



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 898-2007**

**ST. VITAL PARK RIVERBANK RE-VEGETATION**

## TABLE OF CONTENTS

### PART A - BID SUBMISSION

Form A: Bid	1
Form B: Prices	4
Form G1: Bid Bond and Agreement to Bond	9
Form G2: Irrevocable Standby Letter of Credit and Undertaking	11

### PART B - BIDDING PROCEDURES

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

### PART C - GENERAL CONDITIONS

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

### PART D - SUPPLEMENTAL CONDITIONS

#### General

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

#### Submissions

D8. Authority to Carry on Business	3
D9. Safe Work Plan	3
D10. Insurance	3
D11. Performance Security	4
D12. Subcontractor List	4
D13. Equipment List	4
D14. Detailed Work Schedule	4

#### Schedule of Work

D15. Commencement	5
D16. Restricted Work Hours	5
D17. Substantial Performance	5
D18. Total Performance	5
D19. Liquidated Damages	6

#### Control of Work

D20. Job Meetings	6
D21. Prime Contractor – The Workplace Safety and Health Act (Manitoba)	6

**Measurement and Payment**

D22. Payment	6
<b>Warranty</b>	
D23. Warranty	6
D24. Protection of River Channel	7
D25. Environmental Protection	7
D26. Protection of Heritage Resources	9
Form H1: Performance Bond	10
Form H2: Irrevocable Standby Letter of Credit	12
Form J: Subcontractor List	14
Form K: Equipment	15

**PART E - SPECIFICATIONS**

**General**

E1. Applicable Specifications and Drawings	1
--	---

**General Requirements**

E2. Office Facilities	1
E3. Protection of Instrumentation	1
E4. Protection Of Existing Trees	2
E5. Traffic Control	2
E6. Pedestrian Safety	3
E7. Survey	3
E8. Site Preparation and Restoration	3
E9. Construction Sequencing	4
E10. Stockpiling of Materials	5
E11. Erosion and Sediment Control	5
E12. Soil Amendment	6
E13. Erosion Control Blanket	8
E14. Wood Chip Mulch and Erosion Control Netting	9
E15. Trees, Shrubs, and Herbaceous Plantings	9
E16. Seeding	14
E17. Long Term Scheduled Maintenance	16
E18. Chemical Control of Vegetation	20

## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

B1.1 ST. VITAL PARK RIVERBANK RE-VEGETATION

### **B2. SUBMISSION DEADLINE**

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, March 20, 2008.

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

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

### **B3. SITE INVESTIGATION**

B3.1 Further to C3.1, the Contract Administrator or an authorized representative will be available at the Site from 10:00 to 12:00 p.m. on Wednesday, March 12, 2008 to review the project with interested Bidders. Use the South entrance to the Park to access the Site.

B3.2 Further to C3.1, the Bidder may view the Site without making an appointment.

B3.3 The Bidder shall not be entitled to rely on any information or interpretation received at the Site investigation unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

### **B4. ENQUIRIES**

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

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

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

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

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

### **B5. ADDENDA**

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

B5.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.

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

## **B6. SUBSTITUTES**

- B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
  - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
  - (c) identify any anticipated cost or time savings that may be associated with the substitute;
  - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed Work Schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
  - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed Work Schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his sole discretion grant approval for the use of a substitute as an "approved equal" or as an "approved alternative", or may refuse to grant approval of the substitute.
- B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.
- B6.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he wishes to inform.
- B6.7 If the Contract Administrator approves a substitute as an "approved equal", any Bidder may use the approved equal in place of the specified item.
- B6.8 If the Contract Administrator approves a substitute as an "approved alternative", any Bidder bidding that approved alternative may base his Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B15.

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

**B7. BID COMPONENTS**

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

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

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

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

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

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

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

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

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

B7.8 Bids shall be submitted to:

The City of Winnipeg  
Corporate Finance Department  
Materials Management Branch  
185 King Street, Main Floor  
Winnipeg MB R3B 1J1

**B8. BID**

B8.1 The Bidder shall complete Form A: Bid, making all required entries.

B8.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:

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

- B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.
- B8.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.
- B8.4 Paragraph 12 of Form A: Bid shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his own name, it shall be signed by the Bidder;
  - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
  - (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, should be affixed;
  - (d) if the Bidder is carrying on business under a name other than his own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- B8.4.1 The name and official capacity of all individuals signing Form A: Bid shall be printed below such signatures.
- B8.4.2 All signatures should be witnessed, except where a corporate seal has been affixed.
- B8.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

## **B9. PRICES**

- B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B9.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.
- B9.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

## **B10. QUALIFICATION**

- B10.1 The Bidder shall:
- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba; and
  - (b) be financially capable of carrying out the terms of the Contract; and
  - (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.
- B10.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) be responsible and not be suspended, debarred or in default of any obligations to the City (a list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>).
  - (b) have successfully carried out Work similar in nature, scope and value to the Work; and

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

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

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

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

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

## **B11. BID SECURITY**

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

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

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

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

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

B11.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B11.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.

B11.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.



B11.3 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Bid Opportunity.

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

B12.1 Bids will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Branch, or in such other office as may be designated by the Manager of Materials.

B12.1.1 Bidders or their representatives may attend.

B12.1.2 Bids determined by the Manager of Materials, or his designate, to not include the bid security specified in B11 will not be read out.

B12.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

B12.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract Amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

B12.4 The Bidder is advised that any information contained in any Bid may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

## **B13. IRREVOCABLE BID**

B13.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.

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

## **B14. WITHDRAWAL OF BIDS**

B14.1 A Bidder may withdraw his Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

B14.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.

B14.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid, and only such person, has authority to give notice of withdrawal.

B14.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:

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

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

## **B15. EVALUATION OF BIDS**

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

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

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

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

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

B15.5 Further to B15.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.

B15.5.1 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each item, the sum of the quantities multiplied by the unit prices for each item shall take precedence.

## **B16. AWARD OF CONTRACT**

B16.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

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

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

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

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

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

## **PART C - GENERAL CONDITIONS**

### **C1. GENERAL CONDITIONS**

- C1.1 The *General Conditions for Construction* (Revision 2006 12 15) are applicable to the Work of the Contract.
- C1.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.
- C1.2 A reference in the Bid Opportunity to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for Construction*.

## PART D - SUPPLEMENTAL CONDITIONS

### GENERAL

#### D1. GENERAL CONDITIONS

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

#### D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of installation of plantings and native seeding to re-vegetate approximately 700 lineal metres of riverbank on the Red River within St. Vital Park.

D2.2 The Work under this Contract is the final site restoration Work and landscaping to follow the Work completed under the Riverbank Stabilization Works (City of Winnipeg, Bid Opportunity 779-2006), which is to attain Substantial Performance by March 15, 2008 and Total Performance by June 1, 2008.

D2.3 The Contractor for Re-vegetation Work shall attend project meetings for the Riverbank Stabilization Work if requested by the Contract Administrator for the purpose of coordinating his Work with the Riverbank Stabilization Work.

D2.4 The major components of the Work in each area are as follows:

##### Work Area A:

- (a) Site preparation and restoration
- (b) Growing medium preparation for seeding areas (100mm depth)
- (c) Growing medium preparation for planting beds (200mm depth)
- (d) Supply and installation of native trees and shrubs (whips and potted sizes), and herbaceous material
- (e) Supply and installation of native seed for wildflowers and grasses, with hydro-mulch
- (f) Supply and installation of erosion control blanket for temporary erosion protection
- (g) Supply and installation of wood chip mulch and erosion protection netting in planting areas
- (h) Long-term maintenance of plant material
- (i) Long-term maintenance of seeded areas
- (j) Long-term site cleanup

##### Work Area B:

- (a) Site preparation and restoration
- (b) Growing media preparation for seeding areas (100mm depth)
- (c) Growing media preparation for planting beds (200mm depth)
- (d) Supply and installation of native trees and shrubs (whips and potted sizes), and herbaceous material
- (e) Supply and installation of native seed for wildflowers and grasses, with hydro-mulch
- (k) Supply and installation of erosion control blanket for temporary erosion protection
- (l) Supply and installation of wood chip mulch and erosion protection netting in planting areas
- (m) Long-term maintenance of plant material

- (n) Long-term maintenance of seeded areas
- (o) Long-term site cleanup

### **D3. DEFINITIONS**

D3.1 When used in this Bid Opportunity:

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

### **D4. CONTRACT ADMINISTRATOR**

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

Don Hester, FCSLA, MCIP  
Senior Planner and Landscape Architect  
UMA Engineering Ltd.  
1479 Buffalo Place, Winnipeg, Manitoba, R3T 1L7

Telephone No. (204) 284-0580

Facsimile No. (204) 475-3646

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

### **D5. CONTRACTOR'S SUPERVISOR**

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

### **D6. NOTICES**

D6.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.

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

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

The City of Winnipeg  
Chief Administrative Officer Secretariat  
Attn: Chief Administrative Officer  
Administration Building, 3rd Floor  
510 Main Street  
Winnipeg MB R3B 1B9

Facsimile No.: (204) 949-1174

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

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

**D7. FURNISHING OF DOCUMENTS**

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

**SUBMISSIONS**

**D8. AUTHORITY TO CARRY ON BUSINESS**

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

**D9. SAFE WORK PLAN**

- D9.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.
- D9.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

**D10. INSURANCE**

- D10.1 The Contractor shall provide and maintain the following insurance coverage:
- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
  - (b) automobile liability insurance for owned automobiles used for or in connection with the Work in the amount of at least two million dollars (\$2,000,000.00) at all times during the performance of the Work and until the date of Total Performance;
  - (c) an all risks Installation Floater carrying adequate limits to cover all machinery and equipment utilized during the performance of the Work.
- D10.2 Deductibles shall be borne by the Contractor.
- D10.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of

any Work but in no event later than the date specified in C4.1 for the return of the executed Contract.

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

#### **D11. PERFORMANCE SECURITY**

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

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

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

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

#### **D12. SUBCONTRACTOR LIST**

D12.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

#### **D13. EQUIPMENT LIST**

D13.1 The Contractor shall provide the Contract Administrator with a complete list of the equipment which the Contractor proposes to utilize (Form K: Equipment List) at or prior to a pre-construction meeting, or at least five (5) Business Days prior to the commencement of any Work on the Site.

#### **D14. DETAILED WORK SCHEDULE**

D14.1 The Contractor shall provide the Contract Administrator with a detailed Work Schedule (Gantt Chart for Work) at least five (5) Business Days prior to the commencement of any Work on the Site.

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



## **SCHEDULE OF WORK**

### **D15. COMMENCEMENT**

- D15.1 The Contractor shall not commence any Work until he is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.
- D15.2 The Contractor shall not commence any Work on the Site until:
- (a) the Contract Administrator has confirmed receipt and approval of:
    - (i) evidence of authority to carry on business specified in D8;
    - (ii) evidence of the workers compensation coverage specified in C6.15;
    - (iii) the Safe Work Plan specified in D9;
    - (iv) evidence of the insurance specified in D10;
    - (v) the performance security specified in D11;
    - (vi) the Subcontractor list specified in D12;
    - (vii) the equipment list specified in D13; and
    - (viii) the detailed Work Schedule specified in D14.
  - (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.
- D15.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.
- D15.4 The City intends to award this Contract by April 18, 2008.

### **D16. RESTRICTED WORK HOURS**

- D16.1 Further to Clause 3.10 of CW 1130, the Contractor shall require written permission 48 hours in advance from the Contract Administrator for any Work to be performed between 2000 hours and 0700 hours, or on Saturdays, Sundays, Statutory Holidays and or Civic Holidays.

### **D17. SUBSTANTIAL PERFORMANCE**

- B1.1 The Contractor shall achieve Substantial Performance on all items excepting Long-term Maintenance on or before July 31, 2008.
- D17.1 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 re-inspected.
- D17.2 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

### **D18. TOTAL PERFORMANCE**

- B1.1 The Contractor shall achieve Total Performance by July 31, 2011.
- D18.1 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 re-inspected.

D18.2 The date on which the Work has been certified by the Contract Administrator as being totally performed to the requirements of the Contract through the issue of a certificate of Total Performance is the date on which Total Performance has been achieved.

#### **D19. LIQUIDATED DAMAGES**

D19.1 If the Contractor fails to achieve Substantial Performance in accordance with the Contract by the day fixed herein for Substantial Performance, the Contractor shall pay the City Two Thousand dollars (\$2,000.00) per Calendar Day for each and every Calendar Day following the day fixed herein for Substantial Performance during which such failure continues.

D19.2 The amount specified for liquidated damages in D19.1 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Substantial Performance by the day fixed herein for same.

D19.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

#### **CONTROL OF WORK**

##### **D20. JOB MEETINGS**

D20.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

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

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

D21.1 Further to C6.24, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

#### **MEASUREMENT AND PAYMENT**

##### **D22. PAYMENT**

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

#### **WARRANTY**

##### **D23. WARRANTY**

D23.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) year thereafter unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D23.2 Notwithstanding C13.2 or D23.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if:

- (a) a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use; or

D23.2.1 In such case, the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

#### **D24. PROTECTION OF RIVER CHANNEL**

D24.1 Should the Contractor deposit any unauthorized material in the river channel, he shall take steps to immediately remove the material and restore the channel to its original condition.

#### **D25. ENVIRONMENTAL PROTECTION**

D25.1 The Contractor shall plan and implement the Work of this Contract strictly in accordance with the requirements of the environmental protection measures proscribed by law and as specified herein.

D25.2 The Contractor is advised that at least the following Acts, Regulations, and By-laws apply to the Work.

D25.3 Federal

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

D25.4 Provincial

- (a) The Dangerous Goods Handling and Transportation Act D12
- (b) The Endangered Species Act E111
- (c) The Environment Act c.E125
- (d) The Fire Prevention Act F80
- (e) The Manitoba Nuisance Act N120
- (f) The Public Health Act c.P210
- (g) The Workplace Safety and Health Act W120
- (h) And current applicable associated regulations.

D25.5 The Contractor shall have a copy of the Letter of Authorization or Advice from Fisheries and Oceans Canada and be familiar with the conditions in the letter for which he is responsible.

D25.6 The Contractor shall have a sufficient supply of containment and clean-up materials such as absorbents, plastic oil booms, and oversized recovery drums (eg. Spill Kit) available on Site.

D25.7 Fuel Handling and Storage

- (a) All fuel handling and storage facilities shall comply with The Dangerous Goods and Transportation Act, Storage and Handling of Petroleum Products Regulation and any local land use permits.
- (b) Fuels, lubricants, and other potentially hazardous materials as defined in The Dangerous Goods and Transportation Act shall be stored and handled within the approved storage areas.
- (c) The Contractor shall ensure that all fuel storage containers are inspected daily for leaks and spillage.
- (d) Products transferred from the fuel storage area(s) to specific Work sites shall not exceed the daily usage requirement.

- (e) When servicing requires the drainage or pumping of fuels, lubricating oils or other fluids from equipment, a groundsheet of suitable material (such as HDPE) and size shall be spread on the ground to catch the fluid in the event of a leak or spill.
- (f) Refuelling of mobile equipment (i.e. equipment which can be moved to the top of bank) and vehicles shall take place at least 100 metres from a watercourse.
- (g) The area around storage sites and fuel lines shall be distinctly marked and kept clear of snow and debris to allow for routine inspection and leak detection.
- (h) A sufficient supply of materials, such as absorbent material and plastic oil booms, to clean up minor spills shall be stored nearby on Site. The Contractor shall ensure that additional material can be made available on short notice.

#### D25.8 Waste Handling and Disposal

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

#### D25.9 Dangerous Goods/Hazardous Waste Handling and Disposal

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

#### D25.10 Emergency Spill Response

- (a) The Contractor shall ensure that due care and caution is taken to prevent spills.
- (b) The Contractor shall report all major spills of petroleum products or other hazardous substances with the potential for impacting the environment and threat to human health and safety to the Contract Administrator and Manitoba Conservation, immediately after occurrence of the environmental accident, by calling the 24-hour emergency telephone number (204) 945-4888.
- (c) The Contractor shall designate a qualified supervisor as the on-site emergency response coordinator for the project. The emergency response coordinator shall have the authority to redirect manpower in order to respond in the event of a spill.
- (d) The following actions shall be taken by the person in charge of the spilled material or the first person(s) arriving at the scene of a hazardous material accident or the on-Site emergency response coordinator:
  - (i) Notify emergency-response coordinator of the accident:
  - (ii) identify exact location and time of accident
  - (iii) indicate injuries, if any
  - (iv) request assistance as required by magnitude of accident (Manitoba Conservation 24-hour Spill Response Line (204) 945-4888, Police, Fire Department, Ambulance, company backup)
  - (v) Assess situation and gather information on the status of the situation, noting:
    - personnel on Site
    - cause and effect of spill
    - estimated extent of damage
    - amount and type of material involved

- proximity to waterways
  - (vi) If safe to do so, try to stop the dispersion or flow of spill material:
    - approach from upwind
    - stop or reduce leak if safe to do so
    - dyke spill material with dry, inert sorbent material or dry clay soil or sand
    - prevent spill material from entering waterways and utilities by dyking
    - prevent spill material from entering utilities, utility manholes, and other openings by covering the openings with rubber spill mats or by dyking
  - (vii) Resume any effective action to contain, clean up, or stop the flow of the spilled product.
- (e) The emergency response coordinator shall ensure that all environmental accidents involving contaminants shall be documented and reported to the Manitoba Conservation according to The Dangerous Goods Handling and Transportation Act Environmental Accident Report Regulation 439/87.

## **D26. PROTECTION OF HERITAGE RESOURCES**

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

**FORM H1: PERFORMANCE BOND**  
(See D11)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

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

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

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

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

BID OPPORTUNITY NO. 898-2007

ST. VITAL PARK RIVERBANK RE-VEGETATION

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

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

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

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

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

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

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

SIGNED AND SEALED  
in the presence of:

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

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

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

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

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

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

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

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

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 898-2007  
  
ST. VITAL PARK RIVERBANK RE-VEGETATION

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

\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

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

\_\_\_\_\_ Canadian dollars.

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

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

Partial drawings are permitted.

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

\_\_\_\_\_  
(Address)

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



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

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

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

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

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

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

\_\_\_\_\_  
(Name of bank or financial institution)

Per: \_\_\_\_\_  
(Authorized Signing Officer)

Per: \_\_\_\_\_  
(Authorized Signing Officer)



**FORM K: EQUIPMENT**  
(See D13)

**ST. VITAL PARK RIVERBANK RE-VEGETATION**

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

**FORM K: EQUIPMENT**  
(See D13)

**ST. VITAL PARK RIVERBANK RE-VEGETATION**

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

## PART E - SPECIFICATIONS

### GENERAL

#### E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

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

<u>Specification No.</u>	<u>Specification Title</u>
S.15-BD-1	Work Area A Plan
S.15-BD-2	Work Area B Plan

- E1.4 The Construction Drawings for the Riverbank Stabilization Works, Bid Opportunity 779-2006, are available upon request.

### GENERAL REQUIREMENTS

#### E2. OFFICE FACILITIES

- E2.1 The Contractor shall supply office facilities meeting the following requirements:
- (a) Shall be conveniently located near the Site.
  - (b) Shall have a table and chairs and be suitable for conducting job meetings.
  - (c) Shall be heated.
  - (d) The Contractor's lunch room facilities may be used for an office.
- E2.2 Measurement and Payment
- No separate measurement or payment shall be made for supply of an office facility. This facility shall be considered incidental to the Work.

#### E3. PROTECTION OF INSTRUMENTATION

- E3.1 The Contractor is advised that instrumentation (slope inclinometers and piezometers) have been installed in test holes KGS-TH2, KGS-TH4, TH06-01, TH06-02, TH06-03, TH06-04 and TH06-05 at the locations shown on the drawing.
- E3.2 The Contractor shall take necessary precautions to prevent damage to instrumentation as a result of his/her Work. In addition, the Contractor shall take necessary precautions to prevent damage as a result of his/her Work to any new instrumentation that is installed.
- E3.3 The Contractor shall repair or replace instrumentation damaged as a result of his/her Work at no cost to the City.

#### **E4. PROTECTION OF EXISTING TREES**

- E4.1 The Contractor shall not damage or disturb trees and bush that are not specified to be removed as indicated on the Drawings.
- E4.2 The locations of existing trees, shrubs and other riverbank vegetation shown on the Drawings to remain are approximate. The Contractor will be expected to work around and protect vegetation which remains of the Riverbank Stabilization Contract.
- E4.3 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing trees within the limits of the construction area:
- (a) The Contractor shall not stockpile materials and soil or park vehicles and equipment within 2 metres of existing trees.
  - (b) Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 100 x 2400 mm wood planks, or suitably protected as approved by the Contract Administrator.
  - (c) Excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of 1.5 times the diameter (measured in inches), with the outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation.
  - (d) Operation of equipment within the drip line of the trees shall be kept to the minimum required to perform the Work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the drip lines of trees. The drip line of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.
  - (a) Work on Site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.
- E4.4 All damage to existing trees caused by the Contractor's activities shall be repaired or replaced to the requirements and satisfaction of the Contract Administrator and the City Forester or his designate.
- E4.5 No separate measurement or payment will be made for the protection of trees.

#### **E5. TRAFFIC CONTROL**

- E5.1 This Specification shall amend and supplement Standard Specifications CW 1130.
- E5.1.1 Further to clauses 3.6 and 3.7 of CW 1130-R1:
- (a) All temporary traffic control signs shall be in accordance with the Manual of Temporary Traffic Control. The Contractor shall bear all costs associated with the placement of temporary traffic control devices required for Work undertaken by the Contractor.
- E5.1.2 Traffic management and road closures:
- (a) A staging area designated for the Contractor's use will be made available upon review with the Contract Administrator and the City.
  - (b) Ambulance/emergency vehicle access must be maintained at all times.
  - (c) All roads in the Park shall be kept open to public traffic during execution of the Work. Temporary road closures shall only be permitted after review with the Contract Administrator and approval by the City.
- E5.1.3 Further to Clauses 3.5 and 3.6 of CW 1130 the Contractor shall keep roadways clean and maintained during construction.

## **E6. PEDESTRIAN SAFETY**

- E6.1 The necessary protection of pedestrian traffic shall be provided during construction, including flagmen (as necessary), barricades, fencing and signage.
- E6.2 A temporary snow fence shall be installed and maintained on the park side of active Work areas during activities that present a hazard to the public, including the operation of heavy equipment.
- E6.3 A fence and appropriate warning signs shall be placed along the top of the access ramps during non-working hours to discourage public access to the Site.

## **E7. SURVEY**

- E7.1 This Specification shall amend and supplement Standard Specifications CW 1130.
  - E7.1.1 Further to CW 1130 the Contractor shall be responsible for the layout of planting beds, plant material and areas to be seeded with different seed mixes. The Contract Administrator will provide sufficient control points for the Contractor to lay out this Work.
  - E7.1.2 The Contractor, upon entering the Site for the purpose of beginning Work, shall locate all reference points and take all necessary precautions to prevent their destruction. The Contractor shall pay all restoration charges for damaged legal survey bars, stakes, markers, etc.
  - E7.1.3 Before commencing Work, the Contractor shall satisfy himself as to the meaning and correctness of all stakes, markers and grade sheets. The Contractor shall give the Contract Administrator at least 24 hours notice in writing before requiring any levels, lines or stakes on any portion of the Work.

## **E8. SITE PREPARATION AND RESTORATION**

- E8.1 Description
  - E8.1.1 This Specification shall cover the following:
    - (a) Mobilization/Demobilization
    - (b) Site Mobilization
    - (c) Removal of existing geotextile from riverbank areas to be re-vegetated
    - (d) Restoration of access/egress routes, staging areas and other areas disturbed in the park to gain access to the Work area.
    - (e) Debris removal
  - E8.1.2 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.
- E8.2 Material
  - E8.2.1 Use materials in accordance with applicable City of Winnipeg Standard Construction Specifications for replacement or repairs to all curbs, sidewalks and any other infrastructure removed or modified in the course of the Work.
  - E8.2.2 Supply imported topsoil and Nursery sod and/or Certified No. 1 seed to repair damage to turf areas.

### E8.3 Construction Methods

- E8.3.1 Construction facilities, construction equipment and other items associated with the works shall be located within the staging area designated by the Contract Administrator.
- E8.3.2 Remove any river deposited debris and the temporary geotextile material that was installed in the previous Riverbank Stabilization Contract from riverbank. The temporary geotextile shall only be removed from Area B when Work is authorized to proceed in that area.
- E8.3.3 Repair, or replace if necessary, all damaged grassed areas, pavement, sidewalk, curbs or other infrastructure, damaged as a result of the Work, in accordance with applicable City of Winnipeg Standard Construction Specifications.
- E8.3.4 It shall be the responsibility of the Contractor to keep public roads and right-of-ways used by their construction activities and traffic, clean and maintained during the construction period.
- (a) Topsoil, peat, sand or other construction materials spilled from hauling equipment onto public roads and right-of-ways shall be picked up promptly at the Contractor's expense.
- E8.3.5 The Contractor shall notify the Contract Administrator and review with him any requirements that would lead to disturbance or removal of existing sidewalks, pavements, vegetation or other infrastructure prior to the Work.
- E8.3.6 The Contractor shall keep the Work area and roadways free of debris, clean and maintained during construction.

### E8.4 Measurement and Payment

- E8.4.1 No separate measurement will be made for mobilization/demobilization, debris removal, constructing, maintaining, and restoring disturbance or damage required for Site Preparation and Restoration.
- E8.4.2 Site Preparation and development including mobilization/demobilization, removal of existing geotextile, debris removal and restoring infrastructure damaged as a result of the Work shall be paid at the Contract Lump Sum Price for "Site Preparation and Restoration", in Work Area A and Work Area B which shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification. Fifty (50) percent of this item shall be paid upon completion and acceptance of the site preparation tasks and the remaining fifty (50) percent upon completion and acceptance of the restoration tasks.

## E9. CONSTRUCTION SEQUENCING

- E9.1 Following Site preparation and construction of access ramps, the construction sequencing shall be as follows:
- (a) Construction shall commence with supply and installation of materials for growing medium, including creation of planting bed areas.
- (b) Installation of erosion control blanket in willow planting areas along the edge of the riprap, and areas with steep slopes (2.5:1).
- (c) Riverbank re-vegetation: planting and seeding in Work Area A.
- (d) Riverbank re-vegetation: planting and seeding in Work Area B.
- (e) Installation of wood chip mulch and erosion protection netting in tree and shrub beds.
- (f) Work shall proceed in a manner which minimizes exposed earth and potential for erosion in open Work areas. The geotextile, installed for erosion protection, shall remain in place until the Contractor is prepared to commence revegetation operations without interruptions to avoid unnecessary risks of erosion of exposed earth.



## **E10. STOCKPILING OF MATERIALS**

### **E10.1 Description**

E10.1.1 This specification covers the procedures for establishing and maintaining stockpiles of materials handled on Site, including topsoil, peatmoss and sand.

E10.1.2 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

### **E10.2 Construction Methods**

- (a) The rate at which materials are delivered to the Site shall be controlled to minimize stockpiling and handling.
- (b) All required stockpiles shall be established within limits of, or adjacent to, the Work Areas A and B as accepted by the Contract Administrator.
- (c) No stockpiles of materials shall be permitted above the crest of the riverbank.
- (d) The maximum size of stock pile shall be 25 cubic meters.
- (e) Stockpiled material shall be handled and maintained in a manner that prevents contamination with other soils and materials, debris, snow or excess moisture. Contaminated material shall be removed and replaced at the Contractor expense.
- (f) Stockpiles shall be maintained to prevent released of fine grain sediments into the river.
- (g) Stockpile locations shall be restored in accordance with applicable Winnipeg Specifications.

### **E10.3 Measurement and Payment**

E10.3.1 No separate measurement or payment shall be made for stockpiling of materials or for restoration of stockpile areas.

## **E11. EROSION AND SEDIMENT CONTROL**

E11.1 This Specification covers the supply, implementation and maintenance of erosion control measures during construction to control the release of sediments into the river during and following construction.

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

E11.3 Contractors are referred to "Best Management Practices Handbook for Activities In and Around the City's Waterways and Watercourses" which can be found at [www.winnipeg.ca/ppd/riverbank/BMPHandbook.pdf](http://www.winnipeg.ca/ppd/riverbank/BMPHandbook.pdf) for supplemental information pertaining to the Work under this Specification.

### **E11.4 Materials**

E11.4.1 In addition to the erosion control blanket and erosion control netting to be installed, the Contractor shall maintain a supply of erosion control products such as silt fencing, straw bales or mulch on Site at all times suitable for trapping and preventing sediments from entering the river during construction.

### **E11.5 Construction Methods**

- (a) The Contractor shall plan and carry out all his Work in a manner that will mitigate the potential for the release of sediments into the river.

- (b) The Contractor shall monitor his Work and implement appropriate sediment control measures as Site conditions warrant. Such measures may include installation of silt fences, straw bales or other measures as required in the event that there is runoff from the Site due to thawing or rain.
- (c) Upon completion of the construction Work, all surplus or waste materials, and materials containing fine-grained sediments shall be removed from the Site.

E11.5.1 Post Construction

- (a) Sediment control measures shall be installed and maintained until Acceptance for Completion of riverbank planting and seeding: to the end of the 3-year long-term maintenance period.

E11.6 Measurement and Payment

E11.7 No separate measurement or payment shall be made for erosion control measures supplied, installed and maintained under this specification. This Work shall be incidental to the Contract.

**E12. SOIL AMENDMENT**

E12.1 This Specification covers the following:

- (a) Soil Amendment (100 mm depth) growing medium for grasses
- (b) Soil Amendment (200 mm depth) growing medium for trees, shrubs and herbaceous material

E12.2 This specification amends and supplements City of Winnipeg Standard Specification CW 3540 "Topsoil and Finish Grading for Establishment of Turf Areas" and shall cover supply of materials for and preparation amending existing clay soils for seeding and planting of trees, shrubs and herbaceous material.

E12.3 Quality Control

E12.3.1 Testing and Samples:

- (a) Submit to the Contract Administrator analyses of amended riverbank soil to be used in creating growing medium, obtained for at least three separate samples taken from each area of the riverbank. The analysis shall be carried out by a qualified soil testing laboratory and shall include the percentage of organic material by weight, as well as recommendations for fertilizers and/or other soil ameliorants.
- (b) Soil testing shall be by a laboratory approved by the Contract Administrator and shall determine N, P, K, Na, Cl, Ca, Mg, organic matter, C.E.C., pH, bulk density and C/N ratio of the Amended Soil for the purpose of recommending fertilizer for the Native Grasses and Wildflowers and Trees, Shrubs and Herbaceous Material.

E12.4 Materials

E12.4.1 Peatmoss for soil amendment shall be derived from partially decomposed species of Sphagnum Mosses, elastic and homogenous, brown in colour; free of decomposed colloidal residue, wood, sulphur and iron or other deleterious material which could affect healthy plant growth; containing a minimum 60% organic matter by weight, and moisture content not exceeding 15%. Shredded particles may not exceed 5 mm in size. Minimum pH value of peat, 4.5; maximum, 7.0.

E12.4.2 Sand shall be medium to coarse textured predominantly siliceous or quartz sand to CSA A82.56-M1976, well washed and free of impurities, clay, silt shale, chemicals or organic matter.

## E12.5 Construction Methods

E12.5.1 Preparation of Existing Grade: CW 3540-R5 9.2.

E12.5.2 Soil Amendment (100 mm depth) - Growing Medium for Native Grasses and Wildflowers Seeding

- (a) Growing medium for native grasses and wildflowers seeding shall consist of a mix of peat moss and sand roto-tilled into the top 100 mm of riverbank soil at the following rates:
  - (i) Peat Moss - 0.035 cubic meters per square meter of area to be amended
  - (ii) Sand - 0.015 cubic meters per square meter area to be amended
- (b) Cross-cultivate the entire area of riverbank soil that is to receive soil amendments to a depth of 100 mm. Redo areas where equipment used for hauling and spreading has re-compacted sub-grade
- (c) Spread peat moss and sand over the area at the specified rates, roto-till or disc the peat moss and sand into the top 100 mm of soil and mechanically roll to obtain a level surface.
- (d) Grade to eliminate rough spots and low spots and to maintain positive drainage.
- (e) Consolidate seedbed to required bulk density using equipment approved by the Contract Administrator. Leave surfaces smooth, uniform and firm against deep foot-printing.

E12.5.3 Soil Amendment (200 mm depth) - Growing Medium for Planting Trees, Shrubs and Herbaceous Material:

- (a) Growing medium for medium for planting trees, shrubs and herbaceous material shall consist of a mix of peat moss and sand roto-tilled into the top 200 mm of riverbank soil at the following rates:
  - (i) Peat Moss - 0.075 cubic meters per square meter of area to be amended
  - (ii) Sand - 0.025 cubic meters per square meter area to be amended
- (b) Cross-cultivate the entire area of soil riverbank that is to receive soil amendments to a depth of 200 mm. Redo areas where equipment used for hauling and spreading has re-compacted sub-grade
- (c) Spread peat moss and sand over the area at the specified rates, roto-till or disc the peat moss and sand into the top 200 mm of soil and mechanically roll to obtain a level surface.
- (d) Grade to eliminate rough spots and low spots and to maintain positive drainage.
- (e) Consolidate seedbed to required bulk density using equipment approved by the Contract Administrator. Leave surfaces smooth, uniform and firm against deep foot-printing.

E12.5.4 Contractor shall complete test areas, of approximately 100 square metres each of 100 mm depth and 200 mm depth amendment, for review and approval of Contract Administrator prior to completing the areas.

## E12.6 Measurement and Payment

E12.6.1 Soil amendment to depths of 100 and 200 mm shall be measured on an area basis for the number of square metres (s. m.) of soil amended with peat moss and sand in accordance with the Construction Drawings and this Specification, and accepted by the Contract Administrator, as computed by the Contract Administrator.

E12.6.2 Soils amendment will be paid for at the Contract Unit Prices for items listed below, which shall be considered compensation in full for supplying all materials and performing all operations herein specified, and all other items incidental to the Work of this Specification.

- (a) "Soil Amendment (100 mm depth)"

(b) "Soil Amendment (200 mm depth)"

**E13. EROSION CONTROL BLANKET**

E13.1 Description

E13.1.1 This Specification covers supply, installation and maintenance of the erosion control blanket.

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

E13.2 Materials

E13.2.1 Erosion Control Blanket

(a) The erosion control blanket in areas Planting Areas 3B, 3C and 4A shall be a long-term, degradable (3 years), non-woven fabric, reinforced by polypropylene netting and meeting or exceeding the following properties:

<b>EROSION CONTROL BLANKET PROPERTIES</b>			
	<b>ASTM Test Method</b>	<b>Units</b>	<b>Minimum Average Value</b>
<b>PHYSICAL</b>			
Grab Tensile Strength	D-6818	kN/m	2.2x2.2
Grab Tensile Elongation	D-6818	%	25
Mass/Unit Area	D-6475	g/m <sup>2</sup>	298
Thickness	D-6525	mm	7.6
Functional Longevity		years	3

Example: Landlok Erosion Control Blanket, Landlok C2.

E13.3 Construction Methods

- (a) Installation, handling and storage of shall conform to the manufacturer's recommendations and specifications, and the above requirements.
- (b) Erosion control blanket shall be installed on all exposed areas of the graded riverbank at or exceeding 1:3 (rise:run slopes).
- (c) The erosion control blanket shall be securely held in place in conformance with the manufacturer's recommendations and the Installation Details of this specification.
- (d) Tears or other damage in the erosion control blanket shall be repaired with a piece of erosion control blanket placed over the damaged area and extending 1.0 m in all directions beyond the damaged area.
- (e) Erosion control blanket shall be installed following the spring thaw and flooding, and shall be maintained until the date of Total Performance.

E13.4 Measurement and Payment

E13.4.1 Erosion control blanket will be measured on an area basis and measured as the area covered by erosion control blanket. The area to be paid for shall be the total number of erosion control blanket square metres (s.m.) of supplied and installed in accordance with this Specification as computed from measurements made by the Contract Administrator.

E13.4.2 Payment shall be at the Contract Unit Price for "Supply, Install and Maintain Erosion Control Blanket" in Work Area A and in Work Area B.

## **E14. WOOD CHIP MULCH AND EROSION CONTROL NETTING**

### **E14.1 Description**

E14.1.1 This Specification covers supply, installation and maintenance of the wood chip mulch and erosion control netting.

E14.1.2 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

### **E14.2 Material**

#### **E14.2.1 Wood Chip Mulch:**

- (a) Wood chip mulch shall be chipped ash, maple, poplar, birch and other deciduous trees. Mulch shall be chipped to sizes ranging from 50mm to 100mm. Mulch may contain stringy twigs and seed, free of non-organic material, wood preservatives or diseased wood. The mulch shall contain no more than 5% of the following materials in total: soil, sawdust, peatmoss, coniferous wood and needles.
- (b) The Contractor shall supply a wood chip mulch sample to the Contract Administrator for approval prior to installation.

E14.2.2 Erosion Control Netting: Tenax Erosion Control Netting: Radix as supplied by Cascade Distribution Limited (contact 1-780-454-2400), or approved equal.

### **E14.3 Construction Methods**

E14.3.1 Wood Chip Mulch: supply and install 50 mm deep deciduous wood chip mulch in areas shown on the Construction Drawings. Wood chip mulch to be pulled away from stems of all plant material.

E14.3.2 Erosion Control Netting: install Erosion Control Netting over wood chip mulch in all areas shown on the drawings.

E14.3.3 Erosion control netting to be installed to manufacturer's specifications, including anchoring with U-staples. The Contractor shall supply a sample to the Contract Administrator for approval prior to installation.

E14.3.4 The erosion control netting and wood chip mulch shall be maintained until the date of Total Performance.

### **E14.4 Measurement and Payment**

E14.4.1 Supply and installation of Wood Chip Mulch and Erosion Control Netting shall be measured on an area basis. The area to be paid for shall be the total number of square metres (s.m.) of Wood Chip Mulch and Erosion Control Netting supplied and installed in accordance with this Specification as computed from measurements made by the Contract Administrator.

E14.4.2 Payment shall be at the Contract Unit Price for "Supply and Install Wood Chip Mulch and Erosion Control Netting" in Work Area A and Work Area B, which payment shall be considered compensation in full for the supply of all materials and the performing of all operations necessary to complete the Work as specified including any items incidental to the Work of this specification.

## **E15. TREES, SHRUBS, AND HERBACEOUS PLANTINGS**

E15.1 This Specification shall deal with the supply and installation of trees, shrubs and herbaceous plantings in areas as indicated on the Construction Drawings, including: preparation, digging, transport and planting.

## E15.2 General

- E15.2.1 Nomenclature of specified nursery stock and collected plantings shall conform to the International Code of Nomenclature for Cultivated Plants and shall be in accordance with the approved scientific names given in the latest edition of Standardized Plant Names. The names of varieties not named therein are generally in conformity with the names accepted in the nursery trade.
- E15.2.2 Source Quality Control:
- (a) All plant material specified within this project shall be either containerized nursery stock and/or collected field-potted native stock. All plants shall be from the Winnipeg area and the Oak-Aspen Forest Eco-region.
  - (b) All nursery stock supplied shall be nursery grown and of species and sizes as indicated on the Construction Drawings. Stock shall be No. 1 Grade material in accordance with the current edition of Landscape Canada's "Guide Specifications for Nursery Stock".
  - (c) All containerized whips and herbaceous plant material shall have a minimum of one full year's growth. Roots shall be healthy, reaching the sides of the container and be developed such that the root ball can be kept intact during transplanting. Roots shall not encircle each other to the extent of inhibiting plant growth.
  - (d) Any nursery stock dug from native stands, wood lots, orchards, or neglected nurseries, which have not received proper cultural maintenance, shall be designated as "collected plants". Material sources are to be approved by Contract Administrator prior to ordering or collecting. The Contractor shall provide all of the necessary nursery certificates to ensure that the plant species comply with this specification.
  - (e) Notify Contract Administrator of source of plant material at least 7 days in advance of shipment.
  - (f) Acceptance of plant material at source does not prevent rejection of same plant material on site prior to or after planting operations.
  - (g) The Contract Administrator retains the right to delete one or more of the specified containerized/potted plant materials to facilitate the completion of the contract.
- E15.2.3 Shipment and Pre-Planting Care:
- (a) Coordinate shipping of plants and excavation of holes to ensure minimum time lapse between digging and planting.
  - (b) Tie branches of trees and shrubs securely and protect plant material against abrasion, exposure and extreme temperature change during transit. Avoid binding of planting stock with rope or wire, which would damage bark, break branches or destroy natural shape of plant. Give full support to root balls during movement.
  - (c) Cover plant foliage with tarpaulin, and protect bare roots by means of dampened straw, peat, saw dust or other acceptable material to prevent loss of moisture during transit and storage.
  - (d) Remove broken and damaged roots with sharp pruning shears. Make clean cut and cover cuts over 50 mm diameter with wound dressing.
  - (e) Keep roots moist and protected from sun and wind. Heel-in trees and shrubs which cannot be planted immediately in shaded areas and water well.
- E15.2.4 During the three year period following completion of planting operations, the Contractor shall remove and replace from site plants which have died or failed to grow satisfactorily, as determined by the Contract Administrator.
- (a) The Contractor shall warranty 85% of plantings are alive and healthy at the end of the three-year maintenance period.

### E15.3 Materials

- E15.3.1 Water shall be potable and free of minerals which may be detrimental to plant growth.
- E15.3.2 Fertilizer shall be slow release organic. Fertilizer shall contain N-P-K in ratio as recommended by soil test results.
- E15.3.3 Root ball burlap shall be 150 g Hessian burlap.
- E15.3.4 Anti-desiccant shall be wax-like emulsion to provide film over plant surfaces reducing evaporation but permeable enough to permit transpiration.
- E15.3.5 Wound dressing shall be horticultural accepted non-toxic, non-hardening emulsion.
- E15.3.6 Planting soil mixture
- (a) Soil to supplement soil in root ball to be mixture of sand, peat and existing clay prepared for Soil Amendment specified in E15.
  - (b) Bonemeal shall be raw bonemeal, finely ground with a minimum analysis of 3% nitrogen and 20% phosphoric acid, added to planting soil at a rate of 3 kg per cubic meter of planting soil mixture.
- E15.3.7 Fertilizer: chemical fertilizers shall have N-P-K compositions as recommended by an agricultural soil testing laboratory, approved by the Contract Administrator, for horticultural trees, shrubs and herbaceous material with growing medium.
- E15.3.8 Plant Material:
- (a) Comply with "Guide Specification for Nursery Stock", Latest Edition of Canadian Nursery Trades Association (Landscape Canada), referring to quality, size and development of plant material and root ball.
  - (b) All nursery stock shall be measured when branches are in their natural position. Height and spread dimensions specified in the Plant List on the Construction Drawings refer to the main body of the plant, and not from branch tip to root base or from branch tip to branch tip.
  - (c) Use trees, shrubs and herbaceous material of No. 1 grade.
  - (d) All trees shall have one, only, sturdy, reasonably straight and vertical trunk, and a well-balanced crown with fully developed leader, unless designated "multi-stem".
  - (e) Use trees and shrubs with structurally sound, strong fibrous root systems, and free of disease, insects, defects or injuries, including rodent damage, sun scald, frost cracks, abrasions or scars to the bark. Plants must have been root pruned regularly, but not later than one growing season prior to arrival on site.
  - (f) All parts of the nursery stock shall be moist and show live, green cambium tissue when cut.
  - (g) At least one (1) plant of each variety supplied shall bear a tag showing both the botanical and common name of the plant.
  - (h) Additional Plant Material Qualifications:
    - (i) Approval required for plant material which has been held in cold storage
    - (ii) Container-grown stock acceptable if containers large enough for root development. Trees and shrubs must have grown in container for minimum of one growing season but not longer than two. Root system must be able to hold soil when removed from container. Plants that have become root-bound are not acceptable. Container stock must have been fertilized with slow releasing fertilizer.
    - (iii) Balled and burlap deciduous trees must have been dug with firm ball. Root balls must include 75% of fibrous and feeder root system. Secure root balls with burlap, heavy twine and rope.

- (iv) Substitutions to plant material as indicated on the Plant List will not be permitted unless written approval has been obtained as to type, variety and size prior to Award of Contract. Plant substitutions must be of similar species and of equal size to those originally specified.

#### E15.4 Construction Methods

E15.5 Staking and laying out of the tree and shrub location and locations for groupings of shrubs shall be co-ordinated between the Contractor and the Contract Administrator prior to planting.

#### E15.5.1 Workmanship

- (a) Obtain approval prior to excavating for plantings.
- (b) No excavation is to take place without the clearance of all utility components with respect to underground lines located in the areas to be excavated.
- (c) Apply anti-desiccant in accordance with material manufacturer's instructions.
- (d) Co-ordinate operations. Keep site clean and planting holes drained. Immediately remove soil or debris spilled onto pavement.

#### E15.5.2 Planting Times:

- (a) Plant deciduous plant material during dormant period, before buds have broken. Plant material noted for spring planting only must be planted in dormant period.
- (b) When permission has been obtained to plant deciduous plant material after buds have broken, spray plants with anti-desiccant to slow down transpiration prior to transplanting.
- (c) When permission has been obtained, trees, shrubs and ground covers growing in containers may be planted throughout growing season.
- (d) Plant only under conditions that are conducive to health and physical conditions of plants.
- (e) Provide planting schedule. Extending planting operations over long period using limited crew will not be accepted.

#### E15.5.3 Excavations:

- (a) Excavations for shrubs to be a minimum of 300 mm deep by 500 mm diameter holes backfilled with planting soil mixture.
- (b) Trees: excavate to depth of at least 200 mm deeper than height of root ball/roots, with width of three times the diameter. Backfill with planting soil mixture.
- (c) Remove water which enters excavations prior to planting. Ensure source of water is not ground water.
- (d) If planting in areas of Erosion Control Blanket, carefully cut blanket to make excavations and plant. Replace and re-secure blanket around plants.

#### E15.5.4 Planting:

- (a) Loosen bottom of planting hole to depth of 150 to 200 mm. Cover bottom of each excavation with minimum of 150 mm of planting soil mixture.
- (b) Plant trees and shrubs vertically, with roots placed straight out in hole, orient to provide the best aspect as seen from the top of bank.
- (c) Place plant material to depth equal to depth they were originally growing in nursery.
- (d) With ball and burlap root balls, loosen burlap and cut away minimum top 1/3 without disturbing root ball. Do not pull burlap from under root ball. With container stock, remove entire container without disturbing root ball. Non biodegradable wrappings must be removed.
- (e) Tamp planting soil around root system in layers of 150 mm eliminating air voids. Frozen or saturated planting soil is unacceptable. When 2/3 of planting soil has been



placed, fill hole with water. After water has completely penetrated into soil, complete backfilling.

- (f) Build 100 mm deep saucer around outer edge of hole to assist with maintenance watering.
- (g) When planting is completed apply slow release organic fertilizer at minimum rate of 12 kg/100 m for shrub beds or 50 g/mm of caliper for trees, or as recommended by the soil analysis. Mix fertilizer thoroughly with top layer of planting soil and water in well.

E15.5.5 Prune trees and shrubs after planting. Employ clean sharp tools and make cuts flush with main branch, smooth and sloping as to prevent accumulation of water. Remove dead and injured branches and branches that rub causing damage to bark. Trim trees and shrubs without changing their natural shape. Do not damage lead branches or remove smaller twigs along main branches. Treat cuts in excess of 50 mm diameter and damaged parts with application of wound dressing.

#### E15.5.6 Standards

- (a) All roots shall be cleanly cut; split roots not acceptable.
- (b) Branches and stems shall be tied and protected; broken or abraded branches or stems not acceptable.
- (c) Planting shall be protected from drying conditions; desiccated material not acceptable.
- (d) All plants to be free of insects and disease: galls, blight and other manifestations of insect infestation or disease not acceptable.

#### E15.6 Maintenance for Establishment

E15.6.1 Water plant material to prevent desiccation. Assume that watering will be required once a week for first four weeks following installation; thereafter, once every second week for the remainder of the maintenance period for establishment. Ensure adequate moisture in root zone at freeze-up.

E15.6.2 Keep mulched shrub beds and tree saucers free from weeds by manually removing undesirable plants during the maintenance period for establishment.

E15.6.3 Spray plants as required to combat pests and diseases. Use organic chemicals approved by Agriculture Canada.

E15.6.4 Make adjustments requested by the Contract Administrator, including straightening trees and adding protection from animals.

#### E15.7 Maintenance Period for Establishment

E15.7.1 Maintain plant material for a minimum period of two months (60 days) following completion of planting operations, or until such time that live growth is evident.

#### E15.8 Method of Measurement and Basis of Payment

##### E15.8.1 Supply and Installation of Trees, Shrubs and Herbaceous Plant Material

- (a) Supply and installation of trees, shrubs and herbaceous plant material will be measured on a unit price basis for each tree, shrub or other plant listed on the Plant List, installed in accordance with this Specification and accepted by the Contract Administrator.
- (b) Supply and installation of trees, shrubs and other plants will be paid for at the Contract Unit Price for each species and size shown on the Plant List, measured as specified herein, which price shall be payment in full for supply of all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.

E15.8.2 Supply and installation of fertilizer for plant material will be incidental to the Work of this Contract.

## **E16. SEEDING**

E16.1 This specification shall amend and supplement CW 3520 "Seeding" and shall provide for supply and installation of naturalized seed mixes in the areas to be re-vegetated, and areas within the planting beds to be determined by the Contract Administrator on site. Restoration seeding is also included.

### **E16.2 Approvals**

E16.2.1 Provide the Contract Administrator with Certificates of Analysis and mix compositions for all seed mixes at least five (5) working days prior to commencing the Work. Include supplier's name and telephone contact information, and percentages of each species and cultivar in each mix.

E16.2.2 Obtain Contract Administrator's approval for any proposed adjustments to the seed mix species or cultivars.

### **E16.3 Materials**

E16.3.1 Topsoil for touch-up seeding along edges of existing turf areas CW 3540.

E16.3.2 Seed mix for touch-up seeding along edges of existing turf areas (by weight):

- (a) 60% Regent Kentucky bluegrass
- (b) 15% Park Kentucky bluegrass
- (c) 15% Franklin Creeping Red fescue
- (d) 10% Delaware Dwarf Perennial ryegrass.
- (e) Use certified seed that is free of disease, weed seeds or other foreign materials

E16.3.3 Native Grasses and Native Wildflowers and Seed Mixes

- (a) Seed mixes for naturalization on the Upper Bank, Mid Bank and Lower Bank (by weight) are listed on the Construction Drawings (see Upper Bank Grasses and Wildflowers, Mid Bank Grasses and Lower Bank Grasses).
- (b) Use seed mixes that are free of disease, weed seeds and other foreign materials.

E16.3.4 Use Annual ryegrass as a cover crop (nurse crop) in all areas to be seeded.

E16.3.5 Hydro-mulch: mulch, water and tackifier shall be in accordance with CW 3520.

E16.3.6 Fertilizer: chemical fertilizers shall have N-P-K compositions as recommended by an agricultural soil testing laboratory approved by the Contract Administrator, provided for Native Grasses and Native Wildflowers.

E16.3.7 Herbicides and insecticides shall be in accordance with CW3520 and E.

### **E16.4 Construction Procedures**

E16.4.1 Native grasses and wildflower areas:

- (a) Prepare seed bed in accordance with E15.
- (b) Maintain positive drainage.
- (c) Seeding and hydro mulching shall be in accordance with CW 3520.
- (d) Sow native seed mixes at 1.0 kg/100 square metres.
- (e) Sow cover crop at 0.6 kg/100 square metres.

E16.4.2 Touch-up along edges of existing turf areas in accordance with CW 3520.

E16.4.3 Fertilizer:

- (a) Where soil analysis and recommendation for fertilizer is unavailable apply 11-52-0 at a rate of 0.75 kg per 100 square metres.

#### E16.4.4 Maintenance for Establishment

- (a) Maintenance for establishment and acceptance conditions for turf grass seeded areas shall be in accordance with CW 3520.
- (b) Maintain seeded areas for growth establishment for a period of ninety days following completion of seeding and hydro-mulching operations.
- (c) The Contractor shall water seeded and hydro-mulched areas as required to obtain optimum soil moisture levels for germination and continued growth of grasses and flowers. Control the watering to prevent seed washouts.
- (d) The Contractor shall mow native seed mix areas once, preferably in October, removing cut material that would smother seeded plants.
- (e) Additional mowing to a height of 125 mm shall be completed as directed by the Contract Administrator in order to remove extensive weed growth and/or to maintain healthy growth of grasses and wildflowers.

E16.4.5 Chemical Weed Control: the Contractor shall use chemical weed control, Roundup, 2-4 D or Diacamba, only as required to spot remove weeds in localized areas. Do not treat large areas seeded with wildflowers with chemical weed control agents.

E16.4.6 The maintenance period will terminate after the following criteria have been met:

- (a) Certified seed that has been sowed meets the requirements of CW 3520 and this specification
- (b) Seeded grasses and wildflowers show healthy, vigorous growth
- (c) The seeded area has a firm, uniform and even surface
- (d) The seeded area is free of debris, including leaves
- (e) The seeded area has sufficient growth density that bare spots do not exceed 5% of total surface area
- (f) The area has less than 10 noxious weeds per 50 square metres
- (g) Seeded areas are free of damaging insects

#### E16.5 Method of Measurement and Basis of Payment

##### E16.5.1 Touch-up Along Edge of Existing Turf

- (a) Touch-up of existing turf shall be measured on an area basis. The area paid for shall be the number of square metres restored and seeded in accordance with this Specification and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.
- (b) Payment will be made at the Contract unit price per square metre for "Seed Touch-Up Turf Areas" in Work Area A and Work Area B, which payment shall be considered compensation in full for the supply of topsoil and other all materials, and the performing of all operations necessary to complete the Work as specified including any items incidental to the Work including watering and maintaining the area for the 90 day warranty period.
- (c) No measurement or payment shall be made for topsoil and seeding to rehabilitate areas damaged by the Contractor's operations including, restoration of turf disturbed as a result of accessing the Work Area from the road. All restoration outside the Work Areas shall be incidental to the Work.

##### E16.5.2 Native Grass Seed, and Grass and Wildflower Seed Mixes

- (a) The Upper Bank Grasses and Wild Flowers (in Planting Areas 3B, 3C) and the Mid and Lower Bank Grasses (in Planting Areas 1B, 2B, 1C, 2C) shall be measured on an area basis for each type of seed mix. The total area to be paid for each type of seed mix shall be the number of square metres seeded and maintained in accordance with this specification and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.

- (b) No measurement shall be made for seed placed outside the limits of placement unless directed by the Contract Administrator.
- (c) Supply, placement and maintenance of native grasses and wildflowers seed mix, and native grasses seed mixes will be paid for at the Contract Unit Prices for the following items in Work Area A and Work Area B, which prices shall be payment in full for supplying all materials and performing all operations herein specified, and all other items incidental to the Work in accordance with this specification and CW3520, and maintaining all seeded areas during the Contractor's warranty period:
  - (i) "Seed Upper Bank Grasses and Wildflowers"
  - (ii) "Seed Mid and Lower Bank Grasses"

E16.5.3 Nurse or Cover Crop Seeding: there will be no separate measurement for nurse or cover crop seeding. Seeding of a nurse crop will be incidental to other seeding operations.

E16.5.4 Herbicides and Insecticides: there will be no separate measurement for materials, equipment and operations related to the use of herbicides and insecticides.

## **E17. LONG TERM SCHEDULED MAINTENANCE**

### **E17.1 Description**

This specification shall cover the long term scheduled maintenance of trees, shrubs and herbaceous material; sod and seeded areas, and as well as general clean up and maintenance of site, for three years following completion of all Maintenance for Establishment purposes. An estimated period of scheduled maintenance for each year shall be from April 15 to October 15 (6 months).

### **E17.2 Materials**

E17.2.1 The Contractor shall provide all necessary materials and equipment including: additional topsoil, soil amelioration, mulch, sod, seed, fertilizers and pesticides, and tractors, mowers, hand mowers, trimmers, fertilizer spreaders pruning tools, water trucks, hoses, water metres and any other items necessary for the maintenance of the areas indicated in this specification.

E17.2.2 Further to the above, the Contractor shall supply, install, and maintain any required fencing or other means to protect the planted areas from public traffic or damage from animals during the maintenance period. The locations of fences shall be limited to within the defined Work area.

E17.2.3 Chemical Herbicide: Roundup, 2-4D, Diacamba or similar chemical herbicides approved by Agriculture Canada. Use only with the approval of the Contract Administrator.

### **E17.3 Personnel**

E17.3.1 The Contractor shall provide all necessary personnel for the ongoing scheduled maintenance operations.

E17.3.2 Personnel should have at least one year of experience in landscape maintenance and should be under the direction of a foreman, in all cases, with not less than five years of experience with similar maintenance operations.

E17.3.3 At a minimum, the maintenance foreman shall be familiar with native plantings and plant identification techniques.

### **E17.4 Timing**

E17.4.1 Maintain plantings and planting beds, sod and seeded areas for a period of three (3) years from the completion of the Maintenance for Establishment period, as determined by the Contract Administrator.

- E17.4.2 Provide the Contract Administrator a Schedule of Maintenance Activities for the three year scheduled maintenance period, based on the requirements outlined herein. The scheduled maintenance period shall not commence until the schedule has been reviewed by the Contract Administrator.
- E17.4.3 The Contractor shall provide a detailed maintenance log, including but not limited to the following: hours of labour undertaken, number of personnel and equipment used. The log will itemize watering, spraying and any other maintenance Work. Contractor shall submit logs monthly, during the growing season, at regularly scheduled meetings with the Contract Administrator. Maintenance logs will be incidental to the maintenance Work.
- E17.5 Maintenance Methods
- E17.5.1 Maintenance of Trees, Shrubs and Herbaceous Plant Material (3 years): to include but not be limited to:
- (a) Watering:
    - (i) Contractor shall determine the need for watering by taking soil tests weekly with a one inch auger. Take a test sample from both the planting soil mix and from tree root balls by drilling to a minimum depth of 600 mm. The soil shall contain enough moisture to hold together when compressed in the hand, but shall not be muddy.
    - (ii) Testing shall be undertaken at a minimum of 6 sites per week at a minimum of 10m between sites. The installed plant material shall not be allowed to dry out to the detriment of the viability of the plant material. Contractor shall monitor and submit testing results in maintenance logs. Contractor shall water-in plant material each fall at the end of annual scheduled maintenance.
    - (iii) The maintenance logs recording watering dates and areas watered shall be submitted to the Contract Administrator at least once per year at the end of each growing season.
  - (b) Fertilizing, Pruning and Spraying of Trees and Shrubs:
    - (i) A qualified local arborist shall undertake all fertilizing, pruning and spraying of trees and plant material.
    - (ii) Where chemicals are used to control weed growth refer to E18.
  - (c) Pruning: prune out damaged limbs or deadwood to standard nursery practices.
  - (d) Cultivation/Weed Growth:
    - (i) Contractor shall cultivate only as required to reconstruct tree saucers, or to remove significant weed growth.
    - (ii) Contractor shall not cultivate around plants with a shovel or spade. Cultivate with a hoe or similar tool to a maximum depth of 50 mm. Maintain natural elevation of the surrounding area when cultivating and create a gentle saucer to contain water around the plant.
    - (iii) Carefully replace wood chip mulch when cultivation has been completed.
    - (iv) Weed by hand a minimum of once per month, or as otherwise determined by the Contract Administrator, to remove competition to installed plant material by undesirable plant material. Dispose of undesirable material off-site.
    - (v) The Contractor shall be responsible for any fines or weed control notices issued for the planting areas. All such notices shall be dealt with by the Contractor in a timely fashion. Copies of any fines and notices shall be provided to the Contract Administrator within five (5) working days of their receipt by the Contractor.
    - (vi) Spraying:
    - (vii) Spot spray plant material to control insect pests and diseases, using horticultural compounds approved by Agriculture Canada which are specific for the problem to be contained.

(viii) Contractor shall be responsible for obtaining any permits required for spraying in proximity to the Red River.

(e) Straightening: straighten trees and shrubs as required or as directed by the Contract Administrator.

(f) Mulching: add mulch to tree saucers and planting beds as required to maintain a 50mm cover. Contractor shall, in addition to hand weeding, lightly rake mulched area periodically.

#### E17.5.2 Maintenance of Turf Areas (90 days)

(a) Maintenance of turf areas at the boundaries of the Work area shall be considered incidental to the Work.

(b) General Turf Maintenance: maintain sod or seeded turf areas as specified in CW 3520.

(c) Mowing

(i) Mow turf grass areas to a height of 75 mm.

(ii) Cut grass at two (2) week intervals or as directed by the Contract Administrator, but at intervals so that approximately one-third of growth is removed in a single cut.

(d) Water sod areas regularly in sufficient quantities to maintain subsoil immediately under sod moist to a depth of 75 to 100mm. Do not over-water.

(e) Fertilize turf areas in the spring and late fall as follows:

(i) Spring: 16-20-0

(ii) Fall 10-6-4

(iii) Contractor shall comply with manufacturer's specifications in the storage and application of fertilizer.

(f) Spray turf areas with broadleaf weed controls twice a year in the spring and late summer, or more frequently as required or directed by the Contract Administrator.

(i) Use environmentally friendly chemical agents approved by Agriculture Canada.

(g) Control damaging insects as required with environmentally friendly chemical agents approved by Agriculture Canada.

(h) Standard: at the end of the required turf maintenance period uniform stands of grass must be well established in all turf areas or re-seeding will be required at the Contractor's expense and to the satisfaction of the Contract Administrator.

(i) Scattered bare spots, none of which is larger than 100 mm square will be allowed up to a maximum of three (3) percent of any turf area.

(ii) Re-seed areas with defective turf and the area so re-seeded shall be further maintained for a 60 day period.

(iii) Any areas re-seeded after September shall have the maintenance period commence on May 15th of the following year or such date as mutually agreed upon by all parties, at which time all turf area must show an even stand of live growth.

#### E17.5.3 Maintenance of Native Seeded/Hydro-mulched Areas (3 years)

(a) Repair and re-seed dead or bare spots to the satisfaction of the Contract Administrator.

(b) Schedule mowing once a year, in mid-October, to a height of 125mm and remove excess thatch.

(c) Mow localized areas, only, as required to control noxious weeds.

(d) Typically eliminate weeds by hand or chemical means. Spot-treat localized weedy areas, only, with Roundup, 2-4D or Diacamba.

- (e) Water native seeded/hydro-mulched areas as required for establishment of healthy wildflowers and grasses and for maintenance in periods of severe drought.
- (f) Control damaging insects, as required, with environmentally friendly chemical agents approved by Agriculture Canada.
- (g) Standard: at the end of the required maintenance period native wildflowers and grasses must be well-established in all native seeded/hydromulched areas or re-seeding will be required at the Contractor's expense and to the satisfaction of the Contract Administrator.
  - (i) Scattered bare spots, none of which is larger than 100 mm square will be allowed up to a maximum of five (5) percent of any area.
  - (ii) Re-seed areas with unacceptable native cover.
  - (iii) Any areas re-seeded after September of the final year of the maintenance period shall have the additional 60-day maintenance period commence on May 15th of the following year or such date as mutually agreed upon by all parties, at which time all native seeded/hydro-mulched areas must show an even stand of live growth.

#### E17.5.4 General Cleanup

- (a) Cleanup garbage and debris throughout site throughout the three year maintenance period.
- (b) Remove soil or grass clippings from pavement areas.
- (c) Dispose of collected garbage and clippings at a recognized solid waste disposal site.
- (d) Clean-up shall include removal of all debris deposited by floods.

#### E17.6 Acceptance Criteria

- E17.6.1 On an annual basis, during the growing season, typically in late June, the Contractor and Contract Administrator shall inspect the works to determine plant material survival rates.
- E17.6.2 All plant material that does not survive or appear viable during the annual inspection will be replaced to meet the following standards on a bed by bed basis:
  - (a) All whips shall be guaranteed to an overall survival rate of 85 percent.
  - (b) All potted planting material shall be guaranteed to an overall survival rate of 85 percent.
- E17.6.3 Plant material which has died or which has failed to thrive will be promptly removed from the site following each annual inspection at the Contractor's expense. The Contractor will be responsible for the cost of replacing any non-viable/dead plant material as required to meet the acceptance criteria.
- E17.6.4 The Contract Administrator shall have the discretion to add additional plant material at the appropriate Contract Unit Prices.

#### E17.7 Method of Measurement and Basis of Payment

- E17.7.1 General Maintenance and Watering of Trees, Shrubs and Herbaceous Material, Turf, and Native Seeded/Hydro-mulched Areas, and General Clean-Up
  - (a) General maintenance, including: watering all areas as required, fertilizing, pruning, spraying, cultivation/weed control, tightening of guy wires, straightening, mulching for trees, shrubs and herbaceous material; turf and native seeded/hydro-mulched areas and general clean-up will be measured on an annual basis for each year of the scheduled maintenance.
  - (b) General maintenance, clean-up and watering will be paid for at the Contract Unit Price for "General Plant Material Maintenance, Watering and General Clean-Up", which prices will include supply of all labour, equipment and materials and performing all operations herein described, and all other items incidental to the Work included in this specification.

## **E18. CHEMICAL CONTROL OF VEGETATION**

### **E18.1 Description**

E18.1.1 This Specification covers the requirements for the application of herbicides for weed control.

### **E18.2 General**

#### **E18.2.1 Safety Requirements**

- (a) Comply with Federal and Provincial, pesticide control regulations. Provide Material Safety Data sheets (MSDS) for all chemicals to be used
- (b) Obtain Provincial Pesticide Applications License and any other permits and licenses necessary to complete the Work.
- (c) Comply with label directions on the use of herbicide products.
- (d) Comply with label directions as to ambient temperature ranges for application.

#### **E18.2.2 Delivery and Storage**

- (a) Deliver, store and maintain packaged materials with manufacturer's seals and labels intact.
- (b) Prevent damage, adulteration and soiling of material during delivery, handling and storage.
- (c) Store material in accordance with label directions, including those on maximum and minimum storage temperatures.
- (d) Store herbicide products in original containers as supplied by manufacturer and keep sealed until used.
- (e) Store herbicide products in sheltered, well ventilated, controlled access location.
- (f) Do not store herbicides near feeds and food stuffs, agricultural plants, seeds, fungicides, insecticides, fertilizers or other agricultural chemicals.
- (g) Identify storage area as pesticide storage facility for fire protection purposes.
- (h) Post in a prominent place a list of medical and fire department telephone numbers.
- (i) Post in a prominent location on the outside of the storage area a list of products stored. Provide a copy of this list to fire department. Keep list up to date.

### **E18.3 Materials**

#### **E18.3.1 Herbicides**

- (a) Select appropriate herbicides to achieve specified control requirement. Refer to Manitoba Guide to Chemical Weed Control.
- (b) Herbicide products used must be registered for such use by Agriculture Canada under Pest Control Products Act.
- (c) Do not use herbicides containing sodium chlorate.
- (d) Adjuvants: should be compatible with herbicide product used.

#### **E18.3.2 Spray Equipment**

- (a) Tank Spray: Do not use airblast, mist or fog sprayer. Sprayer unit to meet the following requirements.
  - (i) Sprayer shall have adjustable height boom, hose and handgun for spot treatments, strainers and nozzles to produce spray pattern compatible with job.
  - (ii) Tank shall be equipped with continuous agitation device.
  - (iii) Pressure gauge and regulator shall be capable of maintaining uniform pressure between 100 and 450 kPa.



- E18.3.3 Backpack Sprayer
- (a) Sprayer shall have hose and handgun for spot treatment.
- E18.3.4 Equip spray tank loading pipe with check valve located within one metre of pump or hydrant to prevent siphoning from spray tank resulting in contamination of water source.
- E18.4 Construction Methods
- E18.4.1 Notice of Spray Operation:
- (a) Post areas to be treated with signs placed at each road access and 100 m intervals around perimeter.
  - (b) Indicate on signs that spray program is being implemented.
  - (c) Put signs in place prior to commencement of spray operation and retain in place for 24 hours after spray operation is completed for each particular area.
- E18.4.2 Environmental Protection:
- (a) Application may continue only when wind velocities range between 2 and 10 km/h.
  - (b) Do not spray when air turbulence will prevent uniform application.
  - (c) Use only herbicides approved for use in the vicinity of waterways.
  - (d) Obtain any required Regulatory Permits prior to application.
  - (e) In case of herbicide spill, notify Contract Administrator and Manitoba Environment verbally immediately and subsequently in writing.
  - (f) Do not allow drifting beyond target area. Use mechanical method to minimize herbicide drift.
  - (g) When spraying adjacent to desirable vegetation, use sprayer fitted with a protective hood suitable to prevent contamination or provide protective covering for such vegetation while spray is in progress.
  - (h) Do not apply soil sterilants to slopes greater than 3 to 1 where killing vegetation would lead to erosion problems.
- E18.4.3 Application of Herbicides
- (a) Treat areas as indicated with appropriate herbicides.
  - (b) Calibrate equipment to achieve manufacturer's recommended application rates.
  - (c) Confine herbicide application to areas as indicated to achieve specified control requirements.
  - (d) Space successive passes to provide uniform coverage of treated area.
  - (e) Use flagmen or other aids as necessary to indicate successive passes.
  - (f) Where roots of desirable vegetation run under treatment area, use contact herbicides.
  - (g) Ensure formulation and rate of sterilant will not lead to leaching outside treatment area.
  - (h) Retreat areas in accordance with label directions until specified control requirements are achieved.
- E18.4.4 Control Requirements
- (a) For weed control, achieve within 30 days of treatment, minimum of 90% kill of target plants without damaging installed plant material or adjacent plant material to be retained.
  - (b) For soil sterilization, achieve within 12 months of treatment, 100% kill of vegetation.
- E18.4.5 Waste Disposal
- (a) Triple-rinse empty herbicide containers with diluent and add rinsate to spray mixture in tank.

- (b) Puncture and crush glass plastic metal containers making them unsuitable for further use.
- (c) Dispose of containers in accordance with Provincial requirements.
- (d) Do not rinse or wash spray tanks and equipment on site.

#### E18.4.6 Report

- (a) Within 7 days of Work completion, submit to Contract Administrator a written report containing following information:
  - (i) Full name and PCP Registration number of herbicide products used including adjuvants.
  - (ii) Types and makes of application equipment used.
  - (iii) Total amount of herbicide applied and rate of application expressed in kilograms of active ingredients per square metre and in kilograms of product per square metre.
  - (iv) Dates and times treatment commenced and terminated each day.
  - (v) Summary of daily weather conditions during treatment.
  - (vi) Number of square metres completed each day.
  - (vii) Description of disposal techniques, total number of containers discarded for each chemical, exact location of disposal site.
  - (viii) Names of drivers, mixers and applicators.
  - (ix) Copies of Provincial Applicator's License and Pesticide Project Application Permit.

#### E18.5 Method of Measurement and Basis of Payment

- E18.5.1 No separate measurement or payment will be made for Chemical Control of Vegetation. It shall be considered incidental to maintaining the planted material.