



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 453-2006

VICTORIA JASON PARK

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PART B - BIDDING PROCEDURES

B1. PROJECT TITLE

B1.1 VICTORIA JASON PARK

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, July 26, 2006.

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

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

B3. SITE INVESTIGATION

B3.1 Further to GC:3.1, the 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 Branch internet site at <http://www.winnipeg.ca/matmgt>.

B5.2.2 The Bidder is responsible for ensuring that he has received all addenda and is advised to check the Materials Management Branch internet site for addenda shortly before submitting his Bid.

B5.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B6. SUBSTITUTES

B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.

B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.

B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.

B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:

- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
- (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
- (c) identify any anticipated cost or time savings that may be associated with the substitute;
- (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed Work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
- (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed Work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.

B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his sole discretion grant approval for the use of a substitute as an "approved equal" or as an "approved alternative", or may refuse to grant approval of the substitute.

B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.

B6.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he wishes to inform.

B6.7 If the Contract Administrator approves a substitute as an "approved equal", any Bidder may use the approved equal in place of the specified item.

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

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

B7. BID SUBMISSION

B7.1 The Bid Submission consists of the following components:

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

B7.2 All components of the Bid Submission shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely in ink, to constitute a responsive Bid.

B7.3 The Bid Submission shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.

B7.3.1 Samples or other components of the Bid Submission which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid Submission.

B7.4 Bid Submissions submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.

B7.5 Bid Submissions shall be submitted to:

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

B8. BID

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

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

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

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

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

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

B9. PRICES

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

B10. QUALIFICATION

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

performing the Work required to be done in accordance with the terms of the Contract;

- (g) have a written Workplace safety and health program in accordance with The Workplace Safety and Health Act (Manitoba);

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

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

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

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

B11. BID SECURITY

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

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

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

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

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

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

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

B12. OPENING OF BIDS AND RELEASE OF INFORMATION

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

B12.1.1 Bidders or their representatives may attend.

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

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

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

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

B13. IRREVOCABLE BID

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

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

B14. WITHDRAWAL OF BIDS

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

B14.1.1 Notwithstanding GC:23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.

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

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

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

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

B15. EVALUATION OF BIDS

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

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

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

B15.3 Further to B15.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid Submission or in other information required to be submitted, that he is responsible and qualified.

B15.4 Further to B15.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices adjusted, if necessary as follows:

- (a) if the lowest evaluated responsive Bid submitted by a responsible and qualified Bidder is within the budgetary provisions for the Work, no adjustment will be made to the total bid price; or
- (b) if the lowest evaluated responsive Bid submitted by a responsible and qualified Bidder exceeds the budgetary provision for the Work, the Total Bid Prices of all responsive Bids submitted by responsible and qualified Bidders will be adjusted by progressively deducting the sum of the quantities multiplied by the unit prices shown on Form B: Prices for the following items in the order listed until a Total Bid Price within the budgetary provision is achieved.

<u>Item No.</u>	<u>Description</u>
4 and 5	Remove and Dispose existing section of chain link fence and Remove top 1.8m of existing 3.6m ht. chain link fence
14a and 15a	Supply and Install Mancana Ash (75mm cal.) and 2 year extended maintenance for deciduous trees
14b and 15b	Supply and Install Black Hills Spruce (1.5m ht.) and 2 year extended maintenance for coniferous trees
6 and 7	Remove, Salvage and Reinstall Wood Bollard and Supply and Install 200mm Wood Bollard

8 Supply and Installation of 1.83m wide crushed limestone pathway (including base courses, geotextile fabric and compaction)

B15.4.1 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each item, the sum of the quantities multiplied by the unit prices for each item shall take precedence.

B16. AWARD OF CONTRACT

B16.1 The City will give notice of the award of the Contract by way of a letter of intent, or will give notice that no award will be made.

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

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

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

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

PART C - GENERAL CONDITIONS

C1. GENERAL CONDITIONS

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

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

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

- D2.1 The major components of the Work are as follows:
- (a) Excavation, Removals and Rough Grading
 - (i) Excavate, Remove and Dispose of Asphalt Pathway and unsuitable base courses
 - (ii) Excavation and Rough Grading for Pathways
 - (iii) Rough Grading for Soccer Pitch
 - (iv) Remove and Dispose of Existing Chain Link Fence
 - (b) Fencing
 - (i) Remove top 1.8m of existing 3.6m ht. chain link fence
 - (ii) Remove, Salvage and Reinstall Wood Bollard
 - (iii) Supply and Install 200mm Wood Bollard
 - (c) Paving
 - (i) Supply and Install 1.83m wide crushed limestone pathway (including base courses, geotextile fabric and compaction)
 - (d) Site Services
 - (i) Supply and Install Nilex 150mm Multi-Flow drainage system (including all connections, fittings, trenching and backfilling)
 - (ii) Supply and Install Catch basin including frame, cover and connection to LDS pipe
 - (iii) Supply and Install 250mm LDS pipe, Open Cut / Class 2 Backfill
 - (iv) Supply and Install 250mm LDS pipe, Core
 - (v) Connection to City of Winnipeg Land Drainage Sewer
 - (e) Plant Material
 - (i) Supply and Install Plant Material
 - (ii) Maintenance for all plant material for two years
 - (iii) Supply and Install Sod

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is:
Aaron Hirota, B.Env.D., M.L.Arch.
McGowan Russell Group
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, the Contract Administrator 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 GC:23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.

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

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

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
Corporate Services Department
Legal Services Division
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. SAFE WORK PLAN

- D7.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in GC:4.1 for the return of the executed Contract.
- D7.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.

D8. INSURANCE

- D8.1 The Contractor shall provide and maintain the following insurance coverage:
- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) all inclusive, with The City of Winnipeg being added as an additional insured, with a cross-liability clause, such liability policy to also contain a contractual liability, an unlicensed motor vehicle liability and a products and completed operations endorsement to remain in place at all times during the performance of the Work and throughout the warranty period;
 - (b) automobile liability insurance for owned and non-owned automobiles used for or in connection with the Work in the amount of at least two million dollars (\$2,000,000.00) at all times during the performance of the Work and until the date of Total Performance;
- D8.2 Deductibles shall be borne by the Contractor.
- D8.3 The Contractor shall provide the City Solicitor with a certificate of insurance of each policy, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in GC:4.1 for the return of the executed Contract.
- D8.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least fifteen (15) Calendar Days prior written notice to the Contract Administrator.

D9. PERFORMANCE SECURITY

- D9.1 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.

D9.1.1 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.

D9.2 If the bid security provided in his Bid Submission was not a certified cheque or draft pursuant to B11.1(c), the Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of letter of intent and prior to the commencement of any Work on the Site but in no event later than the date specified in GC:4.1 for the return of the executed Contract.

D10. SUBCONTRACTOR LIST

D10.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the General Conditions for the return of the executed Contract.

D11. DETAILED WORK SCHEDULE

D11.1 The Contractor shall provide the Contract Administrator with a 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 GC:4.1 for the return of the executed Contract.

D11.2 The detailed Work schedule shall consist of the following:

- (a) a Gantt chart for the Work based on the C.P.M. schedule

D11.3 Further to D11.2(a), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

SCHEDULE OF WORK

D12. COMMENCEMENT

D12.1 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.

D12.2 The Contractor shall not commence any Work on the Site until:

- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence that the Contractor is in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba;
 - (ii) evidence of the Workers compensation coverage specified in GC:6.14;
 - (iii) the Safe Work Plan specified in D7;
 - (iv) evidence of the insurance specified in D8;
 - (v) Performance Security specified in D9
 - (vi) Subcontractor list specified in D10
 - (vii) Detailed Work Schedule specified in D11

- (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.

D12.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.

D13. RESTRICTED WORK HOURS

D13.1 Further to clause 3.10 of CW 1130, the Contractor shall require written permission 48 hours in advance from the Contract Administrator for any Work to be performed between 2000 hours and 0700 hours, or on Saturdays, Sundays, Statutory Holidays and or Civic Holidays.

D14. SUBSTANTIAL PERFORMANCE

D14.1 The Contractor shall achieve Substantial Performance within Thirty Five (35) consecutive Working Days of the commencement of the Work as specified in D12.

D14.2 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.

D14.3 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.

D15. TOTAL PERFORMANCE

D15.1 The Contractor shall achieve Total Performance within Forty (40) consecutive Working Days of the commencement of the Work as specified in D12.

D15.2 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.

D15.3 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.

D16. LIQUIDATED DAMAGES

D16.1 If the Contractor fails to achieve Substantial Performance in accordance with the Contract by the day fixed herein for Substantial Performance, the Contractor shall pay the City Two Hundred and Fifty dollars (\$250.00) per Working Day for each and every Working Day following the day fixed herein for Substantial Performance during which such failure continues.

D16.2 The amount specified for liquidated damages in D16.1 is based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve Substantial Performance by the day fixed herein for same.

D16.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D17. SCHEDULED MAINTENANCE

D17.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

(a) 30 Day sod maintenance as specified in CW3510

D17.2 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

D18. JOB MEETINGS

D18.1 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.

D18.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

D19. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

D19.1 Further to GC:6.26, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

WARRANTY

D20. WARRANTY

D20.1 Notwithstanding GC:13.2, the warranty period shall begin on the date of Total Performance and shall expire two (2) years thereafter unless extended pursuant to GC:13.2.1 or GC:13.2.2, in which case it shall expire when provided for thereunder.

FORM H1: PERFORMANCE BOND
(See D9)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

_____ dollars (\$_____)

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

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

_____ day of _____, 20____, for:

BID OPPORTUNITY NO. 453-2006

VICTORIA JASON PARK

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

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

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

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

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

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

_____ day of _____, 20____ .

SIGNED AND SEALED
in the presence of:

(Witness)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

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

**FORM H2: IRREVOCABLE STANDBY LETTER OF CREDIT
(PERFORMANCE SECURITY)
(See D9)**

(Date)

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 453-2006

WATERFRONT DRIVE STREETSCAPING

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)

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS, STANDARD DETAILS AND DRAWINGS

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

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
L1	Layout Plan
L2	Grading Plan
L3	Details
SS1	Site Services

GENERAL REQUIREMENTS

E2. PROTECTION OF SURVEY INFRASTRUCTURE

- E2.1 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.
- E2.2 Further to GC:6.28 (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 986-4826 (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.
- E2.3 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.
- E2.4 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 subcontractors are aware of this clearance procedure and the potential restoration costs.
- E2.5 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.

E3. PEDESTRIAN SAFETY AND TRAFFIC MANAGEMENT

- E3.1 Ambulance/Emergency vehicle access must be maintained at all times.
- E3.2 During the project, a temporary snow fence shall be installed around the excavation area. The Contractor shall be responsible for maintaining the snow fence in a proper Working condition. No measurement for payment shall be made for this Work.

E4. WATER USED BY CONTRACTOR

- E4.1 Notwithstanding CW 1120.3.7:
 - E4.1.1 Water for use by the Contractor may be obtained from the City of Winnipeg waterworks system.
 - E4.1.2 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.
 - E4.1.3 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.
 - E4.1.4 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.

E5. SITE CONDITION

- E5.1 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.
- E5.2 Surface and sub-surface conditions shown on the Drawings and included herein are provided for general information and variations there from shall not affect the terms of the Contract.
- E5.3 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.

E6. EXISTING UNDERGROUND SERVICES

- E6.1 The Contractor's attention is drawn to the existing underground lines or services that may be located in the area of the Work.
- E6.2 The Contractor shall take all necessary precautions when performing the Work to ensure that no damage is done to these existing services.

- E6.3 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.
- E6.4 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.
- E6.5 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.
- E6.6 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.

E7. CONSTRUCTION FACILITIES AND STAGING

- E7.1 The Contractor shall be responsible for providing his own storage area for storage and handling of all his construction operations. The use of public right-of-ways will not be allowed.

E8. ACCESS

- E8.1 All access is to be on the designated routes through the Site. These routes will be determined at the Pre-Construction Meeting.
- E8.2 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.
- E8.3 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.
- E8.4 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.

E9. ALL-WEATHER DUMP SITE

- E9.1 The Contractor shall have access to an all-weather dump Site throughout the duration of the project. Prior to the start of construction, the Contractor shall provide the Contract Administrator with details in regards to the location of the all-weather dump Site.

E10. EXPOSING EXISTING UNDERGROUND SERVICES AND UTILITIES

- E10.1 The exact location and depth of some of the existing underground services and utilities within the project limits are unknown.

- E10.2 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.
- E10.3 Where the existing hydro duct line is adjacent to tree wells and Heritage Light Pole bases, the edge and top of the duct must be daylighted in the area of exposure through a hydro vac process. This process must be completed by an authorized hydro vac daylighting Contractor (Badger Daylighting 885-0592)
- E10.4 All costs in connection with this item of Work shall be included in the unit price bid for the various bid items.

E11. PROTECTION OF EXISTING TREES

- E11.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities.
- (a) All trees will have a 3m radius protective zone calculated from the circumference at the base of the trunk which will remain free of digging, trenching, grade changes, stock piling of materials and soil compaction, except as minimum to construct swales, throughout the duration of the Contract. Protective fencing around these areas is required.
 - (b) Trees within and immediately adjacent to proposed construction areas and those identified to be at risk by the Contract Administrator, will require 25 x 100 x 2400mm' wood planks strapped to the tree trunk to completely protect the tree trunk from impact damage. (Smaller trees will be similarly protected using proportionally sized wood planks.)
 - (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 3m 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. They must be properly trimmed with sharp tools to prevent crushing or being pulled up by construction equipment. No paint is required. All exposed roots must be mulched until the excavated area is filled with clean earth to avoid exposure to sunlight and desiccation.
 - (d) Operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the Work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.
 - (e) Work on-Site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.
- E11.2 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his designate.
- E11.3 No separate measurement or payment will be made for the protection of trees.
- E11.4 Auguring under existing trees will be the only acceptable method of underground installations. Any other excavations must be approved by the Forestry Branch.

E12. LAYOUT OF WORKS

- E12.1 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 of the Work included in this Contract.
- E12.2 The Contractor must provide all necessary survey equipment in good operating conditions.
- E12.3 The Contractor shall supply all materials (painting, stakes, ribbon, markers, etc) and labour necessary for the accurate location and setting out of the Work.
- E12.4 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 Contract Administrator'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.
- E12.5 All costs associated with this item of Work shall be included in the unit prices bid for the supply and installation of the various items in the Contract.

E13. MATCHING EXISTING GRADES

- E13.1 Wherever the proposed paving, or sod meets existing 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. Where maintenance of existing grade is not possible, Contractor to adjust grade as directed by the Contract Administrator.
- E13.2 All costs associated with matching existing grades shall be included in the unit prices bid for the supply and installation of the various items in the Contract.

E14. STAKES AND MARKS

- E14.1 Further to the General Conditions, 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.
- E14.2 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.
- E14.3 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.
- E14.4 The Contractor shall determine and provide all dimensions and elevations measured from the stakes or marks

E15. TEMPORARY RELOCATION OF AFFECTED STRUCTURES

E15.1 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.

E16. EXCAVATION, REMOVALS, SUBGRADE COMPACTION AND ROUGH GRADING

E16.1 This specification is supplemental to CW 3110 and CW 3170. 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) Excavation, removals, disposal, subgrade compaction and rough grading of the existing Site for the construction of limestone pathways, swales, etc. to the design requirements noted on the Drawings, approved on Site by the Contract Administrator, less the appropriate surface finish allowance.
- (b) Stockpile suitable, approved material on Site for reuse (clean topsoil, clean earth fill and gravel fill). Remove and dispose of unsuitable material.
- (c) Earthwork and Grading of the existing Site to the design elevations shown on the Drawings, less the appropriate surface finish allowance.
- (d) Excavation, Removal and Disposal of Existing Asphalt Pathway.
- (e) Remove, Salvage and Reinstall wood bollards.
- (f) Excavation, Removal and Disposal of Chain Link Fence. Fill all holes.
- (g) Removal and Disposal of top 1.8m of existing 3.6m ht. Chain Link Fence.

E16.2 Construction Methods

E16.2.1 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.

E16.2.2 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 seeded or sodded areas and compacted granular fill in paved areas.

E16.2.3 Excavate and remove existing asphalt paving and base courses. Stockpile suitable granular base course material on Site for reuse. Dispose of unsuitable and excess material off Site at a facility approved by the City of Winnipeg. Costs for stockpiling and disposal are incidental to the Work.

E16.2.4 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.

E16.2.5 In fill areas, where the difference between the existing grade elevation and the design elevation is less than 300mm the Contractor shall scarify the existing ground to a minimum depth of 150mm prior to placement of any fill.

E16.2.6 Remove and dispose of chain link fence as shown on the drawings. Fill holes from posts with clean earth fill and compact to 98% SPD.

E16.2.7 Remove and Dispose of top 1.8m of existing 3.6m ht. Chain Link Fence. All fence posts to remain. Repair fence posts and chain link fabric as required.

E16.2.8 Remove and salvage wood bollards for reinstallation. Fill holes with clean earth fill and compact to 98% SPD.

E16.3 Method of Measurement

E16.3.1 The following items will be measured on an area basis. The area to be paid for shall be the total number of square metres that are excavated in accordance with this Specification as computed from measurements made by the Contract Administrator. No payment will be made for material removed outside of the limits of excavation as established by the Contract Administrator.

- (a) Excavate, Remove, Dispose of Asphalt Pathway and unsuitable base courses.
- (b) Excavation and Rough Grading for Pathways.
- (c) Rough Grading for Soccer Pitch

E16.3.2 The following items will be measured on a linear metre basis. 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.

- (a) Remove and Dispose existing section of chain link fence.
- (b) Remove top 1.8m of existing 3.6m ht. chain link fence.

E16.3.3 Remove, salvage and reinstall wood bollard will be measured on a unit basis. The total number of units to be paid for shall be the total number removed, salvaged and reinstalled in accordance with this Specification as computed from measurements made by the Contract Administrator.

E16.3.4 No measurement will be made for stockpiling suitable topsoil, clean earth fill and granular base course as these items are incidental to this specification.

E16.3.5 No measurement will be made for filling holes/low areas left by excavation and removals operations as this item shall be incidental to this specification.

E16.3.6 No measurement will be made for the excavation or compaction of the subgrade as this shall be incidental to this specification.

E16.3.7 No measurement will be made for disposing of surplus fill and unsuitable material as this shall be incidental to this specification.

E16.3.8 No direct payment will be made for placing and grading of existing fill as all costs for this Work shall be included in the lump sum bid for excavation, removals and rough grading within the limit of the Work.

E16.4 Basis of Payment

E16.4.1 The following items will be paid for at the Contract Unit Price per square metre for

- (a) Excavate, Remove, Dispose of Asphalt Pathway and unsuitable base courses.
- (b) Excavation and Rough Grading for Pathways.
- (c) Rough Grading for Soccer Pitch

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.

E16.4.2 The following items will be paid for at the Contract Unit Price per lineal metre for

- (a) Remove and Dispose existing section of chain link fence.
- (b) Remove top 1.8m of existing 3.6m ht. chain link fence.

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.

- E16.4.3 The following items will be paid for at the Contract Unit Price for "Remove, salvage and reinstall wood bollards" 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.
- E16.4.4 No payment will be made for stockpiling suitable topsoil, clean earth fill and granular base course as these items are incidental to this specification.
- E16.4.5 No payment will be made for filling holes/low areas left by excavation and removals operations as this item shall be incidental to this specification.
- E16.4.6 No payment will be made for the excavation or compaction of the subgrade as this shall be incidental to this specification.
- E16.4.7 No payment will be made for disposing of surplus fill and unsuitable material as this shall be incidental to this specification.

E17. CRUSHED LIMESTONE PATHWAY

E17.1 Description

- E17.1.1 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 including, but not necessarily confined to, the following:
 - (a) Supply and Installation of Limestone Pathway
 - (b) Supply and Placement of Base Course Material
 - (c) Supply and Placement of Sub-Base
 - (d) Supply and Installation of Separation/Reinforcement Geotextile Fabric
 - (e) Compaction
- E17.1.2 There will be no separate measurement and payment supply and placement of sub-base. All Work shall be considered incidental to the Supply and Placing of Limestone Pathway.
- E17.1.3 There will be no separate measurement and payment supply and placement of base course material. All Work shall be considered incidental to the Supply and Placing of Limestone Pathway.
- E17.1.4 There will be no separate measurement and payment for supply and installation of Separation/Reinforcement Geotextile Fabric. All Work shall be considered incidental to the Supply and Placing of Limestone Pathway.
- E17.1.5 There will be no separate measurement and payment for compaction. All Work shall be considered incidental to the Supply and Placing of Base Course Material.

E17.2 Materials

- E17.2.1 Crushed granular material to meet the following requirements:
 - (a) 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;
 - (b) 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) Crushed Limestone Fines –1/4" (6mm) down.

E17.3 Construction

E17.3.1 Placement and Compaction of Granular and Crushed Limestone

- (a) Place crushed granular base course material (stockpiled and new as required) to a minimum compacted thickness of 150mm. Compact to 100% standard proctor density.
- (b) Place crushed granular levelling course material to a minimum compacted thickness of 50mm. Compact to 100% standard proctor density.
- (c) Crushed Limestone fines to a minimum compacted thickness of 50mm as finishing course. Compact to 98% 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) Compact subgrade to min. 98% standard proctor density.
- (f) 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.

E17.4 Field Quality Control

- E17.4.1 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.

E17.5 Acceptance

- E17.5.1 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.

E17.6 Method of Measurement

- E17.6.1 Crushed Limestone Pathway shall be measured on an area basis. The area to be paid for shall be the total number of square metres for "Supply and Install 1.83m wide crushed limestone pathway (including base courses, geotextile fabric, and compaction)" placed in accordance with this Specification and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.

E17.7 Basis of Payment

E17.7.1 Supply and installing Crushed Limestone Pathway will be paid for at the Contract Unit Price per square metre for "Supply and Install 1.83m wide crushed limestone pathway (including base courses, geotextile fabric, and compaction)" 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.

E18. CONSTRUCTION OF LAND DRAINAGE SEWERS

E18.1 Description

E18.1.1 The Work of this section comprises the furnishing of all labour equipment and materials incidental and required to complete the construction of the Land drainage Sewers as shown on the drawings and hereinafter specified.

E18.2 Construction

E18.2.1 Further to Specification CW 2030, CW 2130, and CW 2160 the Contractor shall supply and install land drainage sewers, catch basins and the connection to the existing LDS sewer as shown on the drawings and in accordance with the Specifications.

E18.2.2 All land drainage sewers shall be installed by coring below granular areas and within 1.5m of existing or proposed pavement or structures and as shown on the drawings.

E18.2.3 Catch basins shall be in accordance with SD-225 with modification as required for flow through catch basins.

E18.2.4 All access shaft backfill in granular areas and within 1.5m of existing or proposed pavement shall be Class 2 Backfill compacted to 100% standard proctor density in maximum 150mm thick lifts. The Top section shall be constructed as shown on the Drawings and/or as directed by the Contract Administrator.

E18.3 Method of Measurement

E18.3.1 Supply and Install 250mm dia. LDS pipe will be measured on a lineal metre basis. The lineal metres to be paid for shall be the total number of lineal metres that are installed in accordance with this Specification and accepted to the Contract Administrator, as computed from measurements made by the Contract Administrator.

E18.3.2 Supply and Install Catch Basin will be measured on a per unit basis. The number of units to be paid for shall be the total number of units completed in accordance with this Specification and accepted to the Contract Administrator, as computed from measurements made by the Contract Administrator.

E18.3.3 Connection to existing City of Winnipeg LDS sewer will be measured on a per unit basis. The number of units to be paid for shall be the total number of units completed in accordance with this Specification and accepted to the Contract Administrator, as computed from measurements made by the Contract Administrator.

E18.4 Basis of Payment

E18.4.1 Supply and Install 250mm dia. LDS pipe will be paid for at the Contract Unit Price per lineal metre for "Supply and Install 250mm dia. LDS pipe, Open Cut / Class 2 Backfill" and "Supply and Install 250mm dia. LDS pipe, Core", 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.

E18.4.2 Supply and Install Catch Basin will be paid for on a per item basis, for "Supply and Install Catch Basin including frame, cover and connections to LDS pipe", 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.

E18.4.3 Connection to existing City of Winnipeg LDS sewer will be paid for on a per item basis, 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.

E19. GEOCOMPOSITE DRAIN

E19.1 Description

E19.1.1 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.

E19.2 Products

E19.2.1 Geocomposite supplied by:

Nilex Inc.
 81 Lawson Crescent
 Winnipeg, Manitoba R3P 0T3
 Ph: (204) 925-4466 Fax: (204) 775-9286
 Contact: Ian Corne

E19.3 Materials

E19.3.1 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 ²	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
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E19.3.2 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***	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.

E19.3.3 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.

E19.3.4 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 0.3 inch by 0.3 inch square opening size, 0.063 inch 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 shown on the plans or specified by the Contract Administrator.

E19.3.5 Course sand for backfill shall be clean 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.

E19.4 Installation

E19.4.1 The amount of trench excavated at any time shall not exceed the amount of drain that can be set and backfilled completely on that Working day.

E19.4.2 Locations where the trench crosses existing underground utilities, irrigation pipes, and all other subsurface Works, are to be excavated by hand.

E19.4.3 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.

E19.4.4 The trench shall be 4" wide, depth as specified in the plans. The drain product shall be centered in the trench using centering device as shown in the drawings, and backfilled with clean sand to the surface. Backfill shall be placed in maximum of 45mm loose lifts, lightly tamped into place by foot, and watered.

E19.4.5 The trench excavations for the drain and outlet laterals shall be to the lines and grades shown on the Plans. Over excavation in the bottom of the excavation shall be backfilled to the proper grade with excavated material or sand prior to the placement of the drain.

E19.4.6 Fittings for the drain shall be installed in accordance with the manufacturer's recommendations.

- E19.4.7 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 to the satisfaction of the Contract Administrator.
- E19.4.8 The Contractor shall be responsible for restoration of any affected surfaces during the Work under this section. The restoration shall be in accordance to City of Winnipeg specifications and the satisfaction of the Contract Administrator. Any restoration Work shall be incidental to the supply and installation of Geocomposite Drain.
- E19.5 Method of Measurement
- E19.5.1 Supply and placing geocomposite drain will be measured on a lineal metre basis. The lineal metres to be paid for shall be the total number of lineal metres that are installed in accordance with this Specification and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.
- E19.5.2 All trenching, backfill, fittings, and cleanouts are to be considered incidental to the supply and installation of Geocomposite Drain.
- E19.6 Method of Payment
- E19.6.1 Supply and Install geocomposite drain will be paid for at the Contract Unit Price per lineal metre for "Supply and Install 150mm Nilex Multi-Flow Drainage system (including all Connections and Fittings, Trenching and Backfilling)" 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.

E20. WOOD BOLLARDS

- E20.1 Description
- E20.1.1 The Work of this section comprises the furnishing of all labour equipment and materials incidental and required to complete the supply and installation of wood bollards as shown on the drawings and hereinafter specified.
- E20.2 Installation
- E20.2.1 Wood bollards to be installed as per the drawings and City of Winnipeg standards.
- E20.3 Method of Measurement
- E20.3.1 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.
- E20.4 Basis of Payment
- E20.4.1 Supply and install wood bollards will be paid for at the Contract unit price for "Supply and install 200mm 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.

E21. PLANT MATERIAL

- E21.1 Description
- E21.1.1 The following list generally describes the scope of this section:
- (a) Supply and installation of trees and shrubs including preparation, digging, transport and planting.

- (b) Maintenance of Trees during establishment period (minimum 30 days or until Total Performance whichever is longer). Refer to Extended Maintenance of Trees and Plant Material for extended tree and shrub maintenance period.

E21.2 General

E21.2.1 Source Quality Control

- (a) Obtain approval of plant material at source. All plant material will be field approved by the Contract Administrator. The Contractor shall notify the Contract Administrator to organize the inspection, a minimum of 5 Working days prior to installation.
- (b) No Work under this Special Provision is to proceed without approval.
- (c) Acceptance of plant material at source does not prevent rejection on Site prior to or after planting operations.
- (d) Source of all plant material to be Manitoba.

E21.2.2 Shipment and Pre-Planting Care

- (a) Co-ordinate shipping of plants and excavation of holes to ensure minimum time lapse between digging and planting.
- (b) Tie branches of trees and shrubs securely and protect plant material against abrasion, exposure and extreme temperature change during transit. Avoid binding of planting stock with rope or wire which would damage bark, break branches or destroy natural shape of plant. Give full support to root ball of large trees during lifting.
- (c) Cover plant foliage with tarpaulin, and protect bare roots by means of dampened straw, peat moss, sawdust or other acceptable material to prevent loss of moisture during transit and storage.
- (d) Remove broken and damaged roots with sharp pruning shears. Make clean cut and cover cuts over 50 mm diameter with wound dressing.
- (e) Keep roots moist and protected from sun and wind. Heel-in trees, which cannot be planted immediately, in shaded areas, and water well.

E21.2.3 Guarantee

- (a) The Contractor hereby warrants that the plant material as itemized on the plant list will remain free of defects for the duration of the two year maintenance period indicated in E25. End-of-warranty inspection will be conducted.
- (b) The Contractor agrees and guarantees to replace and replant any nursery stock found dead or in poor condition for the warranty period from date of Certificate of Total Performance, without cost to the City. "Poor Condition" shall be interpreted as meaning nursery stock on which branches are dead or dying, or have not shown satisfactory growth in leaves. Exempted is nursery stock damaged by accidental causes or vandalism, which stock shall be replaced at the cost of the owner.
- (c) The Contract Administrator reserves the right to extend Contractor's warranty responsibilities for an additional one year if, at end of initial warranty period, leaf development and growth is not sufficient to ensure future survival.

E21.2.4 Replacement

- (a) During warranty period, remove from Site any plant material that has died or failed to grow satisfactorily as determined by the Contract Administrator.
- (b) Replace plant material as directed by the Contract Administrator.
- (c) Extend warranty on replacement plant material for a period equal to the original warranty period.
- (d) Continue such replacement and warranty until plant material is acceptable.

E21.3 Materials

E21.3.1 Water

- (a) Water should be potable and free of minerals which may be detrimental to plant growth.

E21.3.2 Root Ball Burlap

- (a) Root ball burlap should be 150 g Hessian burlap.

E21.3.3 Anti-Desiccant

- (a) Anti-desiccant should be wax-like emulsion to provide film over plant surface reducing evaporation but permeable enough to permit transpiration.
- (b) Anti desiccant should be used only as requested by Contract Administrator

E21.3.4 Wound Dressing

- (a) Wound dressing should be horticulturally accepted non-toxic, non-hardening emulsion.

E21.3.5 Plant Material

- (a) Quality and Source: Comply with Guide Specification for Nursery Stock, 1982 Edition of Canadian Nursery Trades Association, referring to size and development of plant material and root ball.
- (b) 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 and shrubs of No. 1 grade.

E21.3.6 Additional plant material qualifications

- (a) Use trees and shrubs with strong fibrous root system free of disease, insects, defects or injuries and structurally sound. Use trees with straight trunks, well and characteristically branched for species. Plant must have been root pruned regularly, but not earlier than one growing season prior to arrival on Site.

E21.3.7 Cold Storage

- (a) Approval required for plant material which has been held in cold storage.

E21.3.8 Container - Grown Stock

- (a) Acceptable if containers large enough for root development. Trees must have grown in container for minimum of one growing season but not longer than two.
- (b) 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.

E21.3.9 Balled and Burlapped

- (a) Deciduous trees in excess of 3m 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. Secure root balls with burlap, heavy twine and rope. For large trees: wrap ball in double layer of burlap and drum lace with minimum 10 mm dia. rope. Protect root balls against sudden changes in temperature and exposure to heavy rainfall.

E21.3.10 Tree Spade Dug Material

- (a) Dig plant material with mechanized digging equipment of hydraulic spade or clam-shell type. Root balls to satisfy CNTA standards. Lift root ball from hole, place in wire basket designed for purpose and line with burlap. Replace root ball and tie basket to

ball with heavy rope. Take care not to injure trunk of tree with wire basket ties or rope.

E21.3.11 Substitutions

- (a) Substitutions to plant material as indicated on plantings plan are not permitted unless written approval has been provided in accordance with B6.

E21.4 Construction Methods

E21.4.1 Workmanship

- (a) Stake out location of trees and shrubs as per the Construction Drawings. Obtain approval prior to excavating.
- (b) Apply anti-desiccant in accordance with material manufacturer's instructions.
- (c) Co-ordinate operations. Keep Site clean and planting holes drained. Immediately remove soil or debris spilled onto pavement.

E21.4.2 Planting Time

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

E21.4.3 Excavations

- (a) Refer to Preparation of Planting Beds. All excavation for installation of plant material is incidental and shall be included in the unit price bid for supply and installation of Plant Material unless otherwise noted.
- (b) Protect bottom of excavations against freezing.
- (c) Remove water which enters excavations prior to planting. Ensure source of water is not ground water.

E21.4.4 Planting

- (a) Loosen bottom of planting hole to depth of 150 to 200 mm.
- (b) Plant trees and shrubs vertically with roots placed straight out in hole. Orient plant material to give best appearance in relation to structure, roads and walks.
- (c) Place plant material to depth equal to depth they were originally growing in nursery.
- (d) With balled and burlapped roots balls, loosen burlap and cut away minimum top 1/3 without disturbing root ball. 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.
- (e) Tamp planting soil around root system in layers of 150 mm eliminating air voids. Frozen or saturated planting soil is unacceptable. When 2/3 of planting soil has been placed, fill hole with water. After water has been completely penetrated into soil, complete backfilling.
- (f) Build 100 mm deep saucer around outer edge of hole to assist with maintenance watering.

- (g) When planting is completed, 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.

E21.4.5 Pruning

- (a) Prune trees after planting as noted below. Postpone pruning of those trees where heavy bleeding may occur, until in full leaf. Employ clean sharp tools and make cuts flush with main branch, smooth and sloping as to prevent accumulation of water.
- (b) Remove projecting stumps on trunks or main branches. Remove dead and injured branches and branches that rub causing damage to bark. Trim trees without changing their natural shape. Do not damage lead branches or remove smaller twigs along main branches.
- (c) Prune Deciduous Trees to min 2.4 m clear stem height.

E21.4.6 Maintenance

- (a) Refer to E25 for Extended Maintenance of all plant material (Two Year Maintenance) Extended maintenance to begin when plant material has been accepted and Certificate of Total Performance has been issued.
- (b) After completion of planting operation to the satisfaction of the Contract Administrator, the Contractor shall be responsible for the maintenance of the plant material during establishment period until accepted and Certificate of Total Performance has been issued.
- (c) Replace any dead or damaged plant material during the maintenance period, including replacement of vandalized material.
- (d) Water sufficiently to maintain optimum growing conditions. Ensure adequate moisture in root zone at freeze-up.

E21.4.7 Maintenance Materials

- (a) 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.

E21.4.8 Personnel

- (a) The Contractor shall provide all necessary personnel for the ongoing maintenance operations.
- (b) 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.

E21.4.9 Maintenance Methods

- (a) Watering Shrubs and Trees
 - (i) All trees and shrubs shall be watered as required.
 - (ii) 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 area 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.
 - (iii) During the hot season soak thoroughly approximately every week to ten days, depending on soil conditions. Take soil sample periodically, using an earth auger, until the maintenance personnel are familiar with soil conditions.
 - (iv) If soil is dry because of insufficient rain in the late fall, water plant material sufficiently to soak the entire root area before the earth freezes.

- (b) Fertilizing Shrubs and Trees
 - (i) Fertilizing shrub beds using a 10-6-4 mixture of fertilizer.
 - (ii) Fertilize trees using a 10-6-4 mixture of fertilizer.
- (c) Cultivation
 - (i) Cultivate planters and tree pits to keep the top layer of soil loose, friable and free of weeds. Never cultivate soil more than 50 mm. Maintain 100 mm depth of wood chip mulch in planters and planting beds.
- (d) Spraying
 - (i) Spray trees, shrubs, perennials and annuals to control insect pests and diseases. Use horticulturally recommended compounds specific for the problem to be contained. Do not use DDT or sprays prohibited by Agriculture Canada.
- (e) Adjustments
 - (i) Make adjustments requested by the Contract Administrator including straightening.

E21.5 Method of Measurement

E21.5.1 Supply and Installation of Plant Material will be measured on a unit basis. The number of units to be paid shall be the total number of units supplied and installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

E21.6 Basis of Payment

E21.6.1 Supply and Installation of Plant Material will be paid for at the Contract Unit Price per unit for "Supply and Installation of Plant Material", 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.

E22. EXTENDED MAINTENANCE OF TREES AND PLANT MATERIAL

E22.1 Description

E22.1.1 This Specification shall deal with the maintenance of the trees for two (2) years calendar years after the date of the Certificate of Total Performance.

E22.2 Scope of the Work

E22.2.1 The following generally describes the scope of this Specification:

- (a) Maintenance of Trees.

E22.3 Materials

E22.3.1 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.

E22.3.2 Personnel

- (a) The Contractor shall provide all necessary personnel for the ongoing maintenance operations.

E22.3.3 Areas

- (a) The following areas shall be part of the maintenance jurisdiction:
 - (i) The trees as indicated on the Construction Drawings.

E22.4 Work Included

E22.4.1 Water Trees

- (a) All trees 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.

E22.4.2 Fertilizing, Pruning and Spraying Deciduous Trees

- (a) 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 trees to control insect pests and diseases. Use horticulturally recommended compounds specific for the problem to be contained.

E22.4.3 Tighten, or remove, turnbuckles or guy wires for trees as required or directed by the Contract Administrator.

E22.4.4 Straighten trees as required and directed by the Contract Administrator.

E22.4.5 General Maintenance

- (a) Clean up litter and debris in tree cover bi-weekly.

E22.4.6 Maintenance of Trees and Shrubs

- (a) From time of acceptance by Contract Administrator to end of warranty period, perform following maintenance operations:
 - (i) Water to maintain soil moisture conditions for optimum growth and health of plant materials without causing erosion.
 - (ii) Reform damaged watering saucers.
 - (iii) Remove weeds monthly.
 - (iv) Replace or respread damaged, missing or distributed mulch.
 - (v) For non-mulched areas, cultivate monthly to keep top layer of soil friable.
 - (vi) Apply pesticides in accordance with Federal, Provincial and Municipal regulations as and when required to control insects, fungus and disease. Obtain product approval from Contract Administrator prior to application.
 - (vii) Apply fertilizer in early spring based on soil test results.
 - (viii) Remove dead, broken, or hazardous branches from plant material.
 - (ix) Keep tree supports in proper repair and adjustment.
 - (x) Remove tree supports and level watering saucers at end of warranty period.
 - (xi) Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.
 - (xii) Submit monthly written reports to Contract Administrator identifying:
 - i) Maintenance Work carried out.
 - ii) Development and condition of plant material.
 - iii) Preventative or corrective measures required which are outside Contractor's responsibility.

E22.5 Guarantee of Work

E22.5.1 The Contractor shall agree and guarantee to replace and replant any nursery stock found dead or in poor condition at the completion of the 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.

E22.6 Method of Measurement

E22.6.1 Extended Maintenance will be on a lump sum basis, in accordance with the Construction Drawings and as accepted by the Contract Administrator.

E22.7 Basis of Payment

E22.7.1 Payment for Extended Maintenance as specified under this section shall be on a lump sum basis. Price bid for extended maintenance of shrubs shall be separated from price bid for extended maintenance of shrubs. Payment shall be made in two equal instalments (50% each), payable on satisfactory completion on the first and second anniversary of the recognized date of completion for Two Years Maintenance.

E22.8 Acceptance

E22.8.1 Upon the second anniversary of the recognized date of completion, or similarly 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.