



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 466-2008

**McGILLIVRAY BOULEVARD 120 m WEST OF KENASTON BOULEVARD TO
WAVERLEY STREET, WIDENING AND REHABILITATION**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

McGILLIVRAY BOULEVARD 120 m WEST OF KENASTON BOULEVARD TO WAVERLEY STREET, WIDENING AND REHABILITATION

B2. SUBMISSION DEADLINE

- B2.1 The Submission Deadline is 12:00 noon Winnipeg time, July 22, 2008.
- B2.2 Bids determined by the Manager of Materials to have been received later than the Submission Deadline will not be accepted and will be returned upon request.
- B2.3 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

B3. ENQUIRIES

- B3.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.
- B3.2 If the Bidder finds errors, discrepancies or omissions in the Bid Opportunity, or is unsure of the meaning or intent of any provision therein, the Bidder shall notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.
- B3.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator to all Bidders by issuing an addendum.
- B3.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator only to the Bidder who made the enquiry.
- B3.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B3 unless that response or interpretation is provided by the Contract Administrator in writing.

B4. ADDENDA

- B4.1 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.
- B4.2 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.
- B4.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Division internet site at <http://www.winnipeg.ca/matmgt>.
- B4.2.2 The Bidder is responsible for ensuring that he has received all addenda and is advised to check the Materials Management Division internet website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B4.3 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.

B5. SUBSTITUTES

- B5.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.
- B5.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B5.3 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.
- B5.4 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.
- B5.5 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.
- B5.6 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.
- B5.6.1 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.
- B5.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B5.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B14.
- B5.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

B6. BID COMPONENTS

- B6.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
 - (b) Form B: Prices, hard copy;

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

B6.2 Further to B6.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B5.

B6.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Bid.

B6.4 The Bid shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.

B6.4.1 Samples or other components of the Bid which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid.

B6.4.2 A hard copy of Form B: Prices must be submitted with the Bid. If there is any discrepancy between the Adobe PDF version of Form B: Prices and the Microsoft Excel version of Form B: Prices, the PDF version shall take precedence.

B6.5 Bidders are advised not to include any information/literature except as requested in accordance with B6.1.

B6.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, may result in the Bid being determined to be non-responsive.

B6.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.

B6.8 Bids shall be submitted to:
The City of Winnipeg
Corporate Finance Department
Materials Management Division
185 King Street, Main Floor
Winnipeg MB R3B 1J1

B7. BID

B7.1 The Bidder shall complete Form A: Bid, making all required entries.

B7.2 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.

B7.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B7.2.

B7.3 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.

- B7.4 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, shall 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.

B7.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.

B7.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

B8. PRICES

B8.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B8.1.1 For the convenience of Bidders, and pursuant to B6.4.2 and B14.4.3, an electronic spreadsheet Form B: Prices in Microsoft Excel (.xls) format is available along with the Adobe PDF documents for this Bid Opportunity on the Bid Opportunities page at the Materials Management Division internet website at <http://www.winnipeg.ca/matmgt>.

B8.2 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.

B8.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B9. QUALIFICATION

B9.1 The Bidder shall:

- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba; and
- (b) be financially capable of carrying out the terms of the Contract; and
- (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.

B9.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

B9.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) have successfully carried out work similar in nature, scope and value to the Work; and

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

B9.4 Further to B9.3(c), the Bidder shall, within three (3) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

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

B9.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B9.6 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B10. BID SECURITY

B10.1 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.

B10.1.1 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.

B10.1.2 All signatures on bid securities shall be original.

B10.1.3 The Bidder shall sign the Bid Bond.

B10.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.

B10.2 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.

B10.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B10.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.

B10.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.

B10.3 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.

B11. OPENING OF BIDS AND RELEASE OF INFORMATION

B11.1 Bids will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Division, or in such other office as may be designated by the Manager of Materials.

B11.1.1 Bidders or their representatives may attend.

B11.1.2 Bids determined by the Manager of Materials, or his designate, to not include the bid security specified in B10 will not be read out.

B11.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division internet site at <http://www.winnipeg.ca/matmgt>.

B11.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract Amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division internet site at <http://www.winnipeg.ca/matmgt>.

B11.4 The Bidder is advised that any information contained in any Bid may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

B12. IRREVOCABLE BID

B12.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.

B12.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly executed and the performance security furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid.

B13. WITHDRAWAL OF BIDS

B13.1 A Bidder may withdraw his Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

B13.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.

B13.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid, and only such person, has authority to give notice of withdrawal.

B13.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:

- (a) retain the Bid until after the Submission Deadline has elapsed;

- (b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid; and
- (c) if the notice has been given by any one of the persons specified in B13.1.3(b), declare the Bid withdrawn.

B13.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B12.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law, including the right to retain the Bidder's bid security.

B14. EVALUATION OF BIDS

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

- (a) compliance by the Bidder with the requirements of the Bid Opportunity (pass/fail);
- (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B9 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B5.

B14.2 Further to B14.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities, if the interests of the City so require.

B14.3 Further to B14.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid or in other information required to be submitted, that he is responsible and qualified.

B14.4 Further to B14.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.

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

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

B14.4.3 The electronic Form B: Prices and the formulas imbedded in that spreadsheet are only provided for the convenience of Bidders. The City makes no representations or warranties as to the correctness of the imbedded formulas. It is the Bidder's responsibility to ensure the extensions of the unit prices and the sum of Total Bid Price performed as a function of the formulas within the electronic Form B: Prices are correct.

B15. AWARD OF CONTRACT

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

B15.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.

- B15.2.1 Without limiting the generality of B15.2, the City will have no obligation to award a Contract where:
- (a) the prices exceed the available City funds for the Work;
 - (b) the prices are materially in excess of the prices received for similar work in the past;
 - (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
 - (d) only one Bid is received; or
 - (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.
- B15.3 Subject to B15.2, where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid.
- B15.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

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

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

D2.1 The Work to be done under the Contract shall consist of:

- (a) New Pavement Construction
 - (i) Westbound McGillivray Boulevard from 120 metres west of Kenaston Boulevard to Waverley Street
- (b) Pavement Rehabilitation
 - (i) Eastbound McGillivray Boulevard from 120 metres west of Kenaston Boulevard to Waverley Street

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

- (a) New Pavement Construction
 - (i) Topsoil stripping, excavation and subgrade compaction
 - (ii) Installation of catchbasins, culverts and sewer service pipe
 - (iii) Placement of separation/reinforcement fabric
 - (iv) Subbase and base course construction
 - (v) Construction of 250 mm plain dowelled concrete pavement (utilizing slip-form paving equipment)
 - (vi) Construction of splash strip (180 mm height)
 - (vii) Construction of asphalt shoulders (100 mm thickness)
 - (viii) Construction of asphalt multi-use path
 - (ix) Landscaping
- (b) Pavement Rehabilitation
 - (i) Planning existing asphalt overlay
 - (ii) Full depth concrete joint and slab repairs
 - (iii) Construction of splash strips (150 mm height) complete with 230 mm concrete pavement widening tied to existing concrete lanes where necessary
 - (iv) Construction of 230 mm plain dowelled concrete turning lanes
 - (v) Placement of asphalt overlay (average thickness 90 mm in gutter lane, 150 mm in median lane)
 - (vi) Construction of asphalt shoulders (100 mm thickness)
 - (vii) Landscaping

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is UMA Engineering Ltd., represented by:

Wayne Jaworski, C.E.T.
Senior Design Technologist
1479 Buffalo Place, Winnipeg, MB R3T 1L7
Telephone No. (204) 284-0580
Facsimile No. (204) 475-3646

D3.2 At the pre-construction meeting, Mr. Jaworski 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.

D4.2 At least two (2) business days prior to the commencement of any Work on the site, the Contractor shall provide the Contract Administrator with a phone number where the supervisor identified in D4.1 or an alternate can be contacted twenty-four (24) hours a day to respond to an emergency.

D5. NOTICES

D5.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.

D5.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D5.3, D5.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D3.1.

D5.3 Notwithstanding C21.3, 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 Financial Officer
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
Internal Services Department
Legal Services Division
Attn: City Solicitor
185 King Street, 3rd Floor
Winnipeg MB R3B 1J1
Facsimile No.: (204) 947-9155

D6. FURNISHING OF DOCUMENTS

D6.1 Upon award of the Contract, the Contractor will be provided with five (5) complete sets of the Bid Opportunity. If the Contractor requires additional sets of the Bid Opportunity, they will be supplied to him at cost.

SUBMISSIONS

D7. AUTHORITY TO CARRY ON BUSINESS

D7.1 The Contractor shall be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba, or if the Contractor does not carry on business in Manitoba, in the jurisdiction where the Contractor does carry on business, throughout the term of the Contract, and shall provide the Contract Administrator with evidence thereof upon request.

D8. SAFE WORK PLAN

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

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

D9. INSURANCE

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

- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability, broad form property damage cover and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
- (b) automobile liability insurance for owned automobiles used for or in connection with the Work in the amount of at least two million dollars (\$2,000,000.00) at all times during the performance of the Work and until the date of Total Performance;
- (c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation.

D9.2 Deductibles shall be borne by the Contractor.

D9.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in the C4.1 for the return of the executed Contract.

D9.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

D10. PERFORMANCE SECURITY

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

- (a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; or
- (b) an irrevocable standby letter of credit issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in

the form attached to these Supplemental Conditions (Form H2: Irrevocable Standby Letter of Credit), in the amount of fifty percent (50%) of the Contract Price; or

- (c) a certified cheque or draft payable to "The City of Winnipeg", drawn on a bank or other financial institution registered to conduct business in Manitoba, in the amount of fifty percent (50%) of the Contract Price.

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

D10.2 If the bid security provided in his Bid was not a certified cheque or draft pursuant to B10.1(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 and in no event later than the date specified in the C4.1 for the return of the executed Contract.

D11. SUBCONTRACTOR LIST

D11.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at or prior to a pre-construction meeting, or 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 C4.1 for the return of the executed Contract.

D12. DETAILED WORK SCHEDULE

D12.1 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 the General Conditions for the return of the executed Contract.

D12.2 The detailed work schedule shall consist of the following:

- (a) a Gantt chart for the Work acceptable to the Contract Administrator.

D12.3 Further to D12.2 (a), the Gantt chart shall clearly identify the start and completion dates of all activities/tasks making up the Work. The Gantt chart shall show the time on a weekly basis, required to carry out the Work. The time shall be on the horizontal axis, and the Work on the vertical axis.

SCHEDULE OF WORK

D13. COMMENCEMENT

D13.1 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.

D13.2 The Contractor shall not commence any Work on the Site until:

- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D7;
 - (ii) evidence of the workers compensation coverage specified in C6.15;
 - (iii) the twenty-four (24) hour emergency response phone number specified in D4.2.
 - (iv) the Safe Work Plan specified in D8;
 - (v) evidence of the insurance specified in D9;
 - (vi) the performance security specified in D10;
 - (vii) the subcontractor list specified in D11;

- (viii) the detailed work schedule specified in D12; and
 - (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.
- D13.3 The Contractor shall commence the Work on the Site within seven (7) working days of receipt of the letter of intent.

D14. RESTRICTED WORK HOURS

- D14.1 Further to clause 3.10 of CW 1130, the Contractor shall require written permission forty-eight (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.
- D14.2 In accordance with the Manual of Temporary Traffic Control, Sections 2.03, 2.04, 2.05 and 2.06, should the Traffic Management Branch of the Public Works Department require that work on Regional Streets be carried out at night or on Sundays or on public holidays, where permitted by the City of Winnipeg Police Department, or that work be restricted or suspended during peak traffic hours, no additional compensation will be considered to meet these requirements.

D15. WORK BY OTHERS

- D15.1 Work by others on or near the Site will include but not necessarily be limited to:
- (a) Manitoba Hydro – new street lighting poles and cable and manhole adjustments;
 - (b) Manitoba Hydro Gas Division – miscellaneous rock wrapping and lowering of gas main and services as necessary.
 - (c) MTS – miscellaneous relocations and manhole adjustments.
 - (d) Shaw – miscellaneous relocations.
 - (e) Pembina Trails School Division – miscellaneous relocation of fibre optic cable.
 - (f) City of Winnipeg Traffic Services – traffic signage and line painting.
 - (g) City of Winnipeg Traffic Signals – temporary and permanent signals work.
 - (h) City of Winnipeg Geomatics Branch – various Works on survey monuments.
 - (i) Affiliated Computer Services Inc. (ACS) – Removal of intersection safety camera equipment at McGillivray Boulevard and Kenaston Boulevard intersection.
- D15.2 The Contractor Administrator will attempt to arrange and coordinate Work to be performed by others so that such Work does not interfere with the Work and Schedule of the Contractor. Where Work by others interferes, as determined by the Contract Administrator, with the Contractor's planned Work, the Contractor shall modify his plans and do other Work. Unless the Contract Administrator determines that there was no opportunity for the Contractor to do a similar amount of Work no consideration will be made to extending the Contract time.

D16. SEQUENCE OF WORK

- D16.1 Further to C6.1, the recommended sequence of work is provided in Appendix 'B'.
- D16.2 Generally, the recommended sequence of work is as follows:
- (a) In 2008, construct the new westbound lanes of McGillivray Boulevard excluding the Kenaston Boulevard intersection. Traffic will remain on the existing lanes throughout 2008.
 - (b) At the beginning of the 2009 construction season, westbound traffic shall be placed on the newly constructed lanes at Waverley Street and detoured back to their existing alignment east of Kenaston Boulevard. This allows the rehabilitation of the existing eastbound lanes to begin and construction within the Kenaston Boulevard intersection to take place.

D17. SUBSTANTIAL PERFORMANCE

- D17.1 The Contractor shall achieve Substantial Performance by September 11, 2009.
- D17.2 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 re-inspected.
- D17.3 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.

D18. TOTAL PERFORMANCE

- D18.1 The Contractor shall achieve Total Performance by September 25, 2009.
- D18.2 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 re-inspected.
- D18.3 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.

D19. LIQUIDATED DAMAGES

- D19.1 If the Contractor fails to achieve Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Calendar Day for each and every Calendar Day following the days fixed herein for same during which such failure continues:
- (a) Substantial Performance – Three Thousand Dollars dollars (\$3,000);
 - (b) Total Performance – One Thousand Dollars dollars (\$1,000).
- D19.2 The amounts specified for liquidated damages in D19.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve critical stages, Substantial Performance or Total Performance by the days fixed herein for same.
- D19.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D20. SCHEDULED MAINTENANCE

- D20.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:
- (a) Initial landscape maintenance as specified in CW3510-R9 and CW3520-R7;
 - (b) Long-term landscape maintenance as specified in E24:
 - (i) General Plant material and planting bed maintenance;
 - (ii) General Sod Maintenance;
 - (iii) General Maintenance of Salt Tolerant Grass;
 - (iv) General Maintenance of Trefoil and Clover Areas;
 - (v) General Clean-up Operations;

- (c) Reflective crack maintenance during two year maintenance warranty period as specified in CW3250-R6;

D20.2 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

D21. JOB MEETINGS

D21.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

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

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

D22.1 Further to C6.24, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

WARRANTY

D23. WARRANTY

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

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

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

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

FORM H1: PERFORMANCE BOND
(See D10)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

_____ dollars (\$_____)

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

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

BID OPPORTUNITY NO. 466-2008

McGILLIVRAY BOULEVARD 120 m WEST OF KENASTON BOULEVARD TO WAVERLEY STREET,
WIDENING AND REHABILITATION
which is by reference made part hereof and is hereinafter referred to as the "Contract".

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

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

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

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

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

_____ day of _____, 20____.

SIGNED AND SEALED
in the presence of:

(Witness as to Principal if no seal)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

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

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

(Date)

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

RE: PERFORMANCE SECURITY – BID OPPORTUNITY NO. 466-2008

McGILLIVRAY BOULEVARD 120 m WEST OF KENASTON BOULEVARD TO WAVERLEY STREET,
WIDENING AND REHABILITATION

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

(Name of Contractor)

(Address of Contractor)

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

Canadian dollars.

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

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

Partial drawings are permitted.

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

(Address)

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

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

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

(Date)

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

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

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

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

FORM J: SUBCONTRACTOR LIST
(See D11)

McGILLIVRAY BOULEVARD 120 m WEST OF KENASTON BOULEVARD TO WAVERLEY STREET,
WIDENING AND REHABILITATION

<u>Portion of the Work</u>	<u>Name</u>	<u>Address</u>
SURFACE WORKS		
<i>Supply of Materials:</i>		
<i>Concrete</i>		
<i>Asphalt</i>		
<i>Base Course & Sub-Base</i>		
<i>Geotextile</i>		
<i>Sod & Seed</i>		
<i>Trees</i>		
<i>Installation/Placement:</i>		
<i>Excavation</i>		
<i>Concrete</i>		
<i>Asphalt</i>		
<i>Sodding & Seeding</i>		
<i>Tree Planting</i>		
<i>Reflective Crack Maintenance</i>		
UNDERGROUND WORKS:		
<i>Supply of Materials:</i>		
<i>Catchbasins</i>		
<i>Culverts</i>		
<i>Frames and Covers</i>		
<i>Concrete LDS</i>		
<i>PVC Sewer Service Pipe</i>		
<i>Installation/Placement:</i>		
<i>Catchbasins</i>		
<i>Culverts</i>		
<i>Concrete LDS</i>		
<i>PVC Sewer Service Pipe</i>		
OTHERS:		

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

E1.1 These Specifications shall apply to the Work.

E1.2 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.

E1.2.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division internet site at <http://www.winnipeg.ca/matmgt>.

E1.2.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.

E1.2.3 Further to C2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.

E1.3 The following are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
00	COVER SHEET	A1
01	KEY PLAN, DRAWING LIST, HORIZONTAL AND VERTICAL CONTROL	A1
02	HORIZONTAL GEOMETRY STA 1+050NM TO STA 1+550NM	A1
03	HORIZONTAL GEOMETRY STA 1+550NM TO STA 2+050NM	A1
04	HORIZONTAL GEOMETRY STA 2+050NM TO STA 2+550NM	A1
05	HORIZONTAL GEOMETRY STA 2+550NM TO STA 3+050NM	A1
06	HORIZONTAL GEOMETRY STA 3+050NM TO WAVERLEY STREET	A1
07	HORIZONTAL GEOMETRY KENASTON BOULEVARD STA 0+812.200EM TO STA 0+970EM & STA 1+090EM TO STA 1+300EM	A1
08	HORIZONTAL ALIGNMENT STA 1+050NM TO STA 1+300NM	A1
09	HORIZONTAL ALIGNMENT STA 1+300NM TO STA 1+550NM	A1
10	HORIZONTAL ALIGNMENT STA 1+550NM TO STA 1+800NM	A1
11	HORIZONTAL ALIGNMENT STA 1+800NM TO STA 2+050NM	A1
12	HORIZONTAL ALIGNMENT STA 2+050NM TO STA 2+300NM	A1
13	HORIZONTAL ALIGNMENT STA 2+300NM TO STA 2+550NM	A1
14	HORIZONTAL ALIGNMENT STA 2+550NM TO STA 2+800NM	A1
15	HORIZONTAL ALIGNMENT STA 2+800NM TO STA 3+050NM	A1
16	HORIZONTAL ALIGNMENT STA 3+050NM TO WAVERLEY STREET	A1
17	HORIZONTAL ALIGNMENT KENASTON BOULEVARD STA 0+812.200EM TO STA 0+970EM	A1
18	HORIZONTAL ALIGNMENT KENASTON BOULEVARD STA 1+090EM TO STA 1+300EM	A1

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
19	VERTICAL ALIGNMENT STA 1+050 TO STA 1+300	A1
20	VERTICAL ALIGNMENT STA 1+300 TO STA 1+550	A1
21	VERTICAL ALIGNMENT STA 1+550 TP STA 1+800	A1
22	VERTICAL ALIGNMENT STA 1+800 TO STA 2+050	A1
23	VERTICAL ALIGNMENT STA 2+050 TO STA 2+300	A1
24	VERTICAL ALIGNMENT STA 2+300 TO STA 2+550	A1
25	VERTICAL ALIGNMENT STA 2+550 TO STA 2+800	A1
26	VERTICAL ALIGNMENT STA 2+800 TO STA 3+050	A1
27	VERTICAL ALIGNMENT STA 3+050 TO WAVERLEY STREET	A1
28	VERTICAL ALIGNMENT KENASTON BOULEVARD STA 0+812.200EM TO STA 1+070EM	A1
29	VERTICAL ALIGNMENT KENASTON BOULEVARD STA 1+070EM TO STA 1+399.146EM	A1
30	CROSS SECTIONS A, B & C	A1
31	CROSS SECTIONS D, E & F	A1
32	DETAILS	A1
33	LANDSCAPE PLAN STA 1+050NM TO STA 1+300NM	A1
34	LANDSCAPE PLAN STA 1+300NM TO STA 1+550NM	A1
35	LANDSCAPE PLAN STA 1+550NM TO STA 1+800NM	A1
36	LANDSCAPE PLAN STA 1+800NM TO STA 2+050NM	A1
37	LANDSCAPE PLAN STA 2+050NM TO STA 2+300NM	A1
38	LANDSCAPE PLAN STA 2+300NM TO STA 2+550NM	A1
39	LANDSCAPE PLAN STA 2+550NM TO STA 2+800NM	A1
40	LANDSCAPE PLAN STA 2+800NM TO STA 3+050NM	A1
41	LANDSCAPE PLAN STA 3+050NM TO WAVERLEY STREET	A1
42	LANDSCAPE PLAN KENASTON BOULEVARD STA 0+812.200EM TO STA 0+970EM	A1
43	LANDSCAPE PLAN KENASTON BOULEVARD STA 1+090EM TO STA 1+300EM	A1
44	LANDSCAPE DETAILS	A1

E1.4 The following figures contained in Appendix 'B' are applicable to the Work:

<u>Figure No.</u>	<u>Figure Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
01	Staging Figure 1	A1
02	Staging Figure 2	A1
03	Staging Figure 3	A1
04	Staging Figure 4	A1
05	Staging Figure 5	A1
06	Staging Figure 6	A1
07	Staging Figure 7	A1
08	Staging Figure 8	A1
09	Staging Figure 9	A1

E2. GEOTECHNICAL REPORT

E2.1 Further to C3.1, the geotechnical report is provided to aid the Contractor's evaluation of the pavement structure and/or existing soil conditions. The geotechnical report is contained in Appendix 'A'.

E3. OFFICE FACILITIES

- E3.1 The Contractor shall supply office facilities meeting the following requirements:
- (a) The field office shall be for the exclusive use of the Contract Administrator.
 - (b) The building shall be conveniently located near the site of the Work.
 - (c) The building shall have a minimum floor area of 30 square metres, with 2 windows for cross ventilation and a door entrance with a suitable lock.
 - (d) The building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between either 16-18°C or 24-25°C.
 - (e) The building shall be adequately lighted with fluorescent fixtures and have a minimum of three wall outlets.
 - (f) The building shall be furnished with one desk, one drafting table, table 3 m x 1.2 m, one stool, one four drawer legal size filing cabinet, and a minimum of 12 chairs.
 - (g) A portable toilet shall be located near the field office building. The toilet shall have a locking door and be for the exclusive use of the Contract Administrator and other personnel from the City.
 - (h) The field office building and the portable toilet shall be cleaned on a weekly basis immediately prior to each site meeting. The Contract Administrator may request additional cleaning when he deems it necessary.
- E3.2 The Contractor shall be responsible for all installation and removal costs, all operating costs, and the general maintenance of the office facilities.
- E3.3 The office facilities will be provided from the date of the commencement of the Work to the date of Total Performance.

E4. PROTECTION OF EXISTING TREES

- E4.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing boulevard trees within the limits of the construction area:
- (a) The Contractor shall not stockpile materials and soil or park vehicles and equipment on boulevards within 2 metres of trees.
 - (b) Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 100 x 2400mm wood planks, or suitably protected as approved by the Contract Administrator.
 - (c) Excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of 1.5 times the diameter (measured in inches), with the outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation.
 - (d) Operation of equipment within the 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.
- E4.2 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.
- E4.3 No separate measurement or payment will be made for the protection of trees.

E4.4 Except as required in clause E4.1(c) and E4.1(e), Elm trees shall not be pruned at any time between April 1 and July 31.

E5. TRAFFIC CONTROL

E5.1 Further to clauses 3.6 and 3.7 of CW 1130-R1:

- (a) Where directed, the Contractor shall construct and maintain temporary asphalt ramps to alleviate vertical pavement obstructions such as manholes and planning drop-offs to the satisfaction of the Contract Administrator. No measurement for payment will be made for this work.
- (b) In accordance with the Manual of Temporary Traffic Control, the Contractor ("Agency" in the manual) shall make arrangements with the Traffic Services Section of the City of Winnipeg to place all temporary regulatory signs. The Contractor shall bear all costs associated with the placement of temporary traffic control devices by the Traffic Services Section of the City of Winnipeg in connection with the works undertaken by the Contractor.

E6. TRAFFIC MANAGEMENT

E6.1 Further to clause 3.7 of CW 1130-R1:

- E6.1.1 Maintain a minimum of one lane of traffic eastbound and one lane of traffic westbound at all times during construction;
- E6.1.2 Where left turn lanes exist, an additional lane to accommodate the left turn storage lane shall be maintained at all times.
- E6.1.3 North/South traffic at all intersections must be maintained during construction to allow for one lane of traffic in each direction to go straight through and where possible another lane in each direction to turn left. When no work is being performed in the intersection and providing it is safe for vehicles, north and south lane closures in the intersection will not be permitted.
- E6.1.4 Where possible, two north/south lanes shall be maintained for through traffic on Kenaston Boulevard between 07:00 – 09:00 and between 15:00 – 17:00, Monday to Friday.
- E6.1.5 Intersecting street and private approach access shall be maintained at all times.
- E6.1.6 Should the Contractor be unable to maintain pedestrian or vehicular access to a residence or business, he shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.
- E6.1.7 Pedestrian and ambulance/emergency vehicle access must be maintained at all times.
- E6.1.8 The extension of Linden Ridge Drive and it's opening to traffic shall occur after the westbound lanes of McGillivray Boulevard are opened to traffic.

E7. WATER USED BY CONTRACTOR

E7.1 Further to clause 3.7 of CW 1120-R1, the Contractor shall pay for all costs associated with obtaining water in accordance with the Waterworks By-law. Sewer charges will not be assessed for water obtained from a hydrant.

E8. SURFACE RESTORATIONS

E8.1 Further to clause 3.3 of CW 1130-R1, at the end of the 2008 construction season, the Contractor shall temporarily repair any Work commenced and not completed to the satisfaction of the Contract Administrator. The Contractor shall maintain the temporary repairs in a safe condition as determined by the Contract Administrator until permanent repairs are completed. The Contractor shall bear all costs associated with temporary repairs and their maintenance.

E9. INFRASTRUCTURE SIGNS

E9.1 The Contractor shall obtain infrastructure signs from the Traffic Services Sign Shop at 421 Osborne Street. The Contractor shall mount each sign securely to a rigid backing material approved by the Contract Administrator. The Contractor shall fasten each sign to a suitable support and erect and maintain one sign at each street as directed by the Contract Administrator. When the Contract Administrator considers the Work on the street complete, the Contractor shall remove and dispose of the signs and supports. No measurement for payment will be made for performing all operations herein described and all other items incidental to the Work described.

E10. RECYCLED CONCRETE BASE COURSE MATERIAL

DESCRIPTION

E10.1 General

E10.1.1 Further to CW 3110, this specification covers supply and placement of recycled concrete base course material for Full-Depth Partial Slab Patches (Class A, B, C, & D), miscellaneous concrete slabs and sidewalks.

E10.2 Definitions

E10.2.1 Deleterious material – are materials such as vegetation, organic material, wood, glass, plastic, metal, reinforcing steel, building rubble, brick, salvaged asphalt materials, clay, shale, and friable particles.

E10.3 Referenced Standard Construction Specifications

- (a) CW 3110 – Sub-Grade. Sub-Base and Base Course Construction.
- (b) CW 3230 – Full-Depth Patching of Existing Pavement Slabs and Joints.
- (c) CW 3235 – Renewal of Existing Miscellaneous Concrete Slabs.
- (d) CW 3325 – Portland Cement Concrete Sidewalk.

MATERIALS

E10.4 Recycled Concrete Base Course Material

E10.4.1 Recycled concrete base course material when used for Full-Depth Partial Slab Patches (Class A, B, C, & D), miscellaneous concrete slabs and sidewalks will be considered equal to granular or limestone base course material specified in Section 2.2 of CW 3110.

E10.4.2 Recycled concrete base course material will be approved by the Contract Administrator.

E10.4.3 Recycled concrete base course material will consist of sound durable particles produced by crushing, screening, and grading of recovered concrete materials, free from soft material that would disintegrate through decay or weathering.

E10.4.4 The recycled concrete base course material will be well graded and conform to the following grading requirements:

Recycled Concrete Base Course Material Grading Requirements

CANADIAN METRIC SIEVE SIZE	PERCENT OF TOTAL DRY WEIGHT PASSING EACH SIEVE
20 000	100%
5 000	40% - 70%
2 500	25% - 60%
315	8% - 25%
80	6% - 17%

- E10.4.5 Recycled concrete base course material when subjected to the abrasion test will have a loss of not more than 35% when tested in accordance with grading B of ASTM C131, Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
- E10.4.6 The amount of deleterious material will be limited to a maximum of two percent of the total dry weight.

CONSTRUCTION METHODS

- E10.5 Placement of Recycled Concrete Base Course Material
- E10.5.1 Place and compact recycled concrete base course material as a levelling course to a maximum thickness of 50 millimetres.
- E10.5.2 Spread materials uniformly to avoid segregation free of pockets of fine and coarse material.
- E10.5.3 Level and compact to the finished elevation. Compact to 100% Standard Proctor Density for Full-Depth Partial Slab Patches (Class A, B, C, & D) and 90% Standard Proctor Density for miscellaneous concrete slabs and sidewalks.
- E10.5.4 Maintain the finished material until the pavement or sidewalk is placed.

MEASUREMENT AND PAYMENT

- E10.6 Recycled Concrete Base Course Material
- E10.6.1 The supplying, placing and compaction of recycled concrete base course material will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for the "Supplying and Placing Base Course Material" as specified in accordance with CW 3110.
- E10.6.2 No measurement or payment will be made for material placed as a levelling course under miscellaneous concrete slabs and sidewalks where the costs are included in accordance with CW 3235 and CW 3325.
- E10.6.3 No measurement or payment will be made for materials rejected by the Contract Administrator.

E11. CONCRETE FLARED END SECTIONS

DESCRIPTION

- E11.1 General
- E11.1.1 This specification covers the installation of concrete flared end sections with safety grates on concrete culverts.
- E11.1.2 Referenced Standard Construction Specifications
(a) CW3610 – Installation of Culverts

MATERIALS

- E11.2 Concrete Flared End Section
- E11.2.1 Concrete flared end sections shall be supplied in accordance with the Drawings.
- E11.3 Safety Grate
- E11.3.1 Safety grates shall be supplied in accordance with the Drawings.

CONSTRUCTION METHODS

- E11.4 Concrete Flared End Section

E11.4.1 Concrete flared end sections including gaskets shall be installed on the ends of concrete culverts as shown on the Drawings or as directed by the Contract Administrator.

E11.5 Safety Grate

E11.5.1 Safety grates shall be installed on concrete flared end sections where shown on the Drawings or as directed by the Contract Administrator.

MEASUREMENT AND PAYMENT

E11.6 Concrete Flared End Section

E11.6.1 Concrete flared end sections with safety grates will be measured on a unit basis for each size of end section and paid for at the Contract Unit Price for "Items of Work" listed here below. The number to be paid for will be to the total number of units installed including gaskets in accordance with this specification, accepted and measured by the Contract Administrator.

Items of Work

Concrete Flared End Sections c/w safety grate

- (i) 450 mm
- (ii) 600 mm
- (iii) 900 mm

E12. INSTALLATION OF CULVERTS

DESCRIPTION

E12.1 General

E12.1.1 This specification shall amend and supplement City of Winnipeg Standard Construction Specification CW 3610-R3 "Installation of Culverts", and shall cover supply and installation of culverts.

E12.1.2 Referenced Standard Construction Specifications

- (a) CW 2030 – Excavation Bedding and Backfill
- (b) CW 3610- Installation of Culverts

E12.1.3 Referenced Standard Detail

- (a) SD 002 – Standard Trench and Excavation Backfill Classes.

MATERIALS

E12.2 Bedding and Backfill

E12.2.1 Bedding and initial backfill material shall consist of 20 mm limestone base, as specified in CW 2030, placed on a prepared subgrade and compacted to the thickness and density herein specified.

CONSTRUCTION METHODS

E12.3 Bevelled Ends

E12.3.1 Further to CW 3610, all CSP culvert ends shall be bevelled as shown on the Drawings.

E12.4 Bedding and Backfill

E12.4.1 The backfilling for culverts installed under proposed pavements and private approaches shall be Class 2 as shown in Standard Detail SD-002 and specified in CW 2030, except as noted below.

- E12.4.2 The following revisions for bedding and initial backfill apply to Class 2 and Class 4 backfill:
- (a) Limestone base material as previously specified shall be used for bedding and initial backfill as opposed to sand.
 - (b) A minimum thickness of 225 mm of compacted 20 mm limestone bedding shall be placed on the prepared subgrade. A 75 mm blanket of loose uniform bedding material shall then be placed on the compacted bedding to provide fill for the corrugations in the invert.
 - (c) The backfill material shall be placed in layers not exceeding 300 mm. Backfilling shall be carried out in such a manner as to obtain uniform compaction without soft spots. Compaction shall be 95% of the Standard Proctor Density.
 - (d) Manual placing and compaction of material shall be used to build up the backfill to encompass the lower part of the pipe. Backfill material shall be placed under the haunches by shovel and compacted firmly by power compaction ("jumping jack") equipment. Valleys of the corrugations and the area immediately next to the pipe must be compacted by hand operated methods. At no time shall heavy compaction equipment be brought closer than 1 m from the CSP.
 - (e) Backfill shall be so placed and mechanically compacted that the fill rises equally and simultaneously on both sides, including handwork next to the pipe. Layers shall be placed with equipment running parallel to the structure.
 - (f) When the fill on both sides of the pipe approaches the crown of the pipe, the same techniques of spreading shallow layers and compacting thoroughly shall be followed as the backfill covers the pipe. Light tamping equipment shall be used for the initial layers over the pipe.
 - (g) No distortion of the structure greater than 2% of the span or rise shall be allowed.
 - (h) No traffic of any sort shall be permitted over the structure until cover of a minimum depth of 300 mm is properly compacted in place. If the Contractor requires crossings by heavy construction equipment, a minimum of 0.6 m of compacted cover over a length of at least 7.3 m of the structure shall be provided at no extra cost to the City.
 - (i) All compaction equipment used shall be subject to the approval of the Contract Administrator.

MEASUREMENT AND PAYMENT

- E12.5 Bevelled Ends
- E12.5.1 There shall be no measurement or payment for bevelled ends. Bevelled ends shall be included in the payment for the supply and installation of CSP culverts.
- E12.5.2 The supply and installation of culverts will be measured and paid for in accordance with CW 3610.

E13. REMOVAL OF EXISTING CULVERTS

DESCRIPTION

- E13.1 General
- E13.1.1 This specification covers the removal of existing culverts.
- E13.1.2 Referenced Standard Construction Specifications
- (a) CW 2030- Excavation Bedding and Backfill

CONSTRUCTION METHODS

- E13.2 Removal of Existing Culverts

- E13.2.1 The Contractor shall remove and salvage existing culverts designated for removal within the limits of the Contract and as shown on the Drawings.
- E13.2.2 The excavation for the removal of existing culverts outside of proposed pavements shall be backfilled to Class 4 standards in accordance with CW 2030. The excavation for removal of existing culverts under proposed pavements shall be backfilled to Class 2 standards in accordance with CW 2030.
- E13.2.3 The culverts shall be removed so as not to damage the pipe sections. Where culverts are coupled, the sections shall be separated prior to removal.
- E13.2.4 Culverts that are deemed unsalvageable by the Contract Administrator shall be removed and disposed of off site.
- E13.2.5 Salvaged culverts shall be delivered to the City of Winnipeg, Public Works Department, South West District Yard, 1539 Waverley Street. Contact Keith Eccles (Cell: 794-4069) to arrange delivery.

MEASUREMENT AND PAYMENT

- E13.3 Removal of Existing Culverts
- E13.3.1 The removal of existing culverts will be measured on a length basis for each size of culvert and paid for at the Contract Unit Price for "Removal of Existing Culverts". Length to be paid for will be the total number of linear metres removed, measured horizontally at grade, in accordance with this specification, accepted and measured by the Contract Administrator.
- E13.3.2 Salvaging and delivery or disposal of the culverts shall be included in payment for "Removal of Existing Culverts" and no further payment shall be made.

E14. DITCH INLET GRATES

DESCRIPTION

- E14.1 General
- E14.1.1 This Specification covers the supply and installation of ditch inlet grates on catchbasins and catchpits.

MATERIALS

- E14.2 Ditch Inlet Gate
- E14.2.1 All steel shall be supplied in accordance with details on the Drawings. All steel shall be hot dip galvanized and all hardware shall be stainless steel. Ditch Inlet Grates shall be Shoppost Iron Works MK-A1 or approved equal.

CONSTRUCTION METHODS

- E14.3 Ditch Inlet Grates
- E14.3.1 The Contractor shall be required to supply and install ditch inlet grates on drainage inlets shown on the Drawings.
- E14.3.2 The ditch inlet grate shall be understood to include the supply and installation of all anchor steel, grate steel, and hardware. All concrete material shall be included in the unit price bid for the catchbasins.
- E14.3.3 The ditch inlet grate shall be securely fastened to the drainage inlets as shown on the Drawings and as approved by the Contract Administrator.
- E14.3.4 Any galvanized surfaces that are damaged shall be coated with a galvanizing compound approved by the Contract Administrator.

MEASUREMENT AND PAYMENT

E14.4 Ditch Inlet Grates

E14.4.1 The supply and installation of ditch inlet grates will not be measured for payment and shall be included in the payment for catchbasins or catchpits.

E15. ASPHALT REINFORCEMENT

DESCRIPTION

E15.1 General

E15.1.1 This Specification covers the placement of asphalt reinforcement.

MATERIALS

E15.2 Asphalt Reinforcement

E15.2.1 Asphalt reinforcement shall consist of fiberglass mesh meeting the following properties:

Property	Test Method	Unit	Value
Tensile Strength based on Component Strand Strength	Across Width D6637	kN/m	100
	Across Length D6637	kN/m	100
Elongation at Break	ASTM D6637	%	< 3
Melting Point	ASTM D276	°C	> 218
Mass/Unit Area	ASTM D5261-92	g/m ²	370
Roll Length		m	100
Roll Width		m	1.5
Roll Area		m ²	150
Grid Size		mm	12.5 x 12.5

CONSTRUCTION METHODS

E15.3 Placement of Asphalt Reinforcement

E15.3.1 Joints shown on the Drawings or as directed by the Contract Administrator to be reinforced shall be cleaned and filled in accordance with CW3250-R6. These joints range in width from 25 mm to 200 mm.

E15.3.2 Install asphalt reinforcement within the limits identified on the Drawings or as directed by the Contract Administrator. The reinforcing grid shall be installed between the first and second lifts of the asphalt overlay. Longitudinal and transverse overlay between rolls shall be 100 – 150 mm.

MEASUREMENT AND PAYMENT

E15.4 Asphalt Reinforcement

E15.4.1 The placement of asphalt reinforcement will be measured on an area basis and paid for at the Contract Unit Price for "Supply and Install Asphalt Reinforcement". The area to be paid for will be the total number of square metres of asphalt reinforcement supplied and installed in accordance with this Specification, accepted and measured by the Contract Administrator.

E15.4.2 The cleaning and filling of the existing joint shall be measured and paid for in accordance with CW3250-R6.

E16. CONCRETE PAVEMENT

DESCRIPTION

E16.1 General

- E16.1.1 This Specification supplements City of Winnipeg Standard Construction Specification CW 3310- Portland Cement Concrete Pavement Works.

CONSTRUCTION METHODS

E16.2 Dowel Assemblies

- E16.2.1 Dowel bars for 250 mm thick plain dowelled concrete pavement shall be 31.8 mm in diameter. Dowel bars for 230 mm thick plain dowelled concrete pavement shall be 28.6 mm in diameter.
- E16.2.2 Skewed transverse joints, where shown on the Drawings, shall be constructed on a longitudinal to transverse skew of 1:6. The dowels for the skewed joint shall be centred on the joint, and be placed parallel to the longitudinal joint. All other joints shall be constructed perpendicular to the direction of traffic.

E16.3 250 mm Plain Dowelled Concrete Pavement

- E16.3.1 The Contractor shall utilize a self-propelled slip form paving equipment capable of paving widths of 3.5 m, 7.4 m and 8.0 m.

E17. INSTALLATION OF INTERLOCKING PAVING STONES ON A LEAN CONCRETE BASE

DESCRIPTION

E17.1 General

- E17.1.1 This specification shall supplement and amend City of Winnipeg Standard Construction Specification CW 3335 "Installation of Interlocking Paving Stones on a Lean Concrete Base".
- E17.1.2 Referenced Standard Construction Specifications
(a) CW 3335- Installation of Interlocking Paving Stones on a Lean Concrete Base
- E17.1.3 Referenced Standard Detail
(a) SD-240B- Interlocking Paving Stones On Lean Concrete Base

MATERIALS

E17.2 Interlocking Paving Stones

- E17.2.1 Paving stones shall be Barkman Concrete "Victorian Pavers" as found in the Barkman Concrete Ltd. 2008 Catalogue. The first two outside courses shall be antique brown colour in a soldier course pattern. Inside courses shall be antique brown in colour and in a paving pattern #1.
- E17.2.2 Paving stones shall conform to the requirements of CAN3-A231.2, Precast Concrete Pavers.
- E17.2.3 Further to CAN3-A231.2.6.1.1, where concrete pavers are shipped for installation before the pavers are twenty-eight (28) days old, the average compressive strength of these pavers at the time of delivery to the work site shall be not less than 40 MPa.

E17.3 Other Materials

- E17.3.1 All other materials, including aggregates for the lean concrete mix, the lean concrete mix, bedding sand and filler sand shall be in accordance with CW 3335.

CONSTRUCTION METHODS

E17.4 Installation of Paving Stones on a Lean Concrete Base

E17.4.1 Install paving stones on a lean concrete base in accordance with CW 3335 and SD-240B.

MEASUREMENT AND PAYMENT

E17.5 Supply and Installation of Interlocking Paving Stones

E17.5.1 Supply and installation of interlocking paving stones shall be measured and paid for in accordance with CW 3335.

E17.6 Supply and Installation of Lean Concrete Base

E17.6.1 Supply and installation of lean concrete base shall be measured and paid for in accordance with CW 3335.

E18. SITE FURNISHINGS

DESCRIPTION

E18.1 Description

E18.1.1 This Specification shall cover all aspects of the supply and installation of benches and waste receptacles along the multi purpose pathway.

MATERIALS

E18.2 Benches

E18.2.1 Urbain Design "Public Place" Bench #194111, UltraPlast recycled plastic:

(a) 760mm long x 1800mm wide, with InfiniGuard Premium anti-corrosion system. Factory assembled, with in-ground mounting.

E18.2.2 Colour: Brown

E18.3 Trash Receptacle

E18.3.1 Urbain Design "Public Place" Trash Receptacle #184417, UltraPlast recycled plastic: black molded polyethylene cover with vinyl-coated cable and 254mm opening, complete with InfiniGuard Premium anti-corrosion system. Factory assembled, with in-ground mounting.

E18.3.2 Colour: Brown

E18.4 Urbain Design site furnishings available from Crozier Agencies, Winnipeg, MB; Tel.: 774-6084.

CONSTRUCTION METHODS

E18.5 Benches and Trash Receptacles

E18.5.1 Install benches and trash receptacles with in-ground mountings as indicated on the Construction Drawings.

METHOD OF MEASUREMENT

E18.6 Benches and Trash Receptacles

E18.6.1 Benches and trash receptacles will be measured on a unit basis for each item supplied and installed and accepted by the Contract Administrator.

BASIS OF PAYMENT

E18.7 Benches and Trash Receptacles

- E18.7.1 Benches and trash receptacles to be paid for at the Contract Unit Prices for “Benches” and “Waste Receptacles”, measured as herein specified, which price will be payment in full for supplying and installing site furnishings.

E19. SODDING

DESCRIPTION

E19.1 General

- E19.1.1 This specification shall amend and supplement City of Winnipeg Standard Construction Specification CW 3510-R9 “Sodding”, and shall cover all aspects of sod supply and installation, including preparation of finish grade, watering and rolling, and 30-day maintenance.
- E19.1.2 Referenced Standard Construction Specifications CW 3510- Sodding
- E19.1.3 Referenced Standard Details
(a) SD-243- Sodding Details

MATERIALS

E19.2 Turf Grass Sod

- E19.2.1 Turf grass sod shall conform to CW 3510-R9.
- E19.2.2 Sod shall be a mixture of 95% Kentucky bluegrass, using equal proportions of any three Class 2 cultivars, and 5% Creeping Red fescue.

CONSTRUCTION METHODS

- E19.3 Preparation of Finish Grade, Placement of Sod, Watering and Rolling and 30-Day Maintenance
- E19.3.1 Finish grading, sod placement, watering and rolling and 30-day maintenance shall conform to CW 3510-R9 and SD-243.
- E19.3.2 Install one width of sod, 600 mm, along all pavements following installation of topsoil or completion of soil amendments, and prior to installation of plant material and seed.

METHOD OF MEASUREMENT

E19.4 Turf Grass Sod

- E19.4.1 Measure sod greater than 600 mm width (c/w 100 mm imported topsoil) in accordance with CW 3510-R9.
- E19.4.2 Measure edge sod < or = 600 mm width with 50 mm imported or conditioned topsoil, or soil amendments, on an area basis for the number of square metres of sod, including 50 mm soil base.

BASIS OF PAYMENT

E19.5 Turf Grass Sod

- E19.5.1 Payment for supply and installation of sod, including 30-day maintenance before acceptance for long term maintenance will be in accordance with CW 3510-R9.
- E19.5.2 Payment shall be in accordance with the following:
- (a) 75% of quantity following supply and placement of sod, and
 - (b) 25% of quantity following termination of the 30 day maintenance period before acceptance for long term maintenance.

- E19.5.3 Payment for edge sod will be at the Contract Unit Price for "Edge Sod" which shall be compensation in full for supplying all materials and performing all operations specified, and all other items incidental to the Work of this Specification.

E20. SEEDING

DESCRIPTION

E20.1 General

- E20.1.1 This specification shall amend and supplement City of Winnipeg Standard Construction Specification CW 3520-R7 "Seeding", and shall cover all aspects of supply and installation of seed, including preparation of finish grade, hydro mulching, and maintenance.

E20.1.2 Referenced Standard Construction Specifications

- (a) CW 3520- Seeding

MATERIALS

E20.2 General

- E20.2.1 Provide the Contract Administrator with Certificates of Analysis and mix compositions for all seed mixes. Include supplier's name and telephone contact information, and percentages of each species and cultivar in each mix.

- E20.2.2 Obtain Contract Administrator's approval for any proposed adjustments to the seed mix species or cultivars.

E20.3 Trefoil and Clover Seed Mix (for future roadway areas)

- E20.3.1 Trefoil and Clover Seed Mix shall be a mixture of the following species and cultivars:

- (a) 40% Creeping Red fescue (*Festuca rubra*);
- (b) 20% Reubens Canada bluegrass (*Poa compressa* 'Reubens');
- (c) 15% Fiesta II Perennial ryegrass (*Lolium perenne* 'Fiesta II');
- (d) 10% White clover (*Trifolium repens*);
- (e) 10% Upstart Birdsfoot trefoil (*Lotus corniculatus* 'Upstart'), and
- (f) 5% Emerald Crown vetch (*Coronilla varia* 'Emerald').

E20.4 Salt Tolerant Seed Mix

- E20.4.1 Salt Tolerant seed mix shall conform to CW 3520-R7.

- E20.4.2 Salt Tolerant seed mix shall be a mixture of the following species:

- (a) 70% Fults Alkaligrass (*Puccinellia distans*);
- (b) 20% Audubon or Aberdeen Red fescue (*Festuca rubra*);
- (c) 10% Perennial Rye Grass (*Lolium perenne*);

E20.5 Trefoil and Vetch Over-seed Mix

- E20.5.1 Trefoil and Vetch Over-seed Mix shall be a blend of the 50% Birdsfoot trefoil and 50% Crown vetch.

E20.6 Cover Crop (Nurse Crop)

- E20.6.1 Use Annual ryegrass as a cover crop in all seeded areas.

E20.7 Herbicides and Insecticides

- E20.7.1 Herbicides and insecticides shall be in accordance with CW 3520-R7.

E20.8 Hydro Mulch

E20.8.1 Mulch, water and tackifier shall be in accordance with CW 3520-R7.

CONSTRUCTION METHODS

E20.9 Salt Tolerant Seed Mix : Site Topsoil; Imported Topsoil; Seeding, and Hydro Mulching, and Maintenance

E20.9.1 Seed with a Brillion Seeder, or equal, on 50 mm compacted depth of site topsoil, or imported topsoil, placed over scarified or pulverized sub-grade to a minimum depth of 50 mm except in areas within the edge of a tree canopy (or drip line) and conditioned in accordance with the Topsoil, Planting Soil, Soil Amendments and Finish Grading Specification in Salt Tolerant Seed areas. Preparation of seed bed as per CW 3520-R7.

E20.9.2 Seeding and hydro mulching, and maintenance of areas designated as "Salt Tolerant Mix" shall conform to CW 3520-R7:

- (a) Sow Salt Tolerant Seed Mix at 2.2 kg/100 square metres (220 kg/hectare), and
- (b) Sow cover crop at 0.6 kg/100 square metres.

E20.10 Seeding with Trefoil and Vetch Over-seed Mix

E20.10.1 Over-seed trefoil and vetch in designated sod areas 90 days after sod installation, or as instructed by the Contract Administrator, using a slit seeder or drill seeder.

E20.11 Maintenance of Areas Seeded with Salt-tolerant Seed Mix and Trefoil and Clover Seed Mix

E20.11.1 The Contractor shall water seeded and hydro mulched areas as required to obtain optimum soil moisture levels for germination and continued growth of flowers and grasses. Control the watering to prevent seed washouts.

E20.11.2 The Contractor shall mow native seed and seed mix areas, and Trefoil and Clover Seed Mix areas, once annually, in October, removing cut material that would smother grass and legumes.

E20.11.3 Additional mowing, at a height of 100 mm, shall be completed upon the direction of the Contract Administrator, as required to remove extensive weed growth and/or to maintain healthy growth of wildflowers and grasses.

E20.12 Chemical Weed Control

E20.12.1 The Contractor shall use chemical weed control, Roundup, 2-4 D or Diacamba, only as required to spot remove weeds in localized areas. Do not treat large areas seeded with trefoil, clover, vetch and wildflowers with chemical weed control agents following seeding operations, unless directed by the Contract Administrator.

E20.12.2 Use only chemicals approved by Agriculture Canada.

E20.13 Termination of Long-Term Maintenance Period

E20.13.1 The maintenance period shall be terminated after the following criteria have been met:

- (a) The certified seed sowed meets the requirements of CW 3520-R7;
- (b) The seeded area is free of debris, including leaves;
- (c) The seeded area has a firm, uniform and even surface;
- (d) Seeded grasses and legumous plants show healthy, vigorous growth;
- (e) The area is free of bare and dead spots and with less than 10 noxious weeds per 50 square metres;
- (f) The seeded area has sufficient growth density that bare spots do not exceed 5% of total surface area, and
- (g) Seeded areas are free of damaging insects.

METHOD OF MEASUREMENT

E20.14 Salt Tolerant Seed Mix

E20.14.1 Salt Tolerant seed mix with imported topsoil or conditioned site topsoil shall be measured on an area basis. The total area to be paid for shall be the number of square metres of salt tolerant seed mix seeded and maintained in accordance with this Specification, measured and accepted by the Contract Administrator.

E20.15 Trefoil and Vetch Over-seeding Mix

E20.15.1 Over-seeding with trefoil and vetch shall be measured on an area basis for the number of square metres of sod over-seeded with trefoil and vetch over-seed mixture. The total area to be paid for shall be the number of square metres over-seeded and maintained in accordance with this specification and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.

E20.15.2 No measurement shall be made for seed placed outside the limits of placement unless directed by the Contract Administrator.

E20.16 Nurse or Cover Crop Seeding

E20.16.1 There will be no separate measurement for nurse or cover crop seeding. Seeding of a nurse crop will be included in payment for other seeding operations.

E20.17 Herbicides and Insecticides

E20.17.1 There will be no separate measurement for materials, equipment and operations related to the use of herbicides and insecticides.

BASIS OF PAYMENT

E20.18 Salt Tolerant Seed Mix and Trefoil and Clover Seed Mix

E20.18.1 Supply, placement and maintenance of salt tolerant seed mix, and grass, and trefoil and clover seed mix will be paid for at the Contract Unit Prices for the "Items of Work" listed here below. Prices shall be payment in full for supplying all materials and performing all operations herein specified, and all other items incidental to the work in accordance with this specification and CW3510-R9.

ITEMS OF WORK

Seeding

(a) Salt Tolerant Seed Mix

(b) Trefoil and Clover Seed Mix

E20.19 Trefoil and Vetch Over-seeding

E20.19.1 Supply and over-seeding with trefoil and vetch over-seed mixture will be paid for at the Contract Unit Price for "Trefoil and Vetch Over-seeding", which price shall be payment in full for supplying all materials and performing all operations herein specified, and all other items incidental to the work of this specification.

E21. TREES, SHRUBS AND GROUND COVERS

DESCRIPTION

E21.1 General

E21.1.1 This specification covers the supply and installation of nursery-grown trees, shrubs and groundcover plantings in areas indicated on the Drawings, including preparation, digging, transport and planting, and maintenance.

E21.2 Nomenclature

E21.2.1 Nomenclature of specified nursery stock shall conform to the International Code of Nomenclature for Cultivated Plants and shall be in accordance with the approved scientific names given in the latest edition of Standardized Plant Names. The names of varieties not named therein are generally in conformity with the names accepted in the nursery trade.

E21.3 Source Quality Control

E21.3.1 All nursery stock supplied shall be nursery grown and of species and sizes as indicated on the Drawings. Nursery stock shall be No. 1 Grade material in accordance with the current edition of Landscape Canada's (CNTA) "Guide Specifications for Nursery Stock".

E21.3.2 Any nursery stock dug from native stands, wood lots, orchards, or neglected nurseries, which have not received proper cultural maintenance, shall be designated as "collected plants". Obtain permission of the Contract Administrator to use collected plants.

E21.3.3 The Contractor shall notify Contract Administrator of source of plant material at least seven (7) days in advance of shipment.

E21.3.4 Acceptance of plant material at source does not prevent rejection of same plant material on site prior to or after planting operations.

E21.3.5 Imported plant material must be accompanied with necessary permits and import licenses. Conform to federal and provincial regulations.

E21.4 Shipment and Pre-Planting Care

E21.4.1 Coordinate shipping of plants and excavation of holes to ensure minimum time lapse between digging and planting.

E21.4.2 Tie branches of trees and shrubs securely and protect plant material against abrasion, exposure and extreme temperature change during transit. Avoid binding of planting stock with rope or wire, which would damage bark, break branches or destroy natural shape of plant. Give full support to root balls, especially of large trees, during lifting.

E21.4.3 Cover plant foliage with tarpaulin, and protect bare roots by means of dampened straw, peat, saw dust or other acceptable material to prevent loss of moisture during transit and storage.

E21.4.4 Remove broken and damaged roots with sharp pruning shears. Make clean cut and cover cuts over 50 mm diameter with wound dressing.

E21.4.5 Keep roots moist and protect from sun and wind. Heel-in trees and shrubs that cannot be planted immediately in shaded areas; water well.

E21.5 Replacement

E21.5.1 During the first two (2) years following completion of planting operations, remove from site any plants that have died or failed to grow satisfactorily, as determined by the Contract Administrator. As an example, plant material installed in 2008 that has failed to grow satisfactorily and has not been replaced by October 31, 2009 would be required to be replaced in the Spring of 2010.

MATERIALS

E21.6 Water

E21.6.1 Water shall be potable and free of minerals that may be detrimental to plant growth.

E21.7 Fertilizer

E21.7.1 Fertilizer shall be slow release organic. Fertilizer shall contain N-P-K in ratio as recommended by soil test results from an approved agricultural soil testing laboratory.

E21.8 Root Ball Burlap

- E21.8.1 Root ball burlap shall be 150 g Hessian burlap.
- E21.9 Anti-desiccant
- E21.9.1 Anti-desiccant shall be wax-like emulsion to provide film over plant surfaces reducing evaporation but permeable enough to permit transpiration.
- E21.10 Wound Dressing
- E21.10.1 Wound dressing shall be horticultural accepted non-toxic, non-hardening emulsion.
- E21.11 Plant Material
- E21.11.1 All plant material specified for this project shall be containerized and/or ball and burlap nursery stock. All plants shall be from the Winnipeg area and the Oak-Aspen Forest Eco-region.
- E21.11.2 Comply with latest edition of the "Guide Specification for Nursery Stock", produced by Landscape Canada (CNTA), referring to quality, size and development of nursery-grown plant material and root balls.
- E21.11.3 Nursery stock shall be No. 1 grade trees, shrubs and vines.
- E21.11.4 All plant material shall be measured when branches are in their natural position. Height and spread dimensions specified in the Plant List on the Drawings refer to the main body of the plant, and not from branch tip to root base or from branch tip to branch tip. Where trees are measured by calliper (cal.), reference is made to the diameter of the trunk measured at 300 mm above ground as the tree stands properly planted in the nursery.
- E21.11.5 All containerized whips and herbaceous plant material shall have a minimum of one full year's growth. Roots shall be healthy, reaching the sides of the containers, and developed such that the root ball can be kept intact during transplanting. Roots shall not encircle each other to the extent of inhibiting plant growth.
- E21.11.6 Any plants designated as nursery stock but dug from native stands, wood lots, orchards, or neglected nurseries that have not received proper cultural maintenance, shall be designated as "collected stock". Material sources are to be approved by Contract Administrator prior to ordering or collecting. The Contractor shall provide all of the necessary nursery certificates to ensure that the plant species comply with this specification.
- E21.11.7 All trees shall have one, only, sturdy, reasonably straight and vertical trunk, and a well-balanced crown with fully developed leader, unless designated "multi-stem". All evergreens shall be symmetrically grown and branched from ground level, up.
- E21.11.8 Use trees, shrubs and groundcovers with structurally sound, strong fibrous root systems, and free of disease, insects, defects or injuries, including rodent damage, sun scald, frost cracks, abrasions or scars to the bark. Plants must have been root pruned regularly, but not later than one growing season prior to arrival on site.
- E21.11.9 All parts of the plants shall be moist and show live, green cambium tissue when cut.
- E21.11.10 At least one (1) plant of each variety supplied shall bear a tag showing both the botanical and common name of the plant.
- E21.11.11 Additional Plant Material Qualifications:
- (a) Imported Plant Material
 - (i) Plant material obtained from areas with milder climatic conditions from those of site acceptable only when moved to site prior to the breaking of buds in their original location and heeled-in in a protected area or placed in cold storage until conditions suitable for planting. Obtain Contract Administrator's approval to use imported plant material.
 - (b) Cold Storage

- (i) Approval required for plant material that has been held in cold storage.
- (c) Container-Grown Stock
 - (i) Acceptable if containers large enough for root development. Trees and shrubs must have grown in container for minimum of one growing season but not longer than two. Root system must be able to hold soil when removed from container. Plants that have become root bound are not acceptable. Container stock must have been fertilized with slow releasing fertilizer.
- (d) Balled and Burlapped Plant Material
 - (i) Deciduous trees in excess of 3 m height must have been dug with large firm ball. Root balls must include 75% of fibrous and feeder root system. This excludes use of native trees grown in light sandy or rocky soil. 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 diameter rope. Protect root balls against sudden changes in temperature and exposure to heavy rainfall.
- (e) Tree Spade Dug Material
 - (i) Obtain approval of the Contract Administrator for digging plant material with mechanized digging equipment, hydraulic spade or clam-shell type. Dig root balls to satisfy Landscape Canada (CNTA) standards. Lift root ball from hole, place in wire basket designed for purpose, line with burlap. Tie basket to ball with heavy rope. Take care not to injure trunk of tree with wire basket ties or rope.
- (f) Substitutions
 - (i) Substitutions to plant material as indicated on the Plant List will not be permitted unless written approval has been obtained as to type, variety and size prior to award of Contract. Plant substitutions must be of similar species and of equal size to those originally specified.

CONSTRUCTION METHODS

E21.12 Workmanship

- E21.12.1 The Contractor shall stake out location of trees, shrubs and planting beds as per the Drawings. Obtain Contract Administrator's approval prior to excavating.
- E21.12.2 The Contractor shall obtain clearances from all utilities, with respect to underground lines located in the areas to be excavated, prior to commencing planting operations.
- E21.12.3 The Contractor shall apply anti-desiccant in accordance with material manufacturer's instructions.
- E21.12.4 The Contractor shall coordinate planting operations; keep the site clean and planting holes drained, and immediately remove soil or debris spilled onto pavement.

E21.13 Planting Time

- E21.13.1 The Contractor shall plant deciduous plant material during dormant period before buds have broken. Plant material noted for spring planting only must be planted in dormant stage.
- E21.13.2 Plant material imported from region with warmer climatic conditions may only be planted in early spring.
- E21.13.3 When permission has been obtained to plant deciduous plant material after buds have broken, spray plants with anti-desiccant to slow down transpiration prior to transplanting.
- E21.13.4 When permission has been obtained, trees, shrubs and ground covers growing in containers may be planted throughout growing season.
- E21.13.5 Plant only under conditions that are conducive to health and physical conditions of plants.

E21.13.6 The Contractor shall provide the Contract Administrator with a planting schedule at least two weeks prior to planting operations. Extending planting operations over long period using limited crew will not be accepted.

E21.14 Excavations

E21.14.1 Shrub beds: excavate to minimum depth of 300 mm, as indicated on the Drawings. Individual shrubs shall be planted in 500 mm deep holes backfilled with planting soil mixture.

E21.14.2 Trees: excavate to depth such that the top of the root ball is even with existing grade, with a surface width of two times the diameter of the root ball. Backfill around trees with planting soil mixture.

E21.14.3 The sides of all tree pits shall be scarified to the depth of one shovel blade.

E21.14.4 Provide drainage for planting holes in heavy soil if natural drainage does not exist. Have method approved.

E21.14.5 Protect the bottoms of excavations against freezing.

E21.14.6 Remove water that enters excavations prior to planting. Ensure source of water is not ground water.

E21.15 Planting

E21.15.1 Trees shall be placed on undisturbed soil and to a depth equal to that at which they were originally growing at the nursery.

E21.15.2 For shrubs, loosen bottom of planting hole to depth of 150 to 200 mm. Cover bottom of each excavation with minimum of 150 mm of planting soil mixture.

E21.15.3 Plant trees, shrubs and groundcover vertically, with roots placed straight out in hole. Orient plant material to give best appearance in relation to structures, roads and walkways.

E21.15.4 Place plant material to depth equal to depth they were originally growing in nursery or in locations collected.

E21.15.5 Ball and burlap root 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-biodegradable wrappings must be removed.

E21.15.6 Tree spade excavated materials:

- (a) Tree spade planting shall be permitted only by approval of the Contract Administrator.
- (b) Dig tree pit with same mechanical equipment as used to dig plant material. Ensure hole dug is upright as possible. Place in hole a mixture of 40 L of planting soil and fertilizer mixed with water to soupy consistency. This will be forced up sides of ball as root ball is placed in hole.
- (c) Loosen bottom of planting hole to depth of 150 to 200 mm. Cover bottom of each excavation with minimum 150 mm topsoil mixture.

E21.15.6 Tamp planting soil mixture 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.

E21.15.7 Excavate 200 mm depth an additional 600 mm beyond planting pits around the perimeter of all tree planting pits, and fill with planting soil mixture.

E21.15.8 Construct 100 mm deep saucers around the outer edge of planting pits to assist with maintenance watering.

E21.15.9 When planting is completed apply slow release organic fertilizer at minimum rate of 12 kg/100 m for shrub beds or 50 g/mm of calliper for trees, or as recommended by the soil analysis. Mix fertilizer thoroughly with top layer of planting soil and water in well.

E21.16 Pruning

E21.16.1 Prune trees, shrubs and groundcover after planting, as indicated. 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. Remove projecting stumps on trunks or main branches. Remove dead and injured branches and branches that rub causing damage to bark. Trim trees and shrubs without changing their natural shape. Do not damage lead branches or remove smaller twigs along main branches.

E21.17 Standards

E21.17.1 All roots shall be cleanly cut; split roots are not acceptable.

E21.17.2 Branches and trunks shall be tied and protected; broken or abraded branches or trunks are not acceptable.

E21.17.3 Planting shall be protected from drying conditions; desiccated material not acceptable.

E21.17.4 All plants shall be free of insects and disease: galls, blight and other manifestations of insect infestation or disease not acceptable.

E21.18 Wood Chip Mulch

E21.18.1 All planting beds shall be covered with a 100 mm depth of wood chip mulch to the limits shown on the planting details.

E21.18.2 Wood chip mulch shall extend under all tree limbs, but shall not be installed within 150 mm of the tree trunk.

E21.18.3 The saucers of all trees not planted in beds shall be covered with a 100 mm depth of wood chip mulch.

E21.19 Maintenance

E21.19.1 Watering

- (a) Plant material shall be watered once a week for first four weeks following installation, and once every second week, thereafter. Ensure adequate moisture in root zone at freeze-up.

E21.19.2 Weeding

- (a) Keep mulched shrub beds and tree saucers weed-free by manually removing weeds during the maintenance period.

E21.19.3 Insects and Diseases

- (a) Spray plants to combat pests and diseases. Use organic chemical insecticides approved by Agriculture Canada.

E21.19.4 Adjustments

- (a) Make adjustments requested by the Contract Administrator, including straightening trees, tightening guy wires and removing tree stakes.

E21.19.5 Maintenance Period

- (a) Maintain plant material for a period of two years following acceptance to start maintenance period of planting operations, as determined by the Contract Administrator.

MEASUREMENT AND PAYMENT

E21.20 Trees, Shrubs and Vines

- E21.20.1 Supply and installation of trees and shrubs will be measured on a unit price basis for each tree, shrub and vine listed on the Plant List and paid for at the Contract Unit Price for each species and size shown on the Plant List. The number of trees and shrubs to be paid for will be the total number of trees and shrubs installed in accordance with this specification and accepted by the Contract Administrator, as computed by the Contract Administrator.
- E21.20.2 Supply and installation of fertilizer for plant material will be included in payment for the plant material.

E22. TOPSOIL, PLANTING SOIL, SOIL AMENDMENTS AND FINISH GRADING

DESCRIPTION

E22.1 General

- E22.1.1 This specification shall amend and supplement City of Winnipeg Standard Construction Specification CW 3540-R5 "Topsoil and Finish Grading for Establishment of Turf Areas", and shall cover supply, preparation and placement of topsoil, planting soil and soil amendments, including preparation of existing grade, finish grading and fertilizer application.
- E22.1.2 Referenced Standard Construction Specifications
(a) CW 3540- Topsoil and Finish Grading for Establishment of Turf Areas

MATERIALS

E22.2 Site Topsoil

- E22.2.1 Stockpiled on-site topsoil and imported topsoil shall conform to CW 3540-R5.

E22.3 Peatmoss

- E22.3.1 Peat moss shall be decomposed plant material, fairly elastic and homogenous, free of colloidal residue, wood, sulphur and iron; containing a minimum of 60% organic material by weight, with moisture content not exceeding 15%. Shredded particles shall not exceed 6 mm in size. Minimum pH value of peat shall be 4.5; maximum 6.0.

E22.4 Sand

- E22.4.1 Sand shall be hard, granular, sharp sand to CSA A82.56-M1976, well-washed and free of impurities, chemicals and organic matter.

E22.5 Bonemeal

- E22.5.1 Bonemeal shall be raw, finely ground with a minimum chemical analysis of 3% nitrogen and 20% phosphoric acid.

E22.6 Wood Chip Mulch

- E22.6.1 Wood chip mulch shall be chipped ash, maple, poplar, birch and other deciduous trees. Mulch shall be chipped to sizes ranging from 50mm to 100mm. Mulch may NOT contain stringy twigs and seed, free of non-organic material, wood preservatives or diseased wood. The mulch shall contain no more than 5% of the following materials in total: soil, sawdust, peatmoss, coniferous wood and needles.
- E22.6.2 The Contractor shall supply a wood chip mulch sample to the Contract Administrator for approval prior to installation.

E22.7 Fertilizer

E22.7.1 Chemical fertilizers shall have N-P-K compositions as recommended by an agricultural soil-testing laboratory approved by the Contract Administrator provided for each of the following:

- (a) Sod and Ditch Seed Mix (City Specification) with imported topsoil;
- (b) Ditch Seed Mix with site topsoil;
- (c) Horticultural trees and shrubs with planting soil mix;
- (d) Native grasses and wildflower seeding with soil amendment; and
- (e) Tiefoil and Clover Seed Mix with soil amendments.

E22.8 Chemical Application

E22.8.1 Roundup or similar chemical herbicides approved by Agriculture Canada shall be used only with the approval of the Contract Administrator.

E22.9 Erosion Control Blanket

E22.9.1 Erosion control blanket shall be North American Green C350 Reinforced Composite Mat, or equal: 100% coconut fibre matrix with three-dimensional UV-stabilized polypropylene netting structure. All nets shall have coloured thread stitched along both outer edges (50 to 125 mm from the edge) as an overlap guide to adjacent mats. Roll width: 2.0 m; length: 16.9 m. Roll weight; 16.8 kg.

E22.10 U-Staples

E22.10.1 Use U staples to anchor the reinforced composite mat to slopes.

E22.11 Straw Wattle

E22.11.1 Use Stenlog or other bio-degradable straw wattle (150 mm diameter).

E22.12 Plastic Edging

E22.12.1 Use heavy-duty 125 mm deep black PVC garden edging with rolled top.

CONSTRUCTION METHODS

E22.13 Imported Topsoil and Finish Grading

E22.13.1 Installation of imported topsoil in areas to receive sod (or turf grass seed), including preparation of existing grade, placing topsoil, applying fertilizer and finish grading shall conform to CW 3540-R5.

E22.14 Placing Stockpiled Topsoil

E22.14.1 After grading of boulevards, sideslopes and ditches, load, haul and place previously stockpiled topsoil in locations shown on the Drawings to a uniform depth of 50 mm.

E22.15 Conditioning Site Topsoil

E22.15.1 Conditioning of site topsoil shall involve the following operations:

- (a) Break up site topsoil, cross cultivate, using a disc or harrow to obtain a friable soil base for seeding;
- (b) Remove any stones, branches, large roots, debris or other material deleterious to obtaining smooth grass surfaces and good plant growth;
- (c) Mix in fertilizer as recommended by soil testing laboratory.

E22.15.2 Install imported or site topsoil to 50 mm compacted depth in areas to be seeded with Ditch Seed Mix.

E22.16 Planting Soil Mixture for Trees, Shrubs and Vines

E22.16.1 Planting soil mixture shall be a mix of 75% topsoil and 20% peatmoss, loose by volume. Incorporate 5% sand, or as required, to improve soil texture. Incorporate bonemeal at 3 kg/cubic metre of planting soil mixture.

E22.17 Construction of Planting Beds

E22.17.1 Excavate planting beds to a depth of 300 mm.

E22.17.2 Install planting soil mixture, loosely compacted, 300 mm deep in planting beds with a smooth top surface to match surrounding contours. Level planting soil mixture by hand around existing and newly planted trees and shrubs.

E22.17.3 Install 100 mm wood chip mulch in all beds following planting operations.

E22.18 Soil Amendment for Native Seeding

E22.18.1 Soil amendment for native grass and wildflower seeding, as well as Trefoil and Clover Mix shall consist of a mix of 60% peat moss and 40% sand, loose by volume.

E22.18.2 Cross-cultivate the entire area of soil base (clay) that is to receive soil amendments to a depth of 150 mm. Redo areas where equipment used for hauling and spreading has re-compacted sub-grade

E22.18.3 Spread 30 mm of peat moss and 20 mm sand over the area of soil amendments.

E22.18.4 Roto-till or disc the peat moss and sand into the top 100 to 125 mm of base material and mechanically roll to obtain a level surface.

E22.18.5 Grade to eliminate rough spots and low spots and to maintain positive drainage.

E22.18.6 Consolidate seedbed to required bulk density using equipment approved by the Contract Administrator. Leave surfaces smooth, uniform and firm against deep foot-printing.

E22.19 Erosion Control Blanket

E22.19.1 Install erosion control blanket in accordance with the Drawings and the manufacturer's specifications in all areas where slopes exceed 3:1.

E22.20 Straw Wattle

E22.20.1 Install 300 mm Stenlog or other straw wattle sediment control material in accordance with the manufacturer's specifications around all rip rap areas, drainage inlets and outlets, and catch basins within seeded areas.

E22.20.2 Install straw wattles so that no gaps exist between the soil and the bottom of the wattle, and the ends of adjacent wattles are overlapped 150 mm minimum to prevent water and sediment passing. Achieve a tight seal between the wattle segments.

E22.20.3 Dog leg terminal ends of straw wattle up the slope to prevent channeling of sedimentation.

E22.20.4 Use 300 mm wooden stakes to fasten straw wattle to the soil. Place stakes on each side of the straw wattle, lying across the natural fibre twine, spaced 1200 mm on centre. Leave 30 to 50 mm of wood stake exposed above the wattle.

E22.20.5 Avoid damage to wattles. Damaged areas of wattles should be cut and tied off, then treated as terminal ends.

E22.21 Plastic Edging

E22.21.1 Install 125 mm plastic edging with rolled top to separate planting beds from sod or seeded areas.

METHOD OF MEASUREMENT

E22.22 Imported Topsoil and Fine Grading

- E22.22.1 There shall be no separate measurement for work associated with imported topsoil and finish grading as described in this specification.
- E22.23 Placing Stockpiled Topsoil
- E22.23.1 Placing previously stockpiled site topsoil will be measured on a volume basis for the number of cubic metres of topsoil excavated from the stockpile and placed on boulevards, slopes, and ditches or graded areas as specified on the Drawings, accepted and measured by the Contract Administrator.
- E22.24 Conditioning of Site Topsoil
- E22.24.1 Conditioning of previously spread site topsoil will be measured on an area basis for the number of square metres of ditch and boulevard conditioned in accordance with the Drawings and this specification and accepted by the Contract Administrator, as computed by the Contract Administrator.
- E22.25 Planting Soil Mixture
- E22.25.1 Construction of planting beds, and supply and installation of planting soil mixture shall be measured on an area basis for the number of square metres of 300 mm depth planting bed constructed, complete with 300 mm depth planting soil mixture, all in accordance with the Drawings and this specification, and accepted by the Contract Administrator, as computed by the Contract Administrator.
- E22.25.2 There will be no separate measurement for planting soil mixture used in planting individual trees and shrubs that are not planted in beds.
- E22.26 Wood Chip Mulch
- E22.26.1 Supply and installation of wood chip mulch shall be measured on an area basis for the number of square metres of 100 mm wood chip mulch installed in planting beds in accordance with the Drawings and this specification, and accepted by the Contract Administrator, as computed by the Contract Administrator.
- E22.26.2 There will be no separate measurement for wood chip mulch used in individual trees saucers.
- E22.27 Soil Amendments for Native Seeding
- E22.27.1 Soil amendments shall be measured on an area basis for the number of square metres of soil base incorporating peat moss and sand in accordance with the Drawings and this specification, and accepted by the Contract Administrator, as computed by the Contract Administrator.
- E22.28 Erosion Control Blanket
- E22.28.1 Erosion control blanket will be measured on an area basis for the number of square metres of area covered by erosion control blanket in accordance with the Drawings and this specification, and accepted by the Contract Administrator, as computed by the Contract Administrator.
- E22.29 Straw Wattle
- E22.29.1 Straw wattle will be measured on a length basis for the number of linear metres of wattle installed in accordance with the Drawings and this specification, and accepted by the Contract Administrator, as computed by the Contract Administrator.
- E22.30 Plastic Edging
- E22.30.1 Plastic edging will be measured on a length basis for the number of linear metres of plastic edging installed in accordance with the Drawings and this specification, and accepted by the Contract Administrator, as computed by the Contract Administrator.

BASIS OF PAYMENT

E22.31 Conditioning of Site Topsoil

E22.31.1 Conditioning of site topsoil will be paid for at the Contract Unit Price for "Conditioning of Previously Spread Site Topsoil", which price shall be payment in full for supplying all labour, equipment and materials and performing all operations as herein specified, including finish grading, and all other work included in the work of this specification.

E22.32 Placing Stockpiled Topsoil

E22.32.1 Placing previously stockpiled site topsoil will be paid for at the Contract Unit Price for "Placing Stockpiled Topsoil", which price shall be payment in full for loading, hauling and placing the material and performing all operators herein specified, and all other items included in the work of this specification.

E22.33 Planting Soil Mixture

E22.33.1 Construction of planting beds and supply and installation of planting soil mixture will be paid for at the Contract Unit Price for "Planting Beds with Planting Soil Mixture", which price shall be payment in full for supplying all materials and performing all operations herein specified, and all other items included in the work of this specification.

E22.34 Wood Chip Mulch

E22.34.1 Supply and installation of wood chip mulch will be paid for at the Contract Unit Price for "Wood Chip Mulch", which price shall be payment in full for supplying all materials and performing all operations herein specified, and all other items included in the work of this specification.

E22.35 Soil Amendments for Native Seeding and Trefoil and Clover Seed Mix

E22.35.1 Soil amendments will be paid for at the Contract Unit Price for "Soil Amendments for Native Seeding and Trefoil and Clover Seed Mix", which price shall be payment in full for supplying all materials and performing all operations herein specified, and all other items included in the work of this specification.

E22.36 Erosion Control Blanket

E22.36.1 Erosion control blanket will be paid for the number at the Contract Unit Price for "Erosion Control Blanket", which price shall be payment in full for supplying all materials and performing all operations herein specified, and all other items included in the work of this specification.

E22.37 Straw Wattle

E22.37.1 Straw wattle will be paid for at the Contract Unit Price for "Straw Wattle", which price shall be payment in full for supplying all materials and performing all operations herein specified, and all other items included in the work of this specification.

E22.38 Plastic Edging

E22.38.1 Plastic edging will be paid for at the Contract Unit Price for "Plastic Edging", which price shall be payment in full for supplying all materials and performing all operations herein specified, and all other items incidental to the Work of this Specification.

E23. CHEMICAL CONTROL OF VEGETATION

DESCRIPTION

E23.1 General

E23.1.1 This specification covers the requirements for the application of herbicides for broad area weed control prior to seeding operations.

E23.2 Safety Requirements

- E23.2.1 Comply with Federal, Provincial, pesticide control regulations. Provide Material Safety Data sheets (MSDS) for all chemicals to be used.
- E23.2.2 Obtain Provincial Pesticide Applications License and any other permits and licenses necessary to complete work.
- E23.2.3 Comply with label directions on the use of herbicide products.
- E23.2.4 Comply with label directions as to ambient temperature ranges for application.

MATERIALS

E23.3 Delivery and Storage

- E23.3.1 Deliver, store and maintain packaged materials with manufacturer's seals and labels intact.
- E23.3.2 Prevent damage, adulteration and soiling of material during delivery, handling and storage.
- E23.3.3 Store material in accordance with label directions, including those on maximum and minimum storage temperatures.
- E23.3.4 Store herbicide products in original containers as supplied by manufacturer and keep sealed until used.
- E23.3.5 Store herbicide products in sheltered, well ventilated, controlled access location.
- E23.3.6 Do not store herbicides near feeds and food stuffs, agricultural plants, seeds, fungicides, insecticides, fertilizers or other agricultural chemicals.
- E23.3.7 Identify storage area as pesticide storage facility for fire protection purposes.
- E23.3.8 Post in a prominent place a list of medical and fire department telephone numbers.
- E23.3.9 Post in a prominent location on the outside of the storage area a list of products stored. Provide a copy of this list to fire department. Keep list up to date.

E23.4 Herbicides

- E23.4.1 Select appropriate herbicides to achieve specified control requirement. Refer to Manitoba Guide to Chemical Weed Control.
- E23.4.2 Herbicide products used must be registered for such use by Agriculture Canada under Pest Control Products Act.
- E23.4.3 Do not use herbicides containing sodium chlorate.

E23.5 Adjuvants

- E23.5.1 Adjuvants shall be compatible with herbicide product used.

E23.6 Spray Equipment

- E23.6.1 Tank Spray: Do not use air-blast, mist or fog sprayer. Sprayer unit to meet the following requirements:
 - (a) Sprayer shall have adjustable height boom, hose and handgun for spot treatments, strainers and nozzles to produce spray pattern compatible with job.
 - (b) Tank shall be equipped with continuous agitation device.
 - (c) Pressure gauge and regulator shall be capable of maintaining uniform pressure between 100 and 450 kPa.
- E23.6.2 Backpack Sprayer: Sprayer shall have hose and handgun for spot treatment.
- E23.6.3 Equip spray tank loading pipe with check valve located within one metre of pump or hydrant to prevent siphoning from spray tank resulting in contamination of water source.

CONSTRUCTION METHODS

E23.7 Notice of Spray Operation

- E23.7.1 Post areas to be treated with signs placed at each road access and 100 m intervals around perimeter.
- E23.7.2 Indicate on signs that spray program is being implemented.
- E23.7.3 Put signs in place prior to commencement of spray operation and retain in place for 24 hours after spray operation is completed for each particular area.

E23.8 Environmental Protection

- E23.8.1 Application may continue only when wind velocities range between 2 and 10 km/h.
- E23.8.2 Do not spray when air turbulence will prevent uniform application.
- E23.8.3 Do not apply herbicides within 65 m of wells, rivers, streams, lakes, marshes or other environmentally sensitive areas unless otherwise sanctioned by provincial permit.
- E23.8.4 In case of herbicide spill, notify Contract Administrator and Provincial Ministry of Environment verbally immediately and subsequently in writing.
- E23.8.5 Do not allow drifting beyond target area. Use mechanical method to minimize herbicide drift.
- E23.8.6 When spraying adjacent to desirable vegetation, use sprayer fitted with protective hood suitable to prevent contamination or provide protective covering for such vegetation while spray is in progress.
- E23.8.7 Do not apply sterilants to slopes greater than 3 to 1 where killing vegetation would lead to erosion problems.

E23.9 Application of Herbicides

- E23.9.1 Treat areas as indicated with appropriate herbicides.
- E23.9.2 Calibrate equipment to achieve manufacturer's recommended application rates.
- E23.9.3 Confine herbicide application to areas as indicated to achieve specified control requirements.
- E23.9.4 Space successive passes to provide uniform coverage of treated area.
- E23.9.5 Use flagmen or other aids as necessary to indicate successive passes.
- E23.9.6 Where roots of desirable vegetation run under treatment area, use contact herbicides.
- E23.9.7 Ensure formulation and rate of sterilant will not lead to leaching outside treatment area.
- E23.9.8 Retreat areas in accordance with label directions until specified control requirements are achieved.
- E23.9.9 Use flags or other aids as necessary to indicate successive passes.

E23.10 Control Requirements

- E23.10.1 For weed control, achieve within 30 days of treatment, minimum of 90% kill of target plants without damaging installed plant material.
- E23.10.2 For soil sterilization, achieve within 12 months of treatment, 100% kill of vegetation.

E23.11 Waste Disposal

- E23.11.1 Triple rinse empty herbicide containers with diluent and add rinsate to spray mixture in tank.
- E23.11.2 Puncture and crush glass plastic metal containers making them unsuitable for further use.

E23.11.3 Dispose of containers in accordance with provincial requirements.

E23.11.4 Do not rinse or wash spray tanks and equipment on site.

E23.12 Report

E23.12.1 Within 7 days of work completion, submit to Contract Administrator a written report containing following information:

- (a) Full name and PCP Registration number of herbicide products used including adjuvants.
- (b) Types and makes of application equipment used.
- (c) Total amount of herbicide applied and rate of application expressed in kilograms of active ingredients per square metre and in kilograms of product per square metre.
- (d) Dates and times treatment commenced and terminated each day.
- (e) Summary of daily weather conditions during treatment.
- (f) Number of hectares completed each day.
- (g) Description of disposal techniques, total number of containers discarded for each chemical, exact location of disposal site.
- (h) Names of drivers, mixers and applicators.
- (i) Copies of provincial applicator's license and pesticide project application permit.

METHOD OF MEASUREMENT

E23.13 Chemical Control of Vegetation

E23.13.1 Broad scale application of chemical herbicides following topsoil installation will be paid for on an area basis. The area paid for shall be the total number of square metres sprayed in accordance with this specification and accepted by the Contract Administrator, as computed by the Contract Administrator.

E23.14 Spot Weed Control

E23.14.1 Application of chemical herbicides to control excessive weed growth in sod or seeded areas, in planting beds or around trees, following completion of planting operations will be included in payments for the general two-year maintenance requirements.

BASIS OF PAYMENT

E23.15 Chemical Control of Vegetation

E23.15.1 Broadscale application of chemical herbicide following topsoil installation will be paid for at the Contract Unit Price per square metre for "Chemical Application of Herbicide", which payment shall be considered compensation in full for supplying all of the labour, materials, equipment, tools and completing all operations herein described and all other work included in the work of this specification.

E24. LONG TERM SCHEDULED MAINTENANCE OF PLANT MATERIAL, SOD, SEEDED TURF PLANTING BEDS, GRASS AND OTHER SEEDED AREAS

DESCRIPTION

E24.1 General

E24.1.1 This specification covers the maintenance of plant material, planting beds, sod and seeded areas following acceptance of the work by the Contract Administrator.

E24.1.2 Referenced Standard Construction Specifications

- (a) CW 3510- Sodding

(b) CW 3520- Seeding

MATERIALS

E24.2 Materials

E24.2.1 The Contractor shall provide all necessary materials and equipment including: additional topsoil, soil ameliorates, mulches, sod, seed, fertilizers and pesticides, and tractors, mowers, hand mowers, trimmers, fertilizer spreaders pruning tools, water trucks, hoses, water metres and any other items necessary for the maintenance of the areas indicated in this specification.

CONSTRUCTION METHODS

E24.3 Provision of Maintenance Personnel

E24.3.1 The Contractor shall provide all necessary personnel for the ongoing maintenance operations.

E24.4 Capability of Personnel

E24.4.1 Maintenance 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.

E24.4.2 The maintenance foreman shall be familiar with native plantings and plant identification techniques.

E24.5 Maintenance Period

E24.5.1 Maintain plantings, sod, and seeded areas, including trefoil and clover areas, as well as unit paving for a period of two (2) years from the completion of the Maintenance for Establishment period, as determined by the Contract Administrator. Note: Completion shall not occur after October 30, or before May 15 of any year.

E24.6 Maintenance Schedule

E24.6.1 Provide the Contract Administrator a Schedule of Proposed Maintenance Activities for the two-year scheduled maintenance period, based on the requirements outlined herein. The scheduled maintenance period shall not commence until the schedule has been reviewed by the Contract Administrator.

E24.7 Recording Maintenance Operations

E24.7.1 The Contractor shall provide a detailed maintenance log, including but not limited to the following: hours of labour undertaken, number of personnel employed and equipment used. The log will itemize watering, spraying and any other maintenance work. Contractor shall submit logs monthly at regularly scheduled meetings with the Contract Administrator. Maintenance log will be included in payment for the maintenance work

E24.8 Traffic

E24.8.1 Do not conduct maintenance operations during peak traffic periods (Monday to Friday from 07:00 to 09:00 and from 15:30 to 17:30).

E24.9 Maintenance of Trees, Shrubs, and Planting Beds

E24.9.1 Maintain trees, shrubs, vines and planting beds as indicated in E21.19.

E24.9.2 Watering Trees, and Shrubs

(a) Newly planted trees, and shrubs require water to become established; however, watering too often can kill a plant. During the summer, if temperatures are fairly high and there has been no rainfall, water approximately once a week.

- (b) Contractor shall determine the need for watering by taking soil tests weekly with a one-inch auger. Take a test sample from both the planting soil and from the tree root balls by drilling to a minimum depth of 600 mm. The soil shall contain enough moisture to hold together when compressed in the hand, but shall not be muddy.
- (c) Testing shall be undertaken at a minimum of 10 sites per week at a minimum of 10m between sites. The installed plant material and bioengineering shall not be allowed to dry out to the detriment of the viability of the plant material. Contractor shall monitor and submit lots to the Contract Administrator monthly. Contractor shall water-in plant material works in late fall during the scheduled maintenance period.
- (d) Thoroughly soak coniferous trees prior to winter freeze-up.

E24.9.3 Fertilizing, Pruning and Spraying Deciduous Trees and Shrubs

- (a) Because of the specialized nature of such operations, employ a qualified local arborist. (Refer to E23)

E24.9.4 Pruning Deciduous Trees and Shrubs

- (a) Prune in accordance with E21.16 by thinning out unnecessary limbs or portions of limbs and by cutting back the terminal growth. Cut with pruning shears and with handsaws for limb-wood. When cutting the terminal growth, make the cuts one-quarter inch above the bud or lead twig. Where an entire limb is removed, make the cuts flush with the main stem or trunk.

E24.9.5 Cultivation

- (a) Cultivate only as required to reconstruct planting beds or tree saucers, or to remove significant weed growth.
- (b) Do not cultivate around plants with a shovel or spade. The tendency is to penetrate too deeply and cause root injury. Cultivate with a hoe or similar tool. When using a hoe never penetrate soil more than 50 mm. Maintain natural elevation of the surrounding area when cultivating. Create a gentle saucer to contain water around the tree root zone.
- (c) Avoid pyramiding soil around the base of any plant as this causes water to drain away and will encourage undesirable top root growth.
- (d) The boundary between the adjacent sod and soil saucer should be crisp and well formed.
- (e) Restore wood chip mulch when cultivation completed.

E24.9.6 Spraying

- (a) Spray trees and shrubs to control insect pests and diseases. Use horticultural compounds approved by Agriculture Canada, which are specific for the problem to be contained.

E24.9.7 Straightening

- (a) Straighten trees as required or as directed by the Contract Administrator

E24.9.8 Mulching Wood Chip

- (a) Add wood chip mulch to planting areas as required to maintain an even fresh surface.

E24.9.9 Weeding

- (a) Hand weed and lightly rake a minimum of once per month, or as determined by the Contract Administrator, to remove competition for installed plant material/undesirable plant material. Dispose of undesirable material off-site.
- (b) The Contractor shall be responsible for any fines or weed control notices issued for the planting areas. All such notices shall be dealt with by the Contractor in a timely fashion. Copies of any fines and notices shall be provided to the Contract Administrator within five (5) working days of receipt by the Contractor.

E24.10 Long-Term Maintenance of Sod and Salt Tolerant Grass Areas

E24.10.1 Maintain sod areas as specified in CW 3510-R9 Sodding.

E24.10.2 Mowing

- (a) Mow sod to a height of 65 mm just prior to overseeding with Birdsfoot Trefoil and Crown Vetch.
- (b) Cut grass once in the fall or as directed by the Contract Administrator.

E24.10.3 Fertilize sod areas in the spring and late fall as follows:

- (a) Spring: 16-20-0
- (b) Fall: 10-6-4

E24.10.4 Weed Control

- (a) The Contractor shall spray sod areas with broadleaf weed controls once in the spring or late summer prior to overseeding with Birdsfoot Trefoil and Crown Vetch, or more frequently as required or directed by the Contract Administrator. Use environmentally friendly chemical agents approved by Agriculture Canada.
- (b) Spot spray only to control noxious weeds following overseeding with Trefoil and Vetch.

E24.10.5 Insect Control

- (a) Control damaging insects as required with chemical agents approved by Agriculture Canada.

E24.10.6 Remove leaves from sod areas or thoroughly mulch in the fall.

E24.10.7 Standard

- (a) At the end of the required maintenance period uniform stands of grass must be well established in all sod areas or resodding/reseeding will be required at the Contractor's expense and to the satisfaction of the Contract Administrator. Scattered bare spots, none of which is larger than 100 mm square will be allowed up to a maximum of three (3) percent of any turf grass area.
- (b) Defective sod shall be replaced and the area so replaced shall be maintained for a 30-day period in the next growing season.
- (c) Reseeded areas shall be maintained until accepted by the Contract Administrator based on the establishment requirements outlined in CW 3520-R7.
- (d) Any areas re-sodded after September 15th which do not show an even stand of live growth and/or adequate root development in that year shall have the maintenance period commence on May 15th of the following year or such date as mutually agreed upon by all parties, at which time all sod must show an even stand of live growth.
- (e) Re-seed areas which fail to show trefoil and vetch upon completion of the two year maintenance period.

E24.11 Maintenance of Trefoil and Clover Areas

E24.11.1 Repair and reseed dead or bare spots to the satisfaction of the Contract Administrator.

E24.11.2 Eliminate weeds by hand or chemical means. Spot treat localized weedy areas, only, with Roundup, 2-4D or Diacamba.

E24.11.3 Water only as required for seed establishment and seed maintenance in periods of severe drought.

E24.11.4 Mowing

- (a) Mow trefoil and clover areas in the late fall, or as directed by the Contract Administrator to remove excessive weed growth.
- (b) Remove cuttings.

- (c) Mow trefoil and clover areas to a height of 100 mm.

E24.12 General Cleanup

- E24.12.1 Cleanup garbage and debris throughout site during the two-year maintenance period.
- E24.12.2 Remove soil or grass clippings from walkway areas.
- E24.12.3 Dispose of collected garbage and clippings at a recognized solid waste disposal site.

METHOD OF MEASUREMENT

E24.13 General Maintenance of Trees and Shrubs, Planting Beds, Sod and Salt Tolerant Grass Areas, and General Cleanup.

E24.13.1 Trees, Shrubs and Vines, and Planting Beds

- (a) Two year general maintenance of trees and shrubs, and planting beds including fertilizing, pruning, spraying for insects, disease control, cultivation, care of guy wires and turnbuckles, straightening, mulching and watering will be measured twice each season, typically in July and October, for a six month annual growing season from April 15 to October 15 each year.

E24.13.2 Sod and Salt Tolerant Seeded Areas

- (a) Two year general maintenance of sod and salt tolerant seeded areas, including scheduled mowing, watering, fertilizing, weed and insect control, and removal of leaves will be measured twice each season, for the six month annual growing season for work completed in each area.

E24.13.3 Trefoil and Clover Areas

- (a) Two year general maintenance of trefoil and clover areas, including mowing once in the fall or as required to control excessive weed growth, spot weed control, and removal of cuttings will be measured twice each season, for the six month annual growing season for work completed in each area each year.

E24.13.4 General Cleanup

- (a) Two-year general cleanup of landscaped areas, including removal of garbage and debris and grass clippings in the roadway corridor will be measured twice each season, for the six-month annual growing season, for the entire project area.

E24.13.5 All measured work will be in accordance with the Drawings and this specification and accepted by the Contract Administrator, as computed by the Contract Administrator.

BASIS OF PAYMENT

E24.14 General Maintenance of Trees and Shrubs, Sod, and Seeded Areas, and General Clean-Up

- E24.14.1 General maintenance and general clean-up will be paid for at the Contract Unit Prices for the "Items of Work" listed here below. Prices will include supply of all labour, equipment and materials and performing all operations herein described, and all other items included in the Work of this specification

ITEMS OF WORK

General Maintenance of Landscaping

- (i) General Plant Material and Planting Bed Maintenance
- (ii) General Sod Maintenance
- (iii) General Maintenance of Salt Tolerant Grass
- (iv) General Maintenance of Trefoil and Clover Areas
- (v) General Clean-up Operations

E25. PLANT MATERIAL WARRANTY

DESCRIPTION

E25.1 General

E25.1.1 This specification covers the provision of warranty for all plant material itemized on the Plant List, for the two-year maintenance period and for the individual areas identified within the overall Contract Area.

E25.2 Timing

E25.2.1 Warranty shall be for two (2) years, commencing upon acceptance of installed plant material.

E25.3 Warranty

E25.3.1 The Contractor hereby warrants that the plant material as itemized on the Plant Lists and on the Drawings will remain free of defects for the maintenance period indicated for each area of the Contract.

E25.4 End-of-Warranty Inspection

E25.4.1 Contract Administrator reserves the right to extend the Contractor's warranty responsibilities for an additional year, at the end of the designated warranty period for the appropriate area, if at that time plant material leaf development and growth are not sufficient to ensure future survival.

E25.5 Replacement

E25.5.1 During the warranty period, remove from site any plant material that has died or failed to grow satisfactorily, as determined by the Contract Administrator and replace with healthy plant material of the same species and size.

E25.5.2 Replace plant material in the following spring or fall as directed.

E25.5.3 Extend warranty on replacement plant material for an additional period until the end of the specified warranty period or for one full growing season, whichever is the longer period.

E25.5.4 Continue such replacement and warranty until plant material is acceptable.

E25.5.5 Trees determined by the Contract Administrator to have been damaged by vandalism shall be replaced and such replacement trees will be paid for at the Contract Unit Prices for the species indicated on the Drawings.

MEASUREMENT AND PAYMENT

E25.6 Warranty

E25.6.1 Warranties on plant material will not be measured or paid for.

E25.6.2 Warranties on plant material shall be included in payment for the supply and installation of plant material.

E26. TREE REMOVALS

DESCRIPTION

E26.1 General

E26.1.1 This specification shall supplement CW 3010-R4 Clearing and Grubbing.

CONSTRUCTION METHODS

E26.2 Tree Removals

E26.2.1 Remove only trees marked and confirmed for removal in the field by the Contract Administrator.

E26.2.2 The Contractor shall arrange for any Elm wood to be disposed of by the City of Winnipeg.

MEASUREMENT AND PAYMENT

E26.3 Tree Removals

E26.3.1 No additional measurement or payment shall be made for the work described in this Specification. Payment shall be included in the unit price paid for "Clearing and Grubbing".

APPENDIX 'A'

GEOTECHNICAL REPORT

APPENDIX 'B'

SEQUENCE OF WORK FIGURES