.

(b) Splices in reinforcing steel shall be made only where indicated on the Contract Drawings. Prior approval of the Contract Administrator shall be obtained where, in the opinion of the Contractor, other splices must be made. All splices shall have laps of at least 40 bar diameters. Welded splices shall not be used.

(c) A minimum of twenty-four (24) hours notice shall be given to the Contract Administrator prior to the pouring of any concrete to allow for inspection of reinforcing steel.

E13.3.2 Quality Control

(a) The Contractor shall provide, without charge, the samples of reinforcing steel required for quality control tests and provide such assistance and use of tools and construction equipment as is required.

E13.3.3 Shop Drawings

(a) The Contractor shall submit shop drawings in accordance with E6 for the Contract Administrator’s approval two (2) weeks prior to the fabrication of any reinforcing steel.\

E13.4 Measurement and Payment

(a) Supply and placement of reinforcing steel shall be included with wastewater pumping station and paid for under the Contract Unit Price for “Pumping Station Superstructure, Including Finishing”, 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.

E14. METAL FABRICATIONS

E14.1 Description

(a) This Specification shall cover the supply fabrication and placement of all metal fabrications.

E14.2 Materials

E14.2.1 General

(a) The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification.

(b) All materials supplied under this Specification shall be of a type acceptable to the Contract Administrator, and shall be subject to inspection and testing by the Contractor Administrator.

(c) All materials shall be handled in a careful and workmanship like manner, to the satisfaction of the Contract Administrator.

(d) Supply, safely store and handle materials set forth in this Specification. Handle materials in a careful and workmanship like manner, to the satisfaction of the Contract Administrator.

E14.3 References

(a) 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.

(b) Steel pipe: to ASTM A 53/A53M, seamless, galvanized, as specified by item.

(c) Welding materials: to CSA W59.

(d) Stud Anchors: to ASTM A108, Grade 1020.

(e) Aluminum: to CAN/CSA S157 and the Aluminum Association ‘Specifications for Aluminum Structures’. Aluminum for plates shall be Type 6061-T651. Welding shall be in accordance with the requirements of CSA W59.2-M1991.

E14.4 Fasteners:

(a) Anchor bolts and fasteners: 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.

(b) Quantity and size of the fasteners shall be as recommended by the manufacturer or as shown on the Drawings.

(c) Provide exposed fastenings of same material, and finish as the metal to which applied unless indicated otherwise.

(d) Supply all items complete with all anchors and fastenings.

E14.5 Construction Methods

E14.5.1 Submittals

(a) Submit the qualifications of the Contractor, qualifications of operators, shop drawings, mill certificates and welding procedures to the Contractor Administrator for acceptance in accordance with E6 Shop Drawings.

(b) Submit 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.

E14.5.2 Fabrication

(a) Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

(b) Use self-tapping shake-proof flat headed screws on items requiring assembly by screws.

(c) Where possible, fit work and shop assemble, ready for erection.

(d) Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

(e) Seal exterior steel fabrications to provide corrosion protection in accordance with CAN3-S16.1.

(f) 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.

(g) All aluminum surfaces in contact with concrete shall be isolated using alkali-resistant bituminous paint meeting the requirements of CGSB 31-GP-3M.

(h) Aluminum plate shall have an approved raised oval or multi-grip pattern with edges straight and true, and shall be cut as far as practical to maintain continuity of the pattern at abutting edges.

(i) Pieces shall be of the sizes indicated on the Drawings and shall not be built up from scrap pieces.

(j) Angle frames shall be of the same material as the cover plate, 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.

E14.5.3 Finishes

(a) All designated steel items supplied under this specification shall be hot-dip galvanizing after fabrication, in accordance with CAN/CSA-G164, to a retention of 600 gm/m².

E14.5.4 Angle Lintels

(a) Steel angles: sizes indicated for openings. Provide minimum 150 mm bearing at ends. Hot dip galvanized.

E14.5.5 Pipe Bollards

(a) Steel pipe: double strong, diameter indicated, hot-dip galvanized.

(b) Concrete: Type 50 sulphate resistant, 20 MPa.

(c) Fabricate and install pipe bollards to be removable as indicated on the Drawings. Set pipe sleeve level and plumb into reinforced concrete footing. Fabricate bollard of steel pipe to fit over top of pipe sleeve and secure to pipe sleeve with 12 mm diameter hot dipped galvanized thru-bolt with nut and washers. Cap top of pipe with 6 mm thick welded steel plate.

E14.5.6 Erection

(a) Do welding work in accordance with CSA W59.

(b) Erect metalwork 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.

(d) Provide components for building in accordance with shop drawings and schedule.

(e) Make field connections with bolts to CAN/CSA-S16.1, 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) Touch-up 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. Accepted products are Galvalloy and Gal-Viz.

(h) Aluminum angle frames shall be anchored into the concrete as shown on the Drawings. Care shall be taken in placing the frames to the exact level, dimension and location required.

(i) Cover plates shall be hinged and shall be supplied with lifting handles, as shown on the Contract Drawings. Exterior covers shall be supplied with a hasp for a padlock.

E14.6 Measurement and Payment

(a) Metal fabrication shall be included with wastewater pumping station and paid for under the Contract Unit Price for "Pumping Station Superstructure, Including Finishing", 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.

E15. MASONRY

E15.1 Description

(a) This Specification shall cover the supply and placement of all masonry work.

E15.2 Materials

(a) Concrete masonry units: to CSA A165 Series (CSA A165.1). Classification H/15/A/M. Provide purpose made shapes for lintels and bond beams.

(a) Face Brick: burned clay brick: to CSA A82.1, Type: FBS, Grade: SW, Metric modular size. Provide solid units where core exposed in final assembly. Acceptable material: IXL 246 Whistler Gray Rockfaced. Running bond.

(b) Limestone: to ASTM C 568, category II, medium density as quarried and supplied by Gillis Quarries Limited, Winnipeg, Manitoba, Canada. Buff colour, rustic finish, 90 mm bed thickness. Sawn-bed, three coursed random ashlar pattern, 15% 57 mm course, 50% 123 mm course, 35% 190 mm course height.

(c) Mortar Materials: to CSA A179. Type N based on Proportion specifications. Use non-staining mortar for limestone work.

(d) Masonry connectors: to CSA A370 and CSA S304, galvanized. Block Shear Connector assembly as manufactured by Fero Holdings Ltd. Consisting of connector plate, V-Tie and polyethylene insulation support.

(e) Masonry reinforcement:

(i) Bar reinforcement: to CSA A371 and CSA G30.18, Grade 400.

(ii) Wire reinforcement: to CSA A371 and CSA G30.14, ladder type. Prefabricated corners and intersections.

(f) Masonry flashing: self-adhesive modified bitumen sheet membrane: minimum 1.0 mm thick. Bakelite Blueskin SA, WR Grace Perm-A-Barrier, Soprema Colphene 1500.

(g) Metal drip edge: brake formed of 24 gauge prefinished steel sheet of same colour as sheet metal roofing, Form drip edge to extend 100 mm under base course, with 6 - 9 mm formed drip at front edge.

E15.3 Construction Methods

(a) Do masonry work in accordance with CSA-A371 except where specified otherwise.

(b) Before commencing masonry work construct mock-up panel for Contract Administrator's review and approval. Construct mock-up panel approximately 1200 x 1200 mm size, on exterior wall of building in location designated by Contract Administrator. Materials and workmanship as specified for finished work. Mock-up panel, if accepted, may become part of the finished work. If not accepted, demolish and construct new panel if requested.

(c) Lay concrete masonry units in running stretcher bond. Coursing height 200 mm of one block and one joint

(d) Lay clay brick in running stretcher bond, coursing height 200 mm for three bricks and three joints. Provide soldier coursing as indicated, using solid units at corners. Exposed cores not permitted.

(e) Lay limestone in random ashlar pattern bond. Joint lines to run horizontally and vertically. Stagger vertical joints and break horizontal joints as often as possible. Balance distribution of stone sizes for best appearance.

(f) Supply and install masonry connectors and reinforcement in accordance with CSA A370, CSA A371, CSA A23.1 and CSA S304.1, and as indicated. Coordinate the installation of the truss uplift anchors with truss subcontractor.

(g) Build masonry plumb, level, and true to line, with vertical joints in alignment. Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.

(h) Remove chipped, cracked, and otherwise damaged units in exposed masonry and replace with undamaged units.

(i) Cut out for electrical switches, outlet boxes, and other recessed or built-in objects. Make cuts straight, clean, and free from uneven edges.

(j) Build in items required to be built into masonry. Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as work progresses.

(k) Construct continuous control joints in exterior masonry veneer. Fill joints with joint filler, backer rods and sealant.

(l) Tool joints with round jointer to provide concave joints where exposed or to receive paint or other thin finish coating. Strike flush joints in concealed spaces.

(m) Keep masonry cavities free of mortar droppings.

(n) Provide weep holes over masonry flashings, spaced at maximum 800 mm on centre.

(o) Build in flashings in masonry in accordance with CAN3-A371. Carry under base course and up backup wall minimum 150 mm and seal stop edge.

(p) Install metal drip edge over masonry flashings at base courses and angle lintels. Align drip edge straight and even. Overlap joints minimum 20 mm.

E15.3.1 Cleaning

(a) Clean stone as work progresses. Allow mortar droppings on stone to partially dry then remove by means of brushing with a stiff fibre brush.

(b) Post construction: clean area of wall designated by Contract Administrator as directed below and leave for one week. If no harmful effects appear and after mortar has set and cured clean masonry as follows:

(i) Protect sills, doors, trim and other work

(ii) Remove large particles with wood paddles without damaging surface. Saturate masonry with clean water and flush off loose mortar and dirt.

(iii) Scrub with solution of 25 mL trisodium phosphate and 25 mL household detergent dissolved in 1 L of clean water using stiff fibre brushes, then clean off immediately with clean water using hose. Alternatively, use proprietary compound recommended by brick masonry manufacturer in accordance with manufacturer's directions.

(iv) Repeat cleaning process as often as necessary to remove mortar and other stains.

(v) Use alternative cleaning solutions and methods for difficult to clean stone only after consultation with masonry unit manufacturer.

E15.4 Measurement and Payment

(a) Masonry work shall be included with pumping station superstructure and paid for under the Contract Unit Price for “Pumping Station Superstructure, Including Finishing”, 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.

E16. CARPENTRY

E16.1 Description

(a) This Specification shall cover the supply, fabrication, transportation, handling, delivery and placement of all carpentry work.

E16.2 References

(a) Canadian General Standards Board (CGSB)

(i) CAN/CGSB-11.3, Hardboard.

(b) Canadian Standards Association (CSA)

(i) CSA B111 - Wire Nails, Spikes and Staples.

(ii) CSA O80 - Wood Preservation.

(iii) CAN/CSA O141 - Softwood Lumber.

(iv) CSA O151 - Canadian Softwood Plywood.

(c) National Lumber Grades Authority (NLGA)

(i) Standard Grading Rules for Canadian Lumber.

E16.3 Materials

(a) Lumber: unless specified otherwise, softwood, S4S, moisture content 19% (S-dry) or less in accordance with CAN/CSA-O141, Spruce, Pine or Fir NLGA No. 2 or better grade. Glued end-jointed (finger-jointed) lumber is not acceptable.

(b) Canadian softwood plywood (CSP): to CSA 0151, standard construction, square edge. Standard sheathing grade.

(c) Hardboard paneling: to CAN/CGSB-11.3, smooth, tempered, 1219 x 2438 x 3 mm thick panels.

(d) Nails, spikes and staples: to CSA B111 and NBC requirements. Galvanized.

(e) Bolts: steel, of sizes required, complete with nuts and washers. Galvanized.

(f) Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead plugs, recommended for purpose by manufacturer.

(g) Surface-applied wood preservative: copper napthenate or pentachlorophenol base water repellent preservative. Use clear for materials exposed in final assembly, coloured elsewhere.

E16.4 Pressure Preservative Treated Wood

(a) Provide lumber materials pressure preservative treated for:

(i) Rough bucks at openings.

(ii) Wood strapping.

(iii) Lumber used on exterior of building, above or below grade.

(b) Treat material to CAN/CSA-O80 using Type-C (copper chromate arsenate) preservative to obtain a minimum net retention level of 6.4 kg/m3) of wood.

(c) Materials shall be dried after treatment to a moisture content of 19% or less.

(d) Each piece of treated material shall be identified with a tag or ink mark bearing the Canadian Wood Preservers' Bureau quality mark.

(e) Apply surface applied wood preservative to heartwood exposed from ripping, end cutting or boring.

E16.5 Construction

E16.5.1 Genaral

(a) Comply with requirements of NBC, Part 9 supplemented by following paragraphs.

(b) Install members true to line, levels and elevations. Space uniformly.

(c) Construct continuous members from pieces of longest practical length.

(d) Install spanning members with "crown-edge" up.

(e) Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

(f) Countersink bolts where necessary to provide clearance for other work.

(g) Use fastenings of following types, except where specific type is indicated or specified:

(i) To hollow masonry, plaster and panel surfaces use toggle bolt.

(ii) To solid masonry and concrete use expansion shield with lag screw, lead plug with wood screw.

(iii) To structural steel use bolts through drilled hole, or welded stud-bolts or power driven self-drilling screws, or welded stud-bolts or explosive actuated stud-bolts.

(h) Install furring and blocking as required to space-out and support surface wall and ceiling finishes, facings, fascia, soffit, siding and other work as indicated. Align and plumb faces of furring and blocking to tolerance of 1:600.

(i) Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work. Except where indicated otherwise, use material at least 38 mm thick.

(j) Install fascia backing, nailers and other wood supports as required and secure using galvanized fasteners.

(k) Install hardboard paneling with finishing nails.

E16.6 Quality Assurance

(a) Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

(b) Plywood, particleboard, OSB and wood based composite panels in accordance with CSA and ANSI standards.

E16.7 Measurement and Payment

(a) Carpentry shall be included with pumping station superstructure and paid for under the Contract Unit Price for "Pumping Station Superstructure, Including Finishing", 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.

E17. PREFABRICATED WOOD TRUSSES

E17.1 Description

(a) This Specification shall cover the supply, fabrication and placement of all prefabricated wood truss work.

E17.2 Materials

E17.2.1 Design Criteria

(a) Design trusses, bracing and bridging in accordance with CAN3-086 for building locality as ascertained by NBC Supplement No. 1, Climatic Information for Building Design in Canada and minimum uniform and minimum concentrated loadings stipulated in NBC commentary.

(b) All roof trusses are to be prefabricated and designed in accordance with the latest edition of CSA-086. Shop drawings, including connection details, bearing the stamp of a registered professional engineer in the Province of Manitoba, shall be submitted to the Contract Administrator for approval before commencement of fabrication. Timber for roof trusses and rafters shall be structurally graded in accordance with NLGA standard grading rules for Canadian Lumber (latest edition). Material may be No. 2 spruce or equal. Material shall be straight grained and kiln dried.

(c) Truss manufacturer to design, fabricate and supply complete roof framing system, including lateral bracing, and uplift anchors.

(d) Limit live load deflections to 1/240th of span.

E17.2.2 Lumber

(a) Lumber: spruce species, fire retardant treated grade, S4S, with maximum moisture content of 19% at time of fabrication and to following standards:

(i) CAN/CSA-0141
(ii) NLGA, Standard Grading Rules for Canadian Lumber.

(b) Identify lumber by grade stamp of an agency certified by Canadian Lumber Standards Administration Board.

E17.3 Construction Methods

E17.3.1 Fabrication

(a) Verify connectors and other truss connectors shown on drawings.

(b) Fabricate wood trusses in accordance with reviewed shop drawings.

(c) Cut truss members to accurate length, angle, and size to assure tight joints for finished trusses.

(d) Assemble truss members to design configuration.

(e) Provide for design camber when positioning truss members.

(f) Connect members using bolts and nuts, metal gussets.

(g) Design and supply suitable metal hangers for all truss to truss connections.

(h) Provide all tie-down connectors and other truss connectors shown on drawings.

E17.3.2 Inspection

(a) Verify end bearing lengths comply with Drawings and code requirements.

(b) Commencement of installation means acceptance of existing conditions.

(c) Truss supplier shall include in the contract price to provide site inspections and certification that trusses were constructed and erected in accordance with Drawings and code requirements.

E17.3.3 Erection

(a) Erect wood trusses in accordance with reviewed erection drawings.

(b) Indicated lifting points to be used to hoist trusses into position.

(c) Exercise care to prevent out-of-place bending of trusses.

(d) Install temporary horizontal and cross bracing to hold trusses plumb and in safe condition until permanent bracing and decking are installed.

(e) Install permanent bracing in accordance with structural drawings and reviewed shop drawings, prior to application of loads to trusses.

(f) Restrict construction loads to design loads to prevent overstressing of truss.

(g) Do not cut or remove any truss material without approval of Contract Administrator.

E17.3.4 Shop Drawings

(a) Submit shop drawings in accordance with E6 Shop Drawings.

(b) Each shop, layout and erection drawing submission shall bear signature and stamp of professional engineer registered or licensed in Province of Manitoba.

(c) Provide truss layout identifying truss mark numbers, location, quantity of each, etc.

(d) Indicate species, sizes and stress grades of lumber used as truss members. Show pitch, span, camber, configuration and spacing of trusses. Indicate connector types, thickness, sizes, locations and design value. Show bearing details. Indicate design load for each member.

(e) Submit stress diagram or print-out of computer design indicating design for each truss member. Indicate allowable load and stress increase.

(f) Indicate arrangement of webs or other members to accommodate ducts and other specialties.

(g) Show lifting points for storage, handling and erection.

(h) Show location of lateral bracing for compression members.

E17.3.5 Delivery and Storage

(a) Store trusses on job site in accordance with manufacturer's instructions. Provide bearing supports and bracings. Prevent bending, wrapping and overturning trusses.

(b) Trusses shall be wrapped with plastic until erected.

E17.4 Measurement and Payment

(a) Supplying and placing of fabricated wood trusses shall be included with wastewater pumping station and paid for under the Contract Unit Price for "Pumping Station Superstructure, Including Finishing", 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.

E18. SHEET VAPOUR BARRIER

E18.1 Description

(a) This Specification shall cover the supply, fabrication, transportation, handling, delivery and placement of sheet vapour barrier work.

E18.2 Materials

(a) Sheet Vapour Barrier: polyethylene film to CAN/CGSB-51.33, Type 1, 0.15 mm thick.

(b) Joint sealing tape: air pressure sensitive adhesive tape, type recommended by vapour barrier manufacturer, 50mm wide for lap joints and perimeter seals, 25mm wide elsewhere.

(c) Sealants: acoustical sealant.

(d) Moulded box vapour barrier: factory-moulded polyethylene box for use with recessed electric switch and outlet device boxes.

E18.3 Construction Methods

E18.3.1 General

(a) Install sheet vapour barrier on warm side of exterior wall, ceiling and floor assemblies as indicated, to form continuous barrier.

(b) Use sheets of largest practical size to minimize joints.

(c) Inspect sheets for continuity. Repair punctures and tears with sealing tape before work is concealed.

E18.3.2 Exterior Surface Openings

(a) Cut sheet vapour barrier to form openings and ensure material is lapped and sealed to frame.

E18.3.3 Perimeter Seals

(a) Seal perimeter of sheet vapour barrier as follows:

(i) Apply continuous bead of sealant to substrate at perimeter of sheets.
(ii) Lap sheet over sealant and press into sealant bead.
(iii) Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

E18.3.4 Lap Joint Seals

(a) Seal lap joints of sheet vapour barrier as follows:

(i) Attach first sheet to substrate.
(ii) Apply continuous bead of sealant over solid backing at joint.
(iii) Lap adjoining sheet minimum 150mm and press into sealant bead.
(iv) Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

E18.3.5 Electrical Boxes

(a) Seal electrical switch and outlet device boxes tat penetrate vapour barrier as follows:

(i) Install moulded box vapour barrier or wrap boxes with polyethylene film sheet providing minimum 300mm perimeter lap flange.
(ii) Apply sealant to seal edges of flange to main vapour barrier and seal wiring penetrations through box cover.

E18.4 Measurement and Payment

(a) The supplying and installation of sheet vapour barrier shall be included with wastewater pumping station and paid for under the Contract Unit Price for “Pumping Station Superstructure, Including Finishing”, 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.

E19. AIR BARRIER

E19.1 Description

(a) This Specification shall cover the supply, fabrication, transportation, handling, delivery and placement of all air barrier work.

E19.2 Materials

(a) Air barrier membrane: SBS modified bitumen sheet membrane fibreglass reinforced, top and bottom surface thermofusible plastic film, minimum 2.5 mm thick. Acceptable material: Soprema Sopraseal 60 F/F, Bakor Blueskin TG, IKO Aquabarrier TG.

(b) Primers, mastics and sealants: of type recommended by manufacturer, suitable for substrate and application.

(c) Flashing and stripping membranes: as recommended by air barrier membrane manufacturer.

E19.3 Construction Methods

E19.3.1 Environmental Conditions

(a) Apply primers and membranes in dry weather and only when air and surface temperature are within manufacturer's recommended limits.

(b) For applications below recommended temperature consult manufacturer and do not proceed until approved by manufacturer or his representative.

E19.3.2 Preparation

(a) Clean substrates of snow, ice, loose particles, oil, grease, dirt, curing compounds, or other foreign matter detrimental to installation and bonding of air barrier membrane. Repair defects in masonry surfaces. Remove sharp protrusions and rough edges.

E19.3.3 Installation

(a) Prime substrates in accordance with manufacturer's instructions. Apply primers at recommended rate of application.

(b) Install materials in accordance with manufacturer's instructions using only materials approved for use with their products. Apply with good construction practice to maintain continuity of air barrier membrane over building elements.

(c) Overlap side and end laps minimum 50 mm. Stagger end laps minimum 300 mm in adjacent rows. Locate end joints minimum 300 mm from internal and external corners.

(d) Install sheets horizontally between masonry ties penetrating membrane. Overlap horizontal joints minimum 50 mm. Slit membrane at each tie and seal making airtight.

(e) Place membrane in position without stretching, taking care to avoid trapped air, creases or fishmouths. Ensure full contact and bond to substrates.

(f) Flash and seal around all penetrations and protrusions such as pipes, conduits, steel angle supports, masonry ties, anchors. Cut and fit membrane neatly and snug fitting, leave no gaps. Make airtight.

(g) Seal with mastic all difficult detail areas that do not allow easy installation of membrane. Make airtight.

(h) At rough openings cut air barrier membrane to form opening. Return membrane into opening and seal to rough bucks. Reinforce corners with additional piece of membrane cut and formed to seal corners.

(i) Overlap and seal air barrier membrane to vapour barriers and waterproofing membranes installed by other trades. Maintain continuity of building air/vapour barrier system over entire building.

(j) Inspect membrane for defects and poor workmanship before covering and make corrections immediately.

(k) Patch and repair misaligned or inadequately lapped seams, tears, punctures or fishmouths to the satisfaction of the Contract Administrator.

(l) Patch cuts, tears, and punctures by bonding an additional layer of air barrier membrane over damaged area. Patch shall extending minimum 150 mm in all directions from fault. Seal and make airtight.

E19.4 Measurement and Payment

(a) The supplying and installation of air barrier membrane shall be paid for under the Contract Unit price for “Pumping Station Superstructure, Including Finishing”, 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.

E20. BOARD INSULATION

E20.1 Description

(a) This Specification shall cover the supply and placement of all board insulation work.

E20.2 Materials

(a) Board insulation: expanded polystyrene board to CAN/ULC-S701, Type 3, thickness as indicated on Drawings, ship lapped edges. Acceptable material: Styrofoam Cavitymate.

(b) Fasteners: concrete anchors with flat discs or washers, for attachment of insulation to concrete surfaces

E20.3 Construction Methods

E20.3.1 Installation

(a) Install insulation after building substrate materials are cured and dry.

(b) Install insulation to maintain continuity of thermal protection to building elements and spaces. Fit insulation tight around electrical, plumbing and heating pipes and ducts, around exterior doors and windows and other penetrations and protrusions. Cut and trim insulation neatly to fit spaces.

(c) Install insulation boards in parallel rows. Butt joints tightly, offset vertical joints. Interlock boards at corners. Use longest pieces possible to reduce number of joints.

(d) Install insulation boards on outer surface of inner wythe of wall cavity with plastic insulation clips over masonry ties to hold insulation tight to backup wall. Install boards horizontally between masonry ties, with horizontal joints centred on ties.

(e) Install insulation over foundation waterproofing with concrete anchors complete with nailing discs or washers. Provide a minimum of five (5) anchors per 600 x 1200 mm of insulation board. Provide additional anchors spaced at 300 mm on centre around perimeter of openings, corners and abutments. Ensure concrete anchors are securely seated. Replace loose fasteners or provide additional fastener adjacent to loose fastener

E20.4 Measurement and Payment

(a) The supplying and installation of board insulation shall be paid for under the Contract Unit price for “Pumping Station Superstructure, Including Finishing”, 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..

E21. BATT AND BLANKET INSULATION

E21.1 Description

(a) This Specification shall cover the supply, fabrication, transportation, handling, delivery and placement of all batt and blanket insulation work.

E21.2 Materials

(a) Batt and blanket mineral fibre insulation: to CAN/ULC-S702, Type 1 – no membrane. Thickness indicated on Drawings.

E21.3 Construction Methods

(a) Install insulation to maintain continuity of thermal protection to building elements and spaces.

(b) Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

(c) Fill all voids completely. Cut and trim insulation neatly to fill voids; leave no gaps. Do not compress insulation to fit into spaces.

E21.4 Measurement and Payment

(a) The supplying and placing of batt and blanket insulation shall be paid for under the Contract Unit price for “Pumping Station Superstructure, Including Finishing”, 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.

E22. ALUMINUM SOFFIT

E22.1 Description

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

E22.2 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 m² of opening for every 30 m² 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-punched.

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

E22.3 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.

E22.4 Measurement and Payment

(a) The supplying and placing of aluminium soffit shall be paid for under the unit price for “Pumping Station Superstructure, Including Finishing”, 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.

E23. METAL ROOFING SYSTEM

E23.1 Description

(a) This Specification shall cover the supply, fabrication and placement of all metal roofing system work.

E23.2 Materials

E23.2.1 Acceptable Material:

(i) Marquis 450 roof panels as manufactured by VicWest Steel.

(ii) Flynn Standing Seam complete with battens

(iii) or approved equal in accordance with B6.

E23.2.2 Components

(a) Roof panels:

(i) Fabricated from 24 gauge galvanized sheet steel to ASTM A653M, Grade 230, with Z275 zinc coating.
(ii) Finish: factory precoated with high molecular polyester coating Colorite HMP, colour QC-16072 Charcoal.
(iii) Colour sample to be approved by Contract Administrator.

(b) Metal flashings, trim, closures exposed to view: prefinished steel sheet of same gauge and finish as roof panels.

(c) Sheet metal accessory components not exposed to ground level view: galvanized steel sheet, minimum 24 gauge.

(d) Screws anchors: as recommended by roofing supplier. Use galvanized anchors, with length and size to meet roof system design.

(e) Deck closures: gauge and profile as recommended by manufacturer.

E23.2.3 Waterproof Membrane

(a) Self-adhesive, modified bitumen sheet, minimum 1 mm (40 mils) thick, non-slip surface. Acceptable material: IKO Armour Gard Ice and Water Protector, W.R. Grace Ice and Water Shield; Domtar Eaveshield; Nordshield Water Stopper; Bakor Eave Guard; BPCO ProGard; EMCO Gripgard.

E23.2.4 Fascia, Gutters and Downspouts

(a) Form fascia and trim of prefinished steel sheet of same material, thickness, finish and colour as roof panels.

(b) Form gutters and downspouts of prefinished steel sheet of same material, thickness, finish and colour as roof panels, conforming to sizes and profiles indicated.

(c) Form gutter liner of galvanized steel sheet, minimum 24 gauge, conforming to sizes and profiles indicated on Drawings. Form in full lengths to reduce number of joints. Seal joints against leakage.

(d) Provide goosenecks, outlets and necessary fastenings.

(e) For open type downspouts fabricate of prefinished steel sheet with same finish and colour on both sides of sheet. Prefinished sheet steel colour to match colour of clay brick veneer as closely as possible. Submit samples to Contract Administrator for review prior to ordering material

(f) Gutter hangers, purpose made, concealed type. Spikes and ferrules not permitted.

E23.3 Construction Methods

E23.3.1 Guarantee

(a) Provide a written guarantee, signed and issued in the name of The City stating that the entire roofing system is guaranteed against leaking for a period of two (2) years from the date of completion.

E23.3.2 Standards

(a) The materials and installation shall meet the applicable standards of the National Building Code, Underwriters Laboratories of Canada (ULC), the Canadian Standards Association (CSA) and any other applicable codes, standards and by-laws.

(b) Written confirmation of conformance with these standards shall be provided to The City.

E23.3.3 Shop Drawings

(a) Submit shop drawings in accordance with E6 to the Contract Administrator for review prior to order of materials or commencement of site work.

(b) Indicate arrangement of prefinished roof sheets, including joints, types and location of supports, fasteners, and any special shapes.

E23.3.4 Quality Assurance

(a) Roofing Contractor must be a member in good standing with the Roofing Contractors Association of Manitoba.

(b) The contractor is responsible for ensuring that the design, supply and total installation of this project are supervised and executed by fully trained and qualified personnel.

(c) Installer shall demonstrate at least five years experience in projects similar in scope.

E23.3.5 Roof System Design

(a) Prefinished roof deck supplier to design connections to substructure for maximum 2.0 kPa uplift, based on connections as required. Contractor to submit Contract Administrator sealed shop drawings of anchorage details to the Contract Administrator for review prior to fabrication and installation.

(b) Roof system fabricator is responsible for complete design and engineering of snow/ice guard system for sheet metal roofing. Guards shall be finished to match roof panels.

E23.3.6 Field Quality Control

(a) Inspection of roof application may be carried out by an independent agency selected by the Contract Administrator.

(b) Notify inspection agency minimum 48 hrs. prior to commencing roofing operations to arrange inspections. Permit agency full access to all portions of work.

(c) Note that the last inspection is to be a “final inspection”, carried out after all roofing is complete, including installation of equipment and openings, and shall be in the presence of the Contract Administrator and the Contractor.

E23.3.7 Waterproof Membrane Installation

(a) Install self-adhesive membrane in accordance with manufacturer's instructions.

(b) Roll out sheets and press firmly to substrate. As installation progresses roll with hand roller to ensure positive bond.

(c) Set first course along eaves. Overlap each succeeding course over lower. Side and end laps minimum 75 mm. Ensure full bond to roof deck and sealed at side and end laps. Avoid excessive bubbles and fish mouths.

(d) Flash and seal around openings and items penetrating roof deck. Cut and fit membrane neatly and snug fitting, leave no gaps. Seal with mastic sealant. Make water tight.

E23.3.8 Metal Roofing Installation

(a) Install metal roofing system in strict accordance with reviewed shop drawings and manufacturer's instructions.

(b) Install factory manufactured panels in longest practical lengths with special panels to suit valleys and penetrations.

(c) Provide a continuous double standard seam, mechanically locking the hold down clips into the seam.

(d) Provide notched and formed closures, to shed water, at changes in pitch and at peaks, ridges and eaves.

E23.4 Touch-up and Cleaning

(a) Touch up minor paint abrasions with touch-up paint provided by roof panel manufacturer to match colour of roof panels.

(b) Clean roof by dry-wiping.

(c) Leave job site completely clean.

E23.5 Measurement and Payment

(a) The supplying and placing of metal roofing system shall be paid for under the Contract Unit price for “Pumping Station Superstructure, Including Finishing”, 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.

E24. JOINT SEALERS

E24.1 Description

(a) This Specification shall cover the supply and placement of all joint sealer work.

E24.2 Materials

E24.2.1 Sealant Materials Designations

(a) Type 1 – Silicones One Part: to CAN/CGSB-19.13. Acceptable material: Dow Corning 795, GE Silpruf, Tremco Spectrum 2.

(b) Type 2 – Silicones One Part: to CAN/CGSB-19.22-M89 (Mildew resistant). Acceptable material: Dow Corning 786.

(c) Type 3 – Acrylic Latex One Part: to CGSB 19-GP-5M. Acceptable material: Tremco 100 Latex Caulk, GE Acrylasil Latex Caulk.

(d) Type 4 – Butyl: to CGSB 19-GP-14M. Acceptable material: Tremco Butyl Sealant.

E24.2.2 Accessories

(a) Preformed Compressible and Non-Compressible back-up materials.

(i) High-Density Foam. Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m density, or neoprene foam backer, size as recommended by manufacturer.

(ii) Bond Breaker Tape. Polyethylene bond breaker tape that will not bond to sealant.

(b) Joint cleanter: non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

(c) Primer: as recommended by manufacturer.

E24.3 Construction Methods

E24.3.1 Sealant Selection

(a) Perimeters of exterior openings where frames meet exterior facade of building: Sealant Type 1.

(b) Miscellaneous flashing joints and metal cladding: Sealant Type 1.

(c) Perimeter of washroom fixtures (e.g., sinks, urinals, water closets, vanities, etc.): Sealant Type 2.

(d) Interior paintable joints: Sealant Type 3.

(e) Bedding aluminum doorsills: Sealant Type 4.

E24.3.2 Delivery, Storage, and Handling

E24.3.3 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

E24.3.4 Environmental and Safety Requirements

(a) Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada.

(b) Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions

E24.3.5 Protection

(a) Protect installed work of other trades from staining or contamination.

E24.3.6 Preparation of Joint Surfaces

(a) Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

(b) Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter that may impair work.

(c) Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

(d) Ensure joint surfaces are dry and frost free.

(e) Prepare surfaces in accordance with manufacturer's directions.

E24.3.7 Priming

(a) Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

(b) Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

E24.3.8 Backup Material

(a) Apply bond breaker tape where required to manufacturer's instructions.

(b) Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

E24.3.9 Mixing

(a) Mix materials in strict accordance with sealant manufacturer's instructions.

E24.3.10 Application

(a) Sealant

(i) Apply sealant in accordance with manufacturer's written instructions.
(ii) (Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
(iii) Apply sealant in continuous beads.
(iv) Apply sealant using gun with proper size nozzle.
(v) Use sufficient pressure to fill voids and joints solid.
(vi) Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
(vii) Tool exposed surfaces before skinning begins to give slightly concave shape.
(viii) Remove excess compound promptly as work progresses and upon completion.

(b) Curing

(i) Cure sealants in accordance with sealant manufacturer's instructions.
(ii) Do not cover up sealants until proper curing has taken place.

(c) Cleanup

(i) Clean adjacent surfaces immediately and leave work neat and clean.
(ii) Remove excess and droppings, using recommended cleaners as work progresses.
(iii) Remove masking tape after initial set of sealant.

E24.4 Measurement and Payment

(a) The supplying and placing of joint sealers shall be paid for under the Contract Unit price for “Pumping Station Superstructure, Including Finishing”, 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.

E25. STEEL HOLLOW METAL DOORS AND FRAMES

E25.1 Description

(a) This Specification shall cover the supply, fabrication and placement of all steel hollow metal doors and frames.

E25.2 Materials

E25.2.1 Fabrication Standards

(a) Fabricate doors and frames to Canadian Manufacturing Specification for Steel Doors and Frames, except where specified otherwise.

E25.2.2 Steel

(a) Commercial grade steel to ASTM A568-81, Class 1, hot-dip galvanized to ASTM A527-80, coating designation to ASTM A525-81, ZF75 (A25).

E25.2.3 Component Part Thickness

(a) Door frames: 1.6mm (16 gauge)

(b) Doors: 1.2 mm (18 gauge)

E25.2.4 Door Construction

(a) Insulated core, welded seam: For exterior use. Reinforced construction. Provide urethane foam insulated cores to R.S.I. of 1.76 (R=10). Laminated by adhesive to face sheets. Reinforced for hardware

E25.2.5 Frame Construction

(a) Mitred or mechanically jointed and continuously welded on the inside of the profile. Welded joints to be ground to a smooth uniform finish.

(b) Butt joints of mullions and transoms: accurately cope, securely weld and grind smooth.

(c) Blank, reinforce, drill and tap for mortised butts and strike. Protect cut-outs in masonry and concrete with mortar guard boxes. Reinforce for surface mounted hardware. Prepare each door for rubber bumpers, two for double door openings.

(d) Top hinge reinforcement: weld in top hinge reinforcement with 20mm leg to hinge reinforcement, 25mm to frame.

(e) Insulation: provide foam-in insulation in all exterior frame cavities.

(f) Door Hardware

(i)	Hinges	CB1960	114 x 102	NRP	630	Stanley
(ii)	Passage Set	D10S			626	Schlage
(iii)	Deadbolt	B860	626	Schlage (tamperproof “Medeco” cylinder – keyed to match City requirements)		
(iv)	Flushbolts	FB6			626	Glynn Johnson
(v)	Weatherstrip				770C	Reese
(vi)	Sweep Seals				773C	Reese
(vii)	Astragal	275C			Reese	
(viii)	Threshold	S205A			Reese	
(ix)	Door Stop/Holder	F26			626	Glynn Johnson

E25.2.6 Frame Anchors

(a) Frames for installation shall be provided with minimum four steel anchors of suitable design.

E25.2.7 Keying

(a) Keys to match The City’s existing “Medeco” system. The City to provide lock number before keying.

(b) Provide keys in triplicate for every lock.

E25.2.8 Shop Drawings

(a) Submit shop drawings in accordance with E6 Shop Drawings.

(b) Submit shop drawings clearly indicating each type of door and frame, material, steel core thickness, mortises, reinforcements, location of exposed fasteners, anchors, openings, arrangement of hardware, and finishes

E25.3 Construction Methods

E25.3.1 General

(a) Install doors and frames to CSDFMA Installation Guide.

E25.3.2 Door Installation

(a) Install doors and hardware in accordance with templates and manufacturer's instructions.

(b) Adjust operable parts for correct function.

E25.3.3 Frame Installation

(a) Set frames plumb, square, level and at correct elevation. Secure anchorages and connections to adjacent construction.

(b) Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in. Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

E25.3.4 Painting

(a) Paint doors and frames in accordance with E27 Painting in colour approved by Contract Administrator.

E25.4 Measurement and Payment

(a) The supplying and placing of steel hollow metal doors and frames shall be paid for under the Contract Unit price for "Pumping Station Superstructure, Including Finishing", 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

E26. PORTLAND CEMENT PARGING

E26.1 Description

(a) This Specification shall cover the supply and placement of all Portland cement parging work.

E26.2 Materials

(a) Water: clean, potable and free from deleterious matter, acids or alkalis.

(b) Sand: clean, coarse, sharp, well screened conforming to CSA A82.57.

(c) Cement: normal Portland Type 10 to CAN/CSA-A5.

(d) Metal lath: diamond mesh, 1.65 kg/m^2, galvanized.

(e) Tie wire: zinc coated annealed steel wire, minimum 16 gauge diameter.

(f) Cornerite: expanded 26 gauge sheet steel, 64 mm legs, galvanized finish.

(g) Stucco stops: square, 24 gauge galvanized sheet steel or pure zinc, perforated or expanded flanges.

(h) Concrete anchors: for attachment of metal lath to concrete and masonry surfaces. Hot dipped galvanized concrete/masonry anchors. Washers 1 mm thick x 25 mm diameter steel, galvanized. Gripcon Concrete Masonry Fastening System or equal.

(i) Building paper: No.15 asphalt saturated felt to CSA A123.3.

(j) Colouring pigment: dry powder pigment for job mix in finish coat. Acceptable material Imasco Custom Colours. Colour generally matching brickwork, as selected by Contract Administrator. Provide 300 x 300 mm samples of finish coat in selected colour and texture on plywood backing for Contract Administrator's review and approval.

E26.3 Construction Methods

E26.3.1 Mixing

(a) Detergent, soap, or other additives in mixes not permitted.

(b) Proportion parts by volume. Measurement of ingredients including water shall be accurate and successive batches shall be proportioned alike.

(c) Adjust cement and lime content by volume based on strength, workability and finishing requirements.

(d) Scratch coat: 1 part cement; 3/4 to 1½ parts lime; 2½ to 4 parts sand (volume of sand per sum of cementitious material).

(e) Parging coat: 1 part cement; 3/4 to 1½ parts lime; 3 to 5 parts sand (volume of sand per sum of cementitious material. Add colouring agent to finish coat in strict conformance with manufacturer's instructions to produce coloured stucco to match approved sample. Accurately and consistently measure ingredients to provide consistent coloured mortar for all batches.

E26.3.2 Installation Metal Lath

(a) Install sheathing paper behind metal lath. Place sheets horizontally, overlapping upper sheet over lower to shed water.

(b) Install metal lath with long dimension of sheets at right angles to supports. Offset end laps in adjacent rows.

(c) Secure at 150 mm on centre along vertical lines running 400 mm apart.

(d) Lap sheets 12 mm at sides and 25 mm at ends. Side laps shall be secured at 400 mm on centre.

(e) At external corners, wrap metal lath around corner minimum of 400 mm. Reinforce with cornerite.

(f) At internal corners, fold wire through corner minimum 400 mm. Reinforce with cornerite.

E26.3.3 Installation Accessories

(a) Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces wherever possible. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges.

(b) Provide casing beads wherever parging terminates and abuts other surfaces and where specifically called for on Drawings.

E26.3.4 Cement Parging Application

(a) Scratch coat:

(i) Apply full scratch coat in sufficient thickness with sufficient pressure to form positive bond. Cross scratch and allow to set.
(ii) Damp cure for not less than 48 hours. Permit to dry.

E26.3.5 Parging coat:

(i) Apply parging coat on scratch coat no sooner than 48 hours after installation of scratch coat.

(ii) Apply over dampened scratch coat with sufficient pressure to form positive bond.

(iii) Bring out to grounds, straighten to true surface, and provide medium brush dash finish.

(iv) Damp cure for not less than 48 hours.

(a) Thickness of finish or top coats specified below are minimum thickness. Increase thickness as required to suit specified textured finishes.

(i) Scratch coat: 12 mm

(ii) Finish coat: 6 mm

(iii) Total: 18 mm

E26.4 Measurement and Payment

(a) Portland cement parging shall be paid for under the Contract Unit price for “Pumping Station Superstructure, Including Finishing”, 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.

E27. PAINTING

E27.1 Description

(a) This Specification shall cover the supply and placement of all painting work.

E27.2 Materials

E27.2.1 Paint

(a) Only paint materials listed in the MPI Approved Products List (APL) are acceptable for use on the project, except where other products are specified.

(b) Paint materials for each coating formula to be products of a single manufacturer.

(c) Colour schedule will be provided by Contract Administrator. Selection of colours will be from manufacturer’s full range of colours.

E27.2.2 Paint Finishes

(a) Except for Formula 1 (epoxy) use Master Painters Institute (MPI) finishing formulae as specified below.

(b) Formula 1: for wood to receive paint finish:

(i) MPI EXT 6.4B - Alkyd GR (semi-gloss) finish premium grade.

(c) Formula 2: for shop primed and unprimed ferrous metal surfaces:

(i) MPI EXT 5.1D - Alkyd G5 (semi-gloss) finish premium grade.

(d) Formula 3: for galvanized and zinc-coated metal apply:

(i) MPI EXT 5.3B - Alkyd G5 (semi-gloss) finish premium grade.

(e) Formula 4: for concrete, walls and ceilings apply:

(i) MPI EXT 3.1A - Latex G5 (semi-gloss) finish premium grade.

(f) Formula 5: for concrete floors apply:

(i) MPI EXT 3.2D - Alkyd floor enamel #59 low gloss finish premium grade. Sprinkle with clean silica sand to provide slip-resistant surface acceptable to Contract Administrator.

E27.3 Construction Methods

E27.3.1 Standard of Acceptance

(a) Walls: No defects visible from a distance of 1000 mm at 90 degrees to surface when viewed using final lighting source.

(b) Ceilings: No defects visible from floor at 45 degrees to surface when viewed using final lighting source.

(c) Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

E27.3.2 Delivery, Storage and Handling

(a) Deliver and store materials in original containers, sealed with labels intact.

(b) Indicate on containers or wrappings:

(i) Manufacturer's name and address.
(ii) Type of paint.
(iii) Compliance with applicable standard.
(iv) Colour number in accordance with colour schedule provided by Contract Administrator.

(c) Observe manufacturer's recommendations for storage and handling.

E27.3.3 Environmental Requirements

(a) Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.

(b) Ventilation: ventilate area of work by use of approved portable supply and exhaust fans.

(c) Provide temporary heating where permanent facilities are not available to maintain minimum recommended temperatures.

(d) Apply paint finish only in areas where dust is no longer being generated by related construction operations such that airborne particles will not affect the quality of the finished surface.

(e) Apply paint only when surface to be painted is dry, properly cured, and adequately prepared.

E27.3.4 Extra Materials

(a) Submit one 4-litre can of each type and colour of primer and finish coating. Identify colour and paint type in relation to established colour schedule and finish formula.

(b) Deliver to The City and store where directed.

E27.3.5 Protection

(a) Cover or mask floors, walls, and equipment adjacent to areas being painted to prevent damage and to protect from paint drops and splatters. Use non-staining coverings.

(b) Protect items that are permanently attached such as Fire Labels on doors, frames, and name plates on equipment.

(c) Protect factory finished products and equipment.

E27.3.6 Cleaning and Surface Preparation

(a) Clean and prepare surfaces in accordance with MPI Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:

(i) Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
(ii) Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
(iii) Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
(iv) Allow surfaces to drain completely and allow to dry thoroughly.

(b) Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pre-treatment as soon as possible after cleaning and before deterioration occurs.

(c) Where possible, prime surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.

(i) Apply vinyl sealer to MPI #36 over knots, pitch, sap and resinous areas.
(ii) Apply wood filler to nail holes and cracks.

(d) Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted.

(e) Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.

E27.3.7 Application

(a) Apply paint in accordance with manufacturer's application instructions unless specified otherwise.

(b) Apply each coat of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

(c) Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

(d) Sand and dust between each coat to remove visible defects.

(e) Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

E27.3.8 Mechanical/Electrical Equipment

(a) Do not paint exposed conduit, ductwork and hangers, unless otherwise indicated.

(b) Paint exposed piping. Colour and texture to match adjacent surfaces, except as noted otherwise.

(c) Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.

(d) Do not paint over nameplates, brass or bronze surfaces or machined surfaces.

(e) Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

E27.3.9 Restoration

(a) Clean and reinstall all hardware items that were removed before undertaken painting operations.

(b) Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

E27.4 Measurement and Payment

(a) Painting shall be paid for under the Contract Unit price for “Pumping Station Superstructure, Including Finishing”, 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.

E28. GRAFFITI RESISTANT COATING

E28.1 Description

(a) This Specification shall cover the supply, fabrication, transportation, handling, delivery and placement of all graffiti resistant coating to all exterior masonry veneer.

E28.2 Materials

(a) Graffiti-resistant coating: one component, water based, non-sacrificial, clear sealer consisting of blend of polymers, orango silanes, and siloxanes. Acceptable material: Fabrikem Fabrishield Paint Repellent, PR-60 for stone, PR-61 for clay brick.

E28.3 Construction Methods

E28.3.1 Sample Application

(a) Apply graffiti-resistant coating to mock-up panel specified in E15 Masonry.

(b) Do not proceed with coating work until Contract Administrator has reviewed and accepted sample application.

E28.3.2 Product Data

(a) Submit manufacturer’s product data, specifications and application instructions to Contract Administrator prior to application of coatings.

E28.3.3 Environmental Conditions

(a) Maintain ambient and structural base temperature at installation area within limits specified by coating manufacturer. Apply coating during dry weather. Do not apply coating to wet or damp surfaces.

E28.3.4 Protection

(a) Protect plants and vegetation that might be damaged by coating. Protect surfaces not intended to have application of coatings. Provide adequate ventilation or isolation measures to protect against toxic fumes.

E28.3.5 Surface Preparation

(a) Prepare and clean substrate surfaces in accordance with coating manufacturer's printed instructions.

(b) Take moisture tests on substrates to receive coating to ensure moisture levels are within limits specified by coating manufacturer.

E28.3.6 Application

(a) Apply coating using low-pressure spraying apparatus, in accordance with manufacturer's instructions at manufacturer's recommended coverage rate:

(i) Stone: 175 – 225 ft²/gal.
(ii) Clay brick:175 – 225 ft²/gal.

(b) Increase coverage depending on surface porosity, absorption, and surface profile.

(c) Apply in uniform, even coats to fully wet substrate.

(d) Allow area to dry completely before applying additional coats.

E28.4 Measurement and Payment

(a) Graffiti resistant coating shall be paid for under the Contract Unit price for "Pumping Station Superstructure, Including Finishing", 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.