



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 585-2011**

**HERITAGE PARK PHASE 2**

## TABLE OF CONTENTS

### PART A - BID SUBMISSION

Form A: Bid	1
Form B: Prices	3

### 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	2
B8. Bid	3
B9. Prices	4
B10. Qualification	4
B11. Opening of Bids and Release of Information	5
B12. Irrevocable Bid	5
B13. Withdrawal of Bids	5
B14. Evaluation of Bids	6
B15. Award of Contract	6

### PART C - GENERAL CONDITIONS

C0. General Conditions	1
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### PART D - SUPPLEMENTAL CONDITIONS

#### General

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

#### Submissions

D7. Authority to Carry on Business	2
D8. Safe Work Plan	2
D9. Insurance	3
D10. Performance Security	3
D11. Subcontractor List	3
D12. Equipment List	3
D13. Detailed Work Schedule	4

#### Schedule of Work

D14. Commencement	4
D15. Working Days	4
D16. Substantial Performance	5
D17. Total Performance	5
D18. Liquidated Damages	5
D19. Scheduled Maintenance	5

#### Control of Work

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

#### Measurement and Payment

D22. Payment	6
D23. Payment Schedule	6

**Warranty**

D24. Warranty	<b>Error! Bookmark not defined.</b>
Form H1: Performance Bond	7
Form H2: Irrevocable Standby Letter of Credit	9
Form J: Subcontractor List	11
Form K: Equipment	12
Form L: Detailed Work Schedule	14

**PART E - SPECIFICATIONS**

**General**

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

**General Requirements**

E2. Protection of Existing Trees	1
E3. Protection of Survey Infrastructure	2
E4. Pedestrian Safety and Traffic Management	2
E5. Stakes and Marks	2
E6. Water Used By Contractor	3
E7. Surface Restorations	3
E8. Temporary Relocation of Affected Structures	3
E9. Truck Weight Limits	4
E10. Pre-Construction Meeting	4
E11. Access	4
E12. Site Condition	4
E13. Layout of Works	4
E14. Existing Underground Services	5
E15. Exposing Existing Underground Services and Utilities	5
E16. Existing Curb Stop Boxes	5
E17. Product Approvals	6
E18. Damage to Existing Structures, Trees and Property	6
E19. Permits, Notices, Licences, Certifications, Laws, and Rules	7
E20. Matching Existing Grades	7
E21. Excavation, Removals, Rough Grading and Subgrade Compaction	7
E22. Crushed Limestone Pathway	10
E23. Asphalt Paving	12
E24. Concrete Approach	13
E25. Foundations	14
E26. Void Form	21
E27. Precast Concrete	21
E28. Site Furniture	22
E29. Wood Bollard	23
E30. Timber Edging	24
E31. Protective Surfacing	25
E32. Play Equipment	26
E33. Sodding	30
E34. Plant Material	30
E35. Extended Maintenance	34
E36. Sub-Surface Drainage	35

## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

B1.1 HERITAGE PARK PHASE 2

### **B2. SUBMISSION DEADLINE**

B2.1 The Submission Deadline is 4:00pm Winnipeg time, August 4, 2011.

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 Bidder may view the Site without making an appointment.

### **B4. ENQUIRIES**

B4.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.

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 Division website at <http://www.winnipeg.ca/matmgt/bidopp.asp>

B5.2.2 The Bidder is responsible for ensuring that he has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.

B5.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 8 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 B14.
- 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.
- B6.10 Notwithstanding B6.2 to B6.9, and in accordance with B7.6 deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B14.1(a).

## **B7. BID COMPONENTS**

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

- (a) Form A: Bid;
  - (b) Form B: Prices;
- B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.
- B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Bid.
- B7.4 The Bid shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.
- B7.4.1 Samples or other components of the Bid which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid.
- B7.5 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.
- B7.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B14.1(a).
- B7.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B7.8 Bids shall be submitted to:  
The City of Winnipeg  
Corporate Finance Department  
Materials Management Division  
185 King Street, Main Floor  
Winnipeg MB R3B 1J1

**B8. BID**

- B8.1 The Bidder shall complete Form A: Bid, making all required entries.
- B8.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his 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 10 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 should be printed below such signatures.

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

## **B9. PRICES**

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

B9.1.1 Notwithstanding C12.2.3(c), prices on Form B: Prices shall include the Manitoba Retail Sales Tax (MRST, also known as PST).

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

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

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

## **B10. 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 Division website at <http://www.winnipeg.ca/matmgt/debar.stm>

B10.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

- B10.4 Further to B10.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:
- (a) a 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 Division website at <http://www.winnipeg.ca/matmgt>)
- B10.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.
- B10.6 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

#### **B11. OPENING OF BIDS AND RELEASE OF INFORMATION**

- B11.1 Following the Submission Deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/default.stm>
- B11.2 After award of Contract, the name(s) of the successful Bidder(s) and the Contract amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/default.stm>
- B11.3 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.

#### **B12. IRREVOCABLE BID**

- B12.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 9 of Form A: Bid.
- B12.2 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 9 of Form A: Bid.

#### **B13. WITHDRAWAL OF BIDS**

- B13.1 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.
- B13.1.1 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.
  - B13.1.2 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 10 of Form A: Bid, and only such person, has authority to give notice of withdrawal.



- B13.1.3 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 10 of Form A: Bid; and
  - (c) if the notice has been given by any one of the persons specified in B13.1.3(b), declare the Bid withdrawn.

B13.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B12.2 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.

## **B14. EVALUATION OF BIDS**

B14.1 Award of the Contract shall be based on the following bid evaluation criteria:

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

B14.2 Further to B14.1(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.

B14.3 Further to B14.1(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.

B14.4 Further to B14.1(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.

B14.4.1 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each item, the sum of the quantities multiplied by the unit prices for each item shall take precedence.

B14.4.2 Further to B14.1(a), in the event that a unit price is not provided on Form B: Prices, the City will determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.

## **B15. AWARD OF CONTRACT**

B15.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B15.2 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.

B15.2.1 Without limiting the generality of B15.2, 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.

**B15.3** Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B14.

**B15.3.1** 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**

### **C0. GENERAL CONDITIONS**

- C0.1 The General Conditions for Construction (Revision 2006 12 15) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at [http://www.winnipeg.ca/matmgt/gen\\_cond.stm](http://www.winnipeg.ca/matmgt/gen_cond.stm)
- C0.2 A reference in the Bid Opportunity to a section, clause or subclause with the prefix "C" designates a section, clause or subclause in the General Conditions for Construction.

## **PART D - SUPPLEMENTAL CONDITIONS**

### **GENERAL**

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

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

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

D2.1 The Work to be done under the Contract shall consist of construction of asphalt parking lot with approach, playground area, entrance pillars, sodded berm and tree planting.

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

- (a) Sawcut, excavate, remove and dispose of section of concrete sidewalk;
- (b) Sawcut, remove and dispose of concrete curb;
- (c) Excavate, remove and dispose of safety surfacing;
- (d) Remove and dispose of unsuitable subgrade and replacement with compacted granular sub-base
- (e) Rough grading;
- (f) Supply and install compacted limestone pathway;
- (g) Supply and install asphalt paving;
- (h) Supply and install concrete approach;
- (i) Supply and install precast concrete culvert;
- (j) Supply and install entrance pillars;
- (k) Supply and install 200mm wood bollards;
- (l) Supply and install timber edging
- (m) Supply and install engineered wood fibre safety surfacing;
- (n) Supply and install playground equipment;
- (o) Supply and install sod and topsoil;
- (p) Supply and installation of plant material; and
- (q) Maintenance for all plant material for two years.

#### **D3. CONTRACT ADMINISTRATOR**

D3.1 The Contract Administrator is McGowan Russell Group, represented by:

Aaron Hirota, MALA, CSLA  
Senior Landscape Architect  
200-120 Fort Street  
Winnipeg, MB, R3C 1C7

Telephone No. (204) 956-0396  
Facsimile No. (204) 956-1265

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

#### **D4. CONTRACTOR'S SUPERVISOR**

- D4.1 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.

#### **D5. NOTICES**

- D5.1 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.
- D5.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D5.3, D5.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D3.1.
- D5.3 Notwithstanding C21., all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following facsimile number:  
The City of Winnipeg  
Chief Financial Officer  
Facsimile No.: (204) 949-1174

- D5.4 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  
Legal Services Department  
Attn: Director of Legal Services  
185 King Street, 3rd Floor  
Winnipeg MB R3B 1J1  
Facsimile No.: (204) 947-9155

#### **D6. FURNISHING OF DOCUMENTS**

- D6.1 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**

#### **D7. AUTHORITY TO CARRY ON BUSINESS**

- D7.1 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.

#### **D8. SAFE WORK PLAN**

- D8.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

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

## **D9. INSURANCE**

D9.1 The Contractor shall provide and maintain the following insurance coverage:

- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) 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;

## **D10. PERFORMANCE SECURITY**

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

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

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

D10.2 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.

## **D11. SUBCONTRACTOR LIST**

D11.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

## **D12. EQUIPMENT LIST**

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

### **D13. DETAILED WORK SCHEDULE**

- D13.1 The Contractor shall provide the Contract Administrator with a detailed work schedule (Form L: Detailed Work Schedule) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.
- D13.2 All dates and time periods in the detailed work schedule shall be consistent with Form F: Work Schedule provided in the Contractor's Bid except that:
- (a) if the actual date that the letter of intent is issued is later than the assumed date indicated in **Error! Reference source not found.**, the Contractor may adjust fixed dates proposed on Form F: Work Schedule, by not more than the difference between the aforementioned assumed and actual dates;

### **SCHEDULE OF WORK**

#### **D14. COMMENCEMENT**

- D14.1 The Contractor shall not commence any Work until he is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.
- D14.2 The Contractor shall not commence any Work on the Site until:
- (a) the Contract Administrator has confirmed receipt and approval of:
    - (i) evidence of authority to carry on business specified in D7;
    - (ii) evidence of the workers compensation coverage specified in C6.15;
    - (iii) the Safe Work Plan specified in D8;
    - (iv) evidence of the insurance specified in D9;
    - (v) the performance security specified in D10;
    - (vi) the Subcontractor list specified in D11;
    - (vii) the equipment list specified in D12; and
    - (viii) the detailed work schedule specified in D13.
  - (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.
- D14.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.

#### **D15. WORKING DAYS**

- D15.1 Further to C1.1(gg), the Contract Administrator's determination of whether or not atmospheric and Site conditions are such that a Working Day is deemed to have elapsed may be based at one time on one type of work while at another time a Working Day may be based on another type of work. When more than one type of major work is involved, the quantity of equipment that must be able to work in order to meet the requirements of a Working Day may vary considerably from that specified in the General Conditions.
- D15.2 In the event that incidental work is behind schedule which, in the opinion of the Contract Administrator, should have been or could have been carried out by the Contractor in conjunction with or immediately following work of a major type, the City hereby reserves the right to charge Working Days on the incidental work until such time as it is up to schedule.
- D15.3 When the major type of work involves restoration of the site to the condition it was prior to rainfall, Working Days shall not be charged.
- D15.4 The Contract Administrator will furnish the Contractor with a daily record for each major type of work showing various information concerning the equipment, the time it worked, could have

worked and Working Days charged. This report is to be signed each day by an authorized representative of the Contractor.

**D16. SUBSTANTIAL PERFORMANCE**

- D16.1 The Contractor shall achieve Substantial Performance within Thirty Five (35) consecutive Working Days of the commencement of the Work as specified in D14.
- D16.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.
- D16.3 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

**D17. TOTAL PERFORMANCE**

- D17.1 The Contractor shall achieve Total Performance within Forty Five (45) consecutive Working Days of the commencement of the Work as specified in D14.
- D17.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be reinspected.
- D17.3 The date on which the Work has been certified by the Contract Administrator as being totally performed to the requirements of the Contract through the issue of a certificate of Total Performance is the date on which Total Performance has been achieved.

**D18. LIQUIDATED DAMAGES**

- D18.1 If the Contractor fails to achieve Substantial Performance in accordance with the Contract by the day fixed herein for Substantial Performance, the Contractor shall pay the City five hundred dollars (\$500.00) per Working Day for each and every Working Day following the day fixed herein for Substantial Performance during which such failure continues.
- D18.2 The amount specified for liquidated damages in D18.1 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Substantial Performance by the day fixed herein for same.
- D18.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

**D19. SCHEDULED MAINTENANCE**

- D19.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:
- (a) Plant material as specified in E35;
- D19.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.



## **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, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

### **D23. PAYMENT SCHEDULE**

- D23.1 Further to C12, payment shall be in accordance with the following payment schedule:
- (a) Monthly progress billings for all works.

## **WARRANTY**

### **D24. WARRANTY**

- D24.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) year thereafter, except where longer warranty periods are specified in the respective Specification sections, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.
- D24.1.1 For the purpose of Performance Security, the warranty period shall be one (1) year.
- D24.2 Notwithstanding C13.2, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use.
- D24.2.1 In such case, the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

**FORM H1: PERFORMANCE BOND**  
(See D10)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

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

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

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

BID OPPORTUNITY NO. 585-2011

HERITAGE PARK PHASE 2

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

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

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

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

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

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

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

**SIGNED AND SEALED**  
in the presence of:

\_\_\_\_\_  
(Witness as to Principal if no seal)

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

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

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

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

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

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

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

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 585-2011  
HERITAGE PARK PHASE 2

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

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

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

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

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

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

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

Partial drawings are permitted.

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

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

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

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

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

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

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

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

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

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

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

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



**FORM K: EQUIPMENT**  
(See D12)

**HERITAGE PARK PHASE 2**

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

**FORM K: EQUIPMENT**  
(See D12)

**HERITAGE PARK PHASE 2**

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





## PART E - SPECIFICATIONS

### GENERAL

#### E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

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

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
L1	Site Layout Plan
L2	Enlargements Plan
L3	Details

### GENERAL REQUIREMENTS

#### E2. PROTECTION OF EXISTING TREES

- E2.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing trees, and trees within the Site, within the limits of the construction area. If the Contractor requires further information on these specifications, contact the City of Winnipeg Forestry Branch at 986-2004.
- All construction traffic shall be restricted to the limits of construction shown on the drawings.
  - Excavation equipment shall be track based.
  - For trees greater than 100mm in diameter, located within 3 meters of the limits of construction, attach wood strapping material having a minimum thickness of 25mm and minimum length of 2440mm around the tree trunks in a manner that will not harm the tree. Do not use nails or fasteners that penetrate the tree trunk. The width of the strapping may be reduced to suit the tree being protected. Length of strapping may be reduced to suit the tree being protected as approved by the Contract Administrator.
  - For trees less than 100mm in diameter, install PVC safety fencing around the tree to a 2.0m radius complete with installation hardware, to adequately support the safety fence. The 2.0m radius safety fence may be reduced to suit the tree being protected as approved by the Contract Administrator.
  - PVC Safety fencing is to be installed at the locations shown on the drawings and to the extent shown on the drawings
  - The operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the Work and shall be approved by the Contract Administrator prior to the commencement of Work. Equipment shall not be parked, repaired, refueled; construction materials shall not be stored, and earth materials shall not be stockpiled with the driplines of the trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tree from the tree trunk to the tips of the outermost branches.

The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.

- (g) Repair, replace and maintain tree protection materials during construction until such time no equipment will be working in the area.
- (h) Remove safely fencing and strapping material without harming the trees as soon as the construction and restoration Work is complete.

- E2.2 Obtain approval from the Contract Administrator to excavate within 2.0m of a tree.
- E2.3 Excavate in a manner to minimize damage to the tree root systems. Keep exposed roots in excavations and trenches moist or shaded. If stockpiling of excavated soil material is required, stockpile in areas away from the tree roots if possible.
- E2.4 All items of tree protection shall be considered incidental to the Work and shall not be measured or paid for separately.

### **E3. PROTECTION OF SURVEY INFRASTRUCTURE**

- E3.1 Notwithstanding clause 4 "Protection of Survey Bars" of the Standard Provisions: Current legislation, The Surveys Act, places the onus on those undertaking construction to protect the Survey Infrastructure from damage as a result of their activity.
- E3.2 Further to C6.26(g), at least 72 hours prior to the commencement of the On-Site Work the Contractor shall contact the City of Winnipeg, Geomatics Services Branch at 918-1360 (8:00 am to 4:00 pm Monday to Friday excluding holidays) to obtain underground clearance. Geomatics Services will locate and mark all known outline survey monuments and geodetic control monuments and confirm the physical condition of those monuments upon completion of construction, at no cost to the Contractor.
- E3.3 Where a survey post, bar or control monument lies in the line of the proposed Work and must be disturbed, the Contractor shall provide the Contract Administrator with 48 hours notice to permit referencing for future replacement, at no cost to the Contractor. Failure to provide the specified notice shall result in the Contractor paying for all costs associated with replacing or relocating the disturbed outline survey monuments and geodetic control monuments.
- E3.4 Survey monuments and geodetic control monuments at or adjacent to the Site, not in the line of the proposed construction, that are damaged or disturbed by the Contractor shall be replaced or relocated by the City or its agent and all associated costs shall be paid for by the Contractor. An approximate estimate of the costs involved to restore a legal survey monument is \$1,000 per bar and \$3,000 per control monument. Contractors must ensure their landscaping and other subcontractors are aware of this clearance procedure and the potential restoration costs.
- E3.5 Where possible, amounts owed to the City in accordance with the above will be deducted from any Protection of survey infrastructure payments to be made by the City to the Contractor.

### **E4. PEDESTRIAN SAFETY AND TRAFFIC MANAGEMENT**

- E4.1 During the project, pedestrian access shall be maintained at all times on public right of way and on adjacent properties. A clear pathway unobstructed from any materials or equipment must be provided. No pedestrian access is required on the construction site.
- E4.2 Vehicle access must be maintained at all times on public right of way and on adjacent properties.

### **E5. STAKES AND MARKS**

- E5.1 Further to C6.26(h), the Contractor will mark, to the extent he determines to be necessary, the location, alignment and elevation of the Work by means of stakes or marks, for review and

approval by Contract Administrator. The Contractor shall make the completed Works conform to the lines and marks thus approved and indicated.

- E5.2 The Contractor shall notify the Contract Administrator immediately of the disturbance of any such stakes or marks. The cost of correcting any errors arising out of neglect of the Contractor to so notify the Contract Administrator shall be borne entirely by the Contractor, as well as the cost of replacing any disturbed stakes or marks.
- E5.3 Before commencing Work, the Contractor shall satisfy himself as to the meaning and correctness of all stakes and marks and no claims shall be entertained by the City on account of any alleged inaccuracies. If any error is suspected in the Drawings, Specifications or the directions of the Contract Administrator, Work shall be discontinued until the errors are rectified, but no claims shall be made on account of any delay occasioned thereby.
- E5.4 The Contractor shall determine and provide all dimensions and elevations measured from the stakes or marks

## **E6. WATER USED BY CONTRACTOR**

- E6.1 Notwithstanding CW 1120.3.7:
- E6.2 Water for use by the Contractor may be obtained from the City of Winnipeg waterworks system.
- E6.3 Should the Contractor wish to obtain water from a City hydrant, he shall make application either in person or by phoning the Permits Clerk at 986-3184 (8:30 am to 4:30 pm Monday to Friday excluding holidays). The Contractor shall advise the Permits Clerk of the hydrant he wishes to use. The Water Services Divisions of the Water and Waste Department will inspect the hydrant to ensure that the location is suitable and that the hydrant is in good working condition. If the requested hydrant is found to be unacceptable, arrangements will be made for the use of an alternate hydrant.
- E6.4 When the application has been approved, the Permits Clerk will contact the Contractor and issue the permit. The permit may not be issued the same day the application is made. The Contractor shall obtain the permit for hydrant use from the Customer Services Division of the Public Works Department, 107-1155 Pacific Avenue. Permit fees will be charged in accordance with the latest version of the Waterworks By-law. All water used shall be metered and protected against contamination by the use of approved backflow prevention devices. The City will rent the meter to the Contractor at the rate established by the Waterworks By-law. The Contractor shall provide a lockable box, piping, valves, and backflow prevention equipment in accordance with Waterwork's guidelines. The backflow preventer(s) must be tested by a plumber licensed to test backflow preventers. The Permits Clerk can provide a list of licensed plumbers and additional information on the requirements for obtaining a use of hydrant permit.
- E6.5 The Contractor shall pay for all water used in accordance with the Waterworks By-law. Sewer charges will not be assessed for water obtained from a hydrant.

## **E7. SURFACE RESTORATIONS**

- E7.1 The Contractor shall temporarily repair any Work commenced and not completed in the 2011 construction season to the satisfaction of the Contract Administrator. The Contractor shall maintain the temporary repairs in a safe condition as determined by the Contract Administrator until permanent repairs are completed. The Contractor shall bear all costs associated with temporary repairs and their maintenance.

## **E8. TEMPORARY RELOCATION OF AFFECTED STRUCTURES**

- E8.1 The Contractor shall temporarily relocate any portable structure such as benches, waste receptacles, picnic benches, etc., which will interfere with the construction of the Work and are not identified as items to be relocated. The Contractor Administrator will identify the temporary locations for the portable structures. Following the completion of the applicable Work the

Contractor shall replace the structures to the locations designated by the Contract Administrator. These relocations shall be considered incidental to the associated Works and no separate measurement for payment will be made.

#### **E9. TRUCK WEIGHT LIMITS**

E9.1 The City shall not pay for any portion of Material which results in the vehicle exceeding the maximum gross vehicle weight allowed under *The City of Winnipeg Traffic By-Law*, unless such vehicle is operating under special permit.

#### **E10. PRE-CONSTRUCTION MEETING**

E10.1 The Contractor shall not begin the Work under this Contract, until a pre-construction meeting has been held between representatives of the Contractor, The City of Winnipeg, and the Contract Administrator.

#### **E11. ACCESS**

E11.1 All access is to be on the designated routes through the Site. These routes will be determined at the Pre-Construction Meeting.

E11.2 Access to the Site as required by the Contractor shall be provided and maintained by the Contractor at his own expense and approved by the Contract Administrator.

E11.3 The Contractor's operations shall be limited to the minimum area necessary for undertaking the Work and he shall be responsible for all damage resulting from his Work on private property. The Contractor shall take such measures as are necessary to ensure safe and convenient pedestrian ingress and egress in maintained to private properties while he is working near them. Any damage caused by the negligence of the Contractor or his Sub-Contractors to the adjacent Works or properties, shall be promptly repaired by him at his own expense, to the satisfaction of the Contract Administrator.

E11.4 All necessary precautions shall be exercised by the Contractor so as not to remove, disturb, or damage any existing trees, shrubs, sod, pavements, streets, roads, boulevards, poles, hydrants, water pipes, gas pipes, electrical wires, cables, conduits, sewers or other existing facilities and equipment at the Site of the Work. For all damage incurred in the performance of the Work (either directly or indirectly), the Contractor shall either replace and repair such damage, whichever may be deemed necessary in the opinion of, and acceptable to, the Contract Administrator and the cost of which shall be borne entirely by the Contractor.

#### **E12. SITE CONDITION**

E12.1 The Contractor shall examine the Site and make themselves familiar with the existing conditions (both above and below grade) and nature of Work to be done.

E12.2 The Contractor shall set all necessary control lines, benchmarks, survey, elevation stakes and layout in accordance with the individual Site conditions and in consultation with the Contract Administrator.

#### **E13. LAYOUT OF WORKS**

E13.1 The Contractor will Work from layout information provided in the construction drawings and will be responsible to provide a full time experienced survey crew to layout and continuously check the locations and elevations of all components and paving of the Work included in this Contract.

E13.2 The Contractor must provide all necessary survey equipment in good operating conditions.

E13.3 The Contractor shall supply all materials (painting, stakes, ribbon, markers, etc) and labour necessary for the accurate location and setting out of the Work.

E13.4 From time to time the Contract Administrator may have a survey crew on the Site, but they will check the Work done by the Contractor's survey personnel only. The checking of the Work by the City's surveyors will not relieve the Contractor of any responsibility of the correctness of the Work. Should any structure or paving or any part thereof be installed in any location other than that shown on the Drawings, then the error shall be rectified by the Contractor all at his own expense and at the satisfaction of, and in a manner specified by the Contract Administrator.

#### **E14. EXISTING UNDERGROUND SERVICES**

E14.1 The Contractor's attention is drawn to the existing underground lines or services that may be located in the area of the Work.

E14.2 The Contractor shall take all necessary precautions when performing the Work to ensure that no damage is done to these existing services.

E14.3 No responsibility will be assumed by the City for correctness or completeness of the Drawings, when provided, with respect to the existing utilities, pipes or other objects either underground or on the surface, shall not be liable for the incorrectness and inadequacy thereof. It shall be the responsibility of the Contractor to determine the location of all such utilities, pipes and other objects and to make good any damage done to them.

E14.4 All costs in connection with this item including location of the existing service, repairs to any existing services damaged by the construction operation, etc. shall be included in the unit prices bid for supply and installation of the items included under this Contract.

E14.5 The Contractor will be required to make his own arrangements in connection with the temporary use of lighting, power, gas, sewer, water or other utilities, and pay all costs in connection therewith.

E14.6 All necessary permits, fees and other like expenses as well as the cost of temporary connections to existing facilities shall be arranged and paid for by the Contractor.

#### **E15. EXPOSING EXISTING UNDERGROUND SERVICES AND UTILITIES**

E15.1 The exact location and depth of some of the existing underground services and utilities within the project limits are unknown.

E15.2 Therefore, the Contractor shall supply all labour, equipment and materials required to expose all underground services and/or utilities sufficiently far enough in advance of the proposed Works to permit the Contract Administrator where necessary, to adjust the alignment and grade to avoid existing lines and ducts.

E15.3 All costs in connection with this item of Work shall be included in the unit price bid for the various bid items.

#### **E16. EXISTING CURB STOP BOXES**

E16.1 During the removal and installation of the concrete pavement, asphalt pathway and unit paving, the Contractor shall take all necessary precautions when Working in the vicinity of any existing curb stop boxes.

E16.2 All existing curb stop boxes not in use as determined by the Contract Administrator shall be abandoned by removing existing curb stop boxes. All costs associated with the abandoning of curb stop boxes are incidental

E16.3 Any existing curb boxes requiring final adjustments (horizontal and/or vertical) are incidental.

E16.4 Any curb stop boxes damaged as a result of the Contractor's operation shall be replaced at his own cost.

## **E17. PRODUCT APPROVALS**

- E17.1 The Contractor shall, following award, prepare a complete list of all material to be used on the project and submit the list to the Contract Administrator seventy two (72) hours prior to start of construction.
- E17.2 The Contractor shall only use material which has been approved by Specification CW3710 or by the Contract Administrator. The list shall provide the product, the manufacturer and the supplier.
- E17.3 Other than required to be done by the Contractor under the Work of this contract, all necessary precautions shall be exercised by the Contractor so as not to remove, disturb, or damage any existing plant material, pavements, streets, roads, boulevard, poles, hydrants, water pipes, gas pipes, electrical wires, cables, conduits, sewers or other existing facilities and equipment at the Site of the Work. For all damage incurred thereto in the performance of the Work, the Contractor shall upon instructions from the Contract Administrator, either replace or repair such damage, whichever may be deemed necessary in the opinion of, and acceptable to the Contract Administrator and the costs of which shall be borne entirely by the Contractor.
- E17.4 All workmanship and materials furnished and supplied under this Specification are subject to close and systematic inspection and testing by the Contract Administrator. The Contract Administrator reserves the right to reject any materials or Works which are not in accordance with the requirements of the Specifications.
- E17.5 The Contractor shall wholly be responsible for the supply, safe storage, and handling of all materials set forth in this specification, and the control of all operations incidental thereto notwithstanding any inspection or approval that may have been previously given.

## **E18. DAMAGE TO EXISTING STRUCTURES, TREES AND PROPERTY**

- E18.1 All necessary precautions shall be exercised by the Contractor so as not to remove, disturb, or damage any existing trees, shrubs, sod, pavements, streets, roads, boulevards, poles, hydrants, water pipes, gas pipes, electrical wires, cables, conduits, sewers or other existing facilities and equipment at the Site of the Work. For all damage incurred in the performance of the Work (either directly or indirectly), the Contractor shall either replace and repair such damage, whichever may be deemed necessary in the opinion of, and acceptable to City of Winnipeg Contract Administrator, and the cost of which shall be borne entirely by the Contractor. The Contractor shall also indemnify and save harmless the City from all claims made directly or indirectly against it in respect to any such damage.
- E18.2 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing street 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 25x100x2400 wood planks, or suitable 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 a 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.

E18.3 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his/her designate.

E18.4 No separate measurement or payment will be made for the protection of trees.

**E19. PERMITS, NOTICES, LICENCES, CERTIFICATIONS, LAWS, AND RULES**

E19.1 The Contractor shall give all necessary notices, obtain all necessary permits and pay all fees in order that the Work may be carried out. The Contractor shall submit all plans required by any inspection authority and obtain approval of same before proceeding with the Work, and pay any cost attached to the inspection of such plans.

E19.2 The Site Development Permits (including lot grading and damage deposits) will be obtained and paid for by the City of Winnipeg Planning, Property and Development Department prior to commencement of construction. A copy of this permit will be provided to the Contractor upon award of Contract.

E19.3 The Contractor shall comply with all laws, ordinances, rules, and regulations that would relate to the Works.

**E20. MATCHING EXISTING GRADES**

E20.1 Wherever the proposed paving, or sod meets existing pathway/pavement, curb edge, or property line, the Contractor shall construct the proposed element to an acceptable grade, as directed by the Contract Administrator, to ensure that proper drainage and accessibility are maintained.

**E21. EXCAVATION, REMOVALS, ROUGH GRADING AND SUBGRADE COMPACTION**

E21.1 Further to City of Winnipeg Specification CW 3110 and CW 3170 due to the extent and nature of underground services in the park area, the Contractor shall be permitted to use only backhoe type equipment when excavating sub-grade material.

DESCRIPTION

E21.2 The Work of this section comprises the furnishing of all labour, equipment and materials required to complete the excavation and related Work including, but not necessarily confined to, the following:

- (a) Sawcut, excavate, remove and dispose of concrete sidewalk.
- (b) Sawcut, remove and dispose of concrete curb
- (c) Excavate, remove and dispose of safety surfacing
- (d) Tree removal
- (e) Excavation, removal, disposal, subgrade compaction and rough grading of the existing Site for the construction of limestone pathway, asphalt parking lot, playground area, concrete base for entry feature and sodded areas to the design requirements noted on the Drawings, approved on Site by the Contract Administrator, less the appropriate surface finish allowance.
- (f) Stockpile suitable, approved material on Site for reuse (clean topsoil, clean earth fill and gravel fill). Remove and dispose of unsuitable material.
- (g) Excavation, removal, and disposal of unsuitable subgrade and replacement with compacted granular base material.

E21.3 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, equipment, tools, supplies and all other things necessary



for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

#### EQUIPMENT

- E21.4 All equipment shall be of a type approved by the Contract Administrator and shall be kept in good Working order.

#### CONSTRUCTION METHODS

- E21.5 The Contractor shall construct the Site within the limits indicated to the design elevations and gradients noted on the Drawings, less the appropriate surface treatment depths specified and shall excavate, remove and dispose of all unsuitable materials of whatever nature encountered.
- E21.6 The Contractor shall construct all sub-grades in accordance with Specification CW 3110. Excavation will be performed as per Item 9.1 of CW 3110. The Contractor shall remove existing pavement in accordance with 9.2 of CW 3110. Unsuitable Excavated material shall be disposed of as per Item 9.3 of CW 3110. All surplus material will be disposed of in accordance with Item 9.3 of CW 3110.
- E21.7 The Contractor shall restrict his activities strictly to within the limits of the Work, unless receiving prior written approval from the Contract Administrator. The Contractor shall take all precautions to prevent damage to traffic structures, pole lines, existing trees, Site services and adjacent property and he shall be liable for any damages occurring in the performance of this Work.
- E21.8 The Contractor shall examine the Site and make themselves familiar with the existing conditions and the nature of the Work to be done.
- E21.9 Prevent damage to surface or underground utility lines which are to remain. Make good any damage.
- E21.10 Contractor to breakout and remove existing section of concrete sidewalk and base materials as indicated on the Drawings. Dispose of material off Site in legal manner.
- E21.11 Remove and dispose of trees, shrubs and planting beds including all root mass. Fill holes and low areas with clean material suitable for finished surface, compact to 98% SPD.
- E21.12 The Contractor shall excavate to the design grades shown less the appropriate allowance for surface treatment and shall excavate, remove and dispose of all unsuitable materials of whatever nature encountered.
- E21.13 Excavated or graded materials to be approved before use as fill for grading Work. Protect such approved material from contamination. Stockpile in approved locations on Site. Protection and stockpiling are incidental to unit prices bid for excavation, removals and rough grading.
- E21.14 All foundations shall be removed to full depth to the satisfaction of the Contract Administrator. Fill all holes resulting from removals with compacted clay fill in sodded areas and compacted granular fill in paved areas.
- E21.15 The Contractor shall excavate topsoil as per CW 3170 Section 9.2. Topsoil excavation is incidental to the unit prices bid for limestone pathway and sodded areas.
- E21.16 The Contractor shall ensure that upon completion of the removal operations the Site is left in a neat condition free from debris, etc. for approval by the Contract Administrator prior to placing base courses and clean fill.
- E21.17 Except for drainage swales, berms and embankments indicated, the design gradient for all other areas shall be considered to be straight grade between the design elevations shown. Changes in grade at swales, berms, embankments and field shall be gently contoured as directed by the Contract Administrator to provide future ease of grass mowing operation.

- E21.18 The Contractor is advised that there may be useable topsoil and earth fill on Site. All suitable material will be reviewed and approved by the Contract Administrator and then re-used on Site. The re-use of this material on Site may reduce the quantity of imported topsoil and clean earth fill required. The Contractor shall re-use existing Site material prior to delivering new material to Site.
- E21.19 No direct payment will be made for placing and grading of existing fill as all costs for this Work shall be incidental to the Work.
- E21.20 Compaction shall include the use of sheep's foot or other suitable compaction equipment as approved by the Contract Administrator to achieve a minimum compaction of 98% Standard Proctor Density below all paved and play areas, and 95% Standard Proctor Density in all other areas disturbed under this Contract. Compaction is incidental to the unit prices bid for limestone pathway and sodded areas
- E21.21 The Contractor shall construct the compacted sub-grade surface to the following depths below the grades shown on the Drawings for each area:
- |                                 |  |
|---------------------------------|--|
| (a) 1.8m wide limestone pathway | 178mm  |
| (b) Sodded areas                | 100mm  |
| (c) Asphalt pavement            | 450mm  |
| (d) Concrete approach           | 750mm  |
| (e) Playground area             | Safety Surfacing to accommodate a surfacing in accordance with CSA standards, design submission and required depth for safety. |
- E21.22 Excavation for all items of new construction are incidental to the unit prices bid under this contract. No separate payment will be made.
- E21.23 Following earth moving, rough grading and compaction the Work areas shall be fine graded to provide a maximum deviation of 50mm in 10 metres from the design grade with no low areas to hold water. The finished surface of all disturbed areas shall be dragged and smoothed in such a manner that there are no loose soil particles greater than 50mm in maximum dimensions.
- E21.24 If required and at locations directed by the Contract Administrator, the Contractor shall excavate and remove unsuitable subgrade material and replace it with compacted granular material in accordance with Specification CW3110. Only areas beyond required excavation for paved areas will be measured and paid.
- E21.25 The Contractor shall load and haul all removed material from the Site and dispose of these materials legally at a dump located by the Contractor and approved by the Contract Administrator. Any materials dropped or spilled on any streets during the hauling operations shall be promptly cleaned up at the expense of the Contractor, to the satisfaction of the Contract Administrator.
- E21.26 The Contractor shall ensure that upon completion of the removal operations, the Site shall be left free of any hazardous depressions and in a neat condition.
- E21.27 The Contractor shall dispose of all unsuitable and excess materials in accordance with City of Winnipeg Specifications. Disposal is incidental to the unit prices bid.
- E21.28 At the limits of excavation, the Contractor shall sawcut the existing to produce a clean straight edge when excavated.
- E21.29 The cost of sawcutting and disposal of any surplus material shall be included in the unit price bid for excavation and removals.

## MEASUREMENT AND PAYMENT

- E21.30 Sawcut, excavation and removal of concrete sidewalk will be measured and paid for at the contract unit price per square meter for "Sawcut, excavate, remove and dispose of concrete sidewalk" as specified herein, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification. The total number of metres to be paid for shall be the total number removed in accordance with this Specification as computed from measurements made by the Contract Administrator.
- E21.31 Sawcut, removal and disposal of concrete curb will be measured and paid for at the contract unit price per meter for "Sawcut, remove and dispose of concrete curb" as specified herein, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification. The total number of metres to be paid for shall be the total number removed in accordance with this Specification as computed from measurements made by the Contract Administrator.
- E21.32 Excavation, removal and disposal of safety surfacing will be measured and paid for at the contract unit price per square meter for "Excavate, remove and dispose of safety surfacing" as specified herein, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification. The total number of square metres to be paid for shall be the total number removed in accordance with this Specification as computed from measurements made by the Contract Administrator.
- E21.33 Removal of unsuitable subgrade and replacement with compacted granular base will be measured and paid for at the contract unit price per cubic meter for "Remove and dispose of unsuitable subgrade and replace with compacted granular sub-base" as specified herein, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification. The total number of cubic metres to be paid for shall be the total number removed and replaced in accordance with this Specification as computed from measurements made by the Contract Administrator.
- E21.34 Rough grading will be measured and paid for at the contract unit price per square meter for "Rough grading" as specified herein, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification. The total number of square metres to be paid for shall be the total number rough graded in accordance with this Specification as computed from measurements made by the Contract Administrator.

## **E22. CRUSHED LIMESTONE PATHWAY**

### DESCRIPTION

- E22.1 Further to CW 3110 and CW 3130 the Work of this section comprises the furnishing of all labour, equipment and materials incidental and required to complete the construction of limestone pathway as shown on the drawings and as hereinafter specified.

### RELATED WORK

- E22.2 Earthwork and Site Grading

### MATERIALS

- E22.3 Crushed granular material to meet the following requirements:
- All Materials supplied under this Specification shall be of a type approved by the Contract Administrator and shall be subject to inspection and testing by the Contract Administrator;
  - Crushed limestone consisting of hard, durable, angular particles, free from clay lumps, cementation, organic material, frozen material and other deleterious materials.

- (c) Granular Levelling Course - Gradations to be within limits specified below when tested to ASTM C136-83 and have a smooth curve without sharp breaks when plotted on semi-log grading chart;

<u>ASTM Sieve Designation</u>	<u>% Passing</u>
20mm (3/4")	100
12.5mm (1/2")	50-75
9.5mm	30-50
6.0mm	10-20
0.425	0-5
0.18	nil
0.075	nil

- (d) Granular Base Course – 2" (50mm) down limestone  
(e) Crushed Limestone Fines – 1/4" (6mm) down.

E22.4 If materials have been tested by an independent testing laboratory within previous 2 months and have successfully passed tests equal to requirements of this specification, submit test certificates from testing laboratory showing suitability of materials for this project.

E22.5 Geotextile as per City of Winnipeg Specifications.

#### CONSTRUCTION METHODS

E22.6 Subgrade inspection and installation of Geotextile

- (a) Verify grades of compacted subgrade (to 100% SPD) for conformity with elevations and sections before placing granular material.  
(b) Proof roll graded subgrade to check for unstable areas, obtain approval of subgrade by Contract Administrator before placing granular base.  
(c) Remove and dispose of unsuitable sub base material as directed by Contract Administrator.  
(d) Install geotextile as specified on the drawings to City of Winnipeg standards and specifications.

E22.7 Placement and compaction of granular and crushed limestone

- (a) Place crushed granular base course material to a minimum compacted thickness of 127mm. Compact to 98% standard proctor density.  
(b) Place crushed granular levelling course material to a minimum compacted thickness of 38mm. Compact to 98% standard proctor density.  
(c) Crushed Limestone fines to a minimum compacted thickness of 13mm as finishing course. Compact to 95% standard proctor density.  
(d) Add crushed granular material as required to replace unsuitable subgrade material. Place in layers not exceeding 200mm thickness and compact to 98% standard proctor.  
(e) Finished surface to be within 12mm of specified grade, but not uniformly high or low. Ensure positive drainage on paved areas and in adjacent sodded areas.

#### FIELD QUALITY CONTROL

E22.8 Inspection and testing of crushed stone paving will be carried out by designated testing laboratory, cost of testing to be paid for by cash allowance as directed by the Contract Administrator.

#### ACCEPTANCE

E22.9 Any Work not satisfactory as specified herein and as determined by the Contract Administrator for initial testing, shall be rectified by the Contractor. This process of inspection and correction

shall continue until the Contract Administrator is satisfied that the Work is 100% complete and as per the construction drawings and specifications. All additional tests for failed or unacceptable results will be borne solely by the Contractor.

#### METHOD OF MEASUREMENT

- E22.10 Compacted Limestone Pathway shall be measured on a square metre basis. The area to be paid for shall be the total number of square metres of limestone pathway placed in accordance with this Specification and the Construction Drawings, as determined by the Contract Administrator.

#### BASIS OF PAYMENT

- E22.11 Compacted Limestone Pathway will be paid for at the contract unit price per square metre for "Supply and install compacted limestone pathway" measured as specified herein, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification

### **E23. ASPHALT PAVING**

#### DESCRIPTION

- E23.1 Further to CW 3410 and CW 3110 the Work of this section comprises the furnishing of all labour, equipment and materials incidental and required to complete the construction of asphalt paving as shown on the drawings and as hereinafter specified, including but not necessarily confined to:
- (a) Construction of Asphalt Parking Lot, including supply and installation of base courses, and asphalt paving as shown on the Drawings.

#### CONSTRUCTION METHODS

- E23.2 Excavation and Compaction of Sub-Grade
- (a) Cost of excavation and compaction shall be incidental and shall be included in the unit prices bid.
- E23.3 Base Course and Sub-base
- (a) Contractor shall construct a compacted granular base and sub-base for asphalt pavement to depths in accordance with City of Winnipeg Specification CW 3110. Additional gravel shall be supplied and installed if necessary to attain proper sub-grade elevations. Cost of constructing compacted granular base shall be incidental to cost of "Supply and Install Asphalt Paving".
- E23.4 Asphalt Surface
- (a) Compacted asphaltic concrete surface shall be constructed in accordance with City of Winnipeg Specification CW 3410 and the Construction Drawings. Contractor to provide mix to meet City of Winnipeg Specifications.
- E23.5 Field Quality Control
- (a) Inspection and testing of subgrade, base courses, and asphalt will be carried out by designated testing laboratory as directed by the Contract Administrator. The cost of testing to be incidental to the unit prices for "Supply and Install Asphalt Paving".
- (b) Where tests show that the compaction does not meet the specified requirement, the Contractor shall pay the costs for further compaction in a manner dictated by City of Winnipeg standard specifications, and shall pay for further testing to establish proof of the specified compaction.

## ACCEPTANCE

- E23.6 Any Work not satisfactory as specified herein and as determined by the Contract Administrator shall be rectified by the Contractor. This process of inspection and correction shall continue until the Contract Administrator is satisfied that the Work is 100% complete and as per the construction drawings and specifications.

## METHOD OF MEASUREMENT

- E23.7 The following items will be measured on an area basis. The area to be paid for shall be the total number of square metres supplied in accordance with the Specifications and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.

## BASIS OF PAYMENT

- E23.8 The following items will be paid for at the contract unit price per square metre for "Supply and Install Asphalt Paving" as specified herein, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification

## **E24. CONCRETE APPROACH**

### DESCRIPTION

- E24.1 Further to CW 3110 and CW 3310 the Work of this section comprises the furnishing of all labour, equipment and materials incidental and required to complete the construction of concrete approach as shown on the drawings and as hereinafter specified, including but not necessarily confined to:
- (a) Construction of concrete approach, including supply and installation of base courses, and concrete paving as shown on the Drawings.

### CONSTRUCTION METHODS

- E24.2 Excavation and Compaction of Sub-Grade
- (a) Cost of excavation and compaction shall be incidental and shall be included in the unit prices bid.
- E24.3 Base Course and Sub-base
- (a) Contractor shall construct a compacted granular base and sub-base for asphalt pavement to depths in accordance with City of Winnipeg Specification CW 3110. Additional gravel shall be supplied and installed if necessary to attain proper sub-grade elevations. Cost of constructing compacted granular base shall be incidental to cost of "Supply and install concrete approach".
- E24.4 Concrete Pavement
- (a) Concrete approach shall be constructed in accordance with City of Winnipeg Specification CW 3310 and the Construction Drawings. Contractor to provide mix to meet City of Winnipeg Specifications.
- E24.5 Field Quality Control
- (a) Inspection and testing of subgrade, base courses, and concrete will be carried out by designated testing laboratory as directed by the Contract Administrator. The cost of testing to be incidental to the unit prices for "Supply and install concrete approach".
  - (b) Where tests show that the compaction does not meet the specified requirement, the Contractor shall pay the costs for further compaction in a manner dictated by City of Winnipeg standard specifications, and shall pay for further testing to establish proof of the specified compaction.

## ACCEPTANCE

- E24.6 Any Work not satisfactory as specified herein and as determined by the Contract Administrator shall be rectified by the Contractor. This process of inspection and correction shall continue until the Contract Administrator is satisfied that the Work is 100% complete and as per the construction drawings and specifications.

## METHOD OF MEASUREMENT

- E24.7 Concrete approach will be measured on a lump sum basis. The item to be paid for shall be the lump sum of items supplied in accordance with the Specifications and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.

## BASIS OF PAYMENT

- E24.8 Concrete approach will be paid for at the contract unit price for "Supply and install concrete approach" as specified herein, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification

## E25. FOUNDATIONS

### DESCRIPTION

- E25.1 The Work of this section comprises the furnishing of all labour, equipment and materials required to complete the supply and installation of concrete bases as shown on the drawings and as hereinafter specified, including, but not necessarily confined to the following:
- (a) Excavation and compaction;
  - (b) Granular fill Work as required;
  - (c) Supply, erection and removal of all formwork as required;
  - (d) Design of concrete mixes;
  - (e) Supply and placing of reinforcing;
  - (f) Installation of cast in place pipe;
  - (g) Supply, placing, curing and finishing of concrete for concrete bases with exposed concrete;
  - (h) Clean-up.
- E25.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

### MATERIALS

- E25.3 The Contractor shall be responsible for the supply, safe storage, and handling of all materials set forth in this Specification.
- E25.4 Handling and Storage of Materials
- E25.4.1 All materials shall be handled and stored in a careful and workmanlike manner, to the satisfaction of the Contract Administrator. Storage of materials shall be in accordance with CSA Standard A23.1-04.
- E25.5 Testing and Approval
- E25.5.1 All materials supplied under this Specification shall be subject to inspection and testing by the Contract Administrator or by the Testing Laboratory designated by the Contract Administrator. There shall be no charge to the City for any materials taken by the Contract Administrator for testing purposes.

- E25.5.2 All materials shall be approved by the Contract Administrator at least seven (7) days before any construction is undertaken. If, in the opinion of the Contract Administrator, such materials in whole or in part, do not conform to the Specifications detailed herein or are found to be defective in manufacture or have become damaged in transit, storage, or handling operations, then such materials shall be rejected by the Contract Administrator and replaced by the Contractor at his own expense.
- E25.6 Cement
- E25.6.1 Cement shall be Type HS or HSb, high-sulphate-resistant hydraulic cement, conforming to the requirements of CSA Standard A23.1-04
- E25.7 Concrete
- E25.7.1 General
- (a) Concrete repair material shall be compatible with the concrete substrate.
- E25.7.2 The Contractor shall be responsible for the design and performance of all concrete mixes supplied under this specification. Either ready mix concrete or proprietary repair mortars, where applicable, may be used having the following minimum properties in accordance with CSA A23.1-04:
- (a) Class of Exposure: S-1
- (b) Compressive Strength @ 56 days = 35 MPa
- (c) Water / Cementing Materials Ratio = 0.4
- (d) Air Content: Category 2 per Table 4 of CSA A23.1-04 (4-7%)
- (e) Cement – shall be as specified in E25.6
- E25.7.3 Mix design for ready mix concrete shall be submitted to Contract Administrator at least two weeks prior to concrete placing operations.
- E25.7.4 The workability of each concrete mix shall be consistent with the Contractor's placement operations. Self compacting concrete may be used for the foundations.
- E25.7.5 Any proposed proprietary repair mortar shall be subject to the approval of the Contract Administrator and must meet or exceed the properties of the ready mix concrete.
- E25.7.6 The temperature of all types of concrete shall be between 15°C and 25°C at discharge. Temperature requirements for concrete containing silica fume shall be between 10°C and 18°C at discharge unless otherwise approved by the Contract Administrator.
- E25.7.7 Concrete materials susceptible to frost damage shall be protected from freezing
- E25.8 Aggregate
- E25.8.1 The Contractor shall be responsible for testing the fine and coarse aggregates to establish conformance to these specifications, and the results of these tests shall be provided to the Contract Administrator if requested. All aggregates shall comply with CSA A23.1.
- E25.8.2 Coarse Aggregate
- (a) The maximum nominal size of coarse aggregate shall be sized to suit the Contractor's mix design. Gradation shall be in accordance with CSA A23.1, Table 11, Group 1. The coarse aggregate shall satisfy the Standard Requirements specified in CSA A23.1, Table 12, "Concrete Exposed to Freezing and Thawing".
- (b) Coarse aggregate shall consist of crushed stone or gravel or a combination thereof, having hard, strong, durable particles free from elongation, dust, shale, earth, vegetable matter or other injurious substances. Coarse aggregate shall be clean and free from alkali, organic or other deleterious matter; and shall have an absorption not exceeding 2.25%.
- (c) The aggregate retained on the 5 mm sieve shall consist of clean, hard, tough, durable, angular particles with a rough surface texture, and shall be free from organic material,



adherent coatings of clay, clay balls, and excess of thin particles or any other extraneous material.

- (d) Coarse aggregate when tested for abrasion in accordance with ASTM C131 shall not have a loss greater than 30%.
  - (i) Tests of the coarse aggregate shall not exceed the limits for standard for requirements prescribed in CSA A23.1, Table 12, for concrete exposed to freezing and thawing.

#### E25.8.3 Fine Aggregate

- (a) Fine aggregate shall meet the grading requirements of CSA A23.1, Table 10, Gradation FA1.
- (b) Fine aggregate shall consist of sand, stone, screenings, other inert materials with similar characteristics or a combination thereof, having clean, hard, strong, durable, uncoated grains free from injurious amounts of dust, lumps, shale, alkali, organic matter, loam, or other deleterious substances.
- (c) Tests of the fine aggregate shall not exceed the limits for standard requirements prescribed in CSA A23.1, Table 12

#### E25.9 Cementing Materials

- (a) Cementing materials shall conform to the requirements of CSA A3001.
- (b) Silica Fume
  - (i) Should the Contractor choose to include silica fume in the concrete mix design, it shall not exceed 8% by mass of cement.
- (c) Fly Ash
  - (i) Fly ash shall be Type C1 or Type F and shall not exceed 25% by mass of cement.
- (d) Cementitious materials shall be stored in a suitable weather-tight building that shall protect these materials from dampness and other destructive agents. Cementitious materials that have been stored for a length of time resulting in the hardening or formation of lumps shall not be used in the Work.

#### E25.10 Admixtures

E25.10.1 Air entraining admixtures shall conform to the requirements of ASTM C260.

E25.10.2 Chemical admixtures shall conform to the requirements of ASTM C494 or C1017 for flowing concrete.

E25.10.3 All admixtures shall be compatible with all other constituents. The addition of calcium chloride, accelerators, and air-reducing agents will not be permitted, unless otherwise approved by the Contract Administrator.

E25.10.4 Appropriate low range water reducing and/or superplasticizing admixtures shall be used in concrete containing silica fume. Approved retarders or set controlling admixtures may be used for concrete containing silica fume.

E25.10.5 An aminocarboxylate based migrating corrosion inhibitor admixture shall be used in concrete that will be used as a repair material that will either be in contact with or adjacent to reinforcing steel in existing concrete. Proposed admixtures shall be subject to the approval of the Contract Administrator.

#### E25.11 Water

E25.11.1 Water used for mixing concrete shall be clean and free from injurious amounts of oil, acid, alkali, organic matter, or other deleterious substances. It shall be equal to potable water in physical and chemical properties.

#### E25.12 Concrete Supply

- E25.12.1 Concrete shall be proportioned, mixed, and delivered in accordance with the requirements of CSA A23.1, except that the transporting of ready mixed concrete in non-agitating equipment will not be permitted unless prior written approval is received from the Contract Administrator.
- E25.12.2 Unless otherwise directed by the Contract Administrator, the discharge of ready mixed concrete shall be completed within 120 minutes after the introduction of the mixing water to the cementing materials and aggregates.
- E25.12.3 The Contractor shall maintain all equipment used for handling and transporting the concrete in a clean condition and proper working order.
- E25.13 Reinforcing Steel
- E25.13.1 Reinforcing steel shall be deemed to include all reinforcing bars, tie-bars, and dowels.
- E25.13.2 All reinforcing steel shall conform to the requirements of CSA Standard G30.18, Grade 400 W, Billet-Steel Bars for Concrete Reinforcement. All reinforcing steel shall be new deformed billet steel bars. All bars, including ties, shall be hot-dip galvanized in accordance with CSA Standard G164 for a minimum net retention of 600 g/m<sup>2</sup>. Reinforcing steel supply and installation will be incidental to construction of concrete foundation and no separate payment will be made.
- E25.14 Steel pipe and weld plates
- E25.14.1 Steel pipe and weld plates shall be supplied to the entry pillar manufacturer's specifications.
- E25.15 Waterproofing Membrane
- E25.15.1 Waterproofing membrane shall be "Sonoshield HLM 5000 R" or approved equivalent by the Contract Administrator.
- E25.16 Miscellaneous Materials
- E25.16.1 Miscellaneous materials shall be of the type specified on the Drawings or approved by the Contract Administrator.

#### CONSTRUCTION METHODS

- E25.17 Location and Alignment of Foundations
- E25.17.1 Foundation construction shall not commence until the Contractor has obtained clearance from the appropriate Utility Authorities.
- E25.17.2 Foundations shall be placed in the positions shown on the Drawings and as directed by the Contract Administrator in the field.
- E25.17.3 The deviation of the axis of any finished foundation shall not differ by more than 1 percent from the vertical.
- E25.18 Buried Utilities
- E25.18.1 The Contractor shall exercise extreme caution when constructing the foundations in the vicinity of existing buried utilities and buildings. The Drawings show the approximate locations of existing buried utilities. The Contractor shall be responsible for obtaining the exact location of the buried utilities from the appropriate Utility Authorities prior to installing the foundations.
- E25.18.2 The proposed locations of the foundations may be changed by the Contract Administrator if they interfere with the buried utilities.
- E25.18.3 The Contractor shall be responsible for all costs that may be incurred for repair/rectification of any damage caused to the existing buried utilities as a result of the Contractor's

operations in constructing cast-in-place concrete foundations, as determined by the Contract Administrator.

#### E25.19 Excavation

- E25.19.1 The Contractor is responsible for determining the excavation method at each foundation location.
- E25.19.2 Excavations for foundations shall be made with equipment designed to remove a core of the diameter shown on the Drawings, or hydro-jet excavation to a depth to bypass and/or expose adjacent utilities.
- E25.19.3 Upon reaching the required elevation, the bottom of the excavation shall be cleaned as directed by the Contract Administrator in the field.
- E25.19.4 All excavated material from the foundations shall be promptly hauled away from the Site to an approved disposal area as located by the Contractor.
- E25.19.5 Upon completion of the cleaning out of the bottom to the satisfaction of the Contract Administrator, the reinforcement and anchor bolts shall be set in place and the concrete poured immediately. Under no circumstances shall a hole be left to stand open after boring has been complete.

#### E25.20 Sleeving

- E25.20.1 Timber or steel sleeving shall be used to temporarily line the bore to prevent bulging or caving of the walls and to protect men at work in the bore.
- E25.20.2 The sleeving shall be designed by the Contractor and constructed to resist all forces that may tend to distort it.
- E25.20.3 The sleeving shall be withdrawn as the concrete is placed in the bore. The sleeving shall extend at least 1 m below the top of the freshly deposited concrete at all times.
- E25.20.4 The clearance between the face of the bore hole and the sleeving shall not exceed 75 mm.

#### E25.21 Inspection of Bores

- E25.21.1 Concrete shall not be placed in a bore until the bore has been inspected and approved by the Contract Administrator.
- E25.21.2 The Contractor shall have available suitable light for the inspection of each bore throughout its entire length.
- E25.21.3 All improperly set sleeving, bore, or bottom shall be corrected to the satisfaction of the Contract Administrator.

#### E25.22 Placing Reinforcing Steel

- E25.22.1 Reinforcement shall be:
  - (a) placed in accordance with the details shown on the Drawings
  - (b) rigidly fastened together, and
  - (c) lowered into the bore intact before concrete is placed.
- E25.22.2 Spacers shall be utilized to properly locate the reinforcing steel cage in the bore.

#### E25.23 Placing steel pipe and weld plates

- E25.23.1 The steel pipe and weld plates shall be aligned as per the drawings. **Extreme care shall be used in this operation to steel pipe and weld plates are aligned properly.**
- E25.23.2 The exposed portion of the steel pipe and weld plates projecting above the top surface of foundation shall be covered before the concrete is poured, to minimize splattering by concrete residue

#### E25.24 Forms

- E25.24.1 Architectural concrete form liner shall be as specified on the Plans or equivalent as approved by the Engineer.
- E25.24.2 Formwork materials shall conform to CSA Standard CAN/CSA-A23.1, and American Concrete Publication SP:4, "Formwork for Concrete".
- E25.24.3 No "stay-in-place" formwork or falsework is permitted.
- E25.24.4 Form sheeting plywood to be covered with form liner or to be directly in contact with soil shall be exterior Douglas Fir, concrete form grade, conforming to CSA Standard O121-M1978, a minimum of 20 mm thick.
- E25.24.5 Where form liner is not being used, form sheeting shall be Douglas Fir, overlay form liner type conforming to CSA Standard O121-M1978. Approved manufacturers are "Evans" and "C-Z".
- E25.24.6 Boards used for formwork shall be fully seasoned and free from defects such as knots, warps, cracks, etc., which may mark the concrete surface.
- E25.24.7 No formwork accessories will be allowed to be left in place within 50 mm of the surface following form removal. Items to be left in place, must be made from a non-rusting material or galvanized steel; and they shall not stain, blemish, or spall the concrete surface for the life of the concrete.
- E25.24.8 Forms for exposed concrete surfaces that do not require a form liner may be either new plywood or steel as authorized by the Contract Administrator.
- E25.24.9 Studding shall be spruce or pine and shall have such dimensions and spacing that they shall withstand distortion from all the forces to which the forms will be subjected. Minimum dimensions shall be 50 mm x 150 mm.
- E25.24.10 Walers shall be spruce or pine, with minimum dimensions of 100 mm x 150 mm.
- E25.24.11 All forms are incidental to these Works and must be removed by the Contractor once adequate strength and curing of the concrete has been achieved.
- E25.24.12 The forms shall be sufficiently rigid to prevent lateral or vertical distortions from the loading environment to which they shall be subjected. Forms shall be set to the design grades, lines, and dimensions, as shown on the Drawings.

#### E25.25 Placing Concrete

- E25.25.1 Care shall be taken to ensure that anchor bolts are vertically aligned and that anchor bolts and conduits are properly positioned prior to placement of concrete.
- E25.25.2 Concrete shall not have a free fall of more than 2.0 m and shall be placed so that the aggregates will not separate or segregate. The slump of the concrete shall not exceed 110 mm. The concrete shall be vibrated throughout the entire length of the foundation.
- E25.25.3 Concrete shall be placed to the elevations as shown on the Drawings. The top surface of the foundation shall be finished smooth and even with a hand float.
- E25.25.4 The shaft shall be free of water prior to placing of concrete. Concrete shall not be placed in or through water unless authorized by the Contract Administrator.

#### E25.26 Protection of Newly Placed Concrete

- E25.26.1 Newly laid concrete threatened with damage by rain, snow, fog, or mist shall be protected with a tarpaulin or other approved means..

#### E25.27 Curing Concrete

- E25.27.1 The top of the freshly finished concrete foundations shall be covered and kept moist by means of wet polyester blankets immediately following finishing operations and shall be maintained at above 10°C for at least seven (7) consecutive days thereafter.

E25.27.2 After the finishing is completed, the surface shall be promptly covered with a minimum of a single layer of clean, damp polyester blanket.

E25.27.3 Concrete shall be protected from the harmful effects of sunshine, drying winds, surface dripping or running water, vibration, and mechanical shock. Concrete shall be protected from freezing until at least twenty-four hours after the end of the curing period.

E25.27.4 Changes in temperature of the concrete shall be uniform and gradual and shall not exceed 3° in one hour or 20° in twenty-four hours.

#### E25.28 Form Removal

E25.28.1 Forms shall not be removed for a period of at least 24 hours after the concrete has been placed. Removal of forms shall be done in a manner to avoid damage to, or spalling of, the concrete.

E25.28.2 The minimum strength of concrete in place for safe removal of forms shall be 20 MPa.

E25.28.3 Field-cured test specimens, representative of the in-place concrete being stripped, will be tested to verify the concrete strength.

E25.28.4 Upon removal of forms and inspection of concrete all exposed concrete shall receive a sack rubbed finish.

#### E25.29 Patching of Formed Surfaces

E25.29.1 Immediately after forms around top of foundation have been removed, but before any repairing or surface finishing is started, the concrete surface shall be inspected by the Contract Administrator. Any repair of surface finishing started before this inspection may be rejected and required to be removed.

E25.29.2 All formed concrete surfaces shall have bolts, ties, struts, and all other timber or metal parts not specifically required for construction purposes cut back fifty (50) mm from the surface before patching.

E25.29.3 Minor surface defects caused by honeycomb, air pockets greater than 5 mm in diameter, and voids left by strutting, and tie holes shall be repaired by removing the defective concrete to sound concrete, dampening the area to be patched and then applying patching mortar. A slurry grout consisting of water and cement, shall be well-brushed onto the area to be patched. When the slurry grout begins to lose the water sheen, the patching mortar shall be applied. It shall be struck-off slightly higher than the surface and left for one hour before final finishing to permit initial shrinkage of the patching mortar and it shall be touched up until it is satisfactory to the Contract Administrator. The patch shall be cured as specified in this Specification, and the final colour shall match the surrounding concrete.

#### E25.30 Cold Weather Concreting

E25.30.1 Protection of concrete shall be considered incidental to its placement. The temperature of the concrete shall be maintained at or above 10°C for a minimum of three (3) days or till the concrete has reached a minimum compressive strength of 20 MPa, by whatever means are necessary. Concrete damaged as a result of inadequate protection against weather conditions shall be removed and replaced by the Contractor at his own expense. Also, concrete allowed to freeze prior to the three (3) days will not be accepted for payment.

#### E25.31 Waterproofing

E25.31.1 Waterproofing membrane shall be applied to all new concrete walls and curbs which will come into contact with planting soil, as identified on the drawings or by the Contract Administrator. The waterproofing membrane shall be roller applied according to manufactures specifications.

## QUALITY CONTROL

- E25.32 All workmanship and all materials furnished and supplied under this Specification are subject to close and systematic inspection and testing by the Contract Administrator, including all operations from the selection and production of materials, through to final acceptance of the Work. The Contractor shall be wholly responsible for the control of all operations incidental thereto notwithstanding any inspection or approval that may have been previously given. The Contract Administrator reserves the right to reject any materials or Works that are not in accordance with the requirements of this Specification.
- E25.33 The Contractor shall be responsible for making a thorough inspection of materials to be supplied under this Contract. All material shall be free of surface imperfections and other defects.

## CLEAN UP AND DAMAGE

- E25.34 Immediately on completion of all piles and foundations Contractor shall remove from Site all equipment, timbers, shores, excavated material, unused concrete, rubbish, etc., caused by his operations, and leave the Site clean, level and ready for placing of grade beams.
- E25.35 This Contractor shall be responsible for making good all areas damaged by his operations in connection with this Contract regardless of the limits of the Contract as shown on the Drawings.

## MEASUREMENT AND PAYMENT

- E25.36 No measurement or separate payment shall be made for concrete foundations. The Works shall be considered incidental to the unit price bid for "Supply and install entrance pillars"

## **E26. VOID FORM**

- E26.1 Cardboard void form shall be of a type specified on the Plans or equivalent as approved by the Contract Administrator.
- E26.2 No measurement or separate payment shall be made for supplying and placing void form. The Works shall be considered incidental to the contract.

## **E27. PRECAST CONCRETE**

### DESCRIPTION

- E27.1 This specification covers the supply and installation of the following precast concrete products:
- (a) entrance pillar  
Including all mounting and or installation hardware, welding, adhesives and grout.

### GENERAL

### DELIVERY AND STORAGE

- E27.2 Store units in a protected location, immediately upon arrival on the Site.
- E27.3 Remove from Site any units which have been damaged during transportation and replace.

### PRODUCTS

- E27.4 Precast concrete entrance pillar to be supplied by:  
Barkman Concrete Ltd.  
909 Gateway Road  
Winnipeg, Manitoba, R3K 3L1  
Contact: August Weins  
T (204) 667-3310

- E27.5 Heavy duty precast concrete culvert to be supplied by:  
Barkman Concrete Ltd.  
909 Gateway Road  
Winnipeg, Manitoba, R3K 3L1  
Contact: August Weins  
T (204) 667-3310

#### MATERIALS

- E27.6 Welding for the installation of entrance pillars shall be incidental to the unit prices bid.
- E27.7 Cast in place concrete foundations for entrance pillars shall be incidental to the unit prices bid.

#### INSTALLATION

- E27.8 Construct pillars as per Drawings. Ensure pipe and sleeve are level and clean.
- E27.9 Weld pillar to concrete foundation for installation as per manufacturer's specifications.
- E27.10 Install precast concrete culvert as per manufacturer's specifications.

#### METHOD OF MEASUREMENT

- E27.11 Entrance pillars shall be measured on a lump sum basis. The number of items to be paid for shall be the total lump sum of entrance pillars installed in accordance with this Specification and the Construction Drawings, as determined by the Contract Administrator.
- E27.12 Precast concrete culvert will be measured on a unit basis. The number of each item to be paid for will be the total number supplied and placed in accordance with this Specification and accepted by the Contract Administrator, as measured by the Contract Administrator.
- E27.13 No measurement shall be made for installation hardware, welding, concrete bases, adhesives and mortar. Installation hardware, welding, concrete bases, adhesives and mortar shall be considered incidental to the contract.

#### BASIS OF PAYMENT

- E27.14 Supply and Installation of entrance pillar shall be at the per lump sum bid for "Supply and install entrance pillar" measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.
- E27.15 Supply and Installation of precast concrete culvert shall be at the per unit bid for "Supply and install precast concrete culvert" measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.
- E27.16 No payment shall be made for installation hardware, welding, concrete bases, adhesives and mortar. Include installation hardware, welding, concrete bases, adhesives and mortar costs in those items for which installation hardware, adhesives and mortar are required.

### **E28. SITE FURNITURE**

#### DESCRIPTION

- E28.1 This specification covers the supply and installation of:
- (a) Cascades Contour Style Recycled Plastic Bench, in ground mount with back and armrests including concrete base.

## GENERAL

- E28.2 Store units in a protected location, immediately upon arrival on the Site.
- E28.3 Remove from Site any units which have been damaged during transportation and replace.

### Products

- E28.4 Cascades Bench -1.82m length Contour series, in ground mount with back and armrests as supplied by:

Playgrounds R Us  
250 Transport Rd.  
BOX 7, GRP 582, RR 5  
Winnipeg, Manitoba R2C 2Z2  
Ph: (204) 632-7000 Fax: (204) 632-7421  
Attn. Jodi McLean

### Installation

- E28.5 Site Furniture shall be installed in locations as indicated on the Construction Drawings.
- E28.6 Benches to be installed as per manufacturers specifications and details.
- E28.7 Protect and maintain Site furnishings, including accessories, until acceptance of project Work.
- E28.8 Immediately remove from Site, damaged furnishing and accessories. Replace, repair, re-finish, or otherwise make good to approval of Contract Administrator.
- E28.9 Concrete Foundations
- (a) The specific concrete requirements shall be:  
Sulfate resistant, Type 50 Cement  
28 day compressive strength of 30 Mpa  
maximum aggregate size of 40mm, nominal  
slump 90 20mm  
maximum water/cement ratio 0.45
  - (b) No separate payment will be made for concrete foundation for site furniture. All Work is incidental to the unit prices bid for the items.

### Method of Measurement

- E28.10 Supply and Installation of cascades bench will be measured on a unit basis. The number of each item to be paid for will be the total number supplied and placed in accordance with this Specification and accepted by the Contract Administrator, as measured by the Contract Administrator.

### Basis of Payment

- E28.11 Supply and Installation of cascade bench shall be at the per unit price bid for "Supply and install cascades bench" measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.

## **E29. WOOD BOLLARD**

### DESCRIPTION

- E29.1 This specification comprises the furnishing of all labour equipment and materials incidental and required to complete the supply and installation of:200mm Wood Bollards as shown on the drawings and hereinafter specified.



## MATERIALS

E29.2 Wood Bollards to be of NGLA standard Grading Rules for Canadian Lumber Select No. 2 or better, ACQ Pressure Treated Spruce, 200 dia. size. Wood shall be smooth and free of rough areas.

E29.3 Wood Preservative to be Woodlife Coppercoat or approved alternative.

## INSTALLATION

E29.4 200mm dia. wood bollards to be installed as per the drawings and City of Winnipeg standards.

E29.5 Treat all cut ends of wood with wood preservative.

## METHOD OF MEASUREMENT

E29.6 Wood Bollards shall be measured on a per unit basis. The numbers to be paid shall be the total number of units installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

## BASIS OF PAYMENT

E29.7 Supply and install wood bollards will be paid for at the Contract unit price for "Supply and install wood bollards" measured as specified herein, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification.

## **E30. TIMBER EDGING**

### GENERAL DESCRIPTION

E30.1 The Contractor shall furnish all labour, materials, equipment and services necessary to complete the Work according to the drawings and specifications.

E30.2 This specification shall cover the supply and installation of timber edging to contain the safety surfacing for the new play area.

### MATERIALS AND CONSTRUCTION METHOD

E30.3 Layout shall be as the dimensions on the drawings. The edging must provide for adequate safety surfacing area beneath play equipment, based on the most recent CSA safety zone requirements.

E30.4 A 3.0 metre (10') offset shall be maintained from all existing trees unless otherwise noted.

E30.5 All bottom timbers to be ACQ pressure treated (P.T.) pine, No.2 or better, no wane, bark, checking or splitting permitted. Wood shall be smooth and free of rough areas. All bottom timber to be 140mm x 140mm to be longest lengths possible with a minimum length of 1200mm.

E30.6 Timbers shall be installed as per Details SCD-651. Base course timbers shall be pinned with a minimum of two (2) 19mm diameter by 500mm long rebar at maximum 1200mm O.C.

E30.7 All capping wood to be 32mm x 150mm Pedra wood, minimum length 1200mm. Pedra cap joints to be offset from bottom timber joints by a minimum of 450mm. Pedra caps shall be pre-drilled, set with grain of wood curved down, and fastened to base course with yellow zinc plated deck screws treated for ACQ use and sized to suit. Pedra capping above base course shall be secured with double row of deck screws offset at 225mm and installed at 600mm O.C. Timber edging is incidental to the work under this specification. No separate measurements or payment will be made.

- E30.8 Geotextile fabric shall be in accordance with CW 3130-latest revision, and installed between the crushed granular base and the safety surfacing, as per Drawing SCD-651. Geotextile is incidental to the work under this specification. No separate measurement or payment will be made.
- E30.9 All timbers shall be cut neatly for a proper fit with no spaces or gaps between. All cuts shall be stained before being secured. Finished elevations shall ensure that all timbers are smooth, level, set plumb and spaced uniformly.
- E30.10 All granular base material shall conform to CW 3110- latest revision and CW3130- latest revision. All materials supplied under this Specification shall be of a type approved by the Contract Administrator, and shall be subject to inspection and testing by the Contract Administrator.
- E30.11 Granular base shall be installed as per Drawing SCD-651 and compacted to a minimum of 95 percent Standard Proctor Density. Supply and installation of granular base material is incidental to the work under this specification. No separate measurement or payment will be made.
- E30.12 The layout of the timber edging shall be coordinated with the installation of the play equipment to ensure that the proper safety zones are created around the equipment.
- E30.13 Contractor to layout on site for review and approval by Contract Administrator prior to construction.

#### METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- E30.14 Timber edging will be measured on a linear metre basis for "supply and install new timber edging. The linear metre to be paid for the total number of linear metre of Timber Edging that are installed in accordance with this Specification and the Construction Drawings, and as acceptable to the Contract Administrator.
- E30.15 Timber edging will be paid for at the Contract Unit Prices per linear metre for "Supply and install timber edging" as and measured as specified herein. This price shall be full payment for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work and as accepted by the Contract Administrator.

### **E31. PROTECTIVE SURFACING**

#### DESCRIPTION

- E31.1 This specification shall cover the supply and installation of Wood fibre surfacing within the play area, as shown on the Drawings.

#### MATERIALS

- E31.2 Wood fibre product shall be either Zeager Woodcarpet or Fibar FibarSystem 200 or Fibar FibarSystem 300 products or substitute in accordance with B6.

- (i) Contact for Woodcarpet:  
Zeagar Bros. Inc.  
4000 East Harrisburg Pike ·  
Middletown, PA 17057  
USA  
Ph: (1-888) 346-8524 or (717) 944-7481 ·  
Fax (717) 944-7681  
[sales@zeager.com](mailto:sales@zeager.com)

- (ii) Contact for Fibar FibarSystem 200 or FibarSystem 300:  
The Fibar Group LLC  
80 Business Park Drive, Suite 300  
Armonk, NY 10504-1705

USA  
Ph: (800) 342-2721  
Fax: (914) 273-8659  
[info@FibarPlaygrounds.com](mailto:info@FibarPlaygrounds.com)

- E31.3 Wood fibre surfacing shall include wood fibre, filter cloth, subsurface drainage system and mats for bottom of slides, under swings, and at each accessible entrance to the Play Area. Mat and drainage layout to be provided on design drawings. All work and materials included to the unit price bid for supply and installation of wood fibre safety surfacing.

#### CONSTRUCTION METHODS

- E31.4 Wood fibre shall be installed within the play area, as defined by the timber edging, to the minimum depth of 200mm as required by CSA standards (after compaction). In play areas where the maximum fall height is greater than 2.4m (8'), depth of material to directly correspond to maximum fall height of play equipment in accordance with manufacturer's specifications and CSA standards.
- E31.5 The installation of the wood fibre shall be done immediately after the play equipment has been installed.
- E31.6 Installation of entire system, including fibre, filter cloth, subsurface drainage and mats shall be done according manufacturer's instructions. Contractor to ensure adequate drainage within play equipment area must be ensured as per same.
- E31.7 Installation shall be done by equipment sized to suit the Work being done and the wood fibre shall be spread by hand as necessary in the immediate vicinity of the play equipment so as not to damage same. The play equipment shall be swept clean to the satisfaction of the Contract Administrator after installation of the wood fibre.

#### METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- E31.8 Engineered wood fibre safety surface will be measured on a square metre basis for "Supply and install engineered wood fibre safety surfacing". The square metres to be paid for the total number of square metres of engineered wood fibre safety surfacing installed in accordance with this Specification and the Construction Drawings, and as acceptable to the Contract Administrator.
- E31.9 Engineered wood fibre safety surfacing will be paid for at the Contract Unit Prices per square metre for " Supply and install engineered wood fibre safety surfacing" as and measured as specified herein. This price shall be full payment for supplying all labour, equipment and materials, and performing all operations herein described and all other items incidental to the Work and as accepted by the Contract Administrator.

### **E32. PLAY EQUIPMENT**

#### DESCRIPTION

- E32.1 The Work of this section comprises the furnishing of all labour, equipment and materials required to complete the supply and installation of play equipment as follows:
- (a) Supply and install 2 bay swing set as per drawings;
  - (b) Supply and install spring rider as per drawings;
  - (c) Supply and install play structure as per drawings;
  - (d) Concrete foundations for all play equipment as per manufacturer's recommendations (including stamped structural details). This Work is incidental to cost of supply and installation of all play equipment listed above.

E32.2 This specification does not include the pre-installation Site preparation Work and perimeter edging. Contractor to ensure layout of these Works is co-ordinated with layout and installation of play equipment and concrete bases.

#### GENERAL

E32.3 The Contractor shall furnish all labour, materials, equipment and services necessary to complete the Work according to the drawings and specifications.

E32.4 The layout of playground equipment to be as shown on the Drawings and as specified herein.

#### MATERIALS

E32.5 Posts / Caps

- (a) All posts shall be a minimum of 5" O.D. round tubing. All posts shall be fabricated from either aluminum (0.125" min. wall thickness) or galvanized steel (0.120" min. wall thickness) tubing with a baked-on polyester powder coating. The powder coating finish shall meet or exceed ASTM standards for hardness, adhesion, impact and salt spray resistance. Colour scheme as per Detail drawings. All fabrication cuts drill holes and weld joints shall be sprayed with a corrosion resistant coating prior to powder coating. The bottom end of the posts is to be sealed with a moisture barrier.
- (b) Top caps for posts shall be aluminium die cast and powder coated the same as the post colour. All caps shall be factory installed and secured in place with tamper proof, self-sealing rivets.

E32.6 Decks

- (a) All metal decks shall be manufactured from vinyl-coated perforated steel.

E32.7 Clamping System

- (a) All deck, rail and play component clamping systems shall be fabricated from zinc plated, and galvanized steel, stainless steel or aluminium, and baked-on polyester powder coated to match post colour unless noted on Detail drawings. Tamper proof, corrosion resistant fasteners shall be used to retain clamping systems.

E32.8 Handrails, Safety Rails and Hand loops

- (a) All metal handrails, safety rails and handloops shall be fabricated using a minimum of 1 1/8" O.D. with a 0.125" wall thickness steel tubing. After all fabrication activities have occurred including end cuts, drill holes, bends and weld joints, all components shall be hot dipped galvanized and baked-on polyester powder coated. Colours as per Detail drawings.
- (b) Hand Rails shall consist of 2.5" (64mm) x 5.5" (140 mm) pressure treated southern yellow pine machined to the appropriate shape.
- (c) Horizontal Guard Rail Panel shall consist of two 2.5" (64 mm) x 5.5" (140 mm) pressure treated southern yellow pine rails fastened directly to the vertical posts.

E32.9 Hardware

- (a) All fasteners shall be socketed and tamper proof in design, and either carbon steel plated with zinc/nickel and iridescent chromate finish or stainless steel.

E32.10 Poly Components

- (a) Poly components such as slides, hoods, and roofs shall be fabricated from U.V. stabilized, rotationally moulded liner low density polyethylene. All play components must be durable and of heavy duty construction to meet all requirements and specifications.
- (b) Poly components such as play panels shall be fabricated from compression molded solid colour, U.V. stabilized high density polyethylene.

- E32.11 The spring rider shall be Landscape Structures Single Bobber Rider (Model # 164074B) or approved substitute in accordance with B6 as supplied by:

Playgrounds-R-Us  
250 Transport Road  
Winnipeg MB  
Ph. 632-7000  
Contact: Jodi McLean

- E32.12 The swing set shall be Landscape Structures 5000 Series Swing with 2 bucket seats and 2 toddler seats or approved substitute in accordance with B6 as supplied by:

Playgrounds-R-Us  
250 Transport Road  
Winnipeg MB  
Ph. 632-7000  
Contact: Jodi Marr

- E32.13 The playstructure shall be Landscape Structures Playbooster (Model # 40415-1-1) or approved substitute in accordance with B6 as supplied by:

Playgrounds-R-Us  
250 Transport Road  
Winnipeg MB  
Ph. 632-7000  
Contact: Jodi McLean

- E32.14 The following play components, or approved equivalents are to be included on the Playbooster Structure

- (a) One (1) Stainless Steel 40" ht. 18" Wide Slide
- (b) One (1) SlideWinder2 64" ht. slide
- (c) One (1) Cascade Climber 64" ht.
- (d) One (1) Deck Link w/Barriers 2 Steps
- (e) One (1) Starburst Climber
- (f) One (1) Chimes Reach Panel
- (g) One (1) Ground Level, Driver Panel Above Deck
- (h) One (1) Storefront Panel
- (i) One (1) Curved Transfer Module 40" ht.
- (j) Two (2) Square Tenderdeck.

#### CANADIAN STANDARDS ASSOCIATION GUIDELINES

- E32.15 All playground equipment supplied and the method of installation shall be in accordance with the most recent edition of the "National Standard of Canada, CAN/CSA-Z614-98".

- E32.16 The Contractor shall submit, within two (2) Business Days of request of Contract Administrator, a written statement confirming compliance with this guideline and shall be prepared, if requested, to provide data supporting compliance within ten (10) Working days of such a request, at no cost to the City.

#### INSTALLATION

- E32.17 Install all components as per manufacturer's specifications. Install manufacturer's standard fittings, fasteners and hardware as required. All posts and anchors to be installed in concrete

footings as per manufacturer's specification and details. Impervious seal to be applied around all in-ground components, to prevent water seepage, as per manufacturer's specifications.

- E32.18 Play structures and Swing Standards shall be installed as per the Canadian Standards Association Guidelines. All posts and other vertical items shall be true to vertical. All decks shall be level.

#### CONCRETE FOUNDATIONS

- E32.19 All playground equipment posts, bases and anchors are to be set in concrete footings or piles to ensure stability and prevent frost heaving. The current Standard Construction Specifications of the City of Winnipeg, CW 2160 - Concrete to be Used in Underground Works, is to be utilized in the installation of the concrete Works for all below ground components. All foundations are to be stamped by a Structural Engineer licensed to practice in the province of Manitoba.
- E32.20 Concrete footings for play equipment shall be a minimum of 900mm deep or in accordance with the manufacturer's specifications, whichever is greater.
- E32.21 The specific concrete requirements shall be:  
Sulfate resistant, Type 50 Cement  
28 day compressive strength of 30 Mpa  
maximum aggregate size of 20mm, nominal  
slump 80 20mm  
maximum water/cement ratio 0.49
- E32.22 No separate payment will be made for concrete foundation for play equipment. All Work is incidental to the unit prices bid for the items.

#### INSTALLATION

- E32.23 Contractor to layout playground for review and approval by Contract Administrator prior to excavating for piles.
- E32.24 Contractor shall notify the Contract Administrator at least 48 hours prior to installation of concrete, so that footings may be inspected in advance of concrete being poured.
- E32.25 Play structure posts shall be centered in concrete footing with a minimum 50mm band of concrete on all sides.
- E32.26 Concrete Bases shall be buried below the bottom of the protective surfacing and have top corners rounded and all rough edges removed according to CSA standards.
- E32.27 Concrete Bases shall be sized appropriately to withstand constant stresses and prevent any shifting of the components. Contractor shall be prepared to supply detailed dimension and specification for the concrete foundations/footings for all components.

#### MAINTENANCE KITS

- E32.28 All play equipment shall include the supply of maintenance kits. Maintenance kits shall include maintenance manuals, complete manufacturer's parts lists, touch-up paint, PVC repair paint, 10% extra of each bolt, washer and any other hardware utilized on the play equipment, and all special tools necessary for assembly and maintenance.

#### METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- E32.29 Supply and installation of playground equipment shall be measured and paid for on a per item basis for "Supply and install playground equipment" measured as specified herein, which price shall be payment in full for supplying all materials (including concrete foundations) and performing all operations herein described and all other items incidental to the Work included in this Specification. The number of units to be paid shall be the total number of units supplied and

installed in accordance with the Specifications and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.

### **E33. SODDING**

E33.1 All Work to be to CW3510 and CW3540.

E33.2 Mineral sod shall be supplied in accordance with CW3510

E33.3 75mm compacted depth of topsoil shall be supplied in accordance with CW3540

E33.4 30 day sod maintenance will commence at Total Performance.

#### **METHOD OF MEASUREMENT**

E33.5 Sodding will be measured on an area basis. The area to be paid for shall be the total number of square metres sodded and maintained in accordance with this Specification and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.

#### **BASIS OF PAYMENT**

E33.6 Sodding will be paid for at the Contract Unit Price per square metre for 'Supply and install sod and topsoil', measured as specified herein, which price shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.

### **E34. PLANT MATERIAL**

#### **DESCRIPTION**

E34.1 The following list generally describes the scope of this section:

- (a) Supply and planting of trees;
- (b) Maintenance to date of substantial performance;
- (c) Warranty for two full years.

#### **GENERAL**

E34.2 Obtain approval of plant material at source.

E34.3 Notify Contract Administrator of source of material at least 7 days in advance of shipment. No Work under this Section is to proceed without approval.

E34.4 Acceptance of plant material at source does not prevent rejection at Site prior to or after planting operations.

E34.5 Source of all plant material to be from an area within the same hardiness zone and soil conditions as Winnipeg.

#### **SHIPMENT AND PRE-PLANTING CARE**

E34.6 Co-ordinate shipping of plants and excavation of holes to ensure minimum time lapse between digging and planting. 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 ball of large trees during lifting.

E34.7 Cover plant foliage with tarpaulin, and protect bare roots by means of dampened straw, peatmoss, sawdust or other acceptable material to prevent loss of moisture during transit and storage.

E34.8 Remove broken and damaged roots with sharp pruning shears. Make clean cut and cover cuts over 50 mm diameter with wound dressing.

E34.9 Keep roots moist and protected from sun and wind. Heel-in shrubs, which cannot be planted immediately, in shaded areas, and water well.

#### MATERIALS

##### WATER

E34.10 Water should be potable and free of minerals, which may be detrimental to plant growth.

##### ANTI-DESICCANT

E34.11 Anti-desiccant should be wax-like emulsion to provide film over plant surface reducing evaporation but permeable enough to permit transpiration.

##### WOUND DRESSING

E34.12 Wound dressing should be horticulturally accepted non-toxic, non-hardening emulsion.

##### PLANT MATERIAL

E34.13 Quality and Source: Comply with City of Winnipeg tree planting guidelines, referring to size and development of plant material and root ball. All plant material to be approved by City and Contract Administrator at source.

E34.14 Measure plants when branches are in their natural position. Height and spread dimensions refer to main body of plant and not from branch tip to branch tip. Use trees of No. 1 grade.

E34.15 Additional plant material qualifications:

- (a) Use perennials and plant plugs with strong fibrous root system free of disease, insects, defects or injuries and structurally sound. Plant must have been root pruned regularly, but not later than one growing season prior to arrival on Site.

##### COLD STORAGE

E34.16 Approval required for plant material, which has been held in cold storage.

##### CONTAINER – GROWN STOCK

E34.17 Acceptable if containers large enough for root development. Shrubs and vines 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.

##### SUBSTITUTIONS

E34.18 Substitutions to plant material as indicated on plantings plan are not permitted unless written approval has been obtained as to type, variety and size prior to award of Contract. Plant substitutions must be similar species and of equal size to those originally specified.

##### ROOT BALLS

E34.19 Deciduous trees in excess of 3 m height must have been dug with large firm ball. Root balls must include 75% of fibrous and feeder root system. This excludes use of native trees grown in light sandy or rocky soil. Lift root ball from hole, place in wire basket designed for purpose and line with burlap. Secure root balls with burlap, heavy twine and wire basket. Protect root balls against sudden changes in temperature and exposure to heavy rainfall. Take care not to injure trunk of tree with wire basket ties or rope.

E34.20 Tree spade material shall not be accepted. Unless dug in field and secured as above.



## CONSTRUCTION METHODS

### WORKMANSHIP

- E34.21 Stake out location of trees and shrubs as per the Construction Drawings. Obtain approval by City and Contract Administrator prior to excavating.
- E34.22 Apply anti-desiccant in accordance with material manufacturer's instructions only as required.
- E34.23 Co-ordinate operations. Keep Site clean and planting holes drained. Immediately remove soil or debris spilled onto pavement.

### PLANTING TIME

- E34.24 Plant deciduous plant material during dormant period, before buds have broken. Plant material noted for spring planting only, must be planted in dormant period.
- E34.25 When permission has been obtained to plant materials after buds have broken, spray plants with anti-desiccant to slow down transpiration prior to transplanting.
- E34.26 When permission has been obtained, shrubs and perennials growing in containers may be planted throughout growing season.
- E34.27 Plant only under conditions that are conducive to health and physical conditions of plants.
- E34.28 Provide planting schedule. Executing planting operations over long period using limited crew will not be accepted.

### EXCAVATIONS

- E34.29 Prepare planting areas as shown on the Drawings.
- E34.30 Provide drainage for planting holes in heavy soil if natural drainage does not exist. Have method approved.
- E34.31 Protect bottom of excavations against freezing.
- E34.32 Remove water, which enters excavations prior to planting. Ensure source of water is not ground water.

### PLANTING

- E34.33 Scarify sides of planting hole to depth of 150 mm where tree is planted in isolated tree pit.
- E34.34 Plant trees, shrubs and perennials vertically with roots placed straight out in hole. Orient plant material to give best appearance in relation to structure, roads and walks.
- E34.35 Place plant material to depth equal to depth they were originally growing in nursery. Allow for soil settlement in planting.
- E34.36 With balled and burlapped roots balls, loosen burlap and cut away minimum top 1/2 without disturbing root ball. Cut vertical slits in remaining burlap around root ball at 250mm intervals. Remove all rope, string, or other ties from around trunk. Do not pull burlap or rope from under root ball. With container stock, remove entire container without disturbing root ball. Non bio-degradable wrappings must be removed including wire baskets.
- E34.37 Tamp planting soil around root system in layers of 150mm 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.
- E34.38 Build 100 mm deep saucer around outer edge of hole to assist with maintenance watering. Install 100mm depth wood chip mulch in saucer as shown on drawings.

- E34.39 When planting is completed, give surface of planting saucer dressing of organic 10-6-4 fertilizer at rate of 12 kg/100 m for shrub beds or 40 to 50 g/mm of calliper for trees. Mix fertilizer thoroughly with top layer of planting soil and water in well.

#### PRUNING

- E34.40 Prune trees and shrubs after planting only as required to remove broken diseased or dead branches. Employ clean sharp tools and make cuts flush with main branch, smooth and sloping as to prevent accumulation of water.

#### MAINTENANCE

- E34.41 After completion of planting operation to the satisfaction of the Contract Administrator and City of Winnipeg, the Contractor shall be responsible for the maintenance of the plant material until date of Substantial Performance and commencement of two year warranty.
- E34.42 Replace any dead or damaged plant material during the maintenance period, including replacement of vandalized material.
- E34.43 Water sufficiently to maintain optimum growing conditions. Ensure adequate moisture in root zone at freeze-up.
- E34.44 The Contractor shall provide all necessary equipment, including: tractors, mowers, hand mowers, trimmers, fertilizer spreaders, pruning tools, hoses, water meters, and any other items necessary for the maintenance of the plant material indicated in this Specification.
- E34.45 Remove all weeds and debris from mulch beds, planting beds and tree wells on a weekly basis.
- E34.46 Turn and top up mulch in beds and tree wells each spring and prior to start of extended maintenance.

#### PERSONNEL

- E34.47 The Contractor shall provide all necessary personnel for the ongoing maintenance operations.
- E34.48 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.

#### MAINTENANCE METHODS

##### WATERING

- E34.49 Trees shall be watered twice weekly, or during the summer, if temperatures are fairly high and there has been no rainfall, water approximately once a week.
- E34.50 To determine the need for watering, make a soil test weekly with a one-inch auger. Take a test sample from both the planting soil and from the root ball by drilling to a minimum depth of 600 mm. The soil shall contain enough moisture to hold together when compressed in the hand, but not be muddy.

##### FERTILIZING

- E34.51 Because of the specialized nature of such operations, fertilizing is to be done by a qualified local arborist.
- E34.52 Fertilize in the fall over the surface of the ground surrounding the plants, then soak the area thoroughly, use 10-6-4 analysis fertilizer spreading a maximum of 0.13 kg per square metre.

## SPRAYING

- E34.53 Spray trees to control insect pests and diseases. Use horticulturally recommended compounds specific for the problem to be contained.

## INSECTS AND DISEASES

- E34.54 Spray plants to combat pests and diseases. Do not use DDT or sprays prohibited by Agriculture Canada.

## MEASUREMENT AND PAYMENT

- E34.55 Supply and Installation of Plant Material will be measured and paid on a unit basis. The number of units to be paid shall be the total number of each type and size of units supplied and installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

- E34.56 Plant material shall be measured and paid on a per unit basis for "Supply and install plant material". The number to be paid shall be the total number of units installed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator for the items as follows:

- i) Showy Mountain Ash (60mm cal.)

## **E35. EXTENDED MAINTENANCE**

### DESCRIPTION

- E35.1 This Specification shall deal with the maintenance of the trees for Two (2) calendar years after the date of the Substantial Performance

### MATERIALS AND PERSONNEL

- E35.2 The Contractor shall provide all necessary equipment, including: tractors, trimmers, fertilizer spreaders, pruning tools, water trucks, hoses, water meters, and any other items necessary for the maintenance of the area indicated in this Specification.

- E35.3 The Contractor shall provide all necessary personnel for the ongoing maintenance operations

### WORK INCLUDED

- E35.4 The following areas shall be part of the maintenance jurisdiction:

- (a) The trees as indicated on the Drawings

- E35.5 Maintenance of Trees

- E35.5.1 Watering

- (a) All plant material shall be watered bi-weekly, or during the summer, if temperatures are fairly high and there has been no rainfall, water approximately once a week. Where irrigation is not available this should be executed by leaving a hose, with a gentle rate of flow, running into the saucer of the root ball for about one hour

- (b) To determine the need for watering, make a soil test weekly with a one-inch auger. Take a test sample from both the planting soil and from the root ball 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.

- E35.5.2 Fertilizing and pest control

- (a) Fertilizing, Pruning and Spraying Deciduous Trees and Shrubs. Because of the specialized nature of such operations, this should be done by a qualified local arborist

- (b) Fertilize in the fall over the surface of the ground surrounding the plants, then soak the area thoroughly. Use 10-6-4 analysis fertilizer spreading a maximum of 0.13 kg per square meter.
- (c) Spray to control insect pests and diseases. Use horticulturally recommended compounds specific for the problem to be contained.

**E35.5.3 Weeding**

- (a) Remove all weeds in tree wells planting beds and mulch beds by hand on a weekly basis. Do not use chemical weed killer.
- (b) Remove all debris from beds, including weeds, and dispose of off Site in a legal manor.

**E35.5.4 Other Maintenance**

- (a) Tighten, or remove, turnbuckles or guy wires for trees as required or directed by the Contract Administrator.
- (b) Straighten trees as required and directed by the Contract Administrator.

**E35.5.5** The Contractor shall agree and guarantee to replace and replant any nursery stock found dead or in poor condition during and at the completion of the maintenance period. All plant material to be replaced and maintained for a minimum of 30 days prior to end of maintenance period. "Poor Condition" shall be interpreted as meaning nursery stock in which branches are dead or dying, or have not shown satisfactory growth of leaves. All replacements shall be of same size and species, as specified.

**E35.5.6** Upon the end of the required maintenance period, a Site inspection shall be held. If at this time, all material and Works is satisfactory the Contract for maintenance and warranty shall be terminated. If materials and Works are found unacceptable the warranty shall be extended by 30 days for a follow up inspection. Extension of warranty will continue in 30 day increments for inspection until all work and material are satisfactory.

**MEASUREMENT AND PAYMENT**

**E35.5.7** Extended Maintenance will be measured and paid for each year at the Contract per Year Lump Sum Price for "Extended Two Year Maintenance"; which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the work included in this Specification.

**E36. SUB-SURFACE DRAINAGE**

**DESCRIPTION**

**E36.1** This Work shall consist of supply and placing a geocomposite prefabricated drain system as shown in the plans. The drainage system shall be installed in accordance with these Specifications and in the locations and dimensions as shown on the plans or as specified by the Contract Administrator. The quantities of drain as shown on the plans may be increased or decreased at the direction of the Contract Administrator based on actual Site conditions that occur during construction of the project. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of the Work.

**MATERIALS**

**E36.2** The drain conduit shall be of flexible, prefabricated, rounded rectangular shaped, composite product. The drain conduit shall be wrapped with a non-woven geotextile and shall be a non-woven needle-punched construction and consist of long-chain polymeric fibers composed of polypropylene, polyethylene or polyamide. The fibers shall be oriented into a multi-directional stable network whereby they retain their positions relative with each other and allow the passage of water as specified. The fabric shall be free of any chemical treatment or coating, which reduces permeability and shall be inert to chemicals commonly found in soil. The geotextile shall conform to the following minimum average roll values.

Weight	ASTM D-3776	3.0 - 4.0
Tensile Strength	ASTM D-4632	100 - 130
Elongation %	ASTM D-4632	50 - 70
Puncture, lb	ASTM D-751	35 - 60
Mullen Burst, psi	ASTM D-3786	110 - 215
Trapezoidal Tear, lb	ASTM D-4533	40 - 42
Coefficient of Permeability	ASTM D-4491	.2 - .4 cm/sec
Flow Rate, gpm/ft <sup>2</sup>	ASTM D-4491	100 - 140
Permittivity, 1/sec	ASTM D-4491	1.3 - 2.0
Apparent Opening Size	ASTM D-4751	60/70 Max. US Std Sieve Opening
Seam Strength, lb/ft	ASTM D-4595	100
Fungus	ASTM G-21	No growth

E36.3 The drainage core shall be made of a high-density polyethylene. The core shall be constructed using interconnected corrugated pipes that define and provide the flow channels and structural integrity of the drain. The geotextile shall function only as a filter. The core of the edge drain shall conform to the following physical property requirements.

Thickness, inches	ASTM D-1777	1.0
Flow Rate, gpm/ft <sup>***</sup>	ASTM D-4716	30
Compressive Strength, psf	STM D-1621 (modified sand method)	6000
Pipe Stiffness, pii	ASTM D-2412	100

\*\*\* At gradient = 0.01, pressure = 10 psi for 100 hours.

E36.4 The fittings used with the edge drain shall be of a "snap together" design. In no case shall any drainage product be joined without the use of the manufacturers connector designed specifically for the purpose.

E36.5 Drainage pipe shall be Multi-Flow or approved substitute in accordance with B6. Size shall be 150mm. All fittings shall be sized to fit approved for use with Multi-Flow or approved substitute by the manufacturer. Cleanouts shall be provided as indicated on the drawing.

E36.6 The pipe for edge drain outlet laterals shall be either PVC pipe meeting the requirements of ASTM D-2729 or ASTM F-949, or high-density polyethylene pipe meeting the requirements of AASHTO M252. 2.4 A rodent screen made of 7.6mm by 7.6mm square opening size, 1.6mm gauge, stainless steel or galvanized, welded wire mesh shall be installed in each outlet lateral line. When using galvanized welded wire mesh, the rodent screen shall be galvanized after it has been formed to the shape and dimensions required.

E36.7 Backfill shall be course sand whose particle size is defined as less than 5% retained on a #10 screen, and less than 5% passing through a # 30 screen. (US Std. Sieve) In no case shall more than 1% pass a #60 screen.

#### INSTALLATION

E36.8 The layout of the subdrain is to be marked on Site and approved by the Contract Administrator prior to trenching.

E36.9 Trenches are to be excavated with a trenching machine or by hand. Locations where the trench has to cross existing utilities, existing irrigation pipes and all other subsurface pipes or fixtures are to be excavated by hand. The amount of trench excavated at any time shall not exceed the amount of drain that can be set and backfilled completely prior to the end of that working day. The trench shall be of the width specified on the drawings.

- E36.10 The bottom surface of the trench is to be free of loose particles and is to have the slope as shown on the drawings. Over excavation in the bottom of the trench shall be backfilled and compacted to 95% standard proctor density to the proper grade with excavated material prior to the placement of the drain. Where the trench is to pass through an area of existing sod, the excavated material is not to remain on the grassed surface for a period longer than 24 hours. Excavated material if not required as fill elsewhere on the Site shall be removed from Site is disposed of legally.
- E36.11 Multi-Flow drain pipe is to be placed in trench using Multi-Flow centering device. Trench is to be backfilled with coarse sand to the surface. Backfill shall be placed in maximum of 45cm loose lifts. Backfill is to be lightly tamped into place and watered. In the case of trenches extending into existing grassed areas coarse sand backfill is to be seeded with grass seed.
- E36.12 Connect drainage pipe to existing subsurface drainage. All parts, fittings, connection hardware shall be incidental to the unit price bid for "Supply and install subsurface drainage".
- E36.13 The contractor is to maintain top surface of the backfilled sand even with the surrounding grade during the grow in phase.
- E36.14 Fittings for the drain shall be installed in accordance with the manufacturer's recommendations.
- E36.15 Any damaged edge drain or outlet lateral shall be replaced or repaired by splicing in an undamaged section of drain at the Contractor's expense.
- E36.16 The Contractor shall be responsible for restoration of any affected surfaces during the Work under this section. There shall be no separate measurement or payment for restoration Work required as a result of this Work.

#### MEASUREMENT AND PAYMENT

- E36.17 Subsurface Drainage will be measured and paid for at the contract unit price per meter for "Supply and install subsurface drainage" as specified herein, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification. The total number of metres to be paid for shall be the total number installed in accordance with this Specification as computed from measurements made by the Contract Administrator.