



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 1005-2015

GUAY PARK RIVERBANK STABILIZATION

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 GUAY PARK RIVERBANK STABILIZATION

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, December 18th, 2015.

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. ENQUIRIES

B3.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.

B3.2 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.

B3.3 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.

B3.4 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.

B3.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B3 unless that response or interpretation is provided by the Contract Administrator in writing.

B4. CONFIDENTIALITY

B4.1 Information provided to a Bidder by the City or acquired by a Bidder by way of further enquiries or through investigation is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Contract Administrator. The use and disclosure of the confidential information shall not apply to information which:

- (a) was known to the Bidder before receipt hereof; or
- (b) becomes publicly known other than through the Bidder; or
- (c) is disclosed pursuant to the requirements of a governmental authority or judicial order.

B4.2 The Bidder shall not make any statement of fact or opinion regarding any aspect of the Bid Opportunity to the media or any member of the public without the prior written authorization of the Contract Administrator.

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 Division website at <http://www.winnipeg.ca/matmgt/bidopp.asp>
- B5.2.2 The Bidder is responsible for ensuring that he/she has received all addenda and is advised to check the Materials Management Division website 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/her 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, to the Bidder who requested approval of the substitute.
- B6.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons he/she 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/her 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 B16.
- 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) Bid Security
 - (i) Form G1: Bid Bond and Agreement to Bond, or
Form G2: Irrevocable Standby Letter of Credit and Undertaking, or
a certified cheque or draft;
- B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.
- B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Bid.
- B7.4 The Bid shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.
- B7.4.1 Samples or other components of the Bid which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid.
- B7.5 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.
- B7.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B16.1(a).
- B7.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B7.8 Bids shall be submitted to:
- The City of Winnipeg
Corporate Finance Department
Materials Management Division
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/her own name, his/her 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/her 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/her 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/her 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 should be printed below such signatures.

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.

B9.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B10. DISCLOSURE

B10.1 Various Persons provided information or services with respect to this Work. In the City's opinion, this relationship or association does not create a conflict of interest because of this full disclosure. Where applicable, additional material available as a result of contact with these Persons is listed below.

B10.2 The Persons are:

- (a) NA

B11. QUALIFICATION

B11.1 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.

B11.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/debar.stm>

B11.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

B11.4 Further to B11.3(c), the Bidder shall, within five (5) 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 copy of their valid Manitoba COR certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Certificate of Recognition (COR) Program administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
- (b) a copy of their valid Manitoba SECOR™ certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Small Employer Certificate of Recognition Program (SECOR™) administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; 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 Division website at <http://www.winnipeg.ca/matmgt/>.)

B11.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B11.6 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B12. BID SECURITY

B12.1 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.

B12.1.1 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.

B12.1.2 All signatures on bid securities shall be original.

B12.1.3 The Bidder shall sign the Bid Bond.

B12.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.

B12.2 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.

B12.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B12.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.

B12.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.

B12.3 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.

B13. OPENING OF BIDS AND RELEASE OF INFORMATION

B13.1 Bids will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Division, or in such other office as may be designated by the Manager of Materials.

B13.1.1 Bidders or their representatives may attend.

B13.1.2 Bids determined by the Manager of Materials, or his/her designate, to not include the bid security specified in B12 will not be read out.

B13.2 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 Division website at <http://www.winnipeg.ca/matmgt/>

B13.3 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 Division website at <http://www.winnipeg.ca/matmgt/>

B13.4 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.

B14. IRREVOCABLE BID

- B14.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.
- B14.2 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.

B15. WITHDRAWAL OF BIDS

- B15.1 A Bidder may withdraw his/her Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.
- B15.1.1 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.
- B15.1.2 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.
- B15.1.3 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 B15.1.3(b), declare the Bid withdrawn.
- B15.2 A Bidder who withdraws his/her Bid after the Submission Deadline but before his/her Bid has been released or has lapsed as provided for in B14.2 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.

B16. EVALUATION OF BIDS

- B16.1 Award of the Contract shall be based on the following bid evaluation criteria:
- (a) compliance by the Bidder with the requirements of the Bid Opportunity, or acceptable deviation there from (pass/fail);
 - (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B11 (pass/fail);
 - (c) Total Bid Price;
 - (d) economic analysis of any approved alternative pursuant to B6.
- B16.2 Further to B16.1(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.
- B16.3 Further to B16.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is responsible and qualified.
- B16.4 Further to B16.1(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.

B16.4.1 Further to B16.1(a), in the event that a unit price is not provided on Form B: Prices, the City will determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.

B17. AWARD OF CONTRACT

B17.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B17.2 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.

B17.2.1 Without limiting the generality of B17.2, 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.

B17.3 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, in accordance with B16.

B17.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for Construction* (Revision 2006 12 15) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm
- 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 riverbank stabilization and erosion protection along a total length of riverbank equal to 165 m and will be fully contained within Guay Park.

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

- (a) Site development including access ramp and working platform;
- (b) Riverbank regrading;
- (c) Installation of rockfill columns and compaction;
- (d) Placement of rockfill riprap including geotextile; and
- (e) Site restoration.

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is Amec Foster Wheeler, represented by:

Germán Ciro, M.Sc., P.Eng
Senior Geotechnical Engineer
440 Dovercourt Drive
Winnipeg, MB, R3Y 1N

Telephone No. 204 488-2997
Facsimile No. 204 489-8261

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

D3.3 Bids Submissions must be submitted to the address in B7.8

D4. CONTRACTOR'S SUPERVISOR

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

D5. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE

D5.1 The Contract, all deliverables produced or developed, and information provided to or acquired by the Contractor are the property of the City and shall not be appropriated for the Contractors own use, or for the use of any third party.

D5.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.

D5.3 The following shall be confidential and shall not be disclosed by the Contractor to the media or any member of the public without the prior written authorization of the Contract Administrator;

- (a) information provided to the Contractor by the City or acquired by the Contractor during the course of the Work;
- (b) the Contract, all deliverables produced or developed; and
- (c) any statement of fact or opinion regarding any aspect of the Contract.

D5.4 A Contractor who violates any provision of D5 may be determined to be in breach of Contract.

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 facsimile number identified in D3.1.

D6.3 Notwithstanding C21, all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following facsimile number:

The City of Winnipeg
Chief Financial Officer

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 facsimile number:

The City of Winnipeg
Legal Services Department
Attn: Director of Legal Services

Facsimile No.: 204 947-9155

D6.5 Bids Submissions must be submitted to the address in B7.8

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/her 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 Division website at <http://www.winnipeg.ca/matmgmt/Safety/default.stm>

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 contractual liability, unlicensed motor vehicle liability, non-owned automobile liability, broad form property damage cover and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
 - (b) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence.
 - (c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation.
- 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 thirty (30) 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/her Bid was not a certified cheque or draft pursuant to B12.1(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. SITE ACCESS PLAN

D13.1 The Contractor shall provide the Contract Administrator with a Site Access 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 the General Conditions for the return of the executed Contract.

D13.2 The Site Access Plan should clearly identify the following:

- (a) The Contractor's proposed river access ramp locations, grades, and proposed materials to be used in construction of the access ramps. The Contractor may choose to use the river access ramp location proposed on the drawings or recommend alternate locations for approval by the Contract Administrator. The Contractor shall be responsible to apply and pay for a Waterway Permit, if required, for any proposed alternate river access ramps. Schedule of Work.

D13.3 The Site Access Plan must clearly demonstrate that at no point during construction shall there be any adverse impacts on riverbank stability.

D13.4 The access ramp shall be created by created by excavation only.

D14. RIPRAP PLACEMENT METHODOLOGY

D14.1 The Contractor shall provide the Contract Administrator with the proposed methodology to place riprap including geotextile below water level 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.

D14.2 The riprap placement methodology shall include the following:

- (a) The contractor's sequence to extend and maintain the geotextile to the limits presented in the drawings while riprap is placed and the equipment and materials required for such activity.

D15. CONSTRUCTION SCHEDULE

D15.1 The Contractor shall provide the Contract Administrator with a proposed construction schedule 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.

D15.2 The Contractor's proposed sequence of Work activities shall be elaborated to meet the Substantial and Total Performance dates.

SCHEDULE OF WORK

D16. COMMENCEMENT

- D16.1 The Contractor shall not commence any Work until he/she is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.
- D16.2 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; and
 - (vi) the Subcontractor list specified in D12.
 - (vii) the Site Access Plan specified in D13.
 - (viii) the Riprap Placement Methodology specified in D14.
 - (ix) the Construction Schedule specified in D15.
 - (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.
- D16.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.
- D16.4 The City intends to award this Contract by January 15th, 2016
- D16.4.1 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates

D17. CRITICAL STAGES

- D17.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:
- (a) Rockfill columns installation and compaction, placement of erosion protection (i.e. geotextile and rockfill riprap) along the river shoreline including geotextile, as-built survey of the below erosion protection, and adjustments necessary to provide proper riprap thickness as per Construction Drawings shall be completed by March 15th, 2016.

D18. SUBSTANTIAL PERFORMANCE

- D18.1 The Contractor shall achieve Substantial Performance by June 15th, 2016.
- D18.2 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.
- D18.3 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.

D19. TOTAL PERFORMANCE

- D19.1 The Contractor shall achieve Total Performance by June 30th, 2016. There shall be no additional costs or claims by the contractor to remobilize the necessary manpower and equipment, if necessary, after the 2016 spring freshet to complete the out-of-water component of the work including restoration of the access ramp and general access points. The date for Total Performance shall be re-evaluated in the event that the river levels prevent the contractor from completing the works. The re-evaluated Total Performance date shall become the new date to assess the amount for liquidated damages.
- D19.2 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.
- D19.3 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.

D20. LIQUIDATED DAMAGES

- D20.1 If the Contractor fails to achieve, Critical Stages, Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:
- (a) Critical Stage – one thousand five hundred dollars (\$1,500.00);
 - (b) Substantial Performance – one thousand five hundred dollars (\$1,500.00);
 - (c) Total Performance – one thousand five hundred dollars (\$1,500.00);
- D20.2 The amounts specified for liquidated damages in D20.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve, Critical Stages, Substantial Performance or Total Performance by the days fixed herein for same.
- D20.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D21. SCHEDULED MAINTENANCE

- D21.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:
- (a) Sodding as specified in E10.3.8;
- D21.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

CONTROL OF WORK

D22. JOB MEETINGS

- D22.1 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.

D22.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

D23. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

D23.1 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).

D24. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS

D24.1 Further to B11.4, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require updated proof of compliance, as set out in B11.4.

MEASUREMENT AND PAYMENT

D25. PAYMENT

D25.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D26. WARRANTY

D26.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) year thereafter, except where longer warranty periods are specified in the respective Specification sections, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D26.1.1 For the purpose of Performance Security, the warranty period shall be one (1) year.

D26.2 Notwithstanding C13.2, 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 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.

D26.2.1 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.

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 for

BID OPPORTUNITY NO. 1005-2015

GUAY PARK RIVERBANK STABILIZATION

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 as to Principal if no seal)

(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
Legal Services Department
185 King Street, 3rd Floor
Winnipeg MB R3B 1J1

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 1005-2015
GUAY PARK RIVERBANK STABILIZATION

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 (2007 Revision), International Chamber of Commerce Publication Number 600.

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

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 Division website at <http://www.winnipeg.ca/matmgt/Spec/Default.stm>
- 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*.

Drawing No.

1005-2015_Drawing_WX17318-D1-RC
1005-2015_Drawing_WX17318-D2-RC
1005-2015_Drawing_WX17318-D3-RC
1005-2015_Drawing_WX17318-D4-RC
1005-2015_Drawing_WX17318-D5-RC

Drawing Name/Title

General Site Plan
Site Access, Working Platform and Cross Sections
Rockfill Colum Plan, Final Surface and Cross Sections
Rockfill Riprap Plan and Cross Sections
Construction Details

E2. SOILS INVESTIGATION REPORT

- E2.1 Further to C3.1, geotechnical test holes furnished with monitoring instrumentation have been completed within the Park limits and in the vicinity of the proposed works to determine the soil and groundwater conditions to facilitate the design of the rehabilitation works. Soil descriptions presented in the test hole logs are considered representative at the locations investigated; however, soil conditions by their nature can be highly variable across the site and soil conditions presented in the logs may not be entirely representative of the soil conditions across the entire site. Test hole logs are included in 1005-2015_Appendix A-Test Hole Logs.
- E2.2 It is the Contractor's responsibility to make any assumptions, interpolation of soil conditions or any reliance made based on the geotechnical information provided. When considered necessary by the Contractor, additional soil investigations would be allowed prior to commencing of the work and after written approval from the Contract Administrator. Additional soil investigations shall be completed at the Contractor's expense.

E3. SITE ACCESS AND EGRESS

- E3.1 Access to and egress from the site shall conform to the Construction Drawings. This access/egress corridor is the preferred point of entrance and exit for wheeled construction traffic in the site area.
- E3.1.1 The Contractor should be aware of the traffic control requirements for entering from, and exiting to St Mary's Rd and conduct his operations accordingly to conform to these conditions.
- E3.1.2 The Contractor shall employ a flagman at the access/egress point to ensure vehicle and pedestrian traffic to and from the site is maintained within the designated traffic areas.
- E3.2 All access and egress at the site shall conform to the requirements of the "Manual for Temporary Traffic Control in Work Areas on City Streets". The contractor shall have available at all times the necessary labour and equipment to maintain streets in a clean condition, free of any deposition due to construction.

E3.3 Under no circumstances shall the contractor enter/exit the site through private property or occupy private property to carry out the work.

E3.4 The Contractor shall bear the full cost of developing and maintaining the site access/egress routes during the course of construction including temporary traffic control as required and noted herein. The Contractor shall repair and restore grassed areas, existing curb work, sidewalks and pavement areas within the park limits. In addition, where required due to damage caused by their own activities, the Contractor shall repair and restore, bollards, trees, and any other structures existing prior to initiation of construction at his own cost.

E4. PROTECTION OF RIVER CHANNEL

E4.1 Should it be necessary for the Contractor to deposit materials within the river channel beyond the extents shown on the Construction Drawings (e.g. access road, cofferdam, etc) or should material inadvertently be deposited within the river channel, the Contractor shall take such steps as are necessary to remove such material and return the river channel to the condition it was in prior to construction. No additional payment will be made for these works. It shall be incidental to the Contract.

E5. PROTECTION OF CENOTAPH AND MONITORING INSTRUMENTATION

E5.1 The Contractor is advised that geotechnical monitoring equipment (one slope inclinometer and two vibrating wire piezometers) has been installed at the site at the location of test hole TH03 as presented in the drawings. Monitoring instrumentation consisting of one slope inclinometer has also been installed at the location of test hole TH02; however, it is acknowledged that test hole TH02 is located within the main construction area and it may get damaged due to construction activity. Therefore, this instrument will be relocated near the beginning of the project. Notwithstanding construction activity, the Contractor shall take all the required precautions to protect the existing instrumentation at TH02 from damage during the period when the new instrumentation is installed and becomes operational. Similarly, the Contractor shall also protect the new instrumentation from damage for the duration of the project. The proposed new location for instrumentation at TH02 is presented in the Construction Drawings. Approximately 1 week will be required between the time of the instrument installation to when the instrument becomes operational. An allowance of \$6,000 dollars is included in the construction budget to install the new instrumentation at the proposed new test hole TH02 location. The allowance includes the cost to retain drilling services, materials installation and earth works necessary for the relocation. In addition to the instrumentation at test holes TH02 and TH03, an existing cenotaph is located adjacent to test hole TH03 that should also be protected from damage. The location of test holes, instrumentation and cenotaph will also be identified in the field and prior to initiating any works.

E5.2 The Contractor shall take all necessary precautions to prevent damage to the instrumentation at test hole TH03 and cenotaph. Should instrumentation or cenotaph become damaged due to the Contractor's operation, it shall be repaired or replaced at the Contractor's expense.

GENERAL REQUIREMENTS

E6. OFFICE FACILITIES

E6.1 The Contractor shall supply office facilities meeting the following requirements:

- (a) The field office shall be for the exclusive use of the Contract Administrator.
- (b) The building shall be conveniently located near the site of the Work.
- (c) The building shall have a minimum floor area of 20 square metres, a height of 2.4m with two windows for cross ventilation and a door entrance with a suitable lock.
- (d) The building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between either 16-18°C in summer or 24-25°C in winter.

- (e) The building shall be adequately lighted with fluorescent fixtures and have a minimum of three wall outlets.
- (f) The building shall be furnished with one desk, table 3m X 1.2m, one four drawer legal size filing cabinet and a minimum of 8 chairs.
- (g) A portable toilet shall be located near the field office building. The toilet shall have a locking door and be for the exclusive use of the Contract Administrator and other personnel from the City.
- (h) The field office building and the portable toilet shall be cleaned on a weekly basis immediately prior to each site meeting. The Contract Administrator may request additional cleaning when deemed necessary.

E6.2 The Contractor shall be responsible for all installation and removal costs, all operating costs, and the general maintenance of the office facilities.

E6.3 The office facilities shall be provided from the date of the commencement of the Work to the date of Total Performance.

E6.4 Office facilities shall be considered incidental to Mobilization and Demobilization, and no additional measurement or payment will be made for work described in this specification.

E7. WATERWAY BY-LAW AND PERMITS

E7.1 The Contractor shall note that all Works fall within 107 metres (350 feet) of the regulated summer water level of the Red River and are therefore within the jurisdiction of the Waterway By-law. The Contract Administrator will apply and pay for the required Waterway Permits for the Work. The Contractor shall make himself aware of and adhere to all conditions imposed by the permit.

E7.2 Stockpiling of materials will only be permitted within the stockpiling areas presented in the drawings. Alternate stockpiling areas can be considered prior approval from the Contract administrator.

E7.3 Laydown areas are presented in the drawings. Alternate laydown areas can be considered subject to prior approval from the Contract Administrator.

E8. CHANNEL PROTECTION

E8.1 The ice surface and riverbank channel shall be cleared of construction materials prior to ice break-up. The Contractor shall clean up all materials, including but not limited to: soil, snow fence, silt fence, construction debris, etc. from this construction activity. All items that will have an adverse impact on the channel shall be removed. Channel Protection shall be considered incidental to the Works of this Contract and no measurement or payment will be made for this item.

E9. MOBILIZATION AND DEMOBILIZATION

E9.1 Mobilization and demobilization will include but not be limited to start-up costs, equipment setup and removal, field office and storage facilities set-up and removal and Site cleanup.

E9.2 Mobilization and demobilization will be measured on a unit basis and paid for at the Contract Unit Price for "Mobilization and Demobilization" in accordance with this specification, accepted and measured by the Contract Administrator.

E9.3 50% of the Mobilization and Demobilization unit price will be paid on the first progress payment.

E9.4 The remaining 50% of the Mobilization and Demobilization unit price will be paid subsequent to the completion of the Work and restoration and cleanup of the Site.

E10. SITE DEVELOPMENT

E10.1 Description

E10.1.1 This Specification shall cover all aspects of the site preparation and restoration work, including site access, erection, maintenance and removal of safety fencing, sediment control works, snow clearing, removal of vegetation, stumps, roots and debris, construction of access ramp to the work area, construction of the working platform to install rockfill columns, site grading, reinstatement of access ramp and working platform after construction to pre-existing conditions, restoration of sidewalk, pathways and paved park entrance, and protection of existing structures and monitoring instrumentation.

E10.1.2 The work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, and all things necessary for and incidental to the satisfactory performance and completion of all work as hereinafter specified.

E10.2 Materials

E10.2.1 Equipment

All equipment, implements, tools and facilities used shall be of a size and type as required to complete the work in a reasonable time. The Contractor shall keep all equipment in good working order, and have sufficient standby equipment available at all times, as required.

E10.3 Construction Methods

E10.3.1 Site Access Development

The Contractor shall be responsible to develop and maintain suitable Site access. This includes but is not limited to temporary removal and reinstallation of safety fencing, any grading repairs, etc. necessary to restore the Site and construction access areas to their pre-existing condition, as approved by the Contract Administrator. Prior to commencing construction, the Contractor shall submit a Site Access Plan, the Methodology for Placement of Riprap, and the Construction Schedule to the Contract Administrator for approval, in accordance with D13, D14 and D15.

- (a) All construction access ramps from the top bank area down to the edge of the river shall be constructed by excavating to the necessary ramp grade and temporarily stockpiling material in a designated area for re-use or disposing of off-site as approved by the Contract Administrator. Under no circumstances will the excavated material or any additional materials be placed as fill in the ramp area. Detailed construction access ramp drawings must be submitted to the Contract Administrator for approval a minimum five (5) business days prior to any construction activity on Site.
- (b) Site access routes and access ramps should be selected to minimize tree removal. Any required tree removal shall be performed in accordance with E12.

The contractor should construct a level working platform at a geodetic elevation of 224 m at the location and to the dimensions presented in the Construction Drawings to facilitate the installation of rockfill columns. The Contractor shall provide alternate configurations, if deemed necessary to the Contract Administrator for approval a minimum five (5) business days prior to any construction activity on Site. The Contractor shall satisfy the Contract Administrator that alternate configurations are stable for the duration of the project. Approval of an alternate working platform design by the Contract administrator does not exempt the Contractor of his design responsibility.

- (a) All excavated materials must be removed from the bank area as excavation occurs and unsuitable material such as silt, rock, rubble, organics and rubbish shall be immediately disposed off-site.

- (b) Any over-excavation shall be backfilled and compacted with granular fill in accordance with E11 at the Contractor's expense to the satisfaction of the Geotechnical Consultant.
- (c) On completion of rockfill columns installation, the area of the working platform shall be restored to the grades presented in the Construction Drawings with granular fill material that meet the requirements presented in E11. Exposed granular fill areas above riprap shall be covered with a 0.3 m thick clay cap.

E10.3.2 Protection of Existing Infrastructures

The Contractor shall be responsible for protection of existing infrastructure at the Site including above ground and buried utilities and existing gravel and paved paths.

- (a) The Contractor is responsible to obtain any required utility clearances prior to commencement of the Works. Any damaged infrastructure shall be repaired at the Contractor's expense.

E10.3.3 Frozen Waterways Permit

The Contractor is responsible for obtaining a Frozen Water Permit for permission to Work on the river ice. Contact the City of Winnipeg.

E10.3.4 Snow and Ice Removal

Snow cover shall be cleared from the riverbank and hauled off-site prior to either auger drilling for construction of rockfill columns or placement of the rockfill riprap. The methodology to clear the snow shall be subject to the approval of the Contract Administrator. Ice at the shoreline of the River shall be broken and cleared before the placement of riprap below ice level. Care shall be taken to ensure that the ice is removed, and does not become trapped below rockfill riprap.

E10.3.5 Traffic Control

The Contractor is responsible to supply, erect, maintain and remove applicable traffic control devices, provide flag persons and follow traffic control procedures in accordance with City of Winnipeg Standard Construction Specification CW 1130 section 3.7.

E10.3.6 Safety Fence

The Contractor shall erect and maintain for the duration of the project a safety fence, to restrict access to the Site. The fencing shall enclose the entire Site with appropriate gates or openings that are closed at the end of each Work day. Appropriate signs shall be erected to warn all recreational users of the park and the river that an open water hazard exists. This shall include but not be limited to snowmobilers and skiers. Fence construction on the riverbank shall consist of Dupont Number L70 orange plastic safety fence or approved equal in accordance with B7 with a mesh spacing of 45 mm and a minimum height of 1.2 metres supported by wood posts driven into the ground or anchored to the ice. The wood posts shall be sized and capable of maintaining the snow fence material upright, regardless of conditions. Upon completion of the work, all fence materials shall be removed and disposed off-site.

E10.3.7 Environmental Regulations

- (a) The Contractor shall adhere to all relevant Federal and Provincial environmental regulations.
- (b) The Contractor shall plan to Work in accordance with the current environmental regulations of "Manitoba Stream Crossing Guidelines for Protection of Fish and Fish Habitat", Fisheries and Oceans, and Manitoba Natural Resources.
- (c) The Contractor shall ensure that a sufficient supply of suitable spill kits are on-site to cleanup minor spills, should they occur. The Contractor shall supply the name, address and phone number of a local supplier, where additional kits are available on short notice.

E10.3.8 General Site Cleanup and Restoration

All areas of the construction Site shall be restored to a condition at least equivalent to its original condition prior to initiation of Work. This may include, but is not necessarily limited to the Contractor's laydown areas, access ramp and working platform, the removal of the Contract Administrator Site trailer, and removal of all temporary fencing.

Topsoil and sodding required to repair affected grassed areas to pre-existing conditions should be conducted by the Contractor and approved by the Contract Administrator in accordance with City of Winnipeg Standard Construction Specification CW3510. Areas of the riverbank designated *Regrading Areas* shall be prepared in accordance with Specification E18.

E10.3.9 Method of Payment

Site development will be measured and paid for at the Contract Lump Sum Price for "Site Development", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

E11. GRANULAR FILL

E11.1 This specification shall cover the supply, placement and compaction of granular fill required to restore grades to pre-existing conditions in areas of the working platform.

E11.2 The Work to be done by the Contractor under this specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E11.3 Materials

E11.3.1 Granular Fill

- (a) The granular fill shall consist of either well graded pit-run or sound, hard, crushed rock free from organic or soft material that would disintegrate through decay or weathering.
- (b) The granular fill material shall meet the following requirements:
 - (i) Material content passing the 315 micrometre sieve is to have a liquid limit not greater than 25 and a plasticity index not greater than 6;
 - (ii) Maximum Los Angeles abrasion loss of 35% (Grading B - ASTM C131)
 - (iii) Maximum shale content 12%
 - (iv) Gradation requirements as follows:

Canadian Metric Sieve Size	Percent of Total Dry Weight Passing Each Sieve	
	Pit-run	Crushed Gravel
80	100%	
50	55% - 100%	
25	38% - 100%	100%
20		82% - 97%
16	32% - 85%	70% - 94%
10		52% - 79%
5	20% - 65%	35% - 64%
1.25		18% - 43%

Canadian Metric Sieve Size	Percent of Total Dry Weight Passing Each Sieve	
	Pit-run	Crushed Gravel
0.63		12% - 34%
0.315	6% - 30%	8% - 26%
0.16		5% - 18%
0.08	2% - 10%	2% - 10%

E11.3.2 Clay Cap

- (a) The clay cap to cover the granular fill areas should consist of native or imported high plastic clay that is free of organics, silt lumps and any other deleterious materials. Frozen native or imported high plastic clay will be rejected by the Contract Administrator.

E11.4 Submittals

E11.4.1 The contractor shall identify his source of granular fill supply in his Submission. No granular fill will be accepted without providing the source and supplier.

E11.4.2 Contractor shall submit quality control testing results showing conformance to the above specification for granular fill for approval a minimum of ten (10) days prior initiation of granular fill placement.

E11.5 Testing and Approval

E11.5.1 All materials set forth in this Specification shall be subject to inspection and testing by the Contract Administrator or by the testing laboratory designated by the Contract Administrator. This may be in addition to quality control testing results submitted by the Contractor. There shall be no charge to the project for any materials taken by the Contract Administrator for testing purposes.

E11.5.2 No supply and placement of granular fill will be permitted prior to the approval of the Contract Administrator. The supplied material shall meet the noted QA and QC testing requirements.

E11.6 Construction Methods

E11.6.1 Granular fill shall only proceed once compaction of rockfill columns have been completed.

E11.6.2 The working platform surface shall be free of boulders, rocks or debris or any other deleterious materials greater than 50 mm in size, snow, frozen or organic material.

E11.6.3 Place granular fill in compacted lifts not exceeding 200 mm in thickness to a minimum of 98% of SPMDD.

E11.6.4 Before placing of granular fill on slope areas, the slopes shall be benched to provide adequate bonding between the slope and the granular fill. The benching shall be undertaken from the bottom of the slope and subsequent benches shall not be excavated until the granular fill has been raised in layers to the top of the previous bench. Bench size should be twice the height of the compacted lift.

E11.6.5 Place a 300 mm thick clay cap over the granular fill that extends above the top of the riprap (i.e., El. 225 m) to protect the granular fill from erosion due to run-off, wave or ice action from the river. The clay cap shall be placed in compacted lifts not exceeding 150 mm in thickness to a minimum of 95% SPMDD.

E11.7 Measurement of Payment

E11.7.1 Granular fill will be measured and paid for on a volume basis. The volume to be paid for shall be the total number of cubic metres of "Granular Fill", compacted in place and

completed with this Specification, as measured in the field and accepted by the Contract Administrator.

- E11.7.2 No separate measurement shall be made for the installed compacted clay cap. Placing and compacting the clay cap shall be incidental to the work described in this specification.

E12. TREE REMOVAL

E12.1 Description

- E12.1.1 This specification shall cover the removal of existing trees and brush within the Contractor's Work area.
- E12.1.2 The Work to be done by the Contractor under this specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E12.2 Materials

E12.2.1 Existing Trees to be Removed

The existing trees to be removed shall include, but will not necessarily be limited to ash, elm, cottonwood, basswood, oak, pine, maple, spruce, etc., all of which may be cut with standard chain saw equipment.

E12.3 Construction Methods

- E12.3.1 Prior to commencement of the Work the Contractor shall identify all trees scheduled for removal for review and acceptance by the Contract Administrator. The Contractor shall cut down only trees approved for removal by the Contract Administrator. In general, the Contractor shall start at the top of the tree and remove branches or trunks in segments not longer than 2 m. Trees are to be felled so as to land within the limits of the Works. The Contractor shall load and haul all trees, stumps, roots, logs, brush, rubbish and all other surface litter from the Site and dispose of these materials at an approved disposal Site, acceptable to the Contract Administrator.
- E12.3.2 The Contractor shall take all precautions to prevent damage to structures, adjacent property and to trees and shrubs. In the event of damage, the Contractor will be held liable, and shall be required to provide appropriate restoration at his cost, to the satisfaction of the Contract Administrator.
- E12.3.3 Any trees damaged during construction activities shall be examined by a bonded tree care professional and pruned as required. Damaged trees which are not viable shall be replaced by the Contractor at his own cost.

E12.4 Measurement and Payment

- E12.4.1 The removal of trees and brush is considered incidental to Site Development and no separate measurement or payment will be made for this item.

E13. PROTECTION OF EXISTING TREES

- E13.1 Removal of some trees will be required at the Site as per E12. The Contractor shall take the following precautionary steps to avoid damage from construction activities to any existing trees not marked and accepted for removal within the limits of the construction area.
- E13.1.1 Do not stockpile materials and soil or park vehicles and equipment within 2 metres of trees.
- E13.1.2 Strap mature tree trunks with 25 x 150 x 2400 mm wood planks. Smaller trees shall be similarly protected using appropriately sized wood planks.
- E13.1.3 Excavations shall be carried out in a manner to minimize damage to existing root systems. Where roots must be cut to facilitate an excavation they shall be neatly pruned at the face

of the excavation. Any limb or root pruning required shall be carried out by certified ISA arborist.

- E13.1.4 Work on Site shall be carried out in a manner to minimize damage to existing tree branches. Where damage to tree branches does occur, the Contractor shall neatly prune the damaged branch.
- E13.1.5 American elm trees shall not be pruned between April 1st and August 1st and Siberian elm trees between April 1st and July 1st of any year under provisions of The Dutch Elm Disease Act.
- E13.2 All damage to existing trees due to construction activities shall be repaired to the requirements and satisfaction of the City of Winnipeg, Public Works Department, Forestry Branch at the Contractor's expense.
- E13.3 Measurement and Payment
 - E13.3.1 Costs for protection of trees shall be considered incidental to Site Development and no separate measurement or payment will be made for this item.

E14. SILT FENCE

E14.1 Description

- E14.1.1 This specification covers the erection of temporary silt fencing, which shall be installed immediately after completion of riprap placement at the locations shown on the drawings and properly maintained to control runoff and minimize the release of detrimental silt loading to watercourses.
- E14.1.2 The scope Work included in this specification is as follows:
 - (a) Supply and Install temporary silt fencing at the locations as indicated on the Drawings, prior to undertaking any other activities on the Site where silt fencing is required.
 - (b) Maintain the silt fencing in serviceable condition throughout the entire duration of activities at the Site where silt fencing is required, including final restoration and cleanup of the construction Site.
 - (c) Remove the silt fencing and restore the area where the fencing was installed, without further disturbing the area and without releasing any deleterious substances to the adjacent watercourse.
- E14.1.3 The Work to be done by the Contractor under this specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E14.2 Materials

- E14.2.1 Fence Posts
 - (a) Fence posts shall be 100 mm diameter untreated wood posts or 50 mm diameter steel.
- E14.2.2 Filter Fabric
 - (a) Filter Fabric Shall be a woven geotextile material specifically designed for a silt fence applications, meeting the following minimum requirements:

Property	Test Method	Value
Grab Tensile Strength	ASTM D 4632	0.55 kN
Grab Tensile Elongation	ASTM D 4632	15%

Property	Test Method	Value
Mullen Burst	ASTM D 4786	2060 kPa
Puncture	ASTM D 4833	0.285 kN
Trapezoid Tear	ASTM D 4533	0.285 kN
UV Resistance	ASTM D 435	80 % @ 500 hrs
Apparent Opening Size (AOS)	ASTM D 4751	0.60 mm
Flow Rate	ASTM D 4491	405 l/min/m ²

Acceptable Product: "Amoco 2130 Silt Fence Fabric" or approved equal in accordance with B7.

E14.2.3 Wire Mesh

- (a) Wire mesh shall be galvanized or plain metal with wire gauge = 3.0 mm, wire spacing @ 150 mm o/c.

E14.2.4 Fencing Material Fasteners

- (a) Staples or wire ties of sufficient strength and spacing to withstand 500 N (100 lbf) pull test at any point on the wire mesh.

E14.3 Construction Methods

E14.3.1 Ensure that no deleterious substances are discharged into the adjacent watercourse at any time during construction activities.

E14.3.2 Silt Fence Installation

- (a) Excavate 150 mm x 150 mm anchor trench along alignment of silt fence as indicated.
- (b) Ensure that fence posts are firmly driven into undisturbed soil, or are completely and firmly backfilled if installed via auger methods. Attach wire mesh as support backing for silt fence filter fabric with fasteners as specified in E14.2.4. Attach silt fence filter fabric on top of wire mesh in similar fashion. Overlap any fence seams (wire mesh or filter fabric) by 450 mm minimum. Ensure that wire mesh and filter fabric are installed on the upslope side of the post and are fully laid in anchor trench as shown.
- (c) Install and compact impermeable excavated materials into anchor trench and slope as indicated. Compact to 95% of maximum dry density (ASTM D-698).

E14.3.3 Silt Fence Maintenance

- (a) Inspect silt fence daily, prior to starting any other construction activities. If fence posts are found loose or not upright, repair in accordance with installation procedure as specified in E14.3.2. If silt fence is found to be loose or torn, repair or replace as necessary to comply with E14.3.2.
- (b) If silt deposition at the fence is 300 mm or more in depth, carefully remove and dispose of silt offsite without disturbing silt fence.

E14.3.4 Silt Fence Removal

- (a) The silt fence shall remain in place until new vegetation growth has established on the bank, as determined by the Contract Administrator.
- (b) Upon authorization of the Contract Administrator, remove all fence posts, wire mesh, fabric, and fasteners from Site.
- (c) Restore areas disturbed in accordance with E10 without releasing any deleterious substances to the adjacent watercourse.

E14.4 Measurement and Payment

- E14.4.1 The supply, placement, and removal of silt fence shall be measured on a length basis and paid for at the Contract Unit Price per lineal metre for "Silt Fence". The length to be paid for shall be the total number of metres supplied and placed in accordance with this Specification, accepted and measured by the Contract Administrator. Payment of silt fence shall be in accordance with the following payment schedule:
- (a) Sixty percent (60%) of the Contract Unit Price per lineal metre for "Silt Fence" shall be paid following supply and installation.
 - (b) Forty percent (40%) of the Contract Unit Price per lineal metre for "Silt Fence" shall be paid following final removal.
- E14.4.2 Removal of accumulated sediment from the silt fence is considered incidental to the Work and no separate measurement or payment will be made.

E15. ROCKFILL COLUMNS

- E15.1 This Specification shall cover the excavation, supply and placement of rockfill and compaction of rockfill required for the installation of the rockfilled columns.
- E15.2 The Work to be done by the Contractor under this specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E15.3 Materials

E15.3.1 Rockfill

- (a) The rockfill material for use as rockfill columns shall consist of a free draining, sound, dense, durable crushed rock. The material shall be free from organics, roots, silts, sand, clay, snow, ice or any other material that would detract from the strength and drainage characteristics of clean rockfill.
- (b) Should the Contractor choose to use limestone, it shall be durable white crystalline limestone or dolomite. Softer buff to yellow dolomite or dolostone will not be accepted.
- (c) The rockfill material shall meet the following requirements:
 - (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 13% (ASTM C88)
 - (iv) maximum absorption of 2.5% (ASTM C127)
 - (v) Gradation requirements as follows:

Canadian Metric Sieve Size	Percent of Total Dry Weight Passing Each Sieve
100,000	100
50,000	75-95
25,000	40-70
10,000	20-40
2,500	5-15
80	0-5

E15.4 Submittals

- E15.4.1 The Contractor shall identify his source of aggregate supply in his Submission. No rockfill will be accepted without providing the source and supplier

E15.4.2 Representative samples of the rockfill shall be submitted to the Contract Administrator for approval a minimum of ten (10) days prior initiation of column construction. Additional samples should be provided, as requested by the Contract Administrator.

E15.4.3 Contractor shall submit quality control testing results showing conformance to the above specification for rockfill along with the submitted representative samples.

E15.5 Testing and Approval

E15.5.1 All materials set forth in this Specification shall be subject to inspection and testing by the Contract Administrator or by the testing laboratory designated by the Contract Administrator. This may be in addition to quality control testing results submitted by the Contractor. There shall be no charge to the project for any materials taken by the Contract Administrator for testing purposes.

E15.5.2 No supply and placement of rockfill will be permitted prior to the Contract Administrator receiving and reviewing representative samples of the rockfill. The supplied material shall meet the noted QA and QC testing requirements.

E15.5.3 The procedures for preparation of all rockfill samples for use in material inspection and testing shall be subject to review and acceptance by the Contract Administrator for individual tests. The samples may be obtained from crushed and processed material at the sizing necessary for specific tests if the material is deemed to be representative of the rockfill that will be used, subject to the acceptance of the Contract Administrator.

E15.5.4 The testing frequency necessary to confirm the material quality will be specified at the discretion of the Contract Administrator.

E15.6 Construction Methods

E15.6.1 Stockpile of Limestone or Fill Material for Stabilization Works

- (a) Limited space is available on the project site for stockpiling. Once the rockfilled column riverbank stabilization has been initiated, a limited volume of rockfill materials proposed for use on this project may be stockpiled over the installed rockfilled columns as directed by the Contract Administrator. Once the rockfilled column construction has proceeded a maximum of 50 metric tonnes of material shall be allowed to stockpile to facilitate the initiation of construction on subsequent days
- (b) The Contract Administrator shall be provided full access to any stockpiles located off-site for inspection purposes. Materials deemed unacceptable to the Contract Administrator shall be immediately removed from site.

E15.6.2 Rockfill Column Construction

- (a) Rockfill Columns will be constructed from the working platform at the locations presented in 1005-2015_Appendix B-Rockfill Column_Layout of this Bid Opportunity and to the dimensions and depths shown on the Drawings or as approved by the Contract Administrator.
- (b) Layout of the Rockfill Columns shall be provided by the Contractor by means of GPS survey in accordance to the coordinates provided by the Contract Administrator. GPS survey shall be provided to the Contract Administrator prior to initiation of drilling.
- (c) The construction of the column stabilization shall be a continuous but staged construction operation. Construction will be permitted either from upstream, or downstream beginning with columns located furthest downslope and proceeding with successive upslope column installation. However, at no time will construction commence on more than one column before the previous column is completely backfilled.

E15.6.3 Excavation

- (a) The column shall be advanced using a piling rig with proper drilling attachments, capable of excavating holes of the required minimum diameters and lengths as

outlined in the construction Drawings. If sloughing is observed during excavation, casing of the hole will be required as directed by the Contract Administrator.

- (b) The excavation shall be extended a minimum of 1.0 m into competent compact to dense glacial till or as determined by the Contract Administrator. Note that the glacial till contact elevation may vary and therefore, the required depth of excavation may differ from that shown on the Drawings.
- (c) All excavated soils shall be removed from the riverbank area immediately after excavation and either stockpiled in designated areas for later reused or removed from the site.
- (d) The Contractor shall endeavour to maintain the excavations in a dry condition. The Contractor will be required to take the necessary precautions to prevent surface water from entering the excavation and if required take corrective action to prevent water from accumulating in the excavation.
- (e) In the event that either seepage or sloughing is excessive, Casing will be required to maintain the hole in a clean and dry condition. Casing shall consist of a steel sleeve having a minimum outside diameter equal to the design column diameter as shown on the Drawings, but shall not exceed 2.286 m (i.e. 90 inches) and shall be of suitable length to protect against seepage and sloughing. The use of Casing shall be at the discretion of the Contract Administrator.

E15.6.4 Backfilling and Densification

- (a) Backfilling of the column with approved rockfill shall commence as soon as the appropriate depth has been achieved as described in the Drawings.
- (b) Placement of the rockfill shall be accomplished by end - dumping the entire thickness of rockfill.
- (c) Placement of the rockfill shall be monitored on a continuous basis by the Contract Administrator to ensure that sloughing does not occur as the materials are being placed into the column.
- (d) Where steel Casing is utilized it shall be withdrawn from the hole only after the column hole has been completely backfilled with rockfill, but before compaction occurs. In addition, it shall remain in place until all adjacent columns have been successfully drilled and backfilled to reduce the potential impact on adjacent construction.
- (e) The Contractor is cautioned that the requirement to minimize the degree of open excavation and expedite backfill and compaction operations during the course of the work is of critical importance to the safety of all personnel and property at the site due to the instability of the existing riverbank.
- (f) Vibratory compaction shall follow the backfilling process (i.e. as soon as practical). The Contractor shall use a vibrating device that can be directly inserted to the bottom of the rockfill column. The compactive device shall have a minimum power output of 145 kW and a frequency between 20 Hz and 60Hz.
- (g) Vibratory compaction must be demonstrated to achieve a relative increase in density of 15% after initial placement of the crushed rockfill, as determined by measuring the vertical drop along the rockfill column.
- (h) Vibration compaction should not proceed until all adjacent columns have been excavated and backfilled to avoid caving of the adjacent column holes.
- (i) The Contractor shall closely monitor the rate of supply of backfill material to the site and suspend excavation operations if necessary to ensure compliance with compaction requirements.
- (j) Under no circumstances shall workers be allowed into the column excavation unless protected by approved means. The design of the protective devices shall conform to the requirements of the Provincial Workplace, Health and Safety, Department of Labour.

- (k) Care shall be taken to prevent contamination of the limestone fill material during column construction. Should contamination of the backfill occur, the affected backfill shall be removed and disposed of by the Contractor as noted in E15.6.5.

E15.6.5 Contaminated Rockfill

- (a) Where the rockfill material becomes contaminated during construction, the Contractor shall promptly advise the Contract Administrator. The Contract Administrator will advise the Contractor:
 - (i) whether the affected fill material must be removed and disposed of or may remain in place, or
 - (ii) whether the fill material to be disposed of may be directly hauled to an approved disposal location or whether the volume of the material to be disposed of must be estimated prior to disposal.
- (b) Where backfill has become contaminated due to the Contractor's method of operation, negligence, failure to backfill in a timely manner, etc., the backfill material shall be classified as rejected backfill and no payment shall be made for such materials.
- (c) Where backfill has become contaminated due to conditions beyond the control of the Contractor, the material shall be classified as common excavation and removed and disposed of incidental to the cost of placing new backfill material. The cost for supply and placement of an additional volume of clean rockfill will be measured and paid for at the contract unit price for "Column Rockfill".

E15.7 Measurement of Payment

E15.7.1 Column Drilling

"Column Drilling" will be measured per lineal metre of "Column Drilling" as measured by the Contract Administrator during daily inspection. The measurements will be taken from the top of the construction platform at elevation 224 m to the bottom of the drilled hole. Column Drilling will be paid for at the Contract Unit Price per lineal metre for "Column Drilling", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification. Additional excavation required to oversized auger holes to install single or multiple sleeves will not be measured and therefore not paid as it is considered incidental to the cost for sleeving.

E15.7.2 Cuttings Disposal

"Cuttings Disposal" will be measured per cubic meter of clay excavated during the Column Drilling operations, and will be taken as the neat volume of soil removed as measured from the top of the construction platform by the Contract Administrator during daily inspection. Cuttings Disposal will be paid for at the Contract Unit Price per cubic metre for "Cuttings Disposal", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification, including but not limited to loading, hauling and disposal off-site

E15.7.3 Column Rockfill

The supply and placement of "Column Rockfill" will be measured on a compacted volume basis. The total compacted volume to be paid for shall be the total number of compacted cubic metric of "Column Rockfill" supplied and placed in accordance with this Specification and accepted by the Contract Administrator. The total compacted volume shall be calculated by multiplying the length of the rockfill column measured to the design grade as per design elevations presented in 1005-2015_Appendix B-Rockfill Column_Layout times the area of the rockfill column assuming a design diameter of 2.13 m. The supply and placement of Rockfill will be paid for at the Contract Unit Price per cubic metric for the "Column Rockfill", measured as specified herein, which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

E15.7.4 Rockfill Compaction

“Rockfill Compaction” will be measured per lineal metre of “Rockfill Compaction” as measured by the Contract Administrator and will be numerically equal to the Column Drilling length determined in E15.7.1. Rockfill Compaction will be paid for at the Contract Unit Price per lineal metre of compacted rockfill for “Rockfill Compaction”.

E15.7.5 Casing

“Casing” will be measured per lineal metre of “Casing” required and as measured by the Contract Administrator during daily inspection. No payment will be provided for the use of casing that has not been approved by the Contract Administrator. Casing will be paid for at the Contract Unit Price per lineal metre of “Casing” required. In cases where multiples sleeves are required in the same shaft, the length of sleeving and the basis for payment will be based on the total length of shaft sleeved not the total length of sleeves.

E16. ROCKFILL RIPRAP

E16.1 This Specification shall covers the excavation, supply and placement of rockfill riprap.

E16.2 The Work to be done by the Contractor under this specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E16.3 Materials

E16.3.1 Rockfill Riprap

- (a) The rockfill material for use as rockfill riprap shall consist of a free draining, sound, dense, durable crushed rock. The material shall be free from organics, roots, silts, sand, clay, snow, ice or any other material that would detract from the strength and drainage characteristics of clean rockfill.
- (b) The rockfill riprap shall comprised of either limestone, granite, or other quality dense crushed rock. Individual particles shall be shaped such that no one dimension is greater than two times the smallest dimension. Flat, elongated, or platy particle shapes shall not be accepted
- (c) Should the Contractor choose to use limestone, it shall be durable white crystalline limestone or dolomite. Softer buff to yellow dolomite or dolostone will not be accepted.
- (d) The rockfill material shall meet the following requirements:
 - (i) minimum bulk specific gravity of 2.6 (ASTM C127)
 - (ii) maximum Los Angeles abrasion loss of 32% (ASTM C131)
 - (iii) maximum soundness loss of 13% (ASTM C88)
 - (iv) maximum absorption of 2.5% (ASTM C127)
 - (v) Gradation requirements as follows:

Canadian Metric Sieve Size	Percent of Total Dry Weight Passing Each Sieve
450	100%
300	50-70%
200	25-40%
100	10-20%
50	0-5%

E16.3.2 Geotextile

- (a) The geotextile material shall be a non-woven geotextile filter fabric at least 4.6 m in width. All physical property requirements are minimum average roll values and shall conform to:

Property	Test Method	Value
Grab Tensile Strength	ASTM D 4632	0.89 kN
Trapezoid Tear	ASTM D 4533	0.36 kN
Apparent Opening Size (AOS)	ASTM D 4751	0.216 mm

Acceptable Product: "Armtex 250" or approved equal in accordance with B7.

E16.4 Submittals

- E16.4.1 The Contractor shall identify his source of aggregate supply in his Submission. No rockfill riprap will be accepted without providing the source and supplier.
- E16.4.2 Representative samples of the rockfill riprap shall be submitted to the Contract Administrator for approval a minimum of ten (10) days prior initiation of construction. Additional samples should be provided, as requested by the Contract Administrator.
- E16.4.3 The Contractor shall submit quality control testing results showing conformance to the above specification for rockfill along with the submitted representative samples.
- E16.4.4 The Contractor shall submit a working procedure to be approved by the Contract Administrator that clearly describes the methodology intended to place the combination of geotextile and riprap into the river channel to the locations presented in the drawings.

E16.5 Testing and Approval

- E16.5.1 All materials set forth in this Specification shall be subject to inspection and testing by the Contract Administrator or by the testing laboratory designated by the Contract Administrator. This includes periodic visits to the quarry for further visual inspections, if required. This may be in addition to quality control testing results submitted by the Contractor. There shall be no charge for any materials taken by the Contract Administrator for testing purposes.
- E16.5.2 No supply and placement of rockfill riprap will be permitted prior to the Contract Administrator receiving and reviewing representative samples of the rockfill. The supplied material shall meet the noted QA and QC testing requirements
- E16.5.3 The procedures for preparation of all rockfill riprap samples for use in material inspection and testing shall be subject to review and acceptance by the Contract Administrator for individual tests. The samples may be obtained from crushed and processed material at the sizing necessary for specific tests if the material is deemed to be representative of the riprap that will be used, subject to the acceptance of the Contract Administrator.
- E16.5.4 The testing frequency necessary to confirm the material quality will be specified at the discretion of the Contract Administrator.

E16.6 Construction Methods

E16.6.1 Geotextile

- (a) Prior to laying the fabric, the riverbank shall be cleared of snow, ice and all deleterious materials (rocks, roots, branches, bricks, glass, etc) down to the bare in-situ soil surface, and graded to provide a smooth uniform surface to prevent puncturing or tearing the fabric.
- (b) The limits of the geotextile placement shall be coincident with those shown on the Construction Drawings for Riprap construction.

- (c) Geotextile shall be laid over the prepared area and keyed into the natural riverbank at the upslope extents of the geotextile as shown on the Drawings. Initially, the fabric shall be loosely laid in order to allow conformity to the riverbank surface.
- (d) Folds and wrinkles in the fabric shall be avoided. Pins, nails or weights shall be installed to hold the fabric in place.
- (e) Keyed trenches shall be backfilled with compacted clay fill as Specified herein.
- (f) The fabric shall be overlapped in a downstream direction (upstream panel overtop of downstream panel).
- (g) All joints shall be overlapped a minimum of 600 millimetres. The overlap shall be pinned or secured according to manufacturer's specifications.
- (h) A minimum of 300 millimetres of riprap material shall be placed over the fabric prior to equipment passage.
- (i) Damaged geotextile as a result of the Contractor's actions as identified by the Contract Administrator, shall be repaired immediately at the Contractor's expense. All fill material shall be cleared a minimum of 1 metre around the damaged area. The damaged area shall be covered with a geotextile patch extending 1 metre beyond the perimeter of the damage.

E16.6.2 Rockfill Riprap

- (a) The riprap shall be placed in a layer having a minimum thickness of 600 mm overlying the geotextile in such a manner that:
 - (i) The larger rocks are uniformly distributed;
 - (ii) The smaller rocks serve to fill the places between the larger stones;
 - (iii) Excessive segregation of the various particle sizes does not occur; and
 - (iv) Damage to the geotextile is minimized.
- (b) Sufficient leveling of the finished surface shall be done to procure a neat and uniform surface, conforming to the shape and dimensions shown on the Drawings, and accepted by the Contract Administrator. The allowable fill tolerances shall be within 50 mm of the grades and thicknesses as shown on the Drawings. All riprap shall neatly join into adjacent riprap areas, where present, or provided with a transition section to the native ground where required, as shown on the Drawings.
- (c) Temporary stockpiling of riprap along the riverbank shall not be permitted, unless written approval from the Contract Administrator has been obtained. Material shall be placed to the required lines and grade shown the Drawings immediately upon delivery to the Site.

E16.7 Measurement and Payment

E16.7.1 Geotextile

The supply and placement of the "Geotextile" shall be measured on an area basis. The area to be paid for shall be the total number of square metres of ground covered by the geotextile (i.e. overlap at all joints will be considered a single layer), placed in accordance with this Specification and accepted by the Contract Administrator, as measured in the field. The supply and placement of the "Geotextile" will be paid at the Contract Unit Price per square metre for "Geotextile", as determined by the Contractor's daily Layout Survey and confirmed by the As-Built Measurement and Survey completed by the Contractor, as specified herein, which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in the Specification.

E16.7.2 Rockfill Riprap

The supply and placement of "Rockfill Riprap" will be measured on a weight basis when rockfill riprap final grades conform to the allowable tolerances as determined by the As-built Measurement and Survey. The weight to be paid for shall be the total number of

metric tonnes of riprap supplied and placed in accordance with this Specification, as measured by a certified weigh scale and accepted by the Contract Administrator. The Contractor shall provide the weigh tickets to the Contract Administrator for the material supplied to the site at the time of delivery. No payment will be made for any weigh tickets which are not supplied at the time of delivery, or which are lost. The supply and placement of "Rockfill Riprap" will be paid for at the Contract Unit Price per metric tonne for the "New Riprap", measured as specified herein, which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

E17. RIVERBANK REGRADING

E17.1 Description

E17.1.1 The specification shall cover the riverbank regrading.

E17.1.2 The work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for an incidental to the satisfactory performance and completion of all work hereinafter specified.

E17.2 Construction Methods

E17.2.1 Riverbank Regrading

- (a) Riverbank regrading is required to provide to a smooth and even slope to promote runoff away. Riverbank regrading shall occur within the area between the rockfill riprap and the top of the bank as shown in the drawings.
- (b) Regraded soils, stumps, tree roots, debris resulting from this activity shall be removed from the riverbank upon excavation and disposed of off-site.
- (c) The Contractor must complete riverbank regrading prior to placing geotextile and rockfill riprap.

E17.3 Measurement and Payment

E17.3.1 Riverbank regrading will be measured and paid for on a volume basis. The volume to be paid for shall be the total number of cubic metres of "Riverbank Regrading", completed in accordance with this Specification, as measured in the field and accepted by the Contract Administrator.

E18. GROUND PREPARATION FOR VEGETATION OF REGRADED AREAS

E18.1 Description

E18.1.1 This specification shall cover the preparation of soil in regraded areas for revegetation generally including supply and placement of compost, and incorporation of compost into the subsoil by tilling.

E18.1.2 The Work to be done by the Contractor under this specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E18.2 Materials

E18.2.1 Compost

Compost to be used for soil amendment shall be derived from decomposed organic matter produced at Brady Landfill Compost Facility.

E18.3 Construction Methods

- E18.3.1 Excluding landscaped or sodded areas in the upper bank area which are incidental to “Site Development”, regraded areas include but are not limited to river access ramps, drainage swales and areas containing shrubs, brush disturbed during Site access development.
- E18.3.2 The Contractor shall not proceed with soil preparation until the grades and dimensions of the subgrade are constructed in accordance with the Specifications and inspected and accepted by the Contract Administrator.
- E18.3.3 The peat shall be placed on the approved subgrade at a minimum thickness of 0.1 m, or as approved by the Contract Administrator.
- E18.3.4 Subsequent to placement, the peat shall be tilled 0.2m into the underlying soil to create a uniform mixture of loosened peat and subsoil. The final thickness of mixed, loosened material shall be 0.3m or as approved by the Contract Administrator.
- E18.3.5 The Contractor shall leave prepared areas smooth, free from uneven areas and low spots, ensuring positive drainage. All surface debris, roots, vegetation, branches and stones in excess of 50mm shall be removed.
- E18.3.6 The Contractor shall ensure that sediment control measures are in place at all ground preparation areas in accordance with E14.
- E18.4 Measurement and Payment
- E18.5 Compost will be provided to the Contractor by The City of Winnipeg at no cost to the project. The Contractor shall load at Brady Landfill Compost Facility. The cost associated with preparation, supply and placement of compost will be paid as per Ground Preparation. Ground preparation for vegetation of regraded areas will be measured and paid for on an area basis. The area to be paid for shall be the total number of square metres of “Ground Preparation for Vegetation of Regraded Areas”, completed in accordance with this Specification, as measured in the field and accepted by the Contract Administrator.