



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 171-2006

**WINNIPEG WATER TREATMENT PROGRAM – SUPPLY AND INSTALLATION OF
WATER TREATMENT PLANT PRECAST ROOF PANELS**

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Section No. Title

01300	Submittals
01450	Quality Control
03412	Precast Concrete Roof Panels

PART B - BIDDING PROCEDURES

B1. PROJECT TITLE

- B1.1 WINNIPEG WATER TREATMENT PROGRAM – SUPPLY AND INSTALLATION OF WATER TREATMENT PLANT PRECAST ROOF PANELS

B2. SUBMISSION DEADLINE

- B2.1 The Submission Deadline is 12:00 noon Winnipeg time, November 10, 2006.
- B2.2 Bid Submissions 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 GC:3.1, the Contract Administrator or an authorized representative will be available at the Site from 11:00 a.m. to 12:00 noon on October 18, 2006 to provide Bidders access to the Site.
- B3.2 The Bidder shall not be entitled to rely on any information or interpretation received at the Site investigation unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

B4. ENQUIRIES

- B4.1 All enquiries shall be directed to the Contract Administrator identified in D4.1.
- B4.2 If the Bidder finds errors, discrepancies or omissions in the Bid Opportunity, or is unsure of the meaning or intent of any provision therein, the Bidder shall notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.
- B4.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator to all Bidders by issuing an addendum.
- B4.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator only to the Bidder who made the enquiry.
- B4.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B4 unless that response or interpretation is provided by the Contract Administrator in writing.

B5. ADDENDA

- B5.1 The Contract Administrator may, at any time prior to the Submission Deadline, issue addenda correcting errors, discrepancies or omissions in the Bid Opportunity, or clarifying the meaning or intent of any provision therein.
- B5.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.

- B5.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management 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 shall 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.

B7. BID SUBMISSION

B7.1 The Bid Submission consists 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 All components of the Bid Submission 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 in ink, to constitute a responsive Bid.

B7.3 The Bid Submission shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.

B7.3.1 Samples or other components of the Bid Submission which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid Submission.

B7.4 Bid Submissions submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.

B7.5 Bid Submissions 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 owner of such business name shall be inserted.

- B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.
- B8.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.
- B8.4 Paragraph 12 of Form A: Bid shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his own name, it shall be signed by the Bidder;
 - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
 - (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, should be affixed;
 - (d) if the Bidder is carrying on business under a name other than his own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- B8.4.1 The name and official capacity of all individuals signing Form A: Bid shall be printed below such signatures.
- B8.4.2 All signatures shall be original and shall 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 Submission and the Contract, when awarded, shall be both joint and several.

B9. PRICES

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

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;
 - (b) be responsible and not be suspended, debarred or in default of any obligation to the City;
 - (c) be financially capable of carrying out the terms of the Contract;
 - (d) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract;
 - (e) have successfully carried out work, similar in nature, scope and value to the Work;
 - (f) employ only Subcontractors who:
 - (i) are responsible and not suspended, debarred or in default of any obligation 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>); and
 - (ii) have successfully carried out work similar in nature, scope and value to the portion of the Work proposed to be subcontracted to them, and are fully capable of performing the Work required to be done in accordance with the terms of the Contract;

- (g) have a written workplace safety and health program in accordance with The Workplace Safety and Health Act (Manitoba);

B10.2 Further to B10.1(g), 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 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 - Option 1 administered by the Manitoba Heavy Construction Association's Safety, Health and Environment Program; or
- (b) a valid COR certification number under the Certificate of Recognition (COR) Program administered by the Manitoba Construction Safety Association; or
- (c) 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.>)

B10.3 The Bidder shall be prepared to 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.

B10.4 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.

B11.2 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 Bid Submissions 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 Bid Submissions 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 After the public opening, the names of the Bidders and their Total Bid Prices as read out (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 Submission 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 GC:23.3, 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 shall:

- (a) retain the Bid Submission until after the Submission Deadline has elapsed;

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

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

B15. EVALUATION OF BIDS

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

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

B15.2 Further to B15.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid Submission 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 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 Submission or in other information required to be submitted, that he is responsible and qualified.

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

B15.4.1 If there is any discrepancy between the lump sum price written in figures and the lump sum price written in words, the price written in words shall take precedence.

B16. AWARD OF CONTRACT

B16.1 The City will give notice of the award of the Contract by way of a letter of intent, or will give notice that no award will be made.

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

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

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

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

PART C - GENERAL CONDITIONS

C1. GENERAL CONDITIONS

C1.1 The *General Conditions for Construction Contracts* (Revision 2000 11 09) are applicable to the Work of the Contract.

C1.1.1 The *General Conditions for Construction Contracts* 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>.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

- D1.1 In addition to the *General Conditions for Construction Contracts*, these Supplemental Conditions are applicable to the Work of the Contract.
- D1.2 The General Conditions are amended by striking out "The City of Winnipeg Act" wherever it appears in the General Conditions and substituting "The City of Winnipeg Charter".
- D1.3 The General Conditions are amended by striking out "Tender Package" wherever it appears in the General Conditions and substituting "Bid Opportunity".
- D1.4 The General Conditions are amended by striking out "Tender Submission" wherever it appears in the General Conditions and substituting "Bid Submission".
- D1.5 The General Conditions are amended by deleting GC:6.16 and GC:6.17. The City of Winnipeg is now within the jurisdiction of the Manitoba Ombudsman pursuant to The Ombudsman Act.

D2. SCOPE OF WORK

- D2.1 The Work to be done under the Contract shall consist of the supply and installation of precast concrete roof panels in accordance with the Drawings and Specifications.
- D2.2 The major components of the Work are as follows:
- (a) The supply and installation of precast concrete roof panels.
 - (b) The supply only of all miscellaneous steel embedments for incorporation into the cast-in-place concrete roof support members by the Installation Contractor, as required to support or connect to the precast roof panels. Cast-in-place concrete columns and beams will be supplied and installed by the City.
 - (c) The installation of all monorail, hoist beam and other miscellaneous embedments supplied by the City for incorporation into the precast roof panels.
 - (d) The supply and installation of all roof penetrations through the precast roof panels as required by the City.

D3. DEFINITIONS

- D3.1 When used in this Bid Opportunity:
- (a) **Installation Contractor and/or Installer** means the General Contractor retained by the City, under a separate contract, to install certain pieces of equipment supplied under this contract
 - (b) **Supply Contractor** means a contractor retained by the City, under a separate contract, to supply City Supplied Equipment which shall be installed by the Contractor.
 - (c) **City Supplied Equipment** means equipment purchased by the City under a separate contract which is supplied into the care of the Contractor for installation under this Contract.
 - (d) **ANSI** means American National Standards Institute
 - (e) **ASME** means American Society of Mechanical Engineers
 - (f) **ASTM** means American Society for Testing and Materials

- (g) **AWWA** means American Water Works Association
- (h) **CSA** means Canadian Standards Association
- (i) **DAF** means Dissolved Air Flotation
- (j) **DBPS** means Deacon Booster Pumping Station
- (k) **EPDM** means Ethylene Propylene Diene Monomer
- (l) **GWWD** means Greater Winnipeg Water District
- (m) **HDPE** means High Density Polyethylene
- (n) **IEC** means International Electrotechnical Commission
- (o) **ISO** means International Organization for Standardization
- (p) **NACE** means National Association of Corrosion Engineers
- (q) **NEMA** means National Electrical Manufacturers Association
- (r) **NSF** means National Sanitation Foundation, and
- (s) **SAE** means Society of Automotive Engineer
- (t) **SSPC** means Steel Structures Painting Council
- (u) **RWPS** means Raw Water Pumping Station
- (v) **TGS** means Manitoba Transportation and Government Services
- (w) **CMU** means concrete masonry unit fabricated to CAN3-A165 also known as concrete block.
- (x) **Manufacturer** means the person, partnership or corporation responsible for the manufacture and fabrication of equipment supplied by the Contractor for the completion of the Work.
- (y) **Manufacturer's Representative** means a trained serviceman empowered by the Manufacturer to provide installation, testing, and commissioning assistance to the Contractor in his performance of those functions.
- (z) **IEEE** means Institute of Electrical and Electronics Engineers
- (aa) **NEMA** means National Electrical Manufacturer's Association
- (bb) **ISA** means the Instrumentation Systems and Automation Society
- (cc) **API** means American Petroleum Institute
- (dd) **Contract Work Schedule** means a Gantt Charter developed by the Contractor developed using the critical path method which shows the proposed progress of the major items of work which are to be performed under this Contract
- (ee) **Project Master Schedule** means a schedule developed by the Contract Administrator which includes and coordinates the Contract Work Schedules of several City contracts, including this Contract
- (ff) **Professional Engineer** means a professional engineer registered in the Province of Manitoba.
- (gg) **Performance Verification** means all factory and field tests, demonstrations and other activities required from the Contractor to complete Form 103 – Certificate of Equipment Satisfactory Performance and to demonstrate to the Contract Administrator's satisfaction that the equipment supplied under this Contract is performing as specified herein.
- (hh) **Acceptable Shop Drawings** means all required Shop Drawings have been reviewed by the Contract Administrator and have been annotated and stamped as "reviewed" or "reviewed as modified" as specified.
- (ii) **SCADA** means supervisor control and data acquisition

- (jj) **WTP** means the Winnipeg Water Treatment Plant and includes the structure and all equipment and materials supplied and installed into the building, under multiple construction contracts, including the Work provided under this Contract.
- (kk) **Record Drawings** means a minimum of one (1) complete set of Contract Documents and Shop Drawings maintained at the Contractor's Site office on which the Contractor clearly shall clearly record in red pencil all Addenda, Change Orders, Field Instructions, and other revisions or as-built conditions which deviate from the original Contract Documents or Acceptable Shop Drawings.

- D3.2 The definitions of technical terms, abbreviations, and symbols will be those of the American Society for Testing and Materials, Canadian Standards Association and the applicable Codes and Standards. In the event of a dispute, the Contract Administrator's decision will be final.
- D3.3 The Manufacturer and Manufacturer's Representative are not parties to this Contract. All work required from the Manufacturer and Manufacturer's Representative shall be provided and coordinated by the Contractor.

D4. CONTRACT ADMINISTRATOR

- D4.1 The Contract Administrator is UMA Projects (CM) Ltd., represented by:
Gord Smith, P. Eng.
1479 Buffalo Place
Winnipeg, MB, R3T 1L7
Telephone No. (204) 986-4249
Facsimile No. (204) 986-8393

- D4.2 At the pre-construction meeting, Gord Smith will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

D5. CONTRACTOR'S SUPERVISOR

- D5.1 At the pre-construction meeting, the Contractor shall identify his designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

D6. NOTICES

- D6.1 Except as provided for in GC:23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.
- D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3, D6.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D4.1.
- D6.3 All notices of appeal shall be sent to the attention of the Chief Financial Officer at the following address or facsimile number:
The City of Winnipeg
Chief Administrative Officer Secretariat
Administration Building, 3rd Floor
510 Main Street
Winnipeg MB R3B 1B9

Facsimile No.: (204) 949-1174

- D6.4 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following address or facsimile number:

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

D7. FURNISHING OF DOCUMENTS

- D7.1 Upon award of the Contract, the Contractor will be provided with five (5) complete sets of the Bid Opportunity. If the Contractor requires additional sets of the Bid Opportunity, they will be supplied to him at cost.

SUBMISSIONS

D8. 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 GC:4.1 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 City will provide and maintain the following Project Insurance Coverages:
- (a) Builder's Risk Insurance in the amount of one hundred percent (100%) of the total project cost.
 - (i) The Contractor shall be responsible for deductibles up to \$10,000.00 maximum of any one loss.
 - (b) Wrap-Up Liability Insurance in an amount of no less than 10 million dollars (\$10,000,000.00)
 - (i) The Contractor shall be responsible for deductibles up to \$10,000.00 maximum of any one loss..
 - (c) The City of Winnipeg will carry such insurance to cover all parties engaged in the Work in this Contract. Provision of this insurance by the City of Winnipeg is not intended in any way to relieve the Contractor from his obligations under the terms of the Contract. Specifically, losses relating to deductibles for insurance, as well as losses in excess of limits of coverage and any risk of loss that is not covered under the terms of the insurance provided by the City of Winnipeg remains with the Contractor.
- D9.2 The Contractor shall provide and maintain the following insurance coverage at all times during the performance of the Work:

- (a) Automobile liability insurance for owned and non-owned automobiles used for or in connection with the work in the amount of at least two million dollars (\$2,000,000.00).
 - (i) Deductibles shall be borne by the Contractor;
 - (ii) The Contractor shall not cancel, materially alter, or cause the policy to lapse without providing at least fifteen (15) Calendar Days prior written notice to the Contract Administrator;
 - (iii) The Contractor shall provide the Contract Administrator with evidence of insurance of the policy at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than seven (7) Calendar Days from notification of the award of Contract.

D9.3 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 Submission 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 GC:4.1 for the return of the executed Contract.

D11. DETAILED PRICES

D11.1 The Contractor shall provide the Contract Administrator with a detailed price breakdown in a format acceptable to the Contract Administrator 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 GC:4.1 for the return of the executed Contract.

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 GC:4.1 for the return of the executed Contract.

D13. DETAILED WORK SCHEDULE

- D13.1 The Contract Administrator has developed a Project Master Schedule for the project. This schedule will be available in the offices of the Contract Administrator and will be updated as required as the Work progresses.
- D13.2 The Contractor shall, within 5 business days of award of contract, prepare a detailed Contract Work Schedule for his Work based on a critical path method (CPM) approach.
- D13.3 The Contract Work Schedule shall conform to the Project Master Schedule and show, in a clear graphical manner, through the use of Gantt charts, in a maximum of weekly stages, the proposed progress of the main items, structures and subtrades of the contract and indicate the labour, construction crews, plant and equipment to be employed. Indicate the delivery date of major pieces of equipment to be supplied. The schedule shall be predicated on the completion of all Work on or before the date of Substantial Performance.
- D13.4 Upon acceptance by the Contract Administrator, distribute copies of the revised schedule to Subcontractors and other concerned parties.
- D13.5 The Contract Work Schedule shall be updated as the Work requires and submitted to the Contract Administrator.
- D13.6 The Contractor shall instruct recipients to report to the Contractor immediately any problems anticipated by the timetable shown in the Contract Work Schedule.
- D13.7 While it is intended that the Contractor shall be allowed, in general, to carry on the Contract in accordance with such general plans as may appear to him to be most desirable, the Contract Administrator, at his discretion, may direct the order in which, and points at which, the Work shall be undertaken.
- D13.8 This control shall be exercised in the interests of the City so that the work or other Contractors who may be working on the Site may be coordinated with the Work on this Contract. A program of Work will be drawn up and agreed to before the commencement of the Contract.
- D13.9 The Contract Administrator shall be notified immediately when the Work under the Contract Work Schedule will adversely affect the work of other Contractors and the critical path of the Project Master Schedule as the Work under the Contractor's Contract Work Schedule is an integral part of the Project Master Schedule.
- D13.10 The Contractor shall be familiar with all other Contract Work Schedules as contracted by the City with other Contractors and the critical path of the Project Master Schedule.

D14. SECURITY CLEARANCE

- D14.1 Each individual proposed to perform Work on the Site shall be required to obtain a Criminal Record Check Search Certificate from the Police Service having jurisdiction at his place of residence.
- D14.2 Prior to the commencement of any Work, and during the term of the Contract if additional or replacement individuals are proposed to perform Work, the Contractor shall supply the Contract Administrator with a Criminal Record Search Certificate obtained not earlier than one (1) year prior to the Submission Deadline, or a certified true copy thereof, for each individual proposed to perform Work within City facilities or on private property.
- D14.3 Any individual for whom a Criminal Record Search Certificate is not provided, or for whom a Criminal Record Search Certificate indicates any convictions or pending charges related to

property offences or crimes against another person, will not be permitted to perform any Work within City facilities or on private property.

- D14.4 Any Criminal Record Search Certificate obtained thereby will be deemed valid for the duration of the Contract subject to a repeated records search as hereinafter specified.
- D14.5 Notwithstanding the foregoing, at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated criminal records search. Any individual who fails to provide a satisfactory Criminal Record Search Certificate as a result of a repeated criminal records search will not be permitted to continue to perform Work under the Contract within City facilities or on private property.

SCHEDULE OF WORK

D15. COMMENCEMENT

- D15.1 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.
- D15.2 The Contractor shall not commence any Work on the Site until:
- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence that the Contractor is 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;
 - (ii) evidence of the workers compensation coverage specified in GC:6.14;
 - (iii) the Safe Work Plan specified in D8;
 - (iv) evidence of the insurance specified in D9;
 - (v) the performance security specified in D10;
 - (vi) the detailed prices specified in D11;
 - (vii) the Subcontractor list specified in D12;
 - (viii) the detailed work schedule specified in D13; and
 - (ix) the security clearances specified in D14.
 - (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.
- D15.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.

D16. CRITICAL STAGES

- D16.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:
- (a) Installation of the precast roof panels for the WM area shall be completed by no later than June 15th, 2007.
 - (b) Installation of the precast roof panels for the WA area shall be completed by no later than August 10th, 2007.
 - (c) Installation of the precast roof panels for the WI area shall be completed by no later than June 1st, 2007.
 - (d) Installation of the precast roof panels for the WR, WO, WF areas shall be completed by no later than December 14th, 2007.

D17. SUBSTANTIAL PERFORMANCE

- D17.1 The Contractor shall achieve Substantial Performance by September 26th, 2008.
- D17.2 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.
- D17.3 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.

D18. TOTAL PERFORMANCE

- D18.1 The Contractor shall achieve Total Performance by October 24th, 2008.
- D18.2 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.
- D18.3 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.

D19. LIQUIDATED DAMAGES

- D19.1 If the Contractor fails to achieve Critical Stages, Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Calendar Day for each and every Calendar Day following the days fixed herein for same during which such failure continues:
- (a) Critical Stages specified in D16.1(a) and D16.1(b) - two thousand, six hundred dollars (\$2,600);
 - (b) Critical Stages specified in D16.1(c) and D16.1(d) – zero dollars (\$0.00);
 - (c) Substantial Performance - two thousand, six hundred dollars (\$2,600); and
 - (d) Total Performance – six hundred dollars (\$600).
- D19.2 The amounts specified for liquidated damages in D19.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve critical stages, Substantial Performance or Total Performance by the days fixed herein for same.
- D19.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

CONTROL OF WORK

D20. JOB MEETINGS

- D20.1 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.

D20.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

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

D21.1 Further to GC:6.26, UMA Projects (CM) Ltd. 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).

D21.2 As Prime Contractor, UMA Projects (CM) Ltd. will administer a Safety and Health Management Plan. Compliance with this Plan will be mandatory for all personnel on the construction site and orientation of all staff by the Prime Contractor's Safety Officer will be required. Further to GC:6.26, 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).

D21.3 The Water Treatment Program Project Safety and Health Management Plan is available on the City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt/projects>

D22. COOPERATION WITH OTHERS

D22.1 The Contractor shall note that several other contracts will be underway at the time of construction, including, but not limited to;

- (a) Bid Opportunity 682-2005 Winnipeg Water Treatment Program – Supply of Standby Generator and 5kV Switchgear
- (b) Bid Opportunity 583-2005 Water Treatment Program - Water Treatment Plant Foundations and Concrete Structures;
- (c) Bid Opportunity 742-2005 Winnipeg Water Treatment Program – The Supply and Installation of Water Treatment Plant Process Mechanical and Electrical; and
- (d) Bid Opportunity 743-2005 Winnipeg Water Treatment Program – Water Treatment Plant Building Envelope. The expected date of award for this contract is March, 2007.

D22.2 Bid Opportunities for the above are available at the City of Winnipeg Materials Management website at <http://www.winnipeg.ca/matmgt/bidopp.asp>.

D22.3 The Contractor will not have exclusive use of the Site. The Contractor shall coordinate activities with others and minimize disruptions to others, where possible.

D22.4 Where Site access requires relocation for installation of works, the Contractor shall construct suitable, all-weather detours, as required.

D22.5 The Contractor shall note that the Deacon Booster Pumping Station and surrounding compound will be in use during the construction period. The Contractor shall maintain reasonable access to all existing plant, valve chambers, rail, mechanical and electrical facilities at all times. The Contractor shall provide all reasonable assistance to City operations personnel to provide safe, secure access to operational facilities.

D22.6 Bid Opportunities for D22.1(a), D22.1(b) and D22.1(c) are available at the City of Winnipeg Materials Management website at <http://www.winnipeg.ca/matmgt/bidopp.asp>.

- (a) The Bid Opportunity for D22.1(d) has not yet been issued for tender, and is not available at the City of Winnipeg Materials Management website.

MEASUREMENT AND PAYMENT

D23. PAYMENT SCHEDULE

- D23.1 Further to GC:12, payment shall be in accordance with the following payment schedule: The lump sum prices listed in Form B: Prices will be paid on the basis of monthly progress estimates in accordance with GC:12 and the detailed price breakdown prepared pursuant to D11.

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. 171-2006

WINNIPEG WATER TREATMENT PROGRAM – SUPPLY AND INSTALLATION OF WATER
TREATMENT PLANT PRECAST ROOF PANELS

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

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

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

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

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

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

_____ day of _____, 20____ .

SIGNED AND SEALED
in the presence of:

(Witness)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

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

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

(Date)

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 171-2006

WINNIPEG WATER TREATMENT PROGRAM – SUPPLY AND INSTALLATION OF WATER
TREATMENT PLANT PRECAST ROOF PANELS

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

(Name of Contractor)

(Address of Contractor)

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

Canadian dollars.

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

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

Partial drawings are permitted.

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

(Address)

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

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

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

(Date)

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

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

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

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS, STANDARD DETAILS AND DRAWINGS

E1.1 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.

E1.1.1 *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>.

E1.1.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.

E1.1.3 Further to GC:2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.

E1.2 The following Drawings are applicable to the Work:

Consultant

<u>Drawing No.</u>	<u>City Drawing No.</u>	<u>Title</u>
CM G001		CONSTRUCTION SITE LAYOUT
PCL-01		PCL WTP CRANES SITE PLAN
WA-S5141	1-0601A-A-S5141-001-00D	STRUCTURAL - ADMINISTRATION AREA - ROOF FRAMING PLAN
WA-S5146	1-0601A-A-S5146-001-00D	STRUCTURAL - ADMINISTRATION AREA - ROOF PLAN
WB-S5140	1-0601B-A-S5140-001-00D	STRUCTURAL - OVERALL BUILDING - ROOF FRAMING KEY PLAN
WB-S5145	1-0601B-A-S5145-001-00D	STRUCTURAL - OVERALL BUILDING - ROOF KEY PLAN
WB-S5451	1-0601B-A-S5451-001-00D	STRUCTURAL - STANDARD DETAILS
WC-S5141	1-0601C-A-S5141-001-00D	STRUCTURAL - CHEMICAL AREA - ROOF FRAMING PLAN
WC-S5146	1-0601C-A-S5146-001-00D	STRUCTURAL - CHEMICAL AREA - ROOF PLAN
WF-S5141	1-0601F-A-S5141-001-00D	STRUCTURAL - FILTRATION AREA 1 - ROOF FRAMING PLAN
WF-S5142	1-0601F-A-S5142-001-00D	STRUCTURAL - FILTRATION AREA 2 - ROOF FRAMING PLAN
WF-S5146	1-0601F-A-S5146-001-00D	STRUCTURAL - FILTRATION AREA 1 - ROOF PLAN
WF-S5147	1-0601F-A-S5147-001-00D	STRUCTURAL - FILTRATION AREA 2 - ROOF PLAN
WI-S5141	1-0601I-A-S5141-001-00D	STRUCTURAL - RAW WATER PUMP STATION AREA - ROOF FRAMING PLAN
WI-S5146	1-0601I-A-S5146-001-00D	STRUCTURAL - RAW WATER PUMP STATION AREA - ROOF PLAN
WM-S5001	1-0601M-D-S5001-001-00D	STRUCTURAL - LEGEND - GENERAL NOTES AND ABBREVIATIONS
WM-S5141	1-0601M-A-S5141-001-00D	STRUCTURAL - ELECTRICAL ROOM - ROOF FRAMING PLAN
WM-S5146	1-0601M-A-S5146-001-00D	STRUCTURAL - ELECTRICAL ROOM - ROOF PLAN
WO-S5141	1-0601O-A-S5141-001-00D	STRUCTURAL - OZONATION AREA - ROOF FRAMING PLAN
WO-S5146	1-0601O-A-S5146-001-00D	STRUCTURAL - OZONATION AREA - ROOF PLAN
WP-S5141	1-0601P-A-S5141-001-00D	STRUCTURAL - FLOC/DAF AREA 1 - ROOF FRAMING PLAN
WP-S5142	1-0601P-A-S5142-001-00D	STRUCTURAL - FLOC/DAF AREA 2 - ROOF FRAMING PLAN
WP-S5146	1-0601P-A-S5146-001-00D	STRUCTURAL - FLOC/DAF AREA 1 - ROOF PLAN
WP-S5147	1-0601P-A-S5147-001-00D	STRUCTURAL - FLOC/DAF AREA 2 - ROOF PLAN
WP-S5201	1-0601P-A-S5201-001-00D	STRUCTURAL - FLOC/DAF AREA - SECTIONS
WR-S5141	1-0601R-A-S5141-001-00D	STRUCTURAL - RESIDUALS HANDLING AREA - ROOF FRAMING PLAN
WR-S5146	1-0601R-A-S5146-001-00D	STRUCTURAL - RESIDUALS HANDLING AREA - ROOF PLAN

E1.3 The following Specifications are applicable to the Work:

Section No. Title

01300	Submittals
01450	Quality Control
03412	Precast Concrete Roof Panels

E2. OFFICE AND SITE FACILITIES

E2.1 The Contractor shall supply office facilities for his own use. The facilities shall be situated at the area designated on CM G001.

E2.2 With reference to drawing CM G001, the City will provide to the Contractor without cost:

- (a) Space for a 40A two pole breaker in the Main Temporary Power Supply will be available to serve office lighting, receptacles and convenience power (electric space heating equipment is not allowed), the Contractor shall supply and install the breaker, cabling and the step down transformer (600V to 120/208V);
- (b) Space for a 40A two pole breaker in the Main Temporary Power Supply will be available for a temporary site electrical panel to serve the construction site power panel (use of electric space heating equipment is not allowed); the Contractor shall supply and install the breaker, cabling, site power panel and the step down transformer (600V to 120/208V);
- (c) Onsite washroom and toilet facilities with non-potable water supply;
- (d) Unless otherwise specified, all required over-current protection, portable distribution panels and transformations, cables, conductors, grounding and other materials required to provide construction power for the Work shall be supplied and installed by the Contractor.

E2.3 The Contractor may arrange for additional facilities with the approval of the Contract Administrator and at the Contractor's cost.

E3. SITE ROADS AND WORK SITE ACCESS

E3.1 The Contractor shall have access to the Site on Business Days between 07:00 and 18:00 unless otherwise approved by the Contract Administrator.

E3.2 Access to the Work Site is restricted and cooperation with other contractors on Site is necessary in the best interest of all parties.

E3.3 The Site is located on Provincial Road 207, 3.2 km north of Highway 1 in Dugald, Manitoba.

E3.3.1 The Site address is PR 207, Lot 57082, Dugald, Manitoba.

E3.4 Provincial Road 207 north of the GWWD rail crossing is a Class B1 road and is subject to load restrictions which will affect the maximum weight of individual deliveries. The approximately 3.2 km of PR 207 between the entrance to the Site and Highway 1 is a TAC Route.

E3.5 Access to the Site is generally limited to:

- (a) Two recently constructed bridges over the Aqueduct at the east end of the Site.

- (b) Access from west end of the Site. Use of this access is subject to certain load restrictions at the junction of the existing buried Cell 1 pipe and at the crossing over the existing aqueduct.

- E3.6 Access to the Site will be interrupted approximately once a month for a duration of approximately four hours due to deliveries of chemical via the railway. Access from west of the clearwell will also be interrupted for a two day period due to the construction of the future surge tower overflow.
- E3.7 Maintenance and upkeep of the noted roads is the shared responsibility of all contractors who use the roads, including the Contractor.
- E3.8 Construction and removal, if necessary, of any additional access roads is the responsibility of this Contractor.
- E3.9 Refer to drawing PCL-01 for crane radius and load limit information.

E4. FIELD ENGINEERING

- E4.1 The Contractor shall engage a qualified surveyor to layout the works and record as-constructed measurements for Record Drawings.
- E4.2 Survey reference points for horizontal and vertical control are indicated on the drawings. The Contractor shall locate, confirm and preserve the reference points during construction.

E5. SANITATION FACILITY

- E5.1 Portable toilets may be provided by the Contractor. Any portable toilet shall be cleaned on a weekly basis and provided with regular maintenance as required to ensure proper operation.
- E5.2 Portable toilets shall be located in an area acceptable to the Contract Administrator.

E6. WASTE CONTAINER

- E6.1 A waste container to dispose of garbage produced from the site shall be provided by the Contractor. It shall be located in a safe, convenient location, and be emptied as necessary by the Contractor. The provision, maintenance and removal of a waste container shall be considered a subsidiary obligation of the Contractor

E7. CONDITION, PROTECTION OF, AND ACCESS TO THE AQUEDUCT

- E7.1 Condition of the Aqueduct
 - E7.1.1 The Aqueduct is constructed of reinforced concrete and in some areas, contains numerous cracks. The Aqueduct, therefore, shall be considered as a fragile structure. All work procedures conducted by the Contractor on and/or near the Aqueduct shall be well planned and executed to ensure that the Aqueduct is not subjected to construction related loads, including excessive vibrations and concentrated or asymmetrical lateral loads.
- E7.2 Protection of the Aqueduct
 - E7.2.1 Contractors working in the vicinity of the aqueduct shall ensure that:
 - (a) Equipment shall only be permitted to cross the Aqueduct at designated bridge crossing locations and shall come to a complete stop before crossing.

- (b) Granular material, construction material, soil or other material shall not be stockpiled on the Aqueduct or within 10 metres of the Aqueduct centreline.
- (c) Construction practices shall not subject the Aqueduct arch to asymmetrical loading at any time.
- (d) Construction practices or procedures at or near the Aqueduct shall not impart excessive vibration loads on the Aqueduct and/or cause settlement of the subgrade below the Aqueduct.

E7.2.2 It is the Contractors' responsibility to ensure that all work crew members understand, observe, and work to the requirements of Specifications.

E7.3 Equipment Restrictions

E7.3.1 Equipment must cross the Aqueduct in a responsible and careful manner (i.e. slowly).

E7.3.2 Loads for Highway No. 207 shall be limited to the weight restrictions in place for the road unless otherwise permitted.

E8. ENVIRONMENTAL PROTECTION

E8.1 The Contractor shall be aware that the Aqueduct is for potable water supply and no contamination by fuel, chemicals, etc. shall be permitted at any time. Fuels or chemicals shall not be stored within 30 metres of the Aqueduct.

E8.2 The Contractor shall plan and implement the Work of this Contract strictly in accordance with the requirements of the environmental protection measures as herein specified.

E8.3 The Contractor is advised that at least the following Acts, Regulations, and By-laws apply to the Work:

E8.3.1 Federal

- (a) Canadian Environmental Protection Act (CEPA) c.16
- (b) Transportation of Dangerous Goods Act and Regulations c.34

E8.3.2 Provincial

- (a) The Dangerous Goods Handling and Transportation Act D12
- (b) The Endangered Species Act E111
- (c) The Environment Act c.E125
- (d) The Fire Prevention Act F80
- (e) The Manitoba Nuisance Act N120
- (f) The Public Health Act c.P210
- (g) The Workplace Safety and Health Act W120
- (h) Current applicable associated regulations.
- (i) The Fisheries Act
- (j) The Migratory Birds Act
- (k) The Historic Resources Act
- (l) Drinking Water Safety Act

E8.3.3 The Contractor is advised that the following environmental protection measures apply to the Work.

E8.3.4 Materials Handling and Storage

- (a) Construction materials shall not be stored within ten (10) metres of the Aqueduct centerline without the approval of the Contract Administrator.

E8.3.5 Fuel Handling and Storage

- (a) The Contractor shall abide by the requirements of Manitoba Conservation storage and handling of Petroleum Products and Allied Products Regulations for handling and storage of fuel products.
- (b) All fuel handling and storage facilities shall comply with The Dangerous Goods and Transportation Act Storage and Handling of Petroleum Products Regulation and any local land use permits.
- (c) Fuels, lubricants, and other potentially hazardous materials as defined in The Dangerous Goods and Transportation Act shall be stored and handled within the approved storage areas.
- (d) The Contractor shall ensure that all fuel storage containers are inspected daily for leaks and spillage.
- (e) Products transferred from the fuel storage area(s) to specific work sites shall not exceed the daily usage requirement.
- (f) When servicing requires the drainage or pumping of fuels, lubricating oils or other fluids from equipment, a groundsheet of suitable material (such as HDPE) and size shall be spread on the ground to catch the fluid in the event of a leak or spill. No repairs within 30 m of aqueduct or watercourse will be permitted.
- (g) Refuelling of mobile equipment and vehicles shall take place at least 30 m from a watercourse.
- (h) The area around storage sites and fuel lines shall be distinctly marked and kept clear of snow and debris to allow for routine inspection and leak detection.
- (i) A sufficient supply of materials, such as absorbent material and plastic oil booms, to clean up minor spills shall be stored nearby on-site. The Contractor shall ensure that additional material can be made available on short notice. All refuelling vehicles shall be equipped with a spill response kit.

E8.3.6 Waste Handling and Disposal

- (a) The construction area shall be kept clean and orderly at all times during and at completion of construction.
- (b) At no time during construction shall personal or construction waste be permitted to accumulate for more than one day at any location on the construction site, other than at a dedicated storage area as may be approved by the Contract Administrator.
- (c) Indiscriminate dumping, littering, or abandonment shall not take place.
- (d) No on-site burning of waste is permitted.
- (e) Equipment shall not be cleaned within 30 m of watercourses; contaminated water from onshore cleaning operations shall not be permitted to enter watercourses.

E8.3.7 Dangerous Goods/Hazardous Waste Handling and Disposal

- (a) Dangerous goods/hazardous waste are identified by, and shall be handled according to, The Dangerous Goods Handling and Transportation Act and Regulations.
- (b) The Contractor shall be familiar with The Dangerous Goods Handling and Transportation Act and Regulations and meet training requirements for these Regulations.

E8.3.8 Emergency Spill Response

- (a) The Contractor shall ensure that due care and caution is taken to prevent spills.
- (b) The Contractor shall report all major spills of petroleum products or other hazardous substances with the potential for impacting the environment and threat to human health and safety to the Contract Administrator and Manitoba Conservation, immediately after occurrence of the environmental accident, by calling the 24-hour emergency telephone phone number (204) 945-4888.
- (c) The Contractor shall designate a qualified supervisor as the on-site emergency response coordinator for the project. The emergency response coordinator shall have the authority to redirect manpower in order to respond in the event of a spill. (Should include reference to a site-specific Emergency Response Plan and Environmental Protection Plan.)
- (d) The following actions shall be taken by the person in charge of the spilled material or the first person(s) arriving at the scene of a hazardous material accident or the on-site emergency response coordinator:
 - (i) Notify emergency-response coordinator of the accident:
 - identify exact location and time of accident
 - indicate injuries, if any
 - request assistance as required by magnitude of accident Manitoba Conservation 24-hour Spill Response Line (204) 945-4888, RCMP (Oakbank Detachment) (911), City of Winnipeg Fire Department (911), Springfield Ambulance (911), company backup, contact Contract Administrator.
 - (ii) Assess situation and gather information on the status of the situation, noting:
 - personnel on site
 - cause and effect of spill
 - estimated extent of damage
 - amount and type of material involved
 - proximity to waterways and the Aqueduct
 - (iii) If safe to do so, try to stop the dispersion or flow of spill material:
 - approach from upwind
 - stop or reduce leak if safe to do so
 - dyke spill material with dry, inert sorbent material or dry clay soil or sand
 - prevent spill material from entering waterways and utilities by dyking
 - prevent spill material from entering Aqueduct manholes and other openings by covering with rubber spill mats or dyking
 - (iv) Resume any effective action to contain, clean up, or stop the flow of the spilled product.

E8.4 The emergency response coordinator shall ensure that all environmental accidents involving contaminants shall be documented and reported to the Manitoba Conservation according to The Dangerous Goods Handling and Transportation Act Environmental Accident Report Regulation 439/87.

E9. SITE RESTORATION

- E9.1 The Contractor shall remove the temporary Site office and storage facilities prior to Total Performance.
- E9.2 The Contractor will be responsible for grounds restoration, as determined necessary by the Contract Administrator.
- E9.3 The Contractor will be responsible for any damage caused by his forces on roadways or accesses.

E10. RECORD DRAWINGS

- E10.1 The Contractor shall keep one (1) complete set of white prints at their Site office, including all Addenda, Change Orders, Field Instructions, and other revisions for the purposes of Record Drawings. As the Work proceeds, the Contractor shall clearly record in red pencil all as-built conditions which deviate from the original Contract documents.
- E10.2 The Record Drawings shall be available for review by the Contract Administrator upon request at any time during the performance of the Work.
- E10.3 Prior to achieving Substantial Performance, the Contractor shall submit the Record Drawings prepared to the Contract Administrator for his review and use. If, in the opinion of the Contract Administrator, the Record Drawings are incomplete or inaccurate, the Record Drawings will be returned to the Contractor and the Contractor shall revise and resubmit the Record Drawings at his cost.
- E10.4 Substantial Performance cannot be achieved without the submission of Record Drawings that are acceptable to the Contract Administrator.

SUBMITTALS

1. SHOP DRAWINGS

1.1 General

- .1 Arrange for the preparation of clearly identified Shop Drawings as specified or as the Contract Administrator may reasonably request. Shop Drawings are to clearly indicate materials, methods of construction, and attachment or anchorage, erection diagrams, connections, explanatory notes, and other information necessary for completion of the Work. Where articles or equipment attach or connect to other articles or equipment, clearly indicate that all such attachments and connections have been properly coordinated, regardless of the trade under which the adjacent articles or equipment will be supplied and installed. Shop Drawings are to indicate their relationship to design Drawings and Specifications. Notify the Contract Administrator of any deviations in Shop Drawings from the requirements of the Contract Documents to allow the Contract Administrator to assess the deviations.
- .2 Where all or part of the Shop Drawings are to be prepared under the stamp and seal of a Professional Engineer registered in the Province of Manitoba, the Contract Administrator will limit that review to an assessment of the completeness of the part of the submission so stamped and sealed.

1.2 Submission Requirements

- .1 Coordinate each submission with requirements of the Work and Contract Documents. Individual submissions will not be reviewed until all related information is available.
- .2 Accompany all submissions with a transmittal letter, in duplicate, containing:
 - .1 Date
 - .2 Project title and Bid Opportunity number
 - .3 Contractor's name and address
 - .4 Specification Section number for each submittal
 - .5 Submittal number and revision number in the following format:
 - .1 First three digits of the bid opportunity # - Spec Section # - Submittal # - Revision # (e.g. 171-05500-001-1).
 - .2 The first submittal is numbered 1 with sequential numbering after that for revisions.
 - .6 Identification and quantity of each Shop Drawing product
 - .7 Other pertinent data
- .3 Submissions shall include:

SUBMITTALS

- .1 Date and revision dates
- .2 Project title and number
- .3 Name, email address, and address of:
 - .1 Contractor
 - .2 Manufacturer
- .4 Contractor's stamp, signed by Contractor's authorized representative, certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .5 As required in the specifications, the seal and signature of a Professional Engineer registered in the Province of Manitoba.
- .4 Details of appropriate portions of work as applicable:
 - .1 Fabrication
 - .2 Layout showing dimensions including identified field dimensions and clearances
 - .3 Setting or erection details
 - .4 Capacities
 - .5 Performance characteristics
 - .6 Standards
 - .7 Operating weight

1.3 Drawings

- .1 Original Drawings or modified standard Drawings provided by the Contractor to illustrate details of portions of Work which are specific to project requirements.
- .2 Maximum sheet size: 850 x 1050 mm.
- .3 Submit twelve (12) prints and one (1) reproducible copy of Shop Drawings. The Contract Administrator will return the reproducible copy with comments transcribed.
- .4 Cross-reference Shop Drawing information to applicable portions of the Contract Documents.

SUBMITTALS

1.4 Procedure and Routing

- .1 The Contractor shall provide to the Contract Administrator thirteen (13) printed copies of the Shop Drawings and corresponding submittal transmittal form(s) complete with the information specified in 1.2 Submission Requirements.
- .2 The Contractor shall simultaneously email the .pdf version of these same Shop Drawings and submittal transmittal forms to the Contract Administrator. The Contractor shall ensure the .pdf version of the Shop Drawings and corresponding submittal transmittal form(s) are identical to the printed copies being distributed for review. When the total size of the email is greater than 5 MB, the Contractor shall post the .pdf version of the Shop Drawings and submittal transmittal form(s) to an accessible place on the internet (provided by the Contract Administrator) and an e-mail notification is to be sent to all parties listed above when posting is complete.
- .3 The routing and the names of individuals responsible for receiving submittals will be identified by the Contract Administrator at the pre-construction meeting held pursuant to D4.2.
- .4 Upon review of the Shop Drawings, the Contract Administrator will e-mail the .pdf version of the annotated Shop Drawings and corresponding transmittal form(s) to the Contractor. When the total size of the email is greater than 5 MB, the Contract Administrator will post the .pdf version of the Shop Drawings and corresponding transmittal form(s) to the same accessible place on the internet and an e-mail notification will be sent to the Contractor. Two (2) printed copies of the reviewed Shop Drawings will be sent back to the Contractor.

1.5 Shop Drawing Review

- .1 Shop Drawing review by the Contract Administrator is solely to ascertain conformance with the general design concept. Responsibility for the approval of detail design inherent in Shop Drawings rests with the Contractor and review by the Contract Administrator shall not imply such approval.
- .2 Review by the Contract Administrator shall not relieve the Contractor of his responsibility for errors or omissions in Shop Drawings or for proper completion of the Work in accordance with the Contract Documents.
- .3 Shop Drawings will be returned to the Contractor with one of the following notations:
 - .1 When stamped "REVIEWED", distribute additional copies as required for execution of the Work.
 - .2 When stamped "REVIEWED AS MODIFIED", ensure that all copies for use are modified and distributed, same as specified for "REVIEWED".
 - .3 When stamped "REVISE AND RE-SUBMIT", make the necessary revisions, as indicated, consistent with the Contract Documents and submit again for review.

SUBMITTALS

- .4 When stamped "NOT REVIEWED", submit other drawings, brochures, etc., for review consistent with the Contract Documents.
- .5 Only Shop Drawings bearing "REVIEWED" or "REVIEWED AS MODIFIED" shall be used on the Work unless otherwise authorized by the Contract Administrator.
- .4 After submittals are stamped "REVIEWED" or "REVIEWED AS MODIFIED", no further revisions are permitted unless re-submitted to the Contract Administrator for further review.
- .5 Any adjustments made on Shop Drawings by the Contract Administrator are not intended to change the Contract Price. If it is deemed that such adjustments affect the Contract Price, clearly state as such in writing prior to proceeding with fabrication and installation of Work.
- .6 Make changes in Shop Drawings which the Contract Administrator may require consistent with Contract Documents. When re-submitting, notify the Contract Administrator in writing of any revisions other than those requested by the Contract Administrator.
- .7 Shop Drawings indicating design requirements not included in the Contract Documents require the seal of a Professional Engineer registered in the Province of Manitoba. If requested, submit engineering calculations for review, sealed by a Professional Engineer.

END OF SECTION

QUALITY CONTROL

1. GENERAL

1.1 Section Includes

- .1 Quality assurance requirements
- .2 Inspection and testing, administrative and enforcement requirements.
- .3 Tests and mix designs.
- .4 Mock-ups.
- .5 Mill tests.

1.2 Precedence

- .1 Refer to GC:2 Interpretation.

1.3 Related Sections (Not Used)

1.4 References

- .1 Unless the edition number and/or date are specified, any reference to the Manufacturer's and published codes, standards and specifications shall mean the latest edition published by the issuing authority, and in effect three (3) Business Days before the Submission Deadline.
- .2 Referenced standards and specifications define minimum requirements. Work in quality exceeding these minimum requirements conforms to the Contract.
- .3 Any reference to a Manufacturer's direction, instruction, or specification shall be deemed to include full information on storing, handling, preparing, mixing, installing, erecting, applying, or other matters concerning the products pertinent to their use and their relationship to the products with which they are incorporated.
- .4 Any reference to regulatory authorities includes all authorities having jurisdiction.
- .5 Any reference to a Specification section includes all Drawings and Schedules related to the work of that section.

1.5 Inspection

- .1 Refer to GC:11 Inspection.

1.6 Independent Inspection Agencies

- .1 Except where inspecting, testing and similar quality control services are specifically indicated to be the Contractor's responsibility, the City will engage Independent

QUALITY CONTROL

- Inspection/Testing Agencies for the purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by the City.
- .2 Where inspecting, testing and similar quality control services are specifically indicated as the Contractor's responsibility, the Contractor shall engage appropriate Independent Inspection/Testing Agencies. Cost of such services will be borne by the Contractor.
 - .3 Where the City has engaged an Inspection/Testing Agency for testing and inspection of a part of the Work and the Contractor is also required to engage an Inspection/Testing Agency for the same or related part of the Work; the Contractor shall not employ the same agency engaged by the City without the prior written approval of the Contract Administrator.
 - .4 Employment of Inspection/Testing Agencies does not relax responsibility to perform Work in accordance with Contract Documents.
 - .5 If defects are revealed during inspection and/or testing, appointed agency may require additional inspection and/or testing to ascertain full degree of defect. Regardless of original responsibility, pay costs for additional inspection and testing, retesting, re-inspection.

1.7 Access to Work

- .1 Refer to GC:11 Inspection.

1.8 Procedures

- .1 Refer to GC:11 Inspection.
- .2 Submit for the Contract Administrator's approval a written Quality Assurance Plan prior to start of any on site activities. The plan shall include as a minimum:
 - .1 Contractor's approach and philosophy to QA/QC during construction.
 - .2 Contractor's method for identification and tracking of all control documents.
 - .3 Organization chart showing proposed personnel and key contacts for QA/QC.
 - .4 QC Representative and any subordinate experts. Submit resumes for the Contract Administrator's review.
 - .5 QC Representative's on-site presence and participation in pre-installation and Subcontractor meetings.
 - .6 Contractor's bi-weekly QC report, including results of contractor certifications, test results, corrective action and follow-up on any deficiencies in the Project's quality control.
 - .7 A list of proposed Inspection/Testing Agencies and their qualifications.

QUALITY CONTROL

- .3 The QC Representative shall be:
 - .1 Independent of the Contractor's Supervisor
 - .2 Qualified by experience and training to monitor construction quality.
 - .3 Responsible for the overall quality assurance of the Contractor's work and compliance with Contract.
 - .4 Responsible to observe and certify the performance of Contractor's tests and pre-inspections, and to attend meetings on site. The QC Representative may elect to use an alternate expert to observe/certify performance.
 - .5 Authorized to stop work at any time that quality problems necessitate. This authority shall be delineated in a letter of appointment from the Contractor, and shall be included in the QA Plan.
- .4 Notify appropriate agency and the Contract Administrator not less than forty eight (48) hours in advance of requirement for tests, in order that attendance arrangements can be made.
- .5 Submit samples and/or materials required for testing, as specified in Specification section. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.
- .6 Provide labour and facilities to obtain and handle samples and materials on the Site.
- .7 Provide suitable facilities for the storage of specimens or samples at correct temperature, free from vibration or damage in accordance with the instruction of the Inspection/Testing Agency and the governing standard.

1.9 Rejected Work

- .1 Refer to GC:11.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.

1.10 Reports

- .1 For inspecting, testing and similar quality control services which are the Contractor's responsibility, submit four (4) copies of inspection and test reports to the Contract Administrator, unless specified otherwise.
- .2 Each report shall include:
 - .1 Date of issue
 - .2 Contract name and number

QUALITY CONTROL

- .3 Name, address and telephone number of Inspection/Testing Agency
 - .4 Name and signature of inspector and tester
 - .5 Date of inspection or test
 - .6 Identification of the product and Specification section covering inspected or tested Work
 - .7 Location of the inspection or the location from which the tested product was derived
 - .8 Type of inspection or test
 - .9 Complete inspection or test data.
 - .10 Test results and an interpretation of test results.
 - .11 Ambient conditions at the time of sample taking and testing.
 - .12 The remarks and observations on compliance with the Contract Documents
 - .13 Recommendations on retesting or other corrective action where necessary
 - .14 Signature of a qualified and authorized representative of the Agency
- .3 Submit reports within forty eight (48) hours, and notify the Contract Administrator forthwith if the report indicates improper conditions or procedures.
 - .4 Refer to Specification section for definitive requirements.

1.11 Tests and Mix Designs

- .1 Furnish test results and mix designs as specified or reasonably required by the Contract Administrator.
- .2 Refer to Specification section for definitive requirements.

1.12 Mock-ups

- .1 Prepare mock-ups as identified in Specification sections. Include for Work of all Specification sections required to provide mock-ups.
- .2 Construct in locations as identified in Specification sections or as otherwise approved by the Contract Administrator.
- .3 Prepare mock-ups for the Contract Administrator's review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.

QUALITY CONTROL

- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

1.13 Mill Tests

- .1 Submit mill test certificates as specified or reasonably required by the Contract Administrator.
- .2 Refer to Specification section for definitive requirements.

END OF SECTION

PRECAST CONCRETE ROOF PANELS

1. GENERAL

1.1 Work Included

- .1 Double-tee and hollow core panels.
- .2 Connecting and supporting devices.
- .3 Formed openings in panels.
- .4 Grouting of hollow core panels.

1.2 Design, Supply and Installation Requirements

- .1 Design of precast concrete members and connections to conform to CSA A23.4-05, CSA A23.3-04 Clause 16, and Canadian Prestressed Concrete Institute Design Handbook, under direct supervision of a Professional Engineer registered in the Province of Manitoba, fully experienced in the design of precast concrete structural units.
- .2 Design all members and connections to safely support their own weight, superimposed loads shown on Drawings, and all other forces and loads to which the structural members may be subjected. Design in accordance with CSA A23.3-04, Clause 16.5.2.3, all members to act as roof in-plane diaphragms typically bounded by cast-in-place perimeter beams with upstands or similar beams.
- .3 Design and provide adjustable double-tee flange connections at the interfaces with structure perimeter beams to accommodate camber of double-tee panels and vertical roof movement with respect to the supporting structure, and to transfer lateral tension/ compression forces between perimeter beams and the double-tee flanges.
- .4 Design and provide slide bearings at one end of double-tee panel stems to accommodate movement. Design and provide non-moving bearings at the other end of double-tee panel stems.
- .5 Design and provide all other connecting elements such as panel to panel connectors and panel to support connectors, and all other hardware necessary for a completely installed roof system, including hardware to be installed by others in separate contracts.
- .6 Design roof deck for a maximum deflection of $1/360$ of the span.
- .7 Design and carry out a panel-to- panel, and panel-to-support-structure field welding sequences such that the roof system will be safely supported and secured at all phases of installation without locking in strains and stresses that might be detrimental to the service performance of the roof system.

PRECAST CONCRETE ROOF PANELS

1.3 Qualifications

- .1 Manufacturer is to be certified for prestressed precast concrete products under CAN/CSA A251-00.

1.4 Quality Assurance

- .1 Fabricate and install precast concrete roof deck in accordance with requirements of CSA A23.4-05.
- .2 Maximum allowable manufacturing and erection tolerances are not to exceed those given in CSA A23.4-05.

1.5 Inspection and Testing

- .1 In addition to the Contractor's quality control, an independent inspection and testing company may be appointed and paid for the City. Notify Contract Administrator at commencement of shop work so inspection and testing may be scheduled.
- .2 Provide free access to all portions of manufacturing plant and cooperate with appointed firm.
- .3 If requested by Contract Administrator, submit proposed mix design for review prior to commencement of work.
- .4 Testing of cement and aggregates may be required to ensure conformance with requirements stated herein.
- .5 Testing of concrete will be performed in accordance with CSA A23.4-05. In addition, make available for inspection and review, records from in-house quality control procedures based upon plant certification requirements.
- .6 Make available certified copies of mill test reports of steel reinforcement supplied, showing physical and chemical analysis.
- .7 Inspect prestressing tendons in accordance with CSA A23.4-05.
- .8 If defects are revealed during testing of concrete and/or inspection of fabricated precast concrete members, Contract Administrator will request additional testing and/or inspection to ascertain full degree of defects.
- .9 Correct defects and/or irregularities to the satisfaction of the Contract Administrator. Further testing and/or inspection, under similar conditions as earlier, will be performed. The Contractor shall pay all costs for retesting and re-inspection.
- .10 Test results will be issued to Contract Administrator.

1.6 Shop Drawings

- .1 Submit shop drawings in accordance with Section 01300 - Submittals.

PRECAST CONCRETE ROOF PANELS

- .2 Prepare shop drawings and calculations under the seal of a Professional Engineer registered in the Province of Manitoba.
- .3 Provide for Contract Administrator's review, copies of design calculations for reinforcing, hoisting, installation, and connection and anchorage devices, estimated camber, and other items designed by the Manufacturer.
- .4 Clearly indicate layout, product locations, fabrication details, unit identification marks, reinforcement, openings, sleeves, inserts, related reinforcement, connection details, dimensions, erection support points, anchors and relationship to adjacent materials in sufficient detail to cover manufacture, handling and erection.
- .5 Do not proceed with fabrication until shop drawings and design calculations have been reviewed by the Contract Administrator.

1.7 Transportation/Handling/Storage

- .1 Submit method of handling and erection to the Contract Administrator for review prior to installation.
- .2 Handle all precast members in a position consistent with their shape and design. Do all lifting and supporting only from support points indicated on shop drawings. Accept full responsibility for delivery, handling and storage of units.
- .3 Embedded lifting or handling devices are to be capable of supporting members in all positions anticipated during manufacture, storage, transportation and erection. Maintain capacity of lifting devices sufficient to resist forces of minimum 2.5 times weight of member.
- .4 Deliver members to site completely finished. Clearly mark members as indicated on shop drawings, with date of production and final position on structure.
- .5 Block and laterally brace members during transport and while stored on site. Provide lateral bracing sufficient to prevent bowing and warping. Blocking and bracing to be clean, non-staining, and it shall not prevent uniform curing of exposed surfaces.
- .6 Provide edges of members with adequate protection to prevent staining, chipping or spalling of concrete.

2. PRODUCTS

2.1 General

- .1 Use forms and beds which are rigid, adequate to withstand prestressing forces and constructed of materials that will result in finished products conforming to requirements stated herein and on the Drawings.

PRECAST CONCRETE ROOF PANELS

- .2 Establish concrete mix design by tests on trial batches to achieve required strengths. Maintain water content as constant as possible during manufacture.
- .3 Provide concrete protection of reinforcement in accordance with CSA A23.4-05 to provide 1.5 hour fire performance rating.
- .4 Deposit and vibrate concrete to ensure proper consolidation, elimination of unintentional cold joints, and to minimize entrapped air on surfaces.
- .5 Fabricate all required connecting devices, plates, angles, inserts, bolts and accessories.
- .6 Provide anchors and inserts to support loads as shown on the Drawings.
- .7 Perform shop welding of connecting and supporting devices in accordance with requirements of CSA W59-03.
- .8 Ensure anchors, inserts, plates, angles and other cast-in items are accurately located. Maintain in position while concrete is placed and consolidated.
- .9 Provide 20 mm diameter holes at 1200 mm centre-to-centre through every stem on double-tee panels. Locate holes at approximately mid-height of stem.
- .10 Provide bracing and/or shoring for cast-in-place concrete beams and columns completed under separate contract for any installation loads in excess of the design loads stated on the contract drawings.

2.2 Finish

- .1 Finish deck slabs to conform to requirements of CSA A23.4-05, Commercial Grade.

2.3 Concrete Materials

- .1 Cement: normal Portland cement - Type GU, conforming to CAN/CSA A3000-03.
- .2 Fine and Coarse Aggregates: conforming to CSA A23.4-05, from a single source for each type of aggregate for entire job.
- .3 Water: potable, free of deleterious matter that may interfere with finish, strength and colour of concrete.

2.4 Reinforcement

- .1 Reinforcing Steel: 400W MPa yield grade, deformed billet steel bars conforming to CSA G30.18-M92 (R2002), galvanized finish.
- .2 Reinforcing Wire: 480 MPa yield grade, deformed steel wire, conforming to CAN/CSA G12-92 (R2003), galvanized finish.
- .3 Welded Steel Wire Fabric: plain type, galvanized finish.

PRECAST CONCRETE ROOF PANELS

- .4 Prestressing Tendons: uncoated seven-wire strand. Specified tensile strength, f_{pu} = 1860 MPa, conforming to ASTM A416/A416M-05.

2.5 Hardware

- .1 Connections, Supporting Devices: Flange connectors and panel end connectors of double-tee panels, including those to be embedded in the cast-in-place beams opposite to panel ends, shall be Type 304 stainless steel. Other connectors and supporting devices shall be Type W Grade 300 steel, conforming to CSA G40.21-04, all galvanized to CAN/CSA G164-M92 (R2003), 600 g/m² min. zinc coating after fabrication.
- .2 Bolts, Nuts and Washers: conforming to ASTM A325-M.
- .3 Anchors, Inserts: patented, load-tested galvanized steel.
- .4 Sleeves for crane, monorail and lifting eye anchors: ASTM A53, 170 Mpa, Type F galvanized pipe
- .5 Bearings:
- Slide Bearings: 100% virgin polytetrafluorethylene (PTFE) sliding surfaces between two layers of minimum 5 mm thick reinforced elastomeric pads.
- Non-moving Bearings: Elastomeric pads with thickness to match thickness of Slide Bearings.
- .6 Welding Materials: conforming to CAN/CSA W48-01.

2.6 Prime Paint

- .1 Touch-up Primer on galvanized surfaces: zinc dust/zinc oxide alkyd type, conforming to CAN/CGSB 1.210-2003.

2.7 Fabrication

- .1 Maintain plant records and quality control program during the production of precast structural concrete, as required by CAN/CSA A251-00, Appendix D. Make records available to Contract Administrator upon request.

3. EXECUTION

3.1 Erection

- .1 Provide temporary bracing for all stresses and induced loads during erection in excess of design loads shown on contract drawings. Maintain temporary bracing in place all roof panels in that region have been placed and connections complete.

PRECAST CONCRETE ROOF PANELS

- .2 Provide all hoisting equipment and operate in accordance with all applicable safety regulations.
- .3 Discontinue work and advise Contract Administrator when members require adjustment beyond design criteria. Required modifications shall be performed at the Contractor's cost.
- .4 Erect members without damage to shape or finish. Replace or repair damaged members to approval of Contract Administrator, at the Contractor's cost.
- .5 Coordinate cast-in-place concrete work, installed under separate contract, affecting installation of precast concrete roof panels with Contract Administrator.
- .6 Erect members without damage to cast-in-place concrete support members installed under separate contract. Repair damage to support members to approval of Contract Administrator, at the Contractor's cost, in accordance with Section 3.2.
- .7 Erect all units level, plumb, square and true within allowable tolerances.
- .8 Differential camber between adjacent precast double tee panels shall not exceed 6mm. Out-of-tolerance differential cambers will be rejected.
- .9 Where framing members support units from both sides erect members in a sequence that balances the load on the framing members. Number of unbalanced units on a framing member not to exceed four.
- .10 Securely fasten units in place.
- .11 Perform welding of connecting and supporting devices in accordance with requirements of CSA-W59-03.
- .12 Prime paint field welds and touch up scratched and damaged galvanized surfaces.
- .13 Fill all joints and grout keys between hollow core slabs with 1:3 mixture of cement and sand, trowel smooth.
- .14 Remove all grout from underside of hollow core slabs and walls and floors immediately after grouting.

3.2 Concrete Repair

- .1 Repair concrete surface damage with system that will provide structurally sound surface finish, uniform in appearance or with upgraded finish by other means until acceptable by Contract Administrator.
- .2 Select system, submit for review, and obtain approval from Contract Administrator prior to use.
- .3 For damage to concrete other than concrete surface damage repair as directed by Contract Administrator.

PRECAST CONCRETE ROOF PANELS

END OF SECTION