



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 741-2006**

**RIVERBANK STABILIZATION, PEMBINA HIGHWAY AT GRANDMONT  
BOULEVARD, PHASE 2**

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## **PART B - BIDDING PROCEDURES**

### **B1. PROJECT TITLE**

- B1.1 RIVERBANK STABILIZATION, PEMBINA HIGHWAY AT GRANDMONT BOULEVARD, PHASE 2

### **B2. SUBMISSION DEADLINE**

- B2.1 The Submission Deadline is 12:00 noon Winnipeg time, December 15, 2006.
- B2.2 Bid Submissions determined by the Manager of Materials to have been received later than the Submission Deadline will not be accepted and will be returned upon request.
- B2.3 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

### **B3. SITE INVESTIGATION**

- B3.1 Further to GC:3.1, the Contract Administrator will hold a Site Investigation at the Site at 10:00 a.m. on Thursday, December 7, 2006 to review the project with interested Bidders.
- B3.2 Further to GC:3.1, the Bidder may view the Site without making an appointment.
- B3.3 The Bidder shall not be entitled to rely on any information or interpretation received at the Site Investigation unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

### **B4. ENQUIRIES**

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

### **B5. ADDENDA**

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

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

## **B6. SUBSTITUTES**

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

- B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative shall base his Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B15.
- B6.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

## **B7. BID SUBMISSION**

- B7.1 The Bid Submission consists of the following components:
- (a) Form A: Bid;
  - (b) Form B: Prices;
  - (c) Form G1: Bid Bond and Agreement to Bond, or  
Form G2: Irrevocable Standby Letter of Credit and Undertaking, or  
a certified cheque or draft;
- B7.2 All components of the Bid Submission shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely in ink, to constitute a responsive Bid.
- B7.3 The Bid Submission shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.
- B7.3.1 Samples or other components of the Bid Submission which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid Submission.
- B7.4 Bid Submissions submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B7.5 Bid Submissions shall be submitted to:
- The City of Winnipeg  
Corporate Finance Department  
Materials Management Branch  
185 King Street, Main Floor  
Winnipeg MB R3B 1J1

## **B8. BID**

- B8.1 The Bidder shall complete Form A: Bid, making all required entries.
- B8.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his own name, his name shall be inserted;
  - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
  - (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;

- (d) if the Bidder is carrying on business under a name other than his own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.

B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.

B8.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.

B8.4 Paragraph 12 of Form A: Bid shall be signed in accordance with the following requirements:

- (a) if the Bidder is a sole proprietor carrying on business in his own name, it shall be signed by the Bidder;
- (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
- (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, should be affixed;
- (d) if the Bidder is carrying on business under a name other than his own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.

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

B8.4.2 All signatures shall be original and shall be witnessed except where a corporate seal has been affixed.

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

## **B9. PRICES**

B9.1 The Bidder shall state 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;
- (b) be responsible and not be suspended, debarred or in default of any obligation to the City;
- (c) be financially capable of carrying out the terms of the Contract;
- (d) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract;

- (e) have successfully carried out Work, similar in nature, scope and value to the Work;
- (f) employ only Subcontractors who:
  - (i) are responsible and not suspended, debarred or in default of any obligation to the City (a list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>); and
  - (ii) have successfully carried out Work similar in nature, scope and value to the portion of the Work proposed to be subcontracted to them, and are fully capable of performing the Work required to be done in accordance with the terms of the Contract;
- (g) have a written workplace safety and health program in accordance with The Workplace Safety and Health Act (Manitoba);

**B10.2** Further to B10.1(g), the Bidder shall, within three (3) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

- (a) a valid COR certification number under the Certificate of Recognition (COR) Program - Option 1 administered by the Manitoba Heavy Construction Association's Safety, Health and Environment Program; or
- (b) a valid COR certification number under the Certificate of Recognition (COR) Program administered by the Manitoba Construction Safety Association; or
- (c) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.)

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

**B10.4** The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

## **B11. BID SECURITY**

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

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



- B11.1.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.
- B11.2 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly executed by the successful Bidder and the performance security furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.
- B11.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B11.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.
- B11.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.
- B11.3 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Bid Opportunity.

## **B12. OPENING OF BIDS AND RELEASE OF INFORMATION**

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

## **B13. IRREVOCABLE BID**

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

## **B14. WITHDRAWAL OF BIDS**

- B14.1 A Bidder may withdraw his Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.
- B14.1.1 Notwithstanding GC:23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.
- B14.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid, and only such person, has authority to give notice of withdrawal.
- B14.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials shall:
- (a) retain the Bid Submission until after the Submission Deadline has elapsed;
  - (b) open the Bid Submission to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid; and
  - (c) if the notice has been given by any one of the persons specified in B14.1.3(b), declare the Bid withdrawn.
- B14.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B13.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law, including the right to retain the Bidder's bid security.

## **B15. EVALUATION OF BIDS**

- B15.1 Award of the Contract shall be based on the following bid evaluation criteria:
- (a) compliance by the Bidder with the requirements of the Bid Opportunity (pass/fail);
  - (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B10 (pass/fail);
  - (c) Total Bid Price;
  - (d) economic analysis of any approved alternative pursuant to B6.
- B15.2 Further to B15.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid Submission is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements if the interests of the City so require.
- B15.3 Further to B15.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid Submission or in other information required to be submitted, that he is responsible and qualified.
- B15.4 Further to B15.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.
- B15.4.1 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each item, the sum of the quantities multiplied by the unit prices for each item shall take precedence.

**B16. AWARD OF CONTRACT**

- B16.1 The City will give notice of the award of the Contract by way of a letter of intent, or will give notice that no award will be made.
- B16.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.
- B16.2.1 Without limiting the generality of B16.2, the City will have no obligation to award a Contract where:
- (a) the prices exceed the available City funds for the Work;
  - (b) the prices are materially in excess of the prices received for similar Work in the past;
  - (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
  - (d) only one Bid is received; or
  - (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.
- B16.3 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid.
- B16.4 Award of Contract shall not be made until the City secures:
- (a) authorization from Department of Fisheries and Oceans for the Work
  - (b) a Waterways Permit for the Work
  - (c) authorization from Manitoba Conservation

## **PART C - GENERAL CONDITIONS**

### **C1. GENERAL CONDITIONS**

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

C1.1.1 The *General Conditions for Construction Contracts* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

## **PART D - SUPPLEMENTAL CONDITIONS**

### **GENERAL**

#### **D1. GENERAL CONDITIONS**

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

#### **D2. SCOPE OF WORK**

- D2.1 The Work to be done under the Contract shall consist of the installation of rock columns to stabilize the riverbank between the Red River and Pembina Highway near Grandmont Boulevard.
- D2.2 The major components of the Work are as follows:
- (a) Construction of access ramps and working platforms.
  - (b) Installation and densification of rock columns.
  - (c) Installation of riprap along the river edge.
  - (d) Site restoration following construction of the stabilization works.

#### **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 GC:23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.

D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3, D6.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D4.1.

D6.3 All notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following address or facsimile number:

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

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

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

**D7. FURNISHING OF DOCUMENTS**

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

**SUBMISSIONS**

**D8. SAFE WORK PLAN**

D8.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in GC:4.1 for the return of the executed Contract.

D8.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

## **D9. INSURANCE**

D9.1 The 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) all inclusive, with The City of Winnipeg being added as an additional insured, with a cross-liability clause, such liability policy to also contain a contractual liability, an unlicensed motor vehicle liability and a products and completed operations endorsement to remain in place at all times during the performance of the Work and throughout the warranty period;
- (b) automobile liability insurance for owned and non-owned automobiles used for or in connection with the Work in the amount of at least two million dollars (\$2,000,000.00) at all times during the performance of the Work and until the date of Total Performance;

D9.2 Deductibles shall be borne by the Contractor.

D9.3 The Contractor shall provide the City Solicitor with a certificate of insurance of each policy, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in GC:4.1 for the return of the executed Contract.

D9.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least fifteen (15) Calendar Days prior written notice to the Contract Administrator.

## **D10. PERFORMANCE SECURITY**

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

- (a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; or
- (b) an irrevocable standby letter of credit issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form attached to these Supplemental Conditions (Form H2: Irrevocable Standby Letter of Credit), in the amount of fifty percent (50%) of the Contract Price; or
- (c) a certified cheque or draft payable to "The City of Winnipeg", drawn on a bank or other financial institution registered to conduct business in Manitoba, in the amount of fifty percent (50%) of the Contract Price.

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

D10.2 If the bid security provided in his Bid Submission was not a certified cheque or draft pursuant to B11.1(c), the Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of letter of intent and prior to the commencement of any Work on the Site but in no event later than the date specified in GC:4.1 for the return of the executed Contract.

**D11. SUBCONTRACTOR LIST**

D11.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least five (5) 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.

**D12. EQUIPMENT LIST**

D12.1 The Contractor shall provide the Contract Administrator with a complete list of the equipment which the Contractor proposes to utilize (Form K: Equipment List) at or prior to a pre-construction meeting, or at least five (5) Business Days prior to the commencement of any Work on the Site.

**D13. DETAILED WORK SCHEDULE**

D13.1 The Contractor shall provide the Contract Administrator with a detailed Work schedule (Gantt chart for Work) at least five (5) Business Days prior to the commencement of any Work on the Site.

**SCHEDULE OF WORK**

**D14. COMMENCEMENT**

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

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

- (a) the Contract Administrator has confirmed receipt and approval of:
  - (i) evidence that the Contractor is in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba;
  - (ii) evidence of the workers compensation coverage specified in GC:6.14;
  - (iii) the Safe Work Plan specified in D8;
  - (iv) evidence of the insurance specified in D9;
  - (v) the performance security specified in D10;
  - (vi) the Subcontractor list specified in D11;
  - (vii) the Equipment List specified in D12; and
  - (viii) the Detailed Work Schedule specified in D13.
- (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.

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

D14.4 The City intends to award this Contract by January 5, 2007.



**D15. RESTRICTED WORK HOURS**

D15.1 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.

**D16. SUBSTANTIAL PERFORMANCE**

D16.1 The Contractor shall achieve Substantial Performance by March 15, 2007.

D16.2 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.

D16.3 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.

**D17. TOTAL PERFORMANCE**

D17.1 The Contractor shall achieve Total Performance by June 30, 2007.

D17.2 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.

D17.3 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.

**D18. LIQUIDATED DAMAGES**

D18.1 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.

D18.2 The amount specified for liquidated damages in D18.1 is based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve Substantial Performance by the day fixed herein for same.

D18.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

**D19. SCHEDULED MAINTENANCE**

D19.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

(a) CW3510-R8

D19.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior

to the expiration of the warranty period. Where the scheduled maintenance cannot be completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

## **D20. WARRANTY**

- D20.1 Notwithstanding GC:13.2, the warranty period shall begin on the date of Substantial Performance and shall expire one (1) year thereafter unless extended pursuant to GC:13.2.1 or GC:13.2.2, in which case it shall expire when provided for thereunder.
- D20.2 Notwithstanding GC:13.2 or D20.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Substantial 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.
- D20.2.1 In such case, the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in GC:13.2 for the warranty period to begin.

## **CONTROL OF WORK**

### **D21. JOB MEETINGS**

- D21.1 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.
- D21.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

### **D22. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

- D22.1 Further to GC:6.26, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

### **D23. PROTECTION OF RIVER CHANNEL**

- D23.1 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.
- D23.2 The Site shall be left in a neat and presentable condition in the time period from river break-up to the commencement of final restoration activities as soon as weather permits in the spring of 2007. Maintenance of all areas affected by construction during this time period shall conform to Clause 13 of CW 1100.
- D23.3 The Contractor shall obtain a "Frozen Waterways Permit" from the Chief of Police Office (986-5999) prior to undertaking any Work on the river, including building or making ice in preparation for construction.

D23.4 No in-stream Work will be permitted by Department of Fisheries and Oceans after March 31, 2007.

**D24. ENVIRONMENTAL PROTECTION**

D24.1 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.

D24.2 The Contractor is advised that at least the following Acts, Regulations, and By-laws apply to the Work.

D24.3 Federal

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

D24.4 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.

D24.5 The Contractor shall have a copy of the letter of authorization from Fisheries and Oceans Canada and be familiar with the conditions in the letter for which he is responsible.

D24.6 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.

D24.7 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.

#### D24.8 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.

#### D24.9 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.

#### D24.10 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.

## **D25. PROTECTION OF HERITAGE RESOURCES**

- D25.1 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.
- D25.2 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.
- D25.3 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 D10)

KNOW ALL MEN BY THESE PRESENTS THAT

\_\_\_\_\_ ,  
(hereinafter called the "Principal"), and

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

\_\_\_\_\_ dollars (\$\_\_\_\_\_.)

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

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

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, for:

BID OPPORTUNITY NO. 741-2006

RIVERBANK STABILIZATION, PEMBINA HIGHWAY AT GRANDMONT BOULEVARD, PHASE 2

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

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

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

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

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

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

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ .

SIGNED AND SEALED  
in the presence of:

\_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Name of Principal)

Per: \_\_\_\_\_ (Seal)

Per: \_\_\_\_\_

\_\_\_\_\_  
(Name of Surety)

By: \_\_\_\_\_ (Seal)  
(Attorney-in-Fact)

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

\_\_\_\_\_  
(Date)

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 741-2006

RIVERBANK STABILIZATION, PEMBINA HIGHWAY AT GRANDMONT BOULEVARD, PHASE 2

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)

RIVERBANK STABILIZATION, PEMBINA HIGHWAY AT GRANDMONT BOULEVARD, PHASE 2

<p><b>1. Category/type:</b></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><b>2. Category/type:</b></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><b>3. Category/type:</b></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)

RIVERBANK STABILIZATION, PEMBINA HIGHWAY AT GRANDMONT BOULEVARD, PHASE 2

<p><b>4. Category/type:</b></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><b>5. Category/type:</b></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><b>6. Category/type:</b></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, STANDARD DETAILS AND DRAWINGS

- E1.1 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.1.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.
- E1.1.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.1.3 Further to GC:2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.2 The following Drawings are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
P 3262-2	Existing Conditions
P 3262-3	Rock Columns - Plan and Details
P 3262-4	Cross Sections 10+20 to 11+80
P 3262-5	Site Restoration and Riprap - Plan and Details

#### E2. SOILS INVESTIGATION REPORT

- E2.1 Further to GC:3.1, 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 Bidders' evaluation of the Site conditions in the Work area. The information is considered accurate at the locations indicated at the time of the investigations. However, variations in subsurface conditions may exist between test holes and fluctuations in groundwater can be expected seasonally.
- E2.3 The test holes SI-04-01, SI-04-02, SI-04-03 SI-04-04, SP-04-05 and SP-04-06 were drilled as part of the preliminary design study in 2004. TH-05-07, TH-05-08 and TH-05-09 were 1.5 m diameter test holes to investigate the drilling conditions for installing rock column shafts.
- E2.4 A copy of the report *Pembina Highway at Grandmont Blvd. Riverbank Stability Assessment and Preliminary Design* is available for review at the office of UMA Engineering Ltd.

#### E3. OFFICE FACILITIES

- E3.1 The Contractor shall supply office facilities meeting the following requirements:
- shall be conveniently located near the Site.
  - shall have a table and chairs and be suitable for conducting job meetings.
  - shall be heated.
  - 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 at the locations shown on the drawing.

E4.2 The Contractor shall take necessary precautions to prevent damage as a result of his Work to piezometer SP-04-05 and SP-04-06 shown on the Drawings. In addition, the Contractor shall take necessary precautions to prevent damage as a result of his Work to any new instrumentation that is installed.

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

## E5. PROTECTION OF EXISTING TREES

E5.1 The Contractor shall not damage or disturb the stand of trees and bush as indicated on the Drawings as Existing Trees and Brush.

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

- (a) The Contractor shall not stockpile materials and soil or park vehicles and equipment on boulevards 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 2400mm 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 to the requirements and satisfaction of the Contract Administrator and the City Forester or his designate.

E5.4 Elm trees cannot be trimmed between April 1 and July 31, inclusive.

E5.5 No separate measurement or payment will be made for the protection of trees.

## **E6. TRAFFIC CONTROL**

E6.1 Further to clauses 3.6 and 3.7 of CW 1130-R1:

- (a) In accordance with the Manual of Temporary Traffic Control, the Contractor ("Agency" in the manual) shall make arrangements with the Traffic Services Section of the City of Winnipeg to place all temporary regulatory signs. The Contractor shall bear all costs associated with the placement of temporary traffic control devices by the Traffic Services Section of the City of Winnipeg in connection with the works undertaken by the Contractor.

E6.2 Traffic management and lane closures:

- (a) Maintain a minimum of one lane of traffic northbound on Pembina Highway at all times.
- (b) Northbound lane closure shall only be permitted after 08:30 on the weekdays.
- (c) The Contractor shall contact the City Traffic Services Section to obtain permission and conditions for lane closures on weekends if required.
- (d) The lane closure shall be re-opened with safe road conditions at the end of each work day.
- (e) No lane closures of southbound traffic on Pembina Highway will be permitted.
- (f) The left turn storage lane west of the Work Site shall be maintained at all times.
- (g) All traffic movements at the intersection of Pembina Highway and Grandmont Boulevard shall be maintained at all times.
- (h) Ambulance/emergency vehicle access must be maintained at all times.

## **E7. PEDESTRIAN SAFETY**

E7.1 The pedestrian sidewalk west of the Site shall be maintained during construction. The necessary protection of pedestrian traffic shall be provided during construction, including flagmen (as necessary), barricades, fencing and signage.

E7.2 During the project, a temporary snow fence shall be installed and maintained around any excavations, steep drop-offs or other conditions hazardous to pedestrians. No measurement for payment shall be made for this Work.

E7.3 A fence and appropriate warning signs shall be placed along the top of the access ramp during non-working hours to discourage public access to the Site.

## **E8. VERIFICATION OF WEIGHTS**

E8.1 All Material which is paid for on a weight basis shall be weighed on a scale certified by Consumer & Corporate Affairs, Canada.

E8.2 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.

E8.3 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 Consumer & Corporate Affairs 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.

## **E9. WORKING BENCH AND ACCESS RAMPS**

### **E9.1 Description**

E9.1.1 This Specification shall cover the following Site development and restoration items:

- (a) Construction of access ramps to the Work area
- (b) Construction of the working bench to install rock columns.
- (c) Re-grading of working bench and access ramps after construction.

E9.1.2 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.

E9.1.3 This specification shall supplement CW-3170-R3.

### **E9.2 Materials**

#### **E9.2.1 Fills**

- (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.

### **E9.3 Construction Methods**

#### **E9.3.1 Access Ramps**

- (a) The location of the access ramp shown on the drawing is approximate and shall be reviewed by the Contractor and 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.
- (d) A second additional access ramp at the south end of the Site shall not be permitted unless accepted by the Contract Administrator and the City Traffic Services Department.

#### **E9.3.2 Working Bench**

- (a) The Contractor shall construct a working bench to facilitate installation of the rock columns along the riverbank. Any deviations in the geometry of the working bench shall require review and approval by the Contract Administrator.
- (b) The Contractor shall be responsible for maintaining the platform 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.

#### E9.3.3 Restoration of Work Areas

- (a) Clay fills placed over the rock columns on the working bench, or elsewhere on Site as required, shall be compacted to a minimum of insitu density using unfrozen clay.
- (b) Clay fills shall not be placed and compacted if the clay is frozen. 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 working bench or between layers of compacted clay prior to placing and compacting subsequent layers of clay fill.
- (d) Reshape and grade access ramps to original riverbank grades as shown on the drawings.
- (e) Install and maintain erosion control measures on exposed regraded portions of the riverbank following construction, to control sediment releases, during spring thaw and floods until the sod has established and has been accepted by the City.
- (f) Repair or replace all damaged pavement, sidewalk, curbs or other infrastructure, damaged as a result of the Work in accordance with applicable City of Winnipeg Standard Construction Specifications.

#### E9.4 Measurement and Payment

E9.4.1 No separate measurement will be made for constructing, maintaining, regrading and restoring the working platform and access ramps, or for repairing banks, pavements or sidewalks.

E9.4.2 Site preparation, constructing, maintaining and restoring the working platform and access ramps or other repairs damaged as a result of the Work shall be paid at the Contract Lump Sum Price for "Construct and Restore Working Platform and Access Ramps", which shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.

### E10. ROCK COLUMNS

E10.1 This Specification shall cover excavation, backfilling and densification of the rock columns.

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 Materials

##### E10.2.1 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) 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 - 5

(vi) maximum moisture content of 3 percent by weight (ASTM D2216-98 ).

#### E10.2.2 Clay Fill

- (a) Clay fill for the 0.6 m thick plug at the top of the rock columns shall be clay excavated from the drilling of the rock column shafts.

#### E10.2.3 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 Contract Administrator shall perform the necessary tests to determine compliance with the specified properties.

#### E10.3 Construction Methods

##### E10.3.1 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.

##### E10.3.2 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.

##### E10.3.3 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.

#### E10.3.4 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.

#### E10.3.5 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.

#### E10.3.6 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:
  - (i) Whether the affected crushed limestone must be removed and disposed of or may remain in place.
  - (ii) Whether the crushed limestone to be disposed of may be directly hauled to an approved disposal location or whether the material to be disposed of must be weighed prior to disposal.
- (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.

#### E10.3.7 Clay Plugs

- (a) The rock columns shall be sealed with a minimum of 0.6 m of compacted clay.
- (b) Where this thickness of clay will not be achieved during riverbank regrading a plug of compacted clay shall be placed at the top of the rock columns such that there will be a minimum of 0.6 m of compacted clay above the top of the crushed limestone after regrading
- (c) The clay plug shall be compacted in accordance with E9.3.3.

#### E10.3.8 Disposal of Water From Rock Column Shafts

- (a) The Contractor is advised that, based on available information, bedrock groundwater at the Site is saline.
- (b) The Contractor shall take necessary measures to minimize inflow of water into the rock column shafts.
- (c) 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.

## E10.4 Measurement

### E10.4.1 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 of shaft drilled, below elevation 225.5 m, 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.

### E10.4.2 Deep Sleeving Rock Column Shafts

- (a) Deep sleeving shall be measured on a vertical length basis. The length paid shall be the total length in metres of sleeving placed in rock column shafts below elevation 225.5 m to prevent sloughing and caving, as computed from measurements made by the Contract Administrator.
- (b) The Contractor shall not be paid for sleeving above elevation 225.5 m. 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) The Contractor shall not be paid for installing over-sized sleeving or installing more than one size of sleeving in a shaft.
- (e) In cases where more than 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.

### E10.4.3 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 elevation 224.9 m, as accepted by the Contract Administrator.
- (b) No separate measurement shall be made of the compacted Clay Plugs installed where required. 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.

### E10.4.4 Disposal of Water From Rock Column Shafts

- (a) Disposal of water removed from rock column shafts shall be measured on volume basis. The volume paid for shall be the total number of cubic metres of water removed in accordance with this Specification as determined by tanker truck volume, volume of an on-Site storage tank, or other method as accepted by the Contract Administrator.
- (b) The price for "Removal and Disposal of Water from Rock Column Shafts" shall include disposal fees or charges levied by the receiving treatment facility.

## E10.5 Payment

- E10.5.1 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.  
Items of Work

- (a) Drill Rock Column Shafts
- (b) Deep Sleeving Rock Column Shafts
- (c) Supply and Compact Crushed Limestone for Rock Columns
- (d) Remove and Dispose of Water from Rock Column Shafts

**E11. GEOTEXTILE**

E11.1 Description

- E11.1.1 This Specification covers the supply and installation the geotextile filter fabric.
- E11.1.2 CW 3130 Sub clauses 5.3 to 5.4 and Clause 10 apply.
- E11.1.3 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.

E11.2 Materials

- E11.2.1 The geotextile shall be a non-woven geotextile fabric, meeting of exceeding the following properties:

<b>NON-WOVEN GEOTEXTILE PROPERTIES</b>			
	<b>ASTM Test Method</b>	<b>Units</b>	<b>Minimum Average Roll Values</b>
<b>PHYSICAL</b>			
Grab Tensile Strength	D-4632	N	890
Grab Tensile Elongation	D-4632	%	50
Mullen Burst	D-3786	kPa	2750
Puncture	D-4833	N	575
Trapezoidal Tear	D-4533	N	355
UV Resistance	D-4355	% @ hrs <sup>1</sup>	70/500
<b>HYDRAULIC</b>			
Apparent Opening Size	D-4751	mm	0.150
Permittivity	D-4491	sec <sup>-1</sup>	1.4
Flow Rate	D-4491	L/sec/m <sup>2</sup>	54

<sup>1</sup> Percent grab tensile strength retained per hours of UV exposure following conditioning in accordance with ASTM D-4355.

E11.3 Construction Methods

- (a) Installation, handling and storage of geotextile fabric shall conform to the manufacturer's recommendations and specifications.
- (b) Geotextile fabric shall be installed on all ground surfaces beneath the riprap.
- (c) 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.
- (d) The geotextile shall be placed in accordance with CW 3616-R1, Clause 9.2 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 riprap.

- (ii) The joints shall be overlapped in a shingle pattern, with the up-slope pieces overlapping the down-slope pieces and the up-slope pieces overlapping the down-slope pieces.
- (e) 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.

**E11.4 Measurement and Payment**

E11.4.1 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 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 per square metre for "Supply and Install Geotextile".

**E12. RIPRAP**

**E12.1 Description**

E12.1.1 This Specification covers supply and installation of riprap along the edge of the river and replaces CW 3615.

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.

**E12.2 Materials**

E12.2.1 Riprap shall be manufactured from hard durable limestone or dolomite with the following amendments:

- (a) meets the physical requirements for crushed limestone specified in E10.2.1(a)(i) to (iv)
- (b) gradation requirements, as follows:

Gradation Requirements Riprap	
Canadian Metric Sieve Size	Percent of Total Dry Weight Passing Each Sieve
500 000	100
300 000	40 - 60
50 000	0-5

**E12.2.2 Acceptance of Material**

- (a) The Contractor shall supply a representative sample of riprap or provide access to the quarry manufacturing the riprap at least ten (10) Business Days prior to the commencement of the Construction.
- (b) The Contract Administrator shall perform the necessary tests to determine compliance with the specified properties.

**E12.3 Construction Methods**

E12.3.1 Riprap 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.

E12.3.2 Riprap shall be placed in a manner such that uniform larger pieces are uniformly distributed and smaller pieces fill the spaces between the larger pieces.

#### E12.4 Measurement and Payment

- E12.4.1 Supply and installation of riprap will be measured and paid for on a weight basis. The weight to be paid for shall be the total number of Tonnes of riprap supplied and installed in accordance with this Specification as accepted by the Contract Administrator. Payment shall be at the Contract Unit Price per tonne for "Supply and Install Riprap".

### **E13. STOCKPILING OF MATERIALS**

#### E13.1 Description

- E13.1.1 This specification covers the procedures for establishing and maintaining stockpiles of crushed limestone, riprap, and other materials handled on Site.

- 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 Construction Methods

- (a) The rate at which materials are delivered to the Site shall be controlled to minimize stockpiling and handling.
- (b) The Contractor shall review stock pile locations with the Contract Administrator prior to establishing stockpiles of material.
- (c) All required stockpiles shall be established within the limits of the rock column and riprap area identified on the drawings.
- (d) No stockpiles of materials shall be permitted at the top of the riverbank, along streets or on private properties.
- (e) The maximum size of stock pile shall be 100 tonnes of material on the working bench 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.
- (f) 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.
- (g) Stockpiles shall be maintained to prevent released of fine grain sediments into the river.

#### E13.3 Measurement and Payment

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

### **E14. EROSION CONTROL BLANKETS**

#### E14.1 Description

- E14.1.1 This Specification shall cover supply and installation of erosion control blankets on exposed soils on the working bench and access ramp, and other areas disturbed during construction.

- E14.1.2 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.

## E14.2 Materials

### E14.2.1 Erosion Control Blanket (ECB)

- (a) Erosion control blanket shall be machine produced 100% coconut fibre matrix with a functional longevity of up to 12 to 36 months.
- (b) The blanket shall be of consistent thickness with the coconut fibres evenly distributed over the entire area at a minimum of  $0.27 \pm$  kg coconut fibre/m<sup>2</sup>.
- (c) Biodegradable reinforcement netting on both sides manufactured from heavy weight cotton or jute fibre thread. (1.47 kg/100 m of thread). The mesh dimension shall be a 16 x 16 mm sewn together on 38 mm centres.
- (d) Approved products are:
  - (i) Erosion Control Blanket C32BD;
  - (ii) North American Green C125BN
- (e) The Contractor shall submit all manufacturers' product specifications and recommended installation methods for the proposed erosion control blankets.

### E14.3 Construction Methods

#### E14.3.1 ECB Installation

- (a) Refer to Appendix B.
- (b) Roll blanket out in direction of water flow.
- (c) Securely fasten blanket against soil surface with a staggered staple pattern as per the manufacturer's recommendations and as accepted by the Contract Administrator, but no less than 2 staples per square metre.
- (d) At blanket edges overlap upstream blanket over downstream blanket by a minimum of 150 mm and secure overlaps with a double row of staples, staggered 100 mm (maximum) apart.
- (e) Install a double row of staples staggered at 100 mm apart and 100 mm on centre over the entire width blanketed area at 10 m intervals.
- (f) The upstream edge of the blanket shall be secured in a 150 mm deep by 150 mm wide trench and anchored with staples at a maximum of 300 cm spacing. The trench shall be backfilled with compacted clay.

#### E14.3.2 ECB Maintenance

- (a) The areas covered with ECB shall be regularly inspected, and in particular after severe rainfall, storms, or flooding, to check for blanket separation or breakage.
- (b) Any damaged or poorly performing areas as the result of storm or flood events shall be replaced/repared immediately. Regrading of the slope by manual labour methods may be required in the event of rill or gully erosion. Areas requiring replacement as directed by the Contract Administrator will be re-measured and additionally paid for at the Contract Unit Price for the Work item.
- (c) The Contractor shall be compensated for replacing ECB only if the damage during storms or flooding is the result of conditions beyond his control, such as ice or floating debris or sever erosion. The Contractor shall not be compensated for replacing or repairing ECB damaged as a result of faulty materials or installation methods.



#### E14.4 Measurement and Payment

##### E14.4.1 Erosion Control Blanket

- (a) Erosion Control Blanket and related Work specified herein will be measured on an area basis and paid for at the Contract Unit Price for "Supply and Install Erosion Control Blanket". The area to be paid for shall be the total number of square metres of ground covered (i.e. overlap at joints shall be considered a single layer), performed in accordance with this Specification, measured and accepted by the Contract Administrator.
- (b) Maintenance is considered incidental to supply and installation of erosion control blanket and no separate measurement or payment will be made.

#### **E15. EROSION AND SEDIMENT CONTROL**

E15.1 This Specification covers the supply, implementation and maintenance of erosion control measures during construction and not specifically covered in E14 to control the release of sediments into the river during and following construction.

E15.2 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.

##### E15.3 Materials

E15.3.1 In addition to the erosion control blanket to be installed after construction as specified in E14, 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.

##### E15.4 Construction Methods

###### E15.4.1 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.

###### E15.4.2 Post Construction

- (a) Sediment control measures shall be installed and maintained, during the spring thaw and flooding, until the Site has been restored and the risk of sediment releases into the river have been mitigated.

**E15.5 Measurement and Payment**

E15.5.1 No separate measurement or payment shall be made for erosion control measures supplied, installed and maintained under this specifications. This Work shall be incidental to the Contract.

**E16. TOPSOIL AND SOD**

E16.1 Supply and install topsoil and sod on disturbed portions of the boulevard in accordance with CW 3540-R3 and CW 3510-R8.

E16.2 Topsoil and sod shall be measured and paid for in accordance with CW 3540-R3 and CW 3510-R8.

**E17. SALVAGE AND REPLANT SEDGE GRASS**

**E17.1 Description**

E17.1.1 This specification covers the procedures for salvaging and replacing sedge grass on the lower bank.

E17.1.2 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.

**E17.2 Construction Methods**

- (a) Clear snow from sedge grass areas identified on the drawings. Do not over excavated snow or damage the sedge turf surface.
- (b) Sedge grass to be salvaged by excavating as a sod 400 mm thick using equipment suitable for procedure so as keep sod intact and to minimize disturbance to root zone.
- (c) Prepare sedge storage area by clearing snow and other debris from ground surface in area designated on drawings.
- (d) Contractor may establish an alterative storage area upon review with Contract Administrator.
- (e) Sedge sod may be stacked a maximum of three layers high. Layers to be separated with a sheet of 5 mil polyethylene.
- (f) The clay subgrade in areas of replanted sedge grass shall be prepared and brought to elevation such that finished grade for the sedge grass is as shown on the drawings.
- (g) Sedge grass shall not be replanted directly on limestone fill. Sub-cut limestone as necessary to establish a minimum of 0.5 m of compacted clay below the replanted sedge grass.
- (h) A marking and inventory procedure shall be implemented for salvaging, storing, and re-planting operations so that grass is re-planted in the same relative position as its original position as much as possible (i.e. grass nearest to the river is replanted nearest to the river).
- (i) Storage area shall be cleaned up to be free of loose soil, sod or debris, and other foreign materials after use.

**E17.3 Measurement and Payment**

- (a) Salvaging and replanting sedge grass will be measured on an area basis. The area to be paid for shall be the total number of square metres of sedge grass replanted in accordance

with this Specification as computed from measurements made by the Contract Administrator. Payment shall be at the Contract Unit Price per square metre for "Salvage and Replant Sedge Grass".

- (b) No payment shall be made for sedge grass damaged or otherwise made unusable during salvaging, storing or replanting.