



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 545-2005

**WINNIPEG WATER TREATMENT PROGRAM –SUPPLY AND INSTALLATION OF
WATER TREATMENT PLANT PILES**

TABLE OF CONTENTS

PART A - BID SUBMISSION

Form A: Bid	1
Form B: Prices	4
Form G1: Bid Bond and Agreement to Bond	5
Form G2: Irrevocable Standby Letter of Credit and Undertaking	7

PART B - BIDDING PROCEDURES

B1. Project Title	1
B2. Submission Deadline	1
B3. Site Investigation	1
B4. Enquiries	1
B5. Addenda	1
B6. Substitutes	2
B7. Bid Submission	3
B8. Bid	3
B9. Prices	4
B10. Qualification	4
B11. Bid Security	5
B12. Opening of Bids and Release of Information	6
B13. Irrevocable Bid	6
B14. Withdrawal of Bids	6
B15. Evaluation of Bids	7
B16. Award of Contract	7

PART C - GENERAL CONDITIONS

C1. General Conditions	1
------------------------	---

PART D - SUPPLEMENTAL CONDITIONS

General

D1. General Conditions	1
D2. Scope of Work	1
D3. Definitions	2
D4. Contract Administrator	2
D5. Contractor's Supervisor	2
D6. Notices	3
D7. Furnishing of Documents	3

Submissions

D8. Safe Work Plan	3
D9. Insurance	3
D10. Performance Security	4
D11. Subcontractor List	5
D12. Equipment List	5
D13. Detailed Work Schedule	5

Schedule of Work

D14. Commencement	5
D15. Schedule Restrictions	6
D16. Critical Stages	6
D17. Substantial Performance	6
D18. Total Performance	6
D19. Liquidated Damages	6

Control of Work

D20. Job Meetings	7
D21. Prime Contractor – The Workplace Safety and Health Act (Manitoba)	7
D22. Cooperation With Others	8

Measurement and Payment

D23. Payment Schedule	8
D24. Warranty	8
Form H1: Performance Bond	9
Form H2: Irrevocable Standby Letter of Credit	11
Form J: Subcontractor List	13
Form K: Equipment	14

PART E - SPECIFICATIONS

General

E1. Applicable Specifications, Standard Details and Drawings	1
E2. Soils Investigation Report	2

General Requirements

E3. Office and Site Facilities	3
E4. Field Engineering	3
E5. Site Drainage and Dewatering	3
E6. Frost Protection	4
E7. Waste Container	4
E8. Condition of the Aqueduct and Existing Yard Piping	4
E9. Environmental Protection	5
E10. Shop Drawings and Product Data	7
E11. Site Restoration	9

Specification Sections

02223	Excavation and Backfilling for Structures
02451	Pile Foundations, General
02468	Precast Concrete Piles

PART B - BIDDING PROCEDURES

B1. PROJECT TITLE

- B1.1 WINNIPEG WATER TREATMENT PROGRAM –SUPPLY AND INSTALLATION OF WATER TREATMENT PLANT PILES

B2. SUBMISSION DEADLINE

- B2.1 The Submission Deadline is 12:00 noon Winnipeg time, September 27, 2005.
- 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 10:30 a.m. to 12:00 p.m. on September 20, 2005 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 shortly before submitting his Bid.
- 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; and
- (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 and Unit Prices in Canadian funds for the Work on Form B: Prices.
- B9.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.
- B9.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B10. QUALIFICATION

- B10.1 The Bidder shall:
- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba;
 - (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 sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.

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

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 piles supplied under this Contract and the delivery and installation of precast concrete piles fabricated under Bid Opportunity 378-2005 – Piling Supply. Also included is the excavation from existing pre-excavated grade to bottom of voidform plus 100mm for future levelling course to be placed by others as well as other components as listed below or as detailed in the Drawings and Specifications.
- D2.2 The major components of the Work are:
- (a) Supply, fabrication and delivery of Precast Concrete Piles as specified in Section 02468 Precast Concrete Piles, clause 1.1 and as defined in the Drawings and Specifications
 - (b) Installation of Precast Concrete Piles as specified in Section 02451 Pile Foundations General, clause 1.1 and as defined in the Drawings and Specifications
 - (c) Supply, fabrication and delivery of one hundred and five (105) Precast Concrete Piles (400 mm), in addition to those shown on drawings, to be installed:
 - (i) between B13 and B18 south of Line BD
 - (ii) between BD and BH south of line B14
 - (iii) between B2 and B13 south at line BGPiles to be cut to elevation 236.00
 - (d) Delivery and installation of Precast Concrete Piles (400 mm), pre-purchased by the City under Bid Opportunity 378-2005, as specified in Section 02451, etc., consisting of:
 - (i) Two hundred and six (206) quantity of 15 m piles
 - (ii) Four hundred (400) quantity of 14 m piles
 - (iii) One hundred (100) quantity of 13 m piles
 - (e) Excavation as specified in Section 02223 Excavation and Backfilling for Structures, clause 1.1
 - (f) Provision of construction drainage around work area perimeter suitable to ensure work area remains free of accumulated water during the duration of Work
- D2.3 The Site is located on Provincial Road 207, 3 km north of Highway 1 in Dugald, Manitoba

- D2.3.1 The Site address is PR207, Lot 57082, Dugald, Manitoba
- D2.3.2 Provincial Road 207 is a class B1 road and is subject to seasonal load restrictions which will affect the maximum weight of individual deliveries. The Contractor shall be responsible for the payment of all fees and acquire all permits from the authority having jurisdiction as required by GC:6.11 – GC:6.15

D3. DEFINITIONS

- D3.1 When used in this Bid Opportunity:
- (a) “**ANSI**” means American National Standards Institute
 - (b) “**ASME**” means American Society of Mechanical Engineers
 - (c) “**ASTM**” means American Society for Testing and Materials
 - (d) “**AWWA**” means American Water Works Association
 - (e) “**CSA**” means Canadian Standards Association
 - (f) “**DAF**” means Dissolved Air Flotation
 - (g) “**DBPS**” means Deacon Booster Pumping Station
 - (h) “**EPDM**” means Ethylene Propylene Diene Monomer
 - (i) “**GWWD**” means Greater Winnipeg Water District
 - (j) “**HDPE**” means High Density Polyethylene
 - (k) “**IEC**” means International Electrotechnical Commission
 - (l) “**ISO**” means International Organization for Standardization
 - (m) “**NACE**” means National Association of Corrosion Engineers
 - (n) “**NEMA**” means National Electrical Manufacturers Association
 - (o) “**NSF**” means National Sanitation Foundation, and
 - (p) “**SAE**” means Society of Automotive Engineer

D4. CONTRACT ADMINISTRATOR

- D4.1 The Contract Administrator is UMA Projects (CM) Ltd., represented by:
Mr. Larry Smith, C.E.T.
Assistant Construction Manager
1479 Buffalo Place
Winnipeg, Manitoba, R3T 1L7
Telephone No. (204) 986-8392
Facsimile No. (204) 986-8393

- D4.2 At the pre-construction meeting, Larry 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 to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following address or facsimile number:
- The City of Winnipeg
Chief 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 shall 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.
- (b) 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. SUBCONTRACTOR LIST

D11.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in GC:4.1 for the return of the executed Contract.

D12. EQUIPMENT LIST

D12.1 The Contractor shall provide the Contract Administrator with a complete list of the equipment which the Contractor proposes to utilize (Form K: Equipment 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 Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in GC:4.1 for the return of the executed Contract.

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

- (a) a critical path method (C.P.M.) schedule for the Work; and
- (b) a Gantt chart for the Work based on the C.P.M. schedule;

all acceptable to the Contract Administrator.

D13.3 Further to D13.2(a), the C.P.M. schedule shall clearly identify the start and completion dates of all of the activities/tasks making up the Work as well as showing those activities/tasks on the critical path:

D13.4 Further to D13.2(b), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

SCHEDULE OF WORK

D14. COMMENCEMENT

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

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

- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence 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 Subcontractor list specified in D11;
 - (vii) the equipment list specified in D12; and
 - (viii) the detailed work schedule specified in D13.

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

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

D15. SCHEDULE RESTRICTIONS

D15.1 The intent of this Contract is to complete the installation of piles and excavation to required grades such that the work under the Water Treatment Plant structural contract can start as early as possible in 2006 with the footing concrete and placement of Voidform without further excavation prior to frost having come out of the ground. To accomplish this it is expected that the Work of this Contract is required to be complete in 2005.

D16. CRITICAL STAGES

D16.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:

- (a) December 31, 2005. Complete all piling and excavation.

D17. SUBSTANTIAL PERFORMANCE

D17.1 The Contractor shall achieve Substantial Performance by December 31, 2005.

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 January 15, 2006.

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 Substantial Performance in accordance with the Contract by the day fixed herein for Substantial Performance, the Contractor shall pay the City two thousand, six hundred dollars (\$2,600) per Calendar Day for each and every Calendar Day following the day fixed herein for Substantial Performance during which such failure continues.

- D19.2 The amount specified for liquidated damages in D19.1 is based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve Substantial Performance by the day fixed herein for same.
- D19.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.
- D19.4 If the Contractor fails to achieve critical stages, Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:
- (a) Substantial Performance - two thousand, six hundred dollars (\$2,600)
 - (b) Total Performance – six hundred dollars (\$600)
- D19.5 The amounts specified for liquidated damages in D19.3 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.
- D19.6 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.
- D19.7 The City will endeavour to award the Contract within fourteen (14) Calendar Days of the Submission Deadline. If the award is not made within that time period, Contract dates specified in D17.1 (a), D18.1 and D19.1 will be extended by an equivalent number of Calendar Days.

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 training and certification 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 32-2005 Winnipeg Water Treatment Program - Supply of Butterfly Valves for Yard Piping (Awarded)
 - (b) Bid Opportunity 70-2005 Winnipeg Water Treatment Program – Bulk Excavation for Clearwell and Water Treatment Plant Sites
 - (c) Bid Opportunity 101-2005 Winnipeg Water Treatment Program – Clearwell Piling Supply
 - (d) Bid Opportunity 102-2005 Winnipeg Water Treatment Program – Supply of Sluice Gates
 - (e) Bid Opportunity 153-2005 Winnipeg Water Treatment Program – Yard Piping and Valve Chambers
 - (f) Bid Opportunity 166-2005 Winnipeg Water Treatment Program – Clearwell Construction
 - (g) Bid Opportunity 378-2005 Winnipeg Water Treatment Program – Water Treatment Plant – Piling Supply
- 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 Operations personnel to provide safe, secure access to operational facilities.

MEASUREMENT AND PAYMENT

D23. PAYMENT SCHEDULE

- D23.1 Further to GC:12, payment shall be in accordance with the following payment schedule:
- (a) Ninety Two and a half percent (92.5%) of the Lump Sum Price listed in Form B: Prices will be paid on the basis of monthly progress estimates in accordance with GC:12.
 - (b) Seven and a half percent (7.5%) of the Lump Sum Price listed in Form B: Prices will be paid upon Substantial Performance in accordance with The Lien Act of the Province of Manitoba.

D24. WARRANTY

- D24.1 Warranty shall be in accordance with GC:13.2

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. 545-2005 WINNIPEG WATER TREATMENT PROGRAM –SUPPLY AND
INSTALLATION OF WATER TREATMENT PLANT PILES**

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)

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

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

(Date)

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

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

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

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

FORM K: EQUIPMENT
(See D12)

**WINNIPEG WATER TREATMENT PROGRAM –SUPPLY AND INSTALLATION OF WATER TREATMENT
PLANT PILES**

1. Category/type: Pile driving – hammer(s)	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
2. Category/type: Pile driving – Crane(s) and leads	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
3. Category/type: Excavation equipment: backhoes, FEL's	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	
Make/Model/Year: _____	Serial No.: _____
Registered owner: _____	

FORM K: EQUIPMENT
(See D12)

**WINNIPEG WATER TREATMENT PROGRAM –SUPPLY AND INSTALLATION OF WATER TREATMENT
PLANT PILES**

4. Category/type: Hoisting and lifting: cranes, other

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

5. Category/type: Miscellaneous

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

6. Category/type:

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

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:

<u>City Drawing No.</u>	<u>Consultant Drawing No.</u>	<u>Title</u>
	WM-C0165	Civil, Existing Site Plan and Survey Plan
1-0601B-B-F0100-001-00D	WB-F0100	Structural, Overall Piling Plan
1-0601F-B-F0101-001-00D	WF-F0101	Structural, Filtration Area 1 Piling Plan
1-0601F-B-F0102-001-00D	WF-F0102	Structural, Filtration Area 2 Piling Plan
1-0601O-B-F0101-001-00D	WO-F0101	Structural, Ozonation Area Piling Plan
1-0601R-B-F0101-001-00D	WR-F0101	Structural, Residuals Area Piling Plan
1-0601F-D-S0501-001-00D	WF-S0501	Structural, Filtration Area Piling Schedule
1-0601F-D-S0502-001-00D	WF-S0502	Structural, Filtration Area Piling Schedule
1-0601F-D-S0503-001-00D	WF-S0503	Structural, Filtration Area Piling Schedule
1-0601O-D-S0501-001-00D	WO-S0501	Structural, Ozonation Area Piling Schedule
1-0601O-D-S0502-001-00D	WO-S0502	Structural, Ozonation Area Piling Schedule
1-0601R-D-S0501-001-00D	WR-S0501	Structural, Residuals Area Piling Schedule
1-0601R-D-S0502-001-00D	WR-S0502	Structural, Residuals Area Piling Schedule
1-0601T-B-S0041-001-00D	WT-S041	Structural, CCT Effluent Conduit – Piling Plan and Schedule

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

Division 2

<u>Sections</u>	<u>Description</u>
02223	Excavation and Backfilling for Structure
02451	Pile Foundations, General
02468	Precast Concrete Piles

E2. SOILS INVESTIGATION REPORT

E2.1 Further to GC:3.1, a copy of the geotechnical information is available on the Winnipeg Water Treatment Program – Project Site Information page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt/projects>

E2.2 Test Hole Logs

E2.2.1 Geotechnical information has been compiled from various sources to summarize subsurface conditions within the work area. Test_Hole_Logs-Set1.pdf at the aforementioned internet site.

- (a) By UMA Engineering
 - (i) TH's 04-01 to 04-10, 04-12 to 04-24, 04-31, and 04-33 to 04-50 (2004)
 - (ii) TH's 1 to 3 (1996)
- (b) By Others
 - (i) TH A13 by KGS Group (1991)
 - (ii) TH's 3 to 6 by RM Hardy & Associates (1977)
 - (iii) TH 1 and 2 by Dyregrov Consultants (1993)
- (c) The figure attached with the Water Treatment Plant Test Pile Program, located at the internet site specified in E2.1 illustrates the test pile locations in relation to the work area.
- (d) Within the City of Winnipeg Water Treatment Plant Preliminary Design Report – Section 14 Geotechnical Investigation (2005), UMA Test Hole information is considered accurate at the locations drilled and at the time of the investigations. The inclusion of test hole data recorded by others does not represent any guarantees to the accuracy of this data.
- (e) Test hole information is provided to assist in the Bidder's evaluation of subsurface conditions and the Bidder shall solely be responsible for any interpretation that they make from this information. Variations in soil conditions may exist between test holes and fluctuations in groundwater levels can be expected seasonally and may occur as a result of construction activities or operation of the Floodway.

E2.3 Test Pile Driving Records

E2.3.1 Test_Pile_Driving_Records-Set1.pdf at the internet site identified in E2.2. shows data recorded by UMA Engineering Ltd. during driving of ten (10) test piles at the site in the adjacent Clearwell area, in March, 2005.

E2.4 Reports

E2.4.1 Additional reports and geotechnical information listed as follows are available for viewing at the offices of Earth Tech Canada Inc., 850 Pembina Highway, Winnipeg, Manitoba.

- (a) The City of Winnipeg Water Treatment Plant Preliminary Design Report – Section 14 Geotechnical Investigation (2005)
- (b) Water Impounding Reservoir - Cell #2 and Booster Pumping Station Deacon Manitoba by RM Hardy & Associates Ltd. (1977)
- (c) Proposed Venturi Chambers Deacon Reservoir by Dyregrov Consultants (1993)
- (d) Deacon Reservoir Expansion Proposed Groundwater Monitoring Program by KGS Group (1993)
- (e) Shoal Lake Aqueduct Program 5 – Deacon Drainage Improvements by UMA Engineering Ltd. (1996)

- (f) Pile Driving records from Deacon Booster Pumping Station by RM Hardy and Associates (1979).

Information in these reports has been provided to assist in the Bidder's evaluation of subsurface conditions and the Bidder shall solely be responsible for any interpretation that they make from this information.

GENERAL REQUIREMENTS

E3. OFFICE AND SITE FACILITIES

- E3.1 The Contractor shall supply office facilities for his own use. The facilities may be situated at the area designated on the drawings.
- E3.2 The City will provide to the Contractor without cost:
 - (a) Granular pad for office location
 - (b) Non-potable water supply
 - (c) Power supply for heating, lighting and office plugs
 - (d) Communications connections for telephone, facsimile and internet (high speed equivalent)
 - (e) Washroom and toilet facilities within the office compound, and
 - (f) 600 volt and 110/220 volt on-site power supply for construction purposes. Three (3) portable distribution panels for 125A. 110/220V power will be available at the site. Also, a 225A 3 phase 600V power supply suitable for tower crane will be available northeast of the clearwell near the south limit of the GWWWD right-of-way (exact location has not been determined). Cables and installation by Contractor.

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 The surveyor shall be a registered Manitoba Land Surveyor, or an instrumentman or surveying firm experienced in layout of similar projects, subject to the approval of the Contract Administrator.
- E4.3 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. SITE DRAINAGE AND DEWATERING

- E5.1 Provision of adequate site drainage during the entire construction phase of this Work shall be the Contractor's responsibility. The Contractor shall maintain site grading as necessary to provide for proper drainage away from the excavated areas. This water is to be re-directed into ditches outside of the site. Silt fences shall be properly erected and keyed into the primary ditches to prevent eroded materials from leaving the site. No extra payment or time extension will be granted as a result of difficulties associated with site access resulting from poor site drainage during any part of the construction phase.
- E5.2 The Contractor shall be responsible for keeping the excavated areas dewatered at all times. The Contractor shall prepare and submit a plan to dewater the excavations at the pre-construction meeting. The plan will be reviewed and approved by the Contract Administrator prior to commencement of a construction. If at any time the Contract Administrator deems the dewater efforts to be insufficient, the Contract Administrator may order the Contractor to modify and/or increase efforts at the sole discretion of the Contract Administrator with no additional

time or compensation. The Contractor shall maintain dewatering until final completion of the Contract.

E6. FROST PROTECTION

- E6.1 The Work of this Contract is intended to be carried out to the intent specified in D16. The Contractor shall provide such frost protection as, in his own opinion, is necessary to complete the Work under this Contract by the dates specified in D17.
- E6.2 Straw used for frost protection shall be thoroughly cleaned and disposed of off site.

E7. WASTE CONTAINER

- E7.1 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.

E8. CONDITION OF THE AQUEDUCT AND EXISTING YARD PIPING

- E8.1 Condition of the Aqueduct
- E8.1.1 The Deacon Booster Pumping Station and area contains numerous water conduits of various constructions and vintages. All are critical components of the City of Winnipeg Water Supply and shall be treated with the utmost caution. Work around any of these pipelines 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 during backfill placement.
- E8.1.2 The Shoal Lake Aqueduct, north of the main access road is a cast-in-place reinforced concrete pipe, vintage 1916-1917. The Branch I Aqueduct running east to west, immediately south of the Booster Pumping Station, commencing at the existing main entrance to the station, is constructed of precast reinforced concrete pipe, vintage 1918-1919. The Branch II Aqueduct, running southerly from the surge tower structure, is constructed of AWWA C301 pre-stressed concrete cylinder pipe vintage 1958-1960. Other existing water transmission lines within the Deacon Booster Pumping Station compound consist of AWWA C301 pre-stressed concrete cylinder pipe vintage 1970-1995.
- E8.2 Protection of the Aqueducts and Water Transmission Lines
- E8.2.1 Contractors carrying out repair work or working in the vicinity of the Aqueducts and transmission lines shall ensure that:
- (a) Equipment shall only be permitted to cross the pipes at designated locations.
 - (b) Granular material, construction material, soil or other material shall not be stockpiled on the Aqueduct or within 5 metres of the Aqueduct centerline.
 - (c) Construction practices shall not subject the Aqueduct 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.
 - (e) Asymmetrical water pressures shall not be permitted to build up on one side of the Aqueduct arch.
 - (f) Further to CW 2030-R6, only smooth edged excavation buckets, soft excavation or hand excavation shall be used for excavation adjacent to and over the pipelines.

E9. ENVIRONMENTAL PROTECTION

- E9.1 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.
- E9.2 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.
- E9.3 The Contractor is advised that at least the following Acts, Regulations, and By-laws apply to the Work:
- E9.3.1 Federal
- (a) Canadian Environmental Protection Act (CEPA) c.16
 - (b) Transportation of Dangerous Goods Act and Regulations c.34
- E9.3.2 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
- E9.3.3 The Contractor is advised that the following environmental protection measures apply to the Work.
- E9.3.4 Materials Handling and Storage
- (a) Construction materials shall not be stored within ten (10) metres of the Aqueduct centerline.
- E9.3.5 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.

E9.3.6 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.

E9.3.7 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.

E9.3.8 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.

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.

E10. SHOP DRAWINGS AND PRODUCT DATA

Further to CW1110:

- (a) 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 in writing of any deviations in Shop Drawings from the requirements of the Contract Documents.
- (b) Shop Drawings shall be submitted with a copy of the associated Specification. For each Specification clause, note compliance or deviation from Specification. Provide full explanation for any deviation. Shop Drawings submitted without the associated Specification Sections will be returned to the Contractor as "Rejected".
- (c) Examine all Shop Drawings prior to submission to the Contract Administrator to ensure that all necessary requirements have been determined and verified and that each Shop Drawing has been checked and coordinated with the requirements of the Work and the Contract Documents. Examination of each Shop Drawing shall be indicated by stamp, date and signature of a responsible person of the Subcontractor for supplied items and of the General Contractor for fabricated items. Shop Drawings not stamped, signed and dated will be returned without being reviewed and stamped Re-submit".

- (d) Submit Shop Drawings with reasonable promptness and in an orderly sequence so as to cause no delay in the Work. Failure to submit Shop Drawings in ample time is not to be considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed. Jointly prepare a schedule fixing the dates for submission and return of Shop Drawings.
- (e) The Contract Administrator will review and return Shop Drawings in accordance with the schedule agreed upon or otherwise with reasonable promptness so as to cause no delay in the Work.
- (f) Submit six (6) copies of white prints, plus one (1) copy of reproducibles, and six (6) copies of all fixture cuts and brochures.
- (g) Shop Drawing review by the Contract Administrator is solely to ascertain conformance with the general design concept. Responsibility for approval of detail design inherent in Shop Drawings rests with the Contractor and review by the Contract Administrator shall not imply such approval.
- (h) 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.
- (i) Responsibility for verification and correlation of field dimensions, fabrication processes, techniques of construction, installation and coordination of all parts of the Work rests with the Contractor.
- (j) Shop Drawings will be returned to the Contractor with one of the following notations:
 - When stamped "REVIEWED" or "NO EXCEPTIONS TAKEN", distribute additional copies as required for execution of the Work.
 - When stamped "REVIEWED AS MODIFIED" or "MAKE NOTED CORRECTIONS", ensure that all copies for use are modified and distributed, same as specified for "REVIEWED".
 - When stamped "REVISE & RESUBMIT", make the necessary revisions, as indicated, consistent with the Contract Documents and submit again for review.
 - When stamped "NOT REVIEWED" or "REJECTED", submit other Drawings, brochures, etc. for review consistent with the Contract Documents.
- (k) - Only Shop Drawings bearing "REVIEWED", "NO EXCEPTIONS TAKEN", "MAKE NOTED CORRECTIONS", or "REVIEWED AS MODIFIED" shall be used on the Work unless otherwise authorized by the Contract Administrator.
- (l) After submittals are stamped "REVIEWED", "NO EXCEPTIONS TAKEN", "MAKE NOTED CORRECTIONS" or "REVIEWED AS MODIFIED", no further revisions are permitted unless re-submitted to the Contract Administrator for further review.
- (m) 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.
- (n) 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.
- (o) Shop Drawings indicating design requirements not included in the Contract Documents require the seal of a qualified Professional Engineer, registered in the province of the place of the Project. Consulting calculations shall be submitted for review, if requested, and sealed by a qualified Professional Engineer.

- (p) Only two (2) reviews of shop drawings will be made by the Contract Administrator at no cost. Each additional review will be charged to the Contractor at the Contract Administrator's scheduled rates. The Contract Administrator's charges for the additional work will be deducted from the Contractor's progress certificates.

E11. SITE RESTORATION

- E11.1 The Contractor shall remove the temporary Site office and storage facilities prior to Total Performance.
- E11.2 The Contractor will be responsible for any damage caused by his forces on roadways or accesses.

EXCAVATION AND BACKFILLING FOR STRUCTURES

1. GENERAL

1.1 Work Included

- .1 Work under this Section includes, but is not necessarily limited to the following items:
 - .1 Final excavation to required elevations for the base slabs, slab thickenings and pile caps, and void form.
 - .2 Excavation below void form to allow for future placement (not in Contract) of 100 mm thick granular levelling material.
 - .3 Disposal of surplus excavated material.
 - .4 Dewatering of excavation.

1.2 Job Conditions

- .1 Examination
 - .1 Visit the Site and note all characteristics and irregularities affecting the Work of this Specification.
 - .2 To proceed with the Work will mean acceptance of the conditions, and failure to comply with the above will in no way form the basis for any claim.
 - .3 Review the geotechnical information prior to submitting Bid for the Work.
- .2 Protection
 - .1 Use all means necessary to protect all materials of this Section before, during, and after installation, and to protect all objects designated to remain.
 - .2 In the event of damage, immediately make all repairs and replacements necessary to the satisfaction of the Contract Administrator and at no additional cost.
 - .3 Protect benchmarks and structures against damage from equipment and vehicular traffic.

1.3 Reference Standards

- .1 Conform to requirements of the National Building Code (NBC) and the Canadian Construction Safety Code.
- .2 Comply with excavation and trenching regulations of Provincial authorities.

EXCAVATION AND BACKFILLING FOR STRUCTURES

1.4 Samples

- .1 All materials incorporated into the Work of this Specification shall be subject to review and testing by the Contract Administrator, including all operations from the selection and separation of the materials, through to final acceptance of the specified Work.
- .2 The Contractor shall be wholly responsible for the control of all operations incidental to the Work, notwithstanding any review or acceptance that may have previously been given.
- .3 The Contract Administrator reserves the right to reject any materials or works which are not in accordance with the requirements of this Specification.
- .4 There shall be no charge for any materials taken by the Contract Administrator for testing purposes.
- .5 All materials shall be reviewed and accepted by the Contract Administrator at least ten (10) days before any construction is undertaken.
- .6 For granular materials, submit a 25 kg sample for coarse, gravelly soil, or 75 kg sample for coarse, crushed stone and sand of each type, clearly labelled for type and source of the materials, for analysis by testing laboratory. Ship samples prepaid or deliver in tightly closed containers to testing laboratory designated by Contract Administrator.
- .7 Costs for analysis will be paid by the City.

1.5 Compaction Testing

- .1 Testing of compacted fill materials will be performed by an independent inspection and testing firm appointed and paid by the City. Testing will be performed so as to least encumber the performance of the Work.
- .2 The City will pay for the first series of tests only, on the area being evaluated. Pay costs for additional testing, if required, due to improper performance of Work.
- .3 Tests will be performed in accordance with American Society for Testing and Materials (ASTM) D698 for Standard Proctor Density on representative samples to control compaction requirements. The Contract Administrator will decide the frequency and number of tests required.
- .4 The field density of the compacted layers shall be verified by field density tests in accordance with ASTM D2922, using nuclear methods performed by the inspection and testing firm. The frequency and number of tests required will be decided by the Contract Administrator.
- .5 Notify the Contract Administrator when Work of this Section or portions of Work are completed to own satisfaction. Do not proceed with additional portions of Work until test results have been verified and accepted.

EXCAVATION AND BACKFILLING FOR STRUCTURES

- .6 During Work tests, if tests indicate that compacted materials do not meet specified required materials, remove defective Work, replace and re-test at own expense as directed by the Contract Administrator.
- .7 Ensure compacted fills are tested and accepted before proceeding with placement of surface materials.

1.6 Geotechnical Information

- .1 Refer to Specification E2 for a list of test hole logs and reports available associated with the Site.
- .2 The Contractor should be aware that the surface soil condition in the excavations performed by the Bulk Excavation Contract may be soft.

2. PRODUCTS

2.1 General

- .1 All materials to be subject to Contract Administrator's acceptance.
- .2 Granular materials to be composed of sound, hard, uncoated particles, free from injurious quantities of clay, flaky particles, soft shale, friable materials, roots, vegetable matter, and frozen lumps.
- .3 Grading of granular materials to show no marked fluctuations between opposite ends of extreme limits.
 - .1 Type 1: pit run granular backfill shall consist of a clean, well-graded, and free-draining pit run material with a maximum size of 75 millimetres, and less than 5% by weight finer than 0.075 millimetres.
 - .2 Type 2: crushed gravel graded within following limits:

Canadian Metric Sieve Size	Percent Passing	
	Crushed Granular	Crushed Limestone
25,000	100	-
20,000	80 - 100	100
5,000	40 - 70	40 - 70
2,500	25 - 55	25 - 60
315	13 - 30	8 - 25
80	5 - 15	6 - 17

At least 60% of material retained on 5 millimetres sieve to have at least one (1) freshly fractured face.

- .4 Type 3: pit run sand for levelling with maximum stone size 40 millimetres.

EXCAVATION AND BACKFILLING FOR STRUCTURES

- .5 Type 4: common backfill shall be free from organic material and rocks larger than 150 millimetres in size and building debris. Fill under landscaped areas to be free from alkali, salt, petroleum products and other materials detrimental to plant growth. Common backfill shall be obtained from Disposal Sites 1 and 2 indicated on the Drawings subject to review by Contract Administrator.

3. EXECUTION

3.1 General

.1 Familiarization

- .1 Prior to all Work of this Section, become thoroughly familiar with the Site, the site conditions, and all portions of the Work falling within this Section.
- .2 Review and understand the geotechnical information.

.2 Protection

- .1 Before starting Work, locate all utilities crossing the Work Site. Notify all agencies or companies having jurisdiction over the specific utilities and protect, relocate, remove, or discontinue service according to their requirements. Any damages shall be repaired at the Contractor's expense.
- .2 Protect and restore pavements, boulevards, grassed areas, etc., that may be opened or damaged in the performance of the Work.
- .3 During construction, maintain roadways in a clean and safe condition and, at the completion of the Contract, clean and restore all roads used to perform the Contract.

3.2 Finish Elevations and Lines

- .1 For setting and establishing finish elevations and lines, secure the services of a registered surveyor or experienced instrumentman acceptable to the Contract Administrator.
- .2 Carefully preserve all data and all monuments set by the registered surveyor. If displaced or lost, immediately replace to the acceptance of the Contract Administrator, at no additional cost to the City.

3.3 Excavation

- .1 Perform excavation in strict compliance to Work Place Safety and Health and authorities have jurisdiction.
- .2 Excavate to noted limits and as required for slabs and pile caps. Stockpile material to be used for backfilling on-site as directed by the Contract Administrator. Excess material is to be disposed of immediately as per Item 3.7, Disposal.

EXCAVATION AND BACKFILLING FOR STRUCTURES

- .3 When complete, request Contract Administrator to review excavations.
- .4 Local pockets of material which, in the opinion of the Contract Administrator are unsuitable, shall be removed to such depths as required by the Contract Administrator.
- .5 The completed excavation shall provide clean, level, solid, and water-free surfaces at the required elevations, ready to receive construction.
- .6 Excavations are not to encroach on existing slopes and as indicated in the geotechnical information.
- .7 Backfill and compact all over-excavated areas under structure surfaces with Type 1 fill and compact to 90% Standard Proctor Density and at no additional cost to the City.
- .8 Make good all damage occurring as a result of inadequate, unauthorized, or defective methods of protection.
- .9 Areas used for temporary stockpiling shall be restored to existing condition or better.

3.4 Shoring and Bracing

- .1 Provide all shoring and bracing required for the Work to prevent damage to existing structures, excavations, and injury to personnel.
- .2 Comply with all applicable rules and regulations of governmental authorities.
- .3 Erect shoring and bracing independent of utilities and structures.
- .4 Prefabricated cages or shields may be used to supplement or replace conventional shoring, provided they comply with all applicable safety regulations.
- .5 Assume full responsibility for any failure, collapse, or movement of existing structures, shoring and bracing, earth banks, trenches, and other excavations.

3.5 Dewatering

- .1 The Contractor shall be responsible for the control of surface drainage on the excavations completed by the Bulk Excavation Contract.
- .2 Dewatering systems shall be designed to expeditiously remove water from the excavation. Maintain dewatering system for a time period determined by the Contract Administrator.
- .3 The dewatering systems must protect the subgrade soils from excessive softening and saturation.
- .4 All access roadways shall employ culverts as required for the Contractor's proposed excavation dewatering plan.

EXCAVATION AND BACKFILLING FOR STRUCTURES

- .5 The Contractor shall submit the proposed dewatering plan two (2) weeks prior to commencement of construction to the Contract Administrator for review and acceptance.
- .6 All temporary ditching and water retention areas shall be lined with an impervious membrane to the satisfaction of the Contract Administrator.
- .7 Discharge from pumps or other dewatering equipment shall be located and controlled such that loss, damage, nuisance, or injury to the work does not result.
- .8 Additional excavation made necessary by water in the excavation shall be at no additional cost to the City.

3.6 Backfilling, Fill, and Compaction

- .1 Preparation
 - .1 Ensure areas to be backfilled are free from debris, snow, ice, and water; and that ground surfaces are not in a frozen condition.
- .2 Backfilling and Filling
 - .1 Backfill and fill to grades, contours, levels, and elevations as directed by the Contract Administrator.
 - .2 Maintain optimum moisture content of materials to permit compaction to specified densities.
 - .3 Compact each soil layer to at least the specified minimum degree; repeat compaction process until plan grade is attained. Compaction densities indicated herein are based on ASTM D698 for Standard Proctor Density.
- .3 Fill for Over-Excavation
 - .1 Type 1 pit run gravel fill for over-excavation shall be placed in uniform lifts not greater than 200 millimetres in thickness and shall be compacted to a density of at least 95% Standard Proctor Density.

3.7 Disposal

- .1 Surplus material not required for backfill and fill purposes shall be disposed of on site to a location designated by the Contract Administrator at no extra cost to the City.

3.8 Clean-Up

- .1 As excavation proceeds, keep roads, streets, and sidewalks clean of dirt and excavated material.
- .2 Clean-up and wash down to remove all dirt and excavated materials caused by Work of this Section.

EXCAVATION AND BACKFILLING FOR STRUCTURES

- .3 Clean at the end of each working day as directed by the Contract Administrator.

END OF SECTION

PILE FOUNDATIONS, GENERAL

1. GENERAL

1.1 Work Included

- .1 Coordinate delivery schedule of piles pre-purchased by the City (under Bid Opportunity 378-2005) with the Contract Administrator and the precast concrete pile supplier (Lafarge Canada Inc.), and pick up and deliver piles from Lafarge Canada Inc. Winnipeg yard to the Site to meet the Contractor's installation schedule.
- .2 Coordinate delivery schedule of piles purchased under this Contract with the pile supplier and pick up and deliver piles from to the Site to meet the Contractor's installation schedule.
- .3 Install precast concrete piles.

1.2 Storage, Handling, and Installation

- .1 Protect piles from damage due to excessive bending stresses, impact, abrasion, or other causes from the point of pick-up, and during storage and handling. Install piles to stated driving tolerances.
- .2 The Contract Administrator shall be the sole judge of the acceptability of supplied piles.
- .3 Replace rejected piles to satisfaction of Contract Administrator. Causes for pile rejection are as follows:
 - .1 Out of fabrication tolerances at time of installation.
 - .2 Cracked, spalled, or broken piles.
 - .3 Out of stated driving tolerances.

1.3 Geotechnical Information

- .1 Refer to Specification E2.2 for a list of test hole logs and reports available associated with the Site.
- .2 The Contractor should be aware that the surface soil condition in the excavations performed by the Bulk Excavation Contract may be soft.
- .3 Notify Contract Administrator in writing if subsurface conditions at Site differ materially from those indicated and await further instructions from Contract Administrator.

PILE FOUNDATIONS, GENERAL

2. PRODUCTS

2.1 Materials

- .1 Piles pre-purchased by the City (under Bid Opportunity 378-2005) have been fabricated and supplied as specified in Section 02468 – Precast Concrete Piles.
- .2 Piles to be furnished under this Contract shall be fabricated and supplied as specified in Section 02468 – Precast Concrete Piles.
- .3 Piles pre-purchased by the City (under Bid Opportunity 378-2005) have been fabricated full length piles as indicated without cutting and splicing requirements. Contractor shall provide equipment to handle full length piles.
- .4 Piles to be furnished under the Contract shall be full length piles as indicated, without cutting and splicing requirements. Contractor shall provide equipment to handle full length piles.
- .5 In the event that site conditions require pile extensions, the extensions shall be constructed in accordance with the detail shown on the Drawings. This Work is in addition to the Scope of Work.
- .6 Grout Seal: ENVIROPLUG No.16 (No.20) or accepted alternate, mixed in accordance with the Manufacturer's instructions.

3. EXECUTION

3.1 Delivery, Storage, and Handling

- .1 Protect piles from damage due to excessive bending stresses, impact, abrasion, or other causes during delivery, storage, and handling.

3.2 Equipment

- .1 Prior to the commencement of pile installation, submit details of equipment for installation of piles to Contract Administrator for review.
 - .1 Impact hammers: provide to the Contract Administrator; Manufacturer's name, type, rated energy per blow at normal working rate, mass of striking parts of hammer, mass of driving cap and type and elastic properties of hammer and pile cushions.
 - .2 Hammer:
 - .1 Hammers to be selected on the basis of driveability analysis using wave equation theory, performed to show that piles can be driven to levels indicated.
 - .2 The driveability analysis shall include, but not be limited to, the following: hammer, cushion, and capblock details; static soil parameters; quake and damping factors, total

PILE FOUNDATIONS, GENERAL

soil resistance, blow count, pile stresses, and energy throughput at representative penetrations.

- .3 Driveability analysis shall be submitted to the Contract Administrator for review of the hammer or hammers.
 - .4 When required criteria cannot be achieved with the proposed hammer, use larger hammer and take other measures as required.
 - .5 Drop hammers are not permitted.
- .3 Leads:
- .1 Construct pile driver leads to provide free movement of hammer. Hold leads in position at top and bottom, with guys, stiff braces, or other means to ensure support to pile while being driven.
 - .2 Length: provide length of leads so that use of a follower is unnecessary.
 - .3 Swing leads: firmly guy top and bottom to hold pile in position during driving operation.
- .4 Followers: when permitted, provide followers of such size, shape, length, and mass to permit driving pile in desired location to required depth and resistance. Provide followers with socket or hood carefully fitted to top of pile to minimize loss of energy and prevent damage to pile.

3.3 Preparation

- .1 Ensure that ground conditions at pile locations are adequate to support pile driving operation and load testing operation. Make provision for access and support of piling equipment during performance of work.
- .2 Pre-bore with an auger bit to a depth no lower than elevation 224.600.
- .3 Completely infill any air space between the wall of pre-bore hole and outside the pile for the full depth of pre-bore with grout seal. Application procedure for the grout seal shall be submitted to the Contract Administrator for review and acceptance prior to commencement of pile installation.

3.4 Field Measurement

- .1 Contractor shall cooperate with the Contract Administrator and shall allow access during the pile installation operations so that all the field measurements can be performed expeditiously.

PILE FOUNDATIONS, GENERAL

3.5 Driving

- .1 Drive precast piles only when concrete has attained strength of 35 MPa as determined by related concrete compression testing in accordance with Canadian Standards Association (CSA) A23.2-00.
- .2 Use driving caps and cushions to protect piles. Reinforce pile heads as required by Contract Administrator. Piles with damaged heads as determined by Contract Administrator will be rejected.
- .3 Hold piles securely and accurately in position while driving.
- .4 Deliver hammer blows along axis of pile.
- .5 Drive piles to practical refusal, as outlined in the geotechnical information. Blow count requirements shall be determined by the Contract Administrator. If followers are used, established criteria for refusal will be increased by 50%.
- .6 When driving precast concrete piles, adjust hammer, as required, to deliver reduced impact so that reflected tensile stress in pile does not exceed allowable.
- .7 Do not drive piles within 10 m of masonry or concrete which has been in place less than seven (7) days. Do not drive piles within 30 m of masonry or concrete which has been in place less than one (1) day.
- .8 Re-strike already driven piles lifted during driving of adjacent piles to confirm and assure set.
- .9 Remove loose and displaced material from around piles after completion of driving, and leave clean, solid surfaces to receive foundation concrete.
- .10 Cut off piles neatly and squarely at elevation ranges as indicated on the Drawings. Final cut off elevations will be confirmed during construction. Provide sufficient length above cut-off elevation so that the part damaged during driving is cut off. Do not cut tendons or other reinforcement which will be used to tie supported structure above to pile. A minimum of 450 mm of strands shall remain for this purpose. The cut off surface of the piles shall be mechanically chipped to expose sound concrete.
- .11 Remove cut-off lengths from Site on completion of Work.

3.6 Design Load Capacity

- .1 Allowable design load capacity of piles at specified loads is:
 - .1 400 mm diameter hex - 800 kilonewtons.
- .2 Installation of each pile will be subject to the review of the Contract Administrator. Contract Administrator will be the sole judge of acceptability of each pile with respect to final driving resistance, depth of penetration, or other criteria used to determine load capacity. Contractor

PILE FOUNDATIONS, GENERAL

shall allow Contract Administrator to review final driving of all piles prior to removal of pile driving rig from Site.

3.7 Driving Tolerances

- .1 Pile heads shall be within ± 100 mm of locations as indicated.
- .2 Piles shall not to be more than 2% of length out of vertical alignment.

3.8 Obstructions

- .1 Where obstruction is encountered that causes sudden unexpected change in penetration resistance or deviation from specified tolerances, proceed as directed by Contract Administrator.

3.9 Repair/Restoration

- .1 The Contract Administrator may require one (1) or more of the following remedial measures:
 - .1 Pull out rejected piles and replace with new piles.
 - .2 Remove rejected pile and replace with a new, and if necessary, a longer pile.
 - .3 Remove rejected pile and fill hole as directed by Contract Administrator.
 - .4 Leave rejected pile in place and cut off as directed by Contract Administrator.
 - .5 Leave rejected pile in place, place adjacent pile(s), and modify pile cap as directed by Contract Administrator.
- .2 No extra compensation will be made for removing and replacing or other work made necessary through rejection of defective piles.

3.10 Protection

- .1 Protect adjacent structures, services, and work of other sections from hazards due to pile driving operations.
- .2 Arrange sequencing of pile driving operations and methods such that no damage occurs to adjacent existing structures. If damaged, remedy damaged items to restore to original or better condition at own expense.
- .3 Undertake review of all adjacent infrastructures with the Contract Administrator complete with a photographic record sufficient to establish pre-driving conditions of the existing adjacent infrastructure.
- .4 Protection for pile strand ends:

PILE FOUNDATIONS, GENERAL

- .1 Highly visible protection safety caps shall be installed for all pile reinforcing strand ends immediately following strand exposure operations. One protection cap may be used for each pile by grouping and securely tying the strands.
- .2 The protection caps shall be highly visible and shall be made secure so that accidental contact will not easily dislodge the caps. Dislodged caps shall be re-installed immediately.
- .3 Pile reinforcing strands shall be protected from severe bending. Kinked or broken strands shall be repaired to the satisfaction of the Contract Administrator.

END OF SECTION

PRECAST CONCRETE PILES

1. GENERAL

1.1 Work Included

- .1 Piles pre-purchased by the City (under Bid Opportunity 378-2005) free on board (FOB) in Lafarge Canada Inc. Winnipeg yard.
- .2 Fabrication, storage, and loading of 400 mm diameter precast concrete piles under this Contract.

1.2 References

- .1 Canadian Standards Association (CSA):
 - .1 CSA- A23.1-00/A23.2-00, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
 - .2 CSA- A23.4-00/A251-00, Precast Concrete – Materials and Construction/Qualification Code for Architectural and Structural Precast Concrete Products.
 - .3 CAN/CSA-A3000-03, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004, and A3005).
- .2 American Society for Testing and Materials Standard (ASTM).
 - .1 ASTM A82, Cold-Drawn Steel Wire for Concrete Reinforcement.

1.3 Design

- .1 Piles shall be solid core prestressed concrete piles with longitudinal prestressing strands and spiral reinforcement.
- .2 Strand tensioning stress shall be 0.7 times the tensile strength of the strand.
- .3 Pile splices at predetermined locations shall be of the mechanical locking type.

1.4 Shop Drawings

- .1 Submit Shop Drawings in accordance with Specification E10.
- .2 Each drawing submitted shall bear the signature and stamp of a qualified professional engineer registered in the Province of Manitoba.
- .3 Indicate the following items:
 - .1 Lifting point details and locations.
 - .2 Storage support point locations.

PRECAST CONCRETE PILES

- .3 Mechanical pile splice details complete with calculations.
- .4 Concrete strength.
- .5 Reinforcing details.
- .6 Type and grade of steel.

1.5 Certificates

- .1 Piles delivered to Site to be certified by Manufacturer that each batch of piles meets the strength requirement of 35 MPa at twenty-eight (28) days.

2. PRODUCTS

2.1 Materials

- .1 Concrete mixes and materials: to CSA-A23.1-00 and CSA-A23.4-00.
- .2 Reinforcing steel: to CAN/CSA-G30.18-M92.
- .3 Cold-drawn steel wire for concrete reinforcement: to ASTM A82.
- .4 Fabricate and supply full length piles as indicated, and provide equipment capable to handle piles without altering them.

2.2 Concrete Mixes

- .1 Proportion normal density concrete in accordance with CSA-A23.1-00, Alternative 1, to give following properties:
 - .1 Use Type 50 Portland Cement.
 - .2 Minimum compressive strength at twenty-eight (28) days: 35 MPa.
 - .3 Minimum cement content: 365 kg/m³ of concrete.
 - .4 Maximum water to cementitious material ratio: 0.45.
 - .5 Nominal size of coarse aggregate: 16 mm maximum.
 - .6 Air content: 5 to 8%, to American Society for Testing and Materials Standard (ASTM) C260.
 - .7 Chemical admixtures: in accordance with CAN/CSA – A3000-03.
 - .8 Pozzolanic mineral admixtures: in accordance with CAN/CSA-A3000-03.

PRECAST CONCRETE PILES

3. EXECUTION

3.1 Fabrication

- .1 Fabricate precast concrete piles to lengths determined in the fabrication schedule.
- .2 Fabricate piles to following finish tolerances:
 - .1 Length: Plus or minus 3 mm/m of length.
 - .2 Cross section:
 - .1 Side width: Minus 5 mm to plus 10 mm.
 - .2 Deviation from straight line: Not more than 3 mm/m of length and not more than 10 mm in full length.
 - .3 Deviation of reinforcing cage from true position: 10 mm.
 - .4 Pile head: 10 mm/m from true right angle plane; surface irregularities 3 mm.
 - .5 Location of reinforcing steel main reinforcing cover: Minus 3 mm to plus 5 mm; spiral: 10 mm.
- .3 Prestress piles under the direction of an experienced and competent supervisor. All personnel operating the stressing equipment shall have been trained in its use.
- .4 De-tension in a manner to keep eccentricity to a minimum
- .5 Quantities and lengths of piles will be determined by Contract Administrator. Remove rejected piles from Site.

3.2 Handling, Storage, and Delivery

- .1 Inspection of the fabricated product upon shipment and certification that the product is free from any damage or defects.
- .2 Replace damaged piles to satisfaction of Contract Administrator.
- .3 Delivery – the project site has insufficient space for long term storage. Delivery to the Site will be on an as required-for-installation basis.
- .4 Protect piles from damage due to excessive bending stresses, impact, abrasion or other causes during delivery, storage, and handling.
- .5 The supplier shall provide lifting and handling equipment for loading of piles onto trucks for delivery to the Site.

END OF SECTION