



THE CITY OF WINNIPEG

BID OPPORTUNITY

779-2006 BID OPPORTUNITY

ST VITAL PARK RIVERBANK STABILIZATION WORKS

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 ST VITAL PARK RIVERBANK STABILIZATION WORKS

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, January 11, 2007.

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

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

B3. SITE INVESTIGATION

B3.1 Further to C3.1, the Contract Administrator or an authorized representative will be available at the Site from 10:00 to 12:00 p.m. on Thursday, January 04, 2007 to review the project with interested Bidders.

B3.2 Further to C3.1, a 2.1m diameter test shaft will be drilled at the time of the Site Investigation January 4, 2007. Bidders are strongly advised to attend the Site Investigation.

B3.3 Further to C3.1, the Bidder may view the Site without making an appointment.

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

B4. ENQUIRIES

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

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

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

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

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

B5. ADDENDA

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

- B5.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.
- B5.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.
- B5.2.2 The Bidder is responsible for ensuring that he has received all addenda and is advised to check the Materials Management Branch internet site for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B5.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B6. SUBSTITUTES

- B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
 - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
 - (c) identify any anticipated cost or time savings that may be associated with the substitute;
 - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed Work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
 - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed Work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.
- B6.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he wishes to inform.
- B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.

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

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

B7. BID COMPONENTS

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

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

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

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

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

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

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

B7.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, may result in the Bid being determined to be non-responsive.

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

B7.8 Bids shall be submitted to:

The City of Winnipeg
Corporate Finance Department
Materials Management 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 should be witnessed, except where a corporate seal has been affixed.

B8.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

B9. PRICES

B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B9.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.

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

B10. QUALIFICATION

B10.1 The Bidder shall:

- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba; and
- (b) be financially capable of carrying out the terms of the Contract; and
- (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.

B10.2 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) be responsible and not be suspended, debarred or in default of any obligations to the City (a list of suspended or debarred individuals and companies is available on the Information

Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>; and

- (b) have successfully carried out Work similar in nature, scope and value to the Work; and
- (c) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and
- (d) have a written workplace safety and health program if required pursuant to The Workplace Safety and Health Act (Manitoba);

B10.3 Further to B10.2(d), the Bidder shall, within three (3) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

- (a) a valid COR certification number under the Certificate of Recognition (COR) Program administered by the Manitoba Construction Safety Association or by the Manitoba Heavy Construction Association's Safety, Health and Environment Program; or
- (b) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.)

B10.4 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B10.5 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B11. BID SECURITY

B11.1 The Bidder shall provide bid security in the form of:

- (a) a bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in the form included in the Bid Submission (Form G1: Bid Bond and Agreement to Bond); or
- (b) an irrevocable standby letter of credit, in the amount of at least ten percent (10%) of the Total Bid Price, and undertaking issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form included in the Bid Submission (Form G2: Irrevocable Standby Letter of Credit and Undertaking); or
- (c) a certified cheque or draft payable to "The City of Winnipeg", in the amount of at least fifty percent (50%) of the Total Bid Price, drawn on a bank or other financial institution registered to conduct business in Manitoba.

B11.1.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.

B11.1.2 All signatures on bid securities shall be original, and shall be witnessed or sealed as required.

B11.2 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly executed by the successful Bidder and the performance security furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.

- B11.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B11.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.
- B11.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.
- B11.3 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Bid Opportunity.

B12. OPENING OF BIDS AND RELEASE OF INFORMATION

- B12.1 Bids will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Branch, or in such other office as may be designated by the Manager of Materials.
- B12.1.1 Bidders or their representatives may attend.
- B12.1.2 Bids determined by the Manager of Materials, or his designate, to not include the bid security specified in B11 will not be read out.
- B12.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.
- B12.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract Amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.
- B12.4 The Bidder is advised that any information contained in any Bid may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

B13. IRREVOCABLE BID

- B13.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.
- B13.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly executed and the performance security furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid.

B14. WITHDRAWAL OF BIDS

- B14.1 A Bidder may withdraw his Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.
- B14.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.
- B14.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid, and only such person, has authority to give notice of withdrawal.
- B14.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:

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

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

B15. EVALUATION OF BIDS

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

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

B15.2 Further to B15.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities, if the interests of the City so require.

B15.3 Any bid with an apparent imbalance between the unit prices in Work Area A and Work Area B may be determined to be non-responsive and rejected by the Award Authority in its sole discretion, acting reasonably.

B15.4 Further to B15.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid or in other information required to be submitted, that he is responsible and qualified.

B15.5 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.

B15.5.1 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 or will give notice that no award will be made.

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

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

- (a) the prices exceed the available City funds for the Work;
- (b) the prices are materially in excess of the prices received for similar Work in the past;
- (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;

- (d) only one Bid is received; or
- (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.

B16.3 Subject to B16.2, where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid.

B16.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his Bid upon written request to the Contract Administrator.

B16.4 Bidders are advised that the City currently has no approved funding for Work in Area B, but is anticipating approval for funding by City Council in January 2007.

B16.5 As noted in D2 and identified in Form B: Prices, the Work in Area B will be contingent upon receiving funding for the Work in Area B. If sufficient funding for Work Area B is not approved by City Council, the City shall have the right to eliminate all or any portion of the Work in Area B.

B16.6 Further to C7.5. C7.5.1 and C7.6, a reduction in the Contract Price pursuant to B16.5 shall not be considered in calculating the aggregate reduction in the Contract Price for purposes of C7.5.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for Construction* (Revision 2006 12 15) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.
- C0.2 A reference in the Bid Opportunity to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for Construction*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

D1.1 In addition to the *General Conditions for Construction*, these Supplemental Conditions are applicable to the Work of the Contract.

D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of installation of a rockfill rip rap blanket, installation of rock columns, and excavation and grading of riverbank to stabilize approximately 700 m of riverbank on the Red River within St. Vital Park. Final Site restoration Work including landscaping will be carried out under a separate Contract commencing as soon as conditions allow in the spring or early summer in 2007.

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

Work Area A:

- (a) Site Preparation and Development
- (b) Installation and densification of rock columns.
- (c) Installation of rockfill rip rap along the river edge.
- (d) Excavation and grading of riverbank.
- (e) Installation of geotextile on graded areas for temporary erosion protection.
- (f) Installation of two catch basins and culverts.
- (g) Maintenance of temporary erosion protection measures following construction.

Work Area B:

- (a) Installation of rockfill rip rap.
- (b) Excavation and grading of riverbank.
- (c) Installation of geotextile on graded area for temporary erosion protection.
- (d) Maintenance of temporary erosion protection measures following construction.

D2.3 Further to D2.2(a) all Work for Site preparation and development shall be considered part of Work in Area A, regardless of whether Work is completed in Area A only, or in both Area A and Area B.

D3. DEFINITIONS

D3.1 When used in this Bid Opportunity:

- (a) "ASTM" means American Society for Testing Materials;
- (b) "CSA" means Canadian Standards Association.

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is UMA Engineering Ltd., represented by:

Jeff Tallin, P.Eng.
Senior Geotechnical Engineer
UMA Engineering Ltd.
1479 Buffalo Place, Winnipeg, Manitoba, R3T 1L7

Telephone No. (204) 284-0580
Facsimile No. (204) 475-3646

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

D5. CONTRACTOR'S SUPERVISOR

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

D6. NOTICES

- D6.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.
- D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3, D6.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D4.1.
- D6.3 All notices of appeal to the Chief Administrative Officer shall be sent to the following address or facsimile number:

The City of Winnipeg
Chief Administrative Officer Secretariat
Attn: Chief Administrative Officer
Administration Building, 3rd Floor
510 Main Street
Winnipeg MB R3B 1B9
Facsimile No.: (204) 949-1174

- 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
Attn: City Solicitor
185 King Street, 3rd Floor
Winnipeg MB R3B 1J1
Facsimile No.: (204) 947-9155

D7. FURNISHING OF DOCUMENTS

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

SUBMISSIONS

D8. AUTHORITY TO CARRY ON BUSINESS

D8.1 The Contractor shall be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Contractor does not carry on business in Manitoba, in the jurisdiction where the Contractor does carry on business, throughout the term of the Contract, and shall provide the Contract Administrator with evidence thereof upon request.

D9. SAFE WORK PLAN

D9.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D9.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

D10. INSURANCE

D10.1 The Contractor shall provide and maintain the following insurance coverage:

- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain a contractual liability, unlicensed motor vehicle liability, non-owned automobile liability and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
- (b) automobile liability insurance for owned automobiles used for or in connection with the Work in the amount of at least two million dollars (\$2,000,000.00) at all times during the performance of the Work and until the date of Total Performance;
- (c) an all risks Installation Floater carrying adequate limits to cover all machinery and equipment utilized during the performance of the Work.

D10.2 Deductibles shall be borne by the Contractor.

D10.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in C4.1 for the return of the executed Contract.

D10.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least fifteen (15) Calendar Days prior written notice to the Contract Administrator.

D11. PERFORMANCE SECURITY

D11.1 The Contractor shall provide and maintain performance security until the expiration of the warranty period in the form of:

- (a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; or
- (b) an irrevocable standby letter of credit issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in

the form attached to these Supplemental Conditions (Form H2: Irrevocable Standby Letter of Credit), in the amount of fifty percent (50%) of the Contract Price; or

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

D11.1.1 Where the performance security is in the form of a certified cheque or draft, it will be deposited by the City. The City will not pay any interest on certified cheques or drafts furnished as performance security.

D11.2 If the bid security provided in his Bid was not a certified cheque or draft pursuant to B11.1(c), the Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of letter of intent and prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D12. SUBCONTRACTOR LIST

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

D13. EQUIPMENT LIST

D13.1 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 or prior to a pre-construction meeting, or at least two (2) Business Days prior to the commencement of any Work on the Site.

D14. DETAILED WORK SCHEDULE

D14.1 The Contractor shall provide the Contract Administrator with a detailed Work schedule (Gantt chart for Work) at least two (2) Business Days prior to the commencement of any Work on the Site.

D14.2 Further to SC 18.1, the Gantt Chart shall clearly identify the start and completion dates of the activities/tasks making up the Work listed on Form B, as well as showing the time on a weekly basis required to carry out the Work.

SCHEDULE OF WORK

D15. COMMENCEMENT

D15.1 The Contractor shall not commence any Work until he is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.

D15.2 The Contractor shall not commence any Work on the Site until:

- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D8;
 - (ii) evidence of the workers compensation coverage specified in C6.15;
 - (iii) the Safe Work Plan specified in D9;
 - (iv) evidence of the insurance specified in D10;
 - (v) the performance security specified in D11;
 - (vi) the Subcontractor list specified in D12;
 - (vii) the Equipment list specified in D13; and

(viii) the Detailed Work Schedule specified on D14.

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

D15.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.

D15.3 The City intends to award this Contract by January 22, 2007.

D16. RESTRICTED WORK HOURS

D16.3 Further to clause 3.10 of CW 1130, the Contractor shall require written permission 48 hours in advance from the Contract Administrator for any Work to be performed between 2000 hours and 0700 hours, or on Saturdays, Sundays, Statutory Holidays and or Civic Holidays.

D17. SUBSTANTIAL PERFORMANCE

D17.1 The Contractor shall achieve Substantial Performance on or before March 31, 2007.

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 June 1, 2007.

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 dollars (\$2,000.00) 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 damages 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.

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 C6.24, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

MEASUREMENT AND PAYMENT

D22. PAYMENT

- D22.1 Further to C12, effective January 1, 2007 the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

D23. WARRANTY

- D23.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire two (2) years thereafter unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.
- D23.2 Notwithstanding C13.2 or D23.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if:
- (a) a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use; or
- D23.2.1 In such case, the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

D24. PROTECTION OF RIVER CHANNEL

- D24.1 Should the Contractor deposit any unauthorized material in the river channel, he shall take steps to immediately remove the material and restore the channel to its original condition.
- D24.2 The Contractor shall obtain a "Frozen Waterways Permit" from the Chief of Police Office (986-5999) prior to undertaking any Work on or along the edge of the river, including building or making ice in preparation for construction.
- D24.3 No in-stream Work will be permitted by Department of Fisheries and Oceans after March 31, 2007.

D25. ENVIRONMENTAL PROTECTION

- D25.1 The Contractor shall plan and implement the Work of this Contract strictly in accordance with the requirements of the environmental protection measures proscribed by law and as specified herein.
- D25.2 The Contractor is advised that at least the following Acts, Regulations, and By-laws apply to the Work.
- D25.3 Federal
- (a) Canadian Environmental Protection Act (CEPA) c.16
 - (b) Transportation of Dangerous Goods Act and Regulations c.34
- D25.4 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) And current applicable associated regulations.
- D25.5 The Contractor shall have a copy of the Letter of Authorization or Advice from Fisheries and Oceans Canada and be familiar with the conditions in the letter for which he is responsible.
- D25.6 The Contractor shall have a sufficient supply of containment and clean-up materials such as absorbents, plastic oil booms, and oversized recovery drums (eg. Spill Kit) available on Site.
- D25.7 Fuel Handling and Storage
- (a) 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.
 - (b) 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.
 - (c) The Contractor shall ensure that all fuel storage containers are inspected daily for leaks and spillage.
 - (d) Products transferred from the fuel storage area(s) to specific Work sites shall not exceed the daily usage requirement.
 - (e) 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.
 - (f) Refuelling of mobile equipment (i.e. equipment which can be moved to the top of bank) and vehicles shall take place at least 100 metres from a watercourse.
 - (g) 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.
 - (h) 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.

D25.8 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 near watercourses; contaminated water from onshore cleaning operations shall not be permitted to enter watercourses.

D25.9 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.

D25.10 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 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.
- (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:
 - (ii) identify exact location and time of accident
 - (iii) indicate injuries, if any
 - (iv) request assistance as required by magnitude of accident (Manitoba Conservation 24-hour Spill Response Line (204) 945-4888, Police, Fire Department, Ambulance, company backup)
 - (v) 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
 - (vi) 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 utilities, utility manholes, and other openings by covering the openings with rubber spill mats or by dyking
 - (vii) Resume any effective action to contain, clean up, or stop the flow of the spilled product.

- (e) 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.

D26. PROTECTION OF HERITAGE RESOURCES

- D26.1 The Contractor shall inform the Contract Administrator of any materials, items or conditions discovered during the course of the Work that could be of historical or archaeological significance.
- D26.2 The Contractor is advised that there may be temporary delays in construction to provide the Archaeologist an opportunity to evaluate and document conditions of possible archaeological significance. In this event, every effort shall be taken to minimize the impacts on the Contractor's operations.
- D26.3 The Contractor shall cooperate fully with the Contract Administrator and the Archaeologist by promptly reporting any unusual conditions encountered during construction and assisting in the evaluation and documentation of archaeological information.

FORM H1: PERFORMANCE BOND
(See D11)

KNOW ALL MEN BY THESE PRESENTS THAT

_____ ,
(hereinafter called the "Principal"), and

_____ ,
(hereinafter called the "Surety"), are held and firmly bound unto **THE CITY OF WINNIPEG** (hereinafter called the "Obligee"), in the sum of

_____ dollars (\$_____)

of lawful money of Canada to be paid to the Obligee, or its successors or assigns, for the payment of which sum the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has entered into a written contract with the Obligee dated the

_____ day of _____, 20____, for:

BID OPPORTUNITY NO. 779-2006

ST VITAL PARK RIVERBANK STABILIZATION WORKS

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

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

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

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

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

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

_____ day of _____, 20____ .

SIGNED AND SEALED
in the presence of:

(Witness)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

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

**FORM H2: IRREVOCABLE STANDBY LETTER OF CREDIT
(PERFORMANCE SECURITY)**
(See D11)

(Date)

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 779-2006

ST VITAL PARK RIVERBANK STABILIZATION WORKS

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

(Name of Contractor)

(Address of Contractor)

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

_____ Canadian dollars.

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

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

Partial drawings are permitted.

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

(Address)

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

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

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

(Date)

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

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

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

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

FORM K: EQUIPMENT
(See D12)

ST VITAL PARK RIVERBANK STABILIZATION WORKS

<p>1. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>2. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>3. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>

FORM K: EQUIPMENT
(See D12)

ST VITAL PARK RIVERBANK STABILIZATION WORKS

<p>4. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>5. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>6. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

- E1.1 These Specifications shall apply to the Work.
- E1.2 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.2.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.
- E1.2.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.2.3 Further to C2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.3 The following are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
S.15-BC-1	Existing Site Conditions
S.15-BC-2	Work Area A Plan
S.15-BC-3	Work Area B Plan
S.15-BC-4	Work Area A Cross-Sections
S.15-BC-5	Work Area B Cross-Sections
S.15-BC-6	Catch Basin and Culvert Details

E2. SOILS INVESTIGATION REPORT

- E2.1 Further to C3.1, the geotechnical information is provided to aid the Contractor's evaluation of the existing soil conditions.
- E2.2 The test hole logs and groundwater level information are provided to supplement the Contractor's evaluation of the Site conditions in the Work area. The information is considered accurate at the locations indicated on the drawings at the time of the investigations. However, variations in subsurface conditions may exist between test holes and fluctuations in groundwater can be expected.
- E2.3 The test holes KGS-TH1, KGS-TH2, KGS-TH3, and KGS-TH4 were drilled as part of a preliminary design study in 1999. TH06-01, TH06-02, TH06-03 and TH06-04 were drilled as part of the Functional Design study.
- E2.4 The following copies of previous reports are available for review at the office of UMA Engineering Ltd.:
- St. Vital Park Riverbank Stability Study and Functional Design of Stabilization Measures (2006)* by UMA Engineering.
 - St. Vital Park River Bank Stability Assessment with 1997 Spring Flood Impacts (2000)* by KGS Group.
 - Report on Stability of Proposed Remedial Measures at St. Vital Park (1975)* by Klohn Leonoff Consultants Ltd.

GENERAL REQUIREMENTS

E3. OFFICE FACILITIES

E3.1 The Contractor shall supply office facilities meeting the following requirements:

- (a) shall be conveniently located near the Site.
- (b) shall have a table and chairs and be suitable for conducting job meetings.
- (c) shall be heated.
- (d) the Contractor's lunch room facilities may be used for an office.

E3.2 Measurement and Payment

No separate measurement or payment shall be made for supply of an office facility. This facility shall be considered incidental to the Work.

E4. PROTECTION OF INSTRUMENTATION

E4.1 The Contractor is advised that instrumentation (slope inclinometers and piezometers) have been installed in test holes KGS-TH2, KGS-TH4, TH06-01, TH06-02, TH06-03, TH06-04 and TH06-05 at the locations shown on the drawing.

E4.2 The Contractor shall take necessary precautions to prevent damage to instrumentation as a result of his/her Work. In addition, the Contractor shall take necessary precautions to prevent damage as a result of his/her Work to any new instrumentation that is installed.

E4.3 The Contractor shall repair or replace instrumentation damaged as a result of his/her Work at no cost to the City.

E5. PROTECTION OF EXISTING TREES

E5.1 The Contractor shall not damage or disturb trees and bush that are not specified to be removed as indicated on the Drawings.

E5.2 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing trees within the limits of the construction area:

- (a) The Contractor shall not stockpile materials and soil or park vehicles and equipment within 2 metres of trees.
- (b) Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 100 x 2400 mm wood planks, or suitably protected as approved by the Contract Administrator.
- (c) Excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of 1.5 times the diameter (measured in inches), with the outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation.
- (d) Operation of equipment within the drip line of the trees shall be kept to the minimum required to perform the Work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the drip lines of trees. The drip line of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.
- (e) Work on Site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.

E5.3 All damage to existing trees caused by the Contractor's activities shall be repaired or replaced to the requirements and satisfaction of the Contract Administrator and the City Forester or his designate.

E5.4 No separate measurement or payment will be made for the protection of trees.

E6. VERIFICATION OF WEIGHTS

E6.1 All Material which is paid for on a weight basis shall be weighed on a scale certified by Measurements Canada.

E6.2 All weight tickets shall have the gross weight and the time and date of weighing printed by an approved electro/mechanical printer coupled to the scale.

E6.3 The tare weight and net weight may either be hand written or machine printed. All weights, scales and procedures shall be subject to inspection and verification by the Contract Administrator. Such inspection and verification may include, but shall not be limited to:

- (a) Checking the Contractors or suppliers scales for Measurements Canada certification seals;
- (b) Observing weighing procedures;
- (c) Random checking of either gross or tare weight by having truck or truck trailer combinations weighed at the nearest available certified scale;
- (d) Checking tare weights shown on delivery tickets against current tare.

E7. TRAFFIC CONTROL

E7.1 This Specification shall amend and supplement Standard Specifications CW 1130-R1.

E7.1.1 Further to clauses 3.6 and 3.7 of CW 1130-R1:

- (a) All temporary traffic control signs shall be in accordance with the Manual of Temporary Traffic Control. The Contractor shall bear all costs associated with the placement of temporary traffic control devices required for Work undertaken by the Contractor.

E7.1.2 Traffic management and road closures:

- (a) Public vehicular traffic will be restricted to the roads shown on the attached Access/Egress Plan.
- (b) Access and egress shall be through the South Gate Entrance only. A staging area designated for the Contractor's use is also indicated on the Access/Egress Plan.
- (c) Construction traffic flow for unloaded and loaded vehicles shall correspond to the roadways and directions shown on the attached Access/Egress Plan.
- (d) Ambulance/emergency vehicle access must be maintained at all times.

E7.1.3 Further to Clauses 3.5 and 3.6 of CW 1130-R1

- (a) The Contractor shall keep roadways clean and maintained during construction.

E8. PEDESTRIAN SAFETY

E8.1 The necessary protection of pedestrian traffic shall be provided during construction, including flagmen (as necessary), barricades, fencing and signage.

E8.2 A temporary snow fence shall be installed and maintained on both the park and river sides of active Work areas and any excavations, steep drop-offs or other conditions hazardous to pedestrians. No measurement for payment shall be made for this Work.

E8.3 A fence and appropriate warning signs shall be placed along the top of the access ramps during non-working hours to discourage public access to the Site.

E9. SURVEY

E9.1 This Specification shall amend and supplement Standard Specifications CW 1130-R1.

- E9.1.1 Further to CW 1130-R1 Clause 3.15.1, the Contractor shall be responsible for the layout of the rock columns. The Contract Administrator will provide sufficient control points for the Contractor to lay out this Work.
- E9.1.2 The Contractor, upon entering the Site for the purpose of beginning Work, shall locate all reference points and take all necessary precautions to prevent their destruction. The Contractor shall pay all restoration charges for damaged legal survey bars, stakes, markers, etc.
- E9.1.3 Before commencing Work, the Contractor shall satisfy himself as to the meaning and correctness of all stakes, markers and grade sheets. The Contractor shall give the Contract Administrator at least 24 hours notice in writing before requiring any levels, lines or stakes on any portion of the Work.

E10. SITE PREPARATION, DEVELOPMENT AND RESTORATION

E10.1 Description

- E10.1.1 This specification shall cover the following:
- (a) Mobilization/Demobilization
 - (b) Restoration of access/egress routes, staging areas, and other areas disturbed in the park to gain access to the Work area.
 - (c) Snow and Debris Removal
- E10.1.2 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E10.2 Material

- E10.2.1 Use materials in accordance with applicable City of Winnipeg Standard Construction Specifications for replacement or repairs to all curbs, sidewalks and any other infrastructure removed or modified to facilitate widening of the south gate entrance and replacement of the gate structure.

E10.3 Construction Methods

- E10.3.1 Construction facilities, construction equipment and other items associated with the works shall be located within the staging area designated on the Site Access/Egress Plan.
- E10.3.2 The Contractor may remove curbs and sidewalks and widened roads on to grassed areas to facilitate construction traffic.
- E10.3.3 Repair, or replace if necessary, all damaged grassed areas, pavement, sidewalk, curbs or other infrastructure, damaged or removed as a result of the Work in accordance with applicable City of Winnipeg Standard Construction Specifications.
- E10.3.4 Repair to the existing pavement along the park roads identified as access/egress routes damaged as a result of normal construction activities will be the responsibility of the City.
- E10.3.5 Damage to the pavement on the parking lot identified as a possible staging area shall be repaired by the Contractor at his/her cost.
- E10.3.6 The Contractor shall notify and review any disturbance or removals of existing sidewalks, pavements, vegetation or other infrastructure prior to the Work.
- E10.3.7 The Contractor shall keep the Work area and roadways free of snow and debris, clean and maintained during construction.

E10.4 Measurement and Payment

E10.4.1 No separate measurement will be made for mobilization/demobilization, snow and debris removal, constructing, maintaining, and restoring disturbance or damage required for Site Preparation, Development and Restoration.

E10.4.2 Site Preparation and development including mobilization/demobilization, debris and snow removal, constructing, maintaining and restoring the south gate entrance or other infrastructure damaged as a result of the Work shall be paid at the Contract Lump Sum Price for "Site Preparation, Development and Restoration", which shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.

E11. CONSTRUCTION SEQUENCING

E11.3 Following Site preparation and construction of access ramps, the construction sequencing shall be as follows:

- (a) Construction shall commence with installation of rock columns in continuous operation.
- (b) Riverbank grading works can be sequenced such that a minimum distance of 60m, measured parallel to the river, is maintained between the installation of rock columns and grading works.

E12. WORKING BENCH AND ACCESS RAMPS

E12.1 Description

E12.1.1 This Specification shall cover the following items:

- (a) Construction of access ramps in the Work area
- (b) Construction of a working bench to install rock columns.

E12.1.2 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E12.1.3 This specification shall supplement CW-3170 R3.

E12.2 Materials

E12.2.1 Working Bench and Access Ramps

- (a) The working bench and access ramp are to be constructed by balance cut and fill where possible.
- (b) The Contractor shall be responsible for supplying additional suitable fill from an off-Site source if required.

E12.3 Construction Methods

E12.3.1 Access Ramps

- (a) The access ramps shall be located within the Work area and shall be reviewed by the Contract Administrator prior to construction.
- (b) Methods and procedures that prevent damage or risk of damage to existing trees, infrastructure and existing facilities on Site, shall be employed during construction and maintenance of the ramps. This may include installing fencing to identify the edges of the ramps and prevent inadvertent entry of construction equipment into treed areas.

- (c) Fills shall not be placed for the construction or maintenance of the ramp without prior acceptance by the Contract Administrator.

E12.3.2 Working Bench

- (a) The Contractor may construct a level working bench to facilitate installation of the rock columns along the riverbank.
- (b) The Contractor shall be responsible for maintaining the bench and ensuring that all fills are placed and remain in a compacted state to support construction equipment during construction.
- (c) Surplus excavated materials shall be immediately removed from the Site. Stockpiling of excavated materials in locations and/or quantities that could jeopardize riverbank stability shall not be permitted.
- (d) Regrade working bench to the original riverbank grades shown on the drawings.

E12.4 Measurement and Payment

E12.4.1 Constructing, maintaining, and restoring the access ramps and the working bench are incidental to the Work and no separate measurement or payment will be made for this Work.

E13. ROCK COLUMNS

E13.1 Description

E13.1.1 This Specification shall cover the installation of rock columns including the auger drilling, sleeving, cuttings removal, supply and placement of crushed limestone and clay cap, crushed limestone and clay plug compaction and provisions for handling groundwater infiltration.

E13.1.2 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E13.2 Materials

E13.2.1 Crushed Limestone

- (a) The material used for the rock column fill shall be 150 mm down crushed limestone manufactured from sound durable limestone or dolomite meeting the following properties:
 - (i) minimum bulk specific gravity of 2.6 (ASTM C127),
 - (ii) maximum Los Angeles abrasion loss of 35% (ASTM C131),
 - (iii) maximum soundness loss of 18% (ASTM C88),
 - (iv) maximum absorption of 2.5% (ASTM C127),
 - (v) maximum moisture content of 3 percent by weight (ASTM D2216-98),
 - (vi) gradation requirements, as follows:

Gradation Requirements 150 mm Crushed Limestone	
Canadian Metric Sieve Size	Percent of Total Dry Weight Passing Each Sieve
150 000	100
50 000	75 - 90
25 000	20 - 50
80	0 - 8

E13.2.2 Clay Fill

Fill for the clay plug at the top of the rock columns shall consist of unfrozen clay with a Liquid Limit greater than 50% and free from deleterious material and may be clay excavated from the drilling of the rock column shafts, as approved by the Contract Administrator.

E13.2.3 Acceptance of Material

- (a) The Contractor shall supply a representative sample of 150 mm Crushed Limestone at least ten (10) Business Days prior to the commencement of the Construction.
- (b) The Contractor shall submit proposed supplier and location of rock and confirm that sufficient quantity of specified rock is available at least ten (10) Business Days prior to the commencement of the Construction.
- (c) The Contract Administrator shall perform the necessary tests to determine compliance with the specified properties.

E13.3 Construction Methods

E13.3.1 Excavation

- (a) The rock column shafts shall be excavated by drill rig augers to the depth necessary to achieve between 0.5 to 1.0 m penetration into competent glacial till. Note that the glacial till contact elevation may vary and the depth of excavation may differ from that shown on the drawings.
- (b) Any deleterious or sloughed material shall be removed from the rock column shaft prior to backfilling.
- (c) The construction of the rock columns shall be a continuous operation with backfilling immediately following excavation.
- (d) The Contractor must complete backfilling of each rock column before commencing to excavate adjacent rock columns.
- (e) Excavated material shall be removed from the riverbank upon excavation and disposed of offsite.

E13.3.2 Surface Sleeving

- (a) The Contractor shall install surface sleeving in each rock column shaft to maintain safe conditions around each shaft. The surface sleeving shall extend to minimum depth of 2 m below grade and 0.3 m above grade.
- (b) The surface sleeving shall be installed prior to drilling shafts deeper than 2 m.
- (c) There shall be no separate measurement and payment for Surface Sleeving.

E13.3.3 Deep Sleeving

- (a) The Contractor shall install additional sleeving, below the surface sleeving, as required to control sloughing and caving of the shafts.
- (b) Deep Sleeving shall only be installed where it is not possible to advance and maintain an open hole during the excavating, backfilling and compacting procedures.
- (c) Contractor shall only be paid for Deep Sleeving approved by the Contract Administrator.

E13.3.4 Backfilling and Densification

- (a) Densification of crushed limestone shall be achieved using vibratory densification equipment capable of penetrating the entire depth of the crushed limestone in the rock column shaft.
- (b) Compacting the crushed limestone with drill augers, free fall of a weight or a backhoe bucket shall not be accepted.

- (c) The densification method shall achieve a relative increase in density of 15% after initial placement of the crushed limestone, as determined by measuring the drop in crushed limestone after densification.
- (d) The Contractor shall demonstrate that the methods and means of compacting the rock fill is suitable to achieve the specified relative increase in density of 15%, on the first three (3) production rock columns (minimum).

E13.3.5 Supply of Crushed Limestone

- (a) The Contractor shall monitor the supply rate of crushed limestone to ensure that the backfilling and compacting operations are not delayed.
- (b) Rock column shafts shall not be left open for any unnecessary lengths of time.

E13.3.6 Contaminated Crushed Limestone

- (a) Where crushed limestone becomes contaminated during construction of the rock columns, the Contractor shall promptly advise the Contract Administrator. The Contract Administrator will advise the Contractor whether the affected crushed limestone must be removed and disposed of or may remain in place.
- (b) Where crushed limestone has become contaminated due to the Contractor's method of operation, negligence, failure to backfill in a timely manner, etc. the material shall be rejected and shall be weighed prior to disposal for deduction from the total weight of crushed limestone measured for payment.
- (c) Where crushed limestone has become contaminated due to conditions beyond the control of the Contractor, the material shall be removed and disposed of incidental to the cost of placing new backfill material.

E13.3.7 Clay Plugs

- (a) The rock columns shall be sealed with a compacted clay plug.
- (b) The clay plug shall be compacted to a minimum of 95 percent of the Standard Proctor Maximum Dry Density as determined by ASTM D698 using unfrozen clay. Placing and compacting clay shall not be permitted if the specified density cannot be achieved due to weather conditions.
- (c) The Contractor shall compact the clay in layers not exceeding 300 mm in thickness. The Contractor shall remove any snow from the rock column or between layers of compacted clay prior to placing and compacting subsequent layers of clay fill.

E13.3.8 Disposal of Water From Rock Column Shafts

- (a) The Contractor shall take necessary measures to minimize inflow of water into the rock column shafts.
- (b) Sediment laden water pumped or displaced from the caisson shafts shall not be released directly into the river but shall be removed from the Site and disposed of in accordance with applicable by-laws and regulations.

E13.4 Measurement

E13.4.1 Drill 2.1 m Diameter Rock Column Shafts

- (a) Drilling 2.1 m diameter rock column shafts shall be measured on a vertical length basis. The length paid shall be the total length in vertical metres (v.m) of shaft drilled, below original ground at the location of the rock column, drilled in accordance with this Specification as computed from measurements made by the Contract Administrator.
- (b) No separate measurement shall be made for excavating clay from the rock column shafts. Excavation to install rock columns shall be incidental to the cost of drilling shafts.
- (c) No payment shall be paid for drilling 2.1 m diameter rock column shaft above original ground.

E13.4.2 Deep Sleeving Rock Column Shafts

- (a) Deep sleeving shall be measured on a vertical length (v.m) basis. The length paid shall be the total length in metres of sleeving placed in rock column shafts below original ground to the bottom of the rock column to prevent sloughing and caving, as computed from measurements made by the Contract Administrator.
- (b) The Contractor shall not be paid for sleeving within 2 m of original ground. Sleeving above this elevation due to the Contractor's construction methods shall deducted from the total amount to be paid.
- (c) The Contractor shall not be paid for additional excavation to auger oversized shafts to install the sleeving. Such additional excavation shall be incidental to the cost for sleeving.
- (d) No payment shall be made for installing over-sized sleeving or installing more than one size of sleeving in a shaft.
- (e) In cases where more that one size of sleeving is installed in a shaft the length of sleeving shall be measured as the total length of shaft sleeved not the total length of sleeve used.

E13.4.3 Supply, Place and Compact Crushed Limestone for Rock Columns

- (a) Crushed limestone for the rock columns shall be measured on a weight basis. The weight paid shall be the total weight in tonnes of Crushed Limestone placed in rock columns below the compacted clay plug, as accepted by the Contract Administrator.
- (b) No separate measurement shall be made of the compacted Clay Plugs installed. Placing and compacting clay plugs shall be incidental to the Contract.
- (c) Crushed limestone or other imported materials required to maintain working surfaces on Site shall not be included in the weight for payment.

E13.4.4 Disposal of Water From Rock Column Shafts

- (a) Disposal of water from rock column shafts is incidental to the Work and no separate measurement or payment will be made for this Work including disposal fees or charges levied by the receiving treatment facility.

E13.5 Payment

E13.5.1 Payment for construction of rock columns shall be paid at the Contract Unit Price for the "Items of Work" listed below, which shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.

E13.5.2 Items of Work

- (a) Drill Rock Column Shafts.
- (b) Deep Sleeving Rock Column Shafts.
- (c) Supply and Compact Crushed Limestone for Rock Columns.

E14. EXCAVATION AND GRADING

E14.1 Description

E14.1.1 This Specifications covers excavation and grading works.

E14.1.2 This Specification shall amend and supplement Standard Specification CW 3170-R3.

E14.1.3 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified

E14.2 Construction Methods

E14.2.1 Excavation and grading shall be to the elevations and grades shown as indicated on the drawings.

E14.2.2 Grading shall be completed in a manner to minimize the potential for water ponding.

E14.2.3 The Contractor shall be responsible for removal and disposal of excess excavated material.

E14.2.4 Excavated material, as approved by the Contract Administrator, may be used for grading purposes excluding deleterious material such as snow, frozen soil, roots, tree trunks, rubble, etc. Fills shall be compacted to a minimum of 95 percent of the Standard Proctor Maximum Dry Density as determined by ASTM D698.

E14.2.5 Removal of Existing Trees

- (b) The Contractor shall be responsible for the removal of all trees and shrubs that are designated to be removed as identified on the drawings. At the time of construction, the Contract Administrator may identify trees now designated for removal to remain.
- (c) All trees shall be removed and disposed of by the Contractor.
- (d) American Elms shall be removed and disposed of in accordance with the Provincial Dutch Elm Disease Act and regulations.

E14.3 Measurement and Payment

E14.3.1 Excavation and grading will be measured on a volume basis. The volume to be paid for shall be the total number of cubic metres (c.m.) excavated below original ground surface. No separate measurement or payment shall be made for fill placed above original ground to achieve design grades. Payment shall be at the Contract Unit Price for "Excavation and Grading" in Work Area A and in Work Area B. The price for "Excavation and Grading" in Work Area A and in Work Area B shall include removal and disposal of trees.

E15. GEOTEXTILE

E15.1 Description

E15.1.1 This Specification covers the supply and installation of the geotextile filter fabric for use under the rockfill rip rap blanket.

E15.1.2 This Specification shall amend and supplement Standard Specification CW3130-R1.

E15.1.3 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E15.2 Materials

E15.2.1 The geotextile shall be a non-woven geotextile fabric, meeting or exceeding the following properties:

NON-WOVEN GEOTEXTILE PROPERTIES			
	ASTM Test Method	Units	Minimum Average Roll Values
PHYSICAL			
Grab Tensile Strength	D-4632	N	890
Grab Tensile Elongation	D-4632	%	50
Mullen Burst	D-3786	kPa	2600
Puncture	D-4833	N	525
Trapezoidal Tear	D-4533	N	355
UV Resistance	D-4355	% @ hrs ¹	70/500

NON-WOVEN GEOTEXTILE PROPERTIES			
	ASTM Test Method	Units	Minimum Average Roll Values
HYDRAULIC			
Apparent Opening Size	D-4751	mm	0.150
Permittivity	D-4491	sec ⁻¹	1.2
Flow Rate	D-4491	L/sec/m ²	54
¹ Percent grab tensile strength retained per hours of UV exposure following conditioning in accordance with ASTM D-4355.			

E15.3 Construction Methods

- (a) Installation, handling and storage of geotextile fabric shall conform to the manufacturer's recommendations and specifications.
- (b) Ground surfaces shall be cleared of all deleterious material such as snow, roots, tree trunks, rubble, etc. to expose the native riverbank soil and shall be graded to a smooth surface.
- (c) The geotextile shall be placed in accordance with CW 3130-R1, Clause 3.1 with following exceptions:
 - (i) More than one piece of fabric may be used to cover the ground surface between the up-slope and down-slope edges of the rockfill rip rap.
 - (ii) The joints shall be overlapped 0.6m in a shingle pattern, with the up-slope pieces overlapping the down-slope pieces and the up-stream pieces overlapping the down-stream pieces.
- (d) Tears or other damage in the geotextile fabric shall be repaired with a piece of geotextile fabric placed over the damaged area and extending 1.0 m in all directions beyond the damaged area.
- (e) A minimum of 300 mm of material shall be placed over the geotextile prior to passage of equipment.

E15.4 Measurement and Payment

E15.4.1 Geotextile fabric will be measured on an area basis and measured as the area covered by geotextile fabric. The area to be paid for shall be the total number of square metres (s.m.) of geotextile fabric supplied and installed in accordance with this Specification as computed from measurements made by the Contract Administrator. Payment shall be at the Contract Unit Price for "Supply and Install Geotextile under Rockfill Rip Rap" in Work Area A and in Work Area B.

E16. ROCKFILL RIP RAP

E16.1 Description

- E16.1.1** This Specification covers supply and installation of rockfill rip rap along the edge of the river.
- E16.1.2** This Specification shall replace Standard Specification CW3615-R2.
- E16.1.3** The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E16.2 Materials

E16.2.1 Rockfill rip rap shall be manufactured from hard durable limestone or dolomite with the following requirements:

- (a) meets the physical requirements for crushed limestone specified in E13.2.1(a)(i) to (iv)
- (b) gradation requirements, as follows:

Gradation Requirements Rockfill rip rap	
Canadian Metric Sieve Size	Percent of Total Dry Weight Passing Each Sieve
500 000	100
300 000	40 - 60
50 000	0-8

E16.2.2 Acceptance of Material

- (a) The Contractor shall supply a representative sample of rockfill rip rap or provide access to the quarry manufacturing the rockfill rip rap at least ten (10) Business Days prior to the commencement of the Construction.
- (b) The Contractor shall submit proposed supplier and location of rock and confirm that sufficient quantity of specified rock is available at least ten (10) Business Days prior to the commencement of the Construction.
- (c) The Contract Administrator shall perform the necessary tests to determine compliance with the specified properties.

E16.3 Construction Methods

E16.3.1 The rockfill rip rap shall be placed to the lines and grades shown on the Drawings

E16.3.2 Rockfill rip rap shall be placed in a manner that prevents damage to the geotextile. Damaged or torn geotextile shall be replaced or repaired at the Contractors expense.

E16.3.3 Rockfill rip rap shall be placed in a manner such that uniform larger pieces are uniformly distributed and smaller pieces fill the spaces between the larger pieces.

E16.4 Measurement and Payment

E16.4.1 Supply and installation of rockfill rip rap will be measured and paid for on a weight basis. The weight to be paid for shall be the total number of tonnes of rockfill rip rap supplied and installed in accordance with this Specification as accepted by the Contract Administrator. Payment shall be at the Contract Unit Price for "Supply and Install Rockfill Rip Rap" in Work Area A and in Work Area B.

E17. TEMPORARY EROSION PROTECTION

E17.1 Description

E17.1.1 This Specification covers the supply, installation and maintaining of the geotextile filter fabric for use as temporary erosion protection for the graded portion of the riverbank.

E17.1.2 This Specification shall amend and supplement Standard Specification CW 3130 R1.

E17.1.3 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E17.2 Materials

E17.2.1 The geotextile shall be a non-woven geotextile fabric, meeting or exceeding the following properties:

NON-WOVEN GEOTEXTILE PROPERTIES		
ASTM Test Method	Units	Minimum Average Roll Values
PHYSICAL		

NON-WOVEN GEOTEXTILE PROPERTIES			
	ASTM Test Method	Units	Minimum Average Roll Values
Grab Tensile Strength	D-4632	N	400
Grab Tensile Elongation	D-4632	%	50
Mullen Burst	D-3786	kPa	1205
Puncture	D-4833	N	240
Trapezoidal Tear	D-4533	N	180

E17.3 Construction Methods

- (a) Installation, handling and storage of geotextile fabric shall conform to the manufacturer's recommendations and specifications.
- (b) Ground surfaces shall be cleared of all deleterious material such as snow, roots, tree trunks, rubble, etc. to expose the native riverbank soil and shall be graded to a smooth surface.
- (c) Geotextile fabric shall be installed on all exposed areas of the graded riverbank excluding the rockfill rip rap prior to river break up.
- (d) The Geotextile shall be securely held in place.
- (e) The geotextile shall be placed in accordance with CW 3130-R1, Clause 3.1 with following exceptions:
 - (i) More than one piece of fabric may be used to cover the ground surface between the up-slope and down-slope edges of the rockfill rip rap.
 - (ii) The joints shall be overlapped 0.6m in a shingle pattern, with the up-slope pieces overlapping the down-slope pieces.
- (f) Tears or other damage in the geotextile fabric shall be repaired with a piece of geotextile fabric placed over the damaged area and extending 1.0 m in all directions beyond the damaged area.
- (g) Erosion geotextile shall be installed prior to the spring thaw and flooding, and shall be maintained until the following dates:
 - (i) June 1, 2007 or
 - (ii) the date of Total Performance if Total Performance is not achieved by June 1, 2007.

E17.4 Measurement and Payment

E17.4.1 Geotextile fabric will be measured on an area basis and measured as the area covered by geotextile fabric. The area to be paid for shall be the total number of square metres (s.m.) of geotextile fabric supplied and installed in accordance with this Specification as computed from measurements made by the Contract Administrator. Payment shall be at the Contract Unit Price for "Supply, Install and Maintain Temporary Erosion Protection" in Work Area A and in Work Area B.

E18. OUTFALL WORKS

E18.1 Description

- E18.1.1 This specification shall cover installation of two catch basins and associated culverts.
- E18.1.2 This Specification shall amend and supplement Standard Specifications CW 2130 and CW 3610.
- E18.1.3 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified

E18.2 Materials

E18.2.1 Sewer Manholes and Catchbasins

- (a) All material shall be of a type approved by the City of Winnipeg.
- (b) Manhole frames and covers shall have machined seating surfaces and shall be in accordance with Approved Product Drawings AP-004 and AP-005.
- (c) All manholes shall be constructed with a 750 mm x 150 mm ring immediately below the frame and cover. If additional riser sections are required, these will be indicated on the drawings.
- (d) Where base diameters are shown on the Construction Drawings, the land drainage manhole shall be constructed in accordance with Standard Drawing SD-10 with the specified base. All bases greater than 1200 mm shall be constructed with flat reducers.
- (e) Catchbasins shall be the sizes shown on the Construction Drawings and constructed in accordance with Standard Drawing SD-024 or SD-025.

E18.2.2 Outfall Piping

- (a) The following materials are specified for use as outfall piping. Locations are noted on the Construction Drawings. In addition to the requirements noted on the Drawing, the following is required:
 - (i) 300 mm ϕ Corrugated Steel Pipe (CSP)
 - ◆ Conforming to CSA Standard G-401
 - ◆ 68 mm x 13 mm corrugation profile
 - ◆ 1.6 mm specified thickness
 - ◆ Custom hot-dip galvanized, conforming to zinc-coating requirements of Clause 3.5.1.3 of the CSA Standard
 - (ii) Material for CSP to CSP connections
 - ◆ Conforming to CSA Specification CAN3- G401. Standard or dimpled with bolt and angle attachments.
 - (iii) Slip Joints
 - ◆ Materials for slip joints for CSP shall be as noted on the Detail Drawings.

E18.2.3 Bedding and Backfill Material for CSP

- (a) Bedding and backfill material for the CSP shall conform to the general requirements of CW 2030 Type 1 material. The material shall be crushed limestone. The material shall be well graded throughout with a maximum aggregate size of 38 mm and from 5% - 15% passing an 80 micrometre sieve. The material shall not be frozen at the time of placement and compaction. The Contractor shall take such measures as are necessary to ensure embedment material is not placed in a frozen state.
- (b) Backfill material (i.e. that material above initial backfill material) and for the impervious clay dam shall be compacted excavated material conforming to Clause 3.8.5.1 of CW 2030 and Clause 9.1 of CW 3610 R3.
- (c) The impervious clay dam shall consist of a high plasticity clay material with a Liquid Limit in excess of 50%. The clay shall be free of deleterious material such as roots, organic material, ice, snow, or other unsuitable materials and maybe salvaged from the on-site excavation, as approved by the Contract Administrator. Frozen material will not be accepted. The supply and placement of the impervious clay cap shall be considered incidental to the CSP installation, and no separate measurement or payment will be made.
- (d) Representative samples of all granular materials proposed for use for bedding and backfilling shall be submitted to the Contract Administrator for review as per Section 2.5 of CW 2030.

E18.2.4 Galvanized Primer

- (a) Galvanized primer for repair of coating shall be zinc rich, ready mix to CGSB-1-GP-181M.

E18.3 Construction Methods

E18.3.1 The catch basins and culverts shall be installed at the locations and to the dimension shown on the drawings.

E18.3.2 The Contractor shall remove an existing catch basin and existing culverts at the locations shown on the drawings.

E18.3.3 Shop Drawings

- (a) The Contractor shall have a Shop Drawing submission prepared for the outfall pipe and slip joint as per Clause 1.5 of CW 1110. The shop drawing submission shall be in sufficient detail to permit review of materials for compliance with this Specification and facilitate assembly in the field complete with connection details.

E18.3.4 Diversion of Flows

- (a) Flows such as snowmelt or rainfall, a watermain break, or any other flow travelling through the vicinity of the proposed outfall pipe trench shall be diverted during construction. The cost of the flow diversion is considered incidental to the installation of the pipe.

E18.3.5 Corrugated Steel Pipe (CSP)

- (a) The CSP shall be installed as shown on the drawings and in accordance with CW 3610, and laid to the established line and grade.

E18.3.6 Bedding and Backfilling for CSP

- (a) Ensure bedding tamped thoroughly under pipe haunches.
- (b) Bedding and backfill up to 600 mm above pipe crown to be hand tamped by mechanical means to a density sufficient to limit pipe deflection to the maximum specified herein (minimum of 90% maximum dry density as determined by the Standard Proctor Compaction Test will be permitted).
- (c) Backfill around pipe in maximum 300 mm lifts alternatively from side to side. At no time should the difference in backfill elevation on either side of the pipe be greater than 450 mm.
- (d) The outfall piping may be strutted in an approved manner to limit deflection during installation and backfilling. The struts must be removed subsequent to construction. If pipe deflects greater than 4% of internal diameter during construction or within the warranty period, the Contractor shall re-excavate to springline (or greater if required), re-establish sufficient side support and re-backfill as originally specified.
- (e) Backfilling above 300 mm above the pipe shall be as per CW 2030 for Class 4 backfill. Contractor to ensure compaction equipment utilized is consistent with degree of compactive effort required and adequate protection against overloading pipe. Compact backfill over pipe perpendicular to trench. Any damage caused to the pipe as a result of construction operations will be rectified at the Contractor's expense. Only non-frozen material shall be used.
- (f) Construct an impervious clay dam at the location indicated on the drawing. Only non-frozen material shall be used.

E18.3.7 Bedding and Backfill for Catch Basins

- (a) The manhole base section shall be bedded on a thoroughly compacted 100 mm of mechanically compacted 20 mm down limestone or a concrete skin coat of cement-stabilized fill (conforming to Clause 2.2 of CW-2030) or equal. This bedding shall be fully compacted and levelled throughout the full trench width to the exact grade

specified so that the base section is uniformly and fully supported and the floor is level.

- (b) The space between the outside of the manhole and the wall of the excavated area shall be backfilled to Class 3 standards at all locations except future land drainage sewer tie-in locations. These tie-in locations are to be backfilled and compacted with clean clay material to a height of 1.5 m above the obvert of the future pipe. No extra payment will be made for this Work, it shall be considered incidental to the price paid for manholes.
- (c) The last two (2) linear metres of all pipes connecting to manholes shall be backfilled to Class 2 standards. This Work shall be paid for as Class 2 backfill for each particular pipe.
- (d) The Contractor shall pay particular attention to backfilling around the manhole to ensure that the required backfill compaction is achieved.

E18.3.8 Installation of Manholes on Existing Mains

- (a) Install manholes on existing mains in accordance to CW 2130 Section 3.9.2

E18.3.9 Connecting CSP. Pipe to Manholes

- (a) Connecting CSP. pipe to manholes shall be performed in accordance with City of Winnipeg Specification CW 2130.
- (b) Where CSP. pipe is used, at the entrance to manholes, the pipe end shall be coated with an approved cementing agent to which sand has been added, and shall be allowed to harden prior to grouting the pipe into the manhole. This practice shall promote a suitable bond between CSP. pipe and the concrete.
- (c) This treatment of CSP. pipe at manholes shall be considered incidental to the installation of sewer main. No separate measurement or payment shall be made for this item.

E18.4 Method of Measurement and Basis of Payment

- E18.4.1 The outfall Work and incidents associated with the outfall Work including the removal of a existing catch basin and existing culverts shall be paid at the Contract Lump Sum Unit Price for "Supply and Install Catch Basin and Culverts, which shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.

E19. STOCKPILING OF MATERIALS

E19.1 Description

- E19.1.1 This specification covers the procedures for establishing and maintaining stockpiles of crushed limestone, riprap, and other materials handled on Site.
- E19.1.2 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E19.2 Construction Methods

- (a) The rate at which materials are delivered to the Site shall be controlled to minimize stockpiling and handling.
- (b) All required stockpiles shall be established within the limits of the rock column and riprap area identified on the drawings.
- (c) No stockpiles of materials shall be permitted above the top of the rockfill rip rap, beyond the crest of the riverbank.

- (d) The maximum size of stock pile shall be 60 tonnes of material within the limits of the rock column and riprap area until a sufficient number of rock columns have been installed and larger stock piles can be established above completed rock columns without adversely affecting riverbank stability.
- (e) Stockpiled material shall be handled and maintained in a manner that prevents contamination with other soils and materials, debris, snow, or excess moisture. Contaminated material shall be removed and replaced at the Contractor expense.
- (f) Stockpiles shall be maintained to prevent released of fine grain sediments into the river.

E19.3 Measurement and Payment

No separate measurement or payment shall be made for stockpiling of materials.

E20. EROSION AND SEDIMENT CONTROL

E20.1 This Specification covers the supply, implementation and maintenance of erosion control measures during construction to control the release of sediments into the river during and following construction.

E20.2 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E20.3 Contractors are referred to "Best Management Practices Handbook for Activities In and Around the City's Waterways and Watercourses" which can be found at www.winnipeg.ca/ppd/riverbank/BMPHandbook.pdf for supplemental information pertaining to the Work under this Specification.

E20.4 Materials

E20.4.1 In addition to the erosion geotextile to be installed, the Contractor shall maintain a supply of erosion control products such as erosion control blankets, silt fencing, straw bales or mulch on Site at all times suitable for trapping and preventing sediments from entering the river during construction.

E20.5 Construction Methods

E20.5.1 Winter Construction

- (a) The Contractor shall plan and carry out all his Work in a manner that will mitigate the potential for the release of sediments into the river.
- (b) Sediment control measures shall be implemented to meet the requirements of Fisheries and Oceans Canada.
- (c) The Contractor shall monitor his Work and implement appropriate sediment control measures as Site conditions warrant. Such measures may include installation of silt fences, straw bales or other measures as required in the event that there is runoff from the Site due to thawing or rain.
- (d) Upon completion of the construction Work, all surplus or waste materials, and materials containing fine-grained sediments shall be removed from the Site.

E20.5.2 Post Construction

- (a) Sediment control measures shall be installed and maintained, during the spring thaw and flooding, until the dates set out in E17.3(g).

E20.6 Measurement and Payment

E20.6.1 No separate measurement or payment shall be made for erosion control measures supplied, installed and maintained under this specification. This Work shall be incidental to the Contract.