



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 93-2008

**ST. MARY'S ROAD – ST. ANNE'S ROAD TO FERMOR AVENUE – CONCRETE
REPAIRS AND ASPHALT RESURFACING**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

- B1.1 ST. MARY'S ROAD – ST. ANNE'S ROAD TO FERMOR AVENUE – CONCRETE REPAIRS AND ASPHALT RESURFACING

B2. SUBMISSION DEADLINE

- B2.1 The Submission Deadline is 12:00 noon Winnipeg time, March 20, 2008.
- B2.2 Bids determined by the Manager of Materials to have been received later than the Submission Deadline will not be accepted and will be returned upon request.
- B2.3 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

B3. 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 Branch 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 Branch 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 9 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) 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 Branch
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 11 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 shall be printed below such signatures.
- B7.4.2 All signatures should be witnessed, except where a corporate seal has been affixed.
- 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 B14.4.2, 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 Branch 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 Branch internet site at <http://www.winnipeg.ca/matmgt>).
- 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 Branch 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, and shall be witnessed or sealed as required.

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 Branch, 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 Branch 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 Branch 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 10 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 10 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 11 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 11 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 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 Branch internet site at <http://www.winnipeg.ca/matmgt>.
- 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) Concrete Repairs, Asphalt Resurfacing and Related Works on St. Mary's Road from St. Anne's Road to Fermor Avenue

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

- (a) Planing of asphalt overlay
- (b) Excavation and placement of base course materials
- (c) Full depth repair of existing concrete joints and slabs
- (d) Installation of catch pits and catch basins
- (e) Adjustment of existing drainage inlets and manholes
- (f) Renewal of curbs and sidewalk
- (g) Construction of monolithic concrete splash strip
- (h) Placement of asphalt overlay (average thickness 80 mm)
- (i) Construction of median planter curbs and placement of topsoil
- (j) Installation of concrete pile foundations
- (k) Boulevard restoration, placement of salt-tolerant seed and site clean-up

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is Earth Tech (Canada) Inc., represented by:

Mr. Kevin Rae, P.Eng.
Project Manager
1000 Waverley Street, Winnipeg, Manitoba R3T 0P3
Telephone No. (204) 926-1118
Facsimile No. (204) 478-7856

D3.2 At the pre-construction meeting, Mr. Kevin Rae, P.Eng. 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 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 All notices of appeal to the Chief Administrative Officer shall be sent to the following address or facsimile number:

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

- D5.4 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following address or facsimile number:

The City of Winnipeg
Corporate Services Department
Legal Services Division
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 Branch internet site at <http://www.winnipeg.ca/matmgt>.

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 fifteen (15) 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 (Form L: Detailed Work Schedule) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the General Conditions for the return of the executed Contract.

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.
- (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 not commence the Work on the Site before May 20, 2008, and shall commence the Work on Site no later than June 2, 2008, as directed by the Contract Administrator and weather permitting.

D14. WORKING DAYS

D14.1 Further to C1.1(gg);

D14.1.1 The Contract Administrator will determine daily if a Working Day has elapsed and will record his assessment. On a weekly basis the Contract Administrator will provide the Contractor with a record of the Working Days assessed for the preceding week. The Contractor shall sign each report signifying that he agrees with the Contract Administrator's determination of the Working Days assessed for the report period.

D14.1.2 Work done to restore the Site to a condition suitable for Work, shall not be considered "work" as defined in the definition of a Working Day.

D14.1.3 When the Work includes two or more major types of Work that can be performed under different atmospheric conditions, the Contract Administrator shall consider all major types

of Work in determining whether the Contractor was able to work in assessing Working Days.

D15. RESTRICTED WORK HOURS

D15.1 Further to clause 3.10 of CW 1130, the Contractor shall require written permission 48 hours in advance from the Contract Administrator for any work to be performed between 2000 hours and 0700 hours, or on Saturdays, Sundays, Statutory Holidays and or Civic Holidays.

D16. WORK BY OTHERS

D16.1 Work by others on or near the Site will include but not necessarily be limited to:

- (a) Manitoba Telecom Services – Adjustment of existing MTS manholes as required;
- (b) City of Winnipeg, Traffic Signals Department – Installation of traffic signals tie-line in the east boulevard of St. Mary's Road and upgrade signal poles at Cunningham Avenue Pedestrian Crossing;
- (c) City of Winnipeg, Traffic Services Department – Placement of all temporary regulatory signs, all signage required for traffic diversions and all signage required for two-way traffic in one side at a time construction areas. The Traffic Services Department requires forty-eight hours notice for changes in signage.
- (d) Manitoba Marathon – The Manitoba Marathon will take place on June 15, 2008, and will utilize the southbound lanes of St. Mary's Road from St. Anne's Road to Kingston Row. Diversion of traffic will not be permitted on June 14 and 15, 2008.

D17. SEQUENCE OF WORK

D17.1 Further to C6.1, the sequence of work shall be as follows:

D17.1.1 The Work shall be divided into four stages. Stage 1 and Stage 3 are each divided into 2 sub-stages. Stages are further subdivided into major items of work.

- (a) **Stage 1A** – Concrete Repairs, Asphalt Resurfacing and Related Works in the northbound median lane, southbound median lane and adjacent left turn lanes of St. Mary's Road from Fermor Avenue to Sunset Boulevard/Crystal Avenue. Work in this section shall be completed lane at a time. Concrete Repairs, Asphalt Resurfacing and Related Works in the northbound median and gutter lanes and adjacent left turn lanes of St. Mary's Road from Sunset Boulevard/Crystal Avenue to Sherwood Place. The median and gutter lane shall be closed simultaneously in this section.
 - (i) Removal of concrete medians and placement of temporary asphalt pavement as required at Sunset Boulevard/Crystal Avenue and Sherwood Place;
 - (ii) Planing of asphalt overlay for Stage 1A and 1B;
 - (iii) Removal of existing pavement where required;
 - (iv) Excavation and placement of base course materials where required;
 - (v) Concrete pavement slab and joint work and adjustments to pavement structures and appurtenances;
 - (vi) Installation of catch pits and catch basins;
 - (vii) Construction of safety median, monolithic median slab and median slab;
 - (viii) Construction of splash strip, renewal of sidewalk and construction of monolithic curb and sidewalk;
 - (ix) Regrading of boulevards, placing of topsoil and seed, and finished grading where required.
- (b) **Stage 1B** – Concrete Repairs, Asphalt Resurfacing and Related Works in the northbound gutter lane of St. Mary's Road from Fermor Avenue to Sunset

Boulevard/Crystal Avenue and in the northbound median lane of St. Mary's Road at the Sunset Boulevard/Crystal Avenue intersection. Work in this section shall be completed lane at a time.

- (i) Removal of concrete medians and placement of temporary asphalt pavement as required at Sunset Boulevard/Crystal Avenue;
 - (ii) Removal of existing pavement where required;
 - (iii) Excavation and placement of base course materials where required;
 - (iv) Concrete pavement slab and joint work and adjustments to pavement structures and appurtenances;
 - (v) Installation of catch pits and catch basins;
 - (vi) Construction of splash strip, renewal of sidewalk and construction of monolithic curb and sidewalk;
 - (vii) Regrading of boulevards, placing of topsoil and seed, and finished grading where required;
 - (viii) Placement of the bottom and top lifts of asphalt in Stage 1A and 1B work areas.
- (c) **Stage 2** – Concrete Repairs, Asphalt Resurfacing and Related Works in the southbound gutter and right turn lane of St. Mary's Road from Fermor Avenue to Sunset Boulevard/Crystal Avenue. Both the gutter and right turn lane shall be closed at the same time in this section. Concrete Repairs, Asphalt Resurfacing and Related Works in the southbound median and gutter lanes and adjacent left turn lanes of St. Mary's Road from Sunset Boulevard/Crystal Avenue to Sherwood Place. Both the median and gutter lane shall be closed simultaneously in this section.
- (i) Removal of concrete medians and placement of temporary asphalt pavement as required at Sunset Boulevard/Crystal Avenue and Sherwood Place;
 - (ii) Planing of asphalt overlay;
 - (iii) Removal of existing pavement where required;
 - (iv) Excavation and placement of base course materials where required;
 - (v) Concrete pavement slab and joint work and adjustments to pavement structures and appurtenances;
 - (vi) Installation of catch pits and catch basins;
 - (vii) Construction of safety median, monolithic median slab and median slab;
 - (viii) Construction of splash strip, renewal of sidewalk and construction of monolithic curb and sidewalk;
 - (ix) Regrading of boulevards, placing of topsoil and seed, and finished grading where required;
 - (x) Placement of the bottom and top lifts of asphalt.
- (d) **Stage 3A** – Concrete Repairs, Asphalt Resurfacing and Related Works in the southbound and northbound lanes of St. Mary's Road from the south median tip of St. Anne's Road to Dunraven Avenue and the northbound median lane of St. Mary's Road from Station 12+60 to St. Anne's Road. Work in this section shall be completed lane at a time.
- (i) Planing of asphalt overlay;
 - (ii) Removal of existing pavement where required;
 - (iii) Excavation and placement of base course materials where required;
 - (iv) Concrete pavement slab and joint work and adjustments to pavement structures and appurtenances;
 - (v) Installation of catch pits and catch basins;
 - (vi) Renewal of sidewalk and construction of monolithic curb and sidewalk;
 - (vii) Regrading of boulevards, placing of topsoil and seed, and finished grading where required;

- (viii) Placement of the bottom and top lifts of asphalt;
 - (ix) The Contractor will be allowed 15 working days to complete all lane at a time construction in Stage 3A. Immediately following completion of paving in Stage 3A, all lanes will be reopened to traffic.
- (e) **Stage 3B** – Concrete Repairs, Asphalt Resurfacing and Related Works in the southbound lanes of St. Mary's Road from Sherwood Place to the south median tip at St. Anne's Road. All lanes shall be closed simultaneously in this section.
- (i) Removal of concrete medians and placement of temporary asphalt pavement as required at Sherwood Place;
 - (ii) Planing of asphalt overlay;
 - (iii) Removal of existing pavement where required;
 - (iv) Excavation and placement of base course materials where required;
 - (v) Concrete pavement slab and joint work and adjustments to pavement structures and appurtenances;
 - (vi) Installation of catch pits and catchbasins;
 - (vii) Construction of safety median, monolithic median slab and median slab;
 - (viii) Construction of splash strip, renewal of sidewalk and construction of monolithic curb and sidewalk;
 - (ix) Regrading of boulevards, placing of topsoil and seed, and finished grading where required;
 - (x) Placement of the bottom and top lifts of asphalt.
- (f) **Stage 4** – Concrete Repairs, Asphalt Resurfacing and Related Works in the northbound median lane of St. Mary's Road from Sherwood Place to Station 12+60, the northbound gutter lane of St. Mary's Road from Sherwood Place to St. Anne's Road and the northbound parking lane of St. Mary's Road from Mager Drive to St. Anne's Road. All lanes shall be closed simultaneously in this section.
- (i) Removal of concrete medians and placement of temporary asphalt pavement as required at Sherwood Place;
 - (ii) Planing of asphalt overlay;
 - (iii) Removal of existing pavement where required;
 - (iv) Excavation and placement of base course materials where required;
 - (v) Concrete pavement slab and joint work and adjustments to pavement structures and appurtenances;
 - (vi) Installation of catch pits and catch basins;
 - (vii) Construction of safety median, monolithic median slab and median slab;
 - (viii) Construction of splash strip, renewal of sidewalk and construction of monolithic curb and sidewalk;
 - (ix) Regrading of boulevards, placing of topsoil and seed, and finished grading where required;
 - (x) Placement of the bottom and top lifts of asphalt.

D17.1.2 Immediately following the completion of the asphaltic concrete overlay of each stage, the Contractor shall remove temporary asphalt and restore applicable concrete medians, clean up the Site and remove all plant, surplus material, waste and debris from that stage, other than that left by the City or other Contractors.

D18. SUBSTANTIAL PERFORMANCE

D18.1 The Contractor shall achieve Substantial Performance within eighty (80) consecutive Working Days of the commencement of the Work as specified in D13.

D18.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.

D18.3 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

D19. TOTAL PERFORMANCE

D19.1 The Contractor shall achieve Total Performance within eighty-five (85) consecutive Working Days of the commencement of the Work as specified in D13.

D19.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.

D19.3 The date on which the Work has been certified by the Contract Administrator as being totally performed to the requirements of the Contract through the issue of a certificate of Total Performance is the date on which Total Performance has been achieved.

D20. LIQUIDATED DAMAGES

D20.1 If the Contractor fails to achieve Substantial Performance in accordance with the Contract by the day fixed herein for Substantial Performance, the Contractor shall pay the City five thousand dollars (\$5,000) per Working Day for each and every Working Day following the day fixed herein for Substantial Performance during which such failure continues.

D20.2 The amount specified for liquidated damages in D20.1 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Substantial Performance by the day fixed herein for same.

D20.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D21. ACCELERATED COMPLETION

D21.1 Description

D21.1.1 This Specification shall cover the accelerated completion of the Works of this Contract.

D21.2 Acceleration of Work

D21.2.1 At no risk to the City, the Contractor at his own initiative, means, and expense, may undertake to complete the Works of this Contract to facilitate the safe reopening of the entire roadway to traffic in advance of Substantial Performance specified in D18.

D21.2.2 Reopening of the entire roadway to traffic shall occur when mainline paving is complete. Intersections, median openings and remaining work can be completed with off-peak short local lane closures.

D21.2.3 In recognition of the fact that an early completion of the Works is of benefit to the City, the City will compensate the Contractor for said early completion on a per diem unit price basis, as hereinafter set out, provided that the City will not be liable to pay for any period of acceleration in excess of twenty (20) Working Days.

D21.2.4 It is noted that certain delays on road rehabilitation Work are normal, due to site conditions, necessary layout and dimensional changes. The Contract Administrator will attempt to resolve each situation as soon as possible. The Contractor is advised that no extension to the number of Working Days will be given for events of this sort which cause construction delay and are resolved within 48 hours of the requirement of change becoming known to both the Contractor and the Contract Administrator.

D21.3 Method of Measurement

D21.3.1 Subject to Clause D21.2 hereof, accelerated completion will be measured on a unit basis per diem. The number of days to be paid for will be the total number of Working Days which the entire facility is safely reopened to vehicular and pedestrian traffic in advance of the number of Working Days specified herein for Substantial Performance in D18., with all specified Works completed acceptable to the Contract Administrator.

D21.4 Basis of Payment

D21.4.1 Subject to Clause D21.2 hereof, accelerated completion will be paid for at the Unit Price per diem specified hereinafter for "Accelerated Completion" which price shall be payment in full for performing all operations undertaken and all other items incidental to the Work included in this Specification. Unit Price per diem = \$5,000.00.

D21.4.2 Payment for this item is not identified on Form B: Prices, and shall not be included thereon. If accelerated completion does occur as specified herein, then payment will be made for this item as an addition to the Contract.

D22. SCHEDULED MAINTENANCE

D22.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

- (a) Reflective crack maintenance during one year warranty period as specified in CW 3250-R6;
- (b) Maintenance of seeded areas as specified in CW 3520-R7.

D22.2 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

D23. JOB MEETINGS

D23.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

D23.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

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

D24.1 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

D25. WARRANTY

D25.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) year thereafter unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D25.2 Notwithstanding C13.2 or D25.1, 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.

D25.2.1 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 dated the

_____ day of _____, 20____, for:

BID OPPORTUNITY NO. 93-2008

ST. MARY'S ROAD – ST. ANNE'S ROAD TO FERMOR AVENUE – CONCRETE REPAIRS AND ASPHALT RESURFACING

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

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

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

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

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

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

_____ day of _____, 20____ .

SIGNED AND SEALED
in the presence of:

(Witness)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

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

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

(Date)

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

RE: PERFORMANCE SECURITY – BID OPPORTUNITY NO. 93-2008

ST. MARY'S ROAD – ST. ANNE'S ROAD TO FERMOR AVENUE – CONCRETE REPAIRS AND
ASPHALT RESURFACING

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)

ST. MARY'S ROAD – ST. ANNE'S ROAD TO FERMOR AVENUE – CONCRETE REPAIRS AND
ASPHALT RESURFACING

<u>Portion of the Work</u>	<u>Name</u>	<u>Address</u>
<i>SURFACE WORKS:</i>		
<i>Supply of Materials:</i>		
<i>Concrete</i>		
<i>Asphalt</i>		
<i>Base Course and Sub-Base</i>		
<i>Salt-tolerant Seeding</i>		
<i>Installation/Placement:</i>		
<i>Planing</i>		
<i>Pavement Removal / Excavation</i>		
<i>Base Course and Sub-Base</i>		
<i>Asphalt</i>		
<i>Concrete</i>		
<i>Seeding</i>		
<i>UNDERGROUND WORKS:</i>		
<i>Supply of Materials:</i>		
<i>Catch Pits / Catch Basins</i>		
<i>Pipe</i>		
<i>Frames</i>		
<i>Installation/Placement:</i>		
<i>Pipe</i>		
<i>OTHERS:</i>		
<i>Reflective Crack Maintenance</i>		

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

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

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
P-3292	Cover Sheet	A1
P-3292-01	Construction Staging and Traffic – Stages 1 and 2	A1
P-3292-02	Construction Staging and Traffic – Stages 3 and 4	A1
P-3292-03	Plan-Profile – Fermor Avenue to Sta. 2+40	A1
P-3292-04	Plan-Profile – Sta. 2+40 to Sta. 3+90	A1
P-3292-05	Plan-Profile – Sta. 3+90 to Sta. 5+40	A1
P-3292-06	Plan-Profile – Sta. 5+40 to Sta. 6+90	A1
P-3292-07	Plan-Profile – Sta. 6+90 to Sta. 8+40	A1
P-3292-08	Plan-Profile – Sta. 8+40 to Sta. 9+90	A1
P-3292-09	Plan-Profile – Sta. 9+90 to Sta. 11+40	A1
P-3292-10	Plan-Profile – Sta. 11+40 to Sta. 12+90	A1
P-3292-11	Plan-Profile – Sta. 12+90 to St. Anne's Road	A1
P-3292-12	Details	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:
- The field office shall be for the exclusive use of the Contract Administrator.
 - The building shall be conveniently located near the site of the Work.
 - The building shall have a minimum floor area of 20 square metres, a height of 2.4m with two windows for cross ventilation and a door entrance with a suitable lock.
 - 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.
 - The building shall be adequately lighted with fluorescent fixtures and have a minimum of three wall outlets.

- (f) The building shall be furnished with two desks, one drafting table, one table 3m x 1.2m, 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 the Contract is completed.

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 planing 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, all signage required for traffic diversions and all signage required for two-way traffic in one side at a time construction areas.

- (c) Construction of asphalt pavement required for temporary traffic diversions (as indicated on the Drawings) will be measured on a weight basis and paid for at the Contract Unit Price per tonne for "Construction of Asphaltic Concrete Pavement, ii) Tie-ins and Approaches (Type 1A)". The weight to be paid for shall be the total number of tonnes placed and compacted in accordance with CW 3410-R7 and accepted by the Contract Administrator.

E6. TRAFFIC MANAGEMENT

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

E6.1.1 During Stage 1A, the Contractor shall maintain northbound traffic in the northbound gutter lane of St. Mary's Road from Fermor Avenue to Crystal Avenue and southbound traffic in the southbound gutter and right turn lane of St. Mary's Road from Sunset Boulevard to Fermor Avenue. Two-way traffic shall be maintained in the southbound lanes of St. Mary's Road from Sunset Boulevard/Crystal Avenue to Sherwood Place. Existing traffic will remain unaffected north of Sherwood Place. St. Mary's Road shall be signed "No Stopping" at any time from Fermor Avenue to Sherwood Place.

E6.1.2 During Stage 1B, the Contractor shall maintain northbound traffic in the northbound median lane of St. Mary's Road from Fermor Avenue to Crystal Avenue and southbound traffic in the southbound gutter and right turn lanes of St. Mary's Road from Sunset Boulevard to Fermor Avenue. All other traffic patterns will remain unchanged from Stage 1A. St. Mary's Road shall be signed "No Stopping" at any time from Fermor Avenue to Sherwood Place.

E6.1.3 During Stage 2, the Contractor shall maintain northbound traffic in the northbound median and gutter lanes of St. Mary's Road from Fermor Avenue to Crystal Avenue and southbound traffic in the southbound median lane of St. Mary's Road from Sunset Boulevard to Fermor Avenue. Two-way traffic shall be maintained in the northbound lanes of St. Mary's Road from Sunset Boulevard/Crystal Avenue to Sherwood Place. Existing traffic will remain unaffected north of Sherwood Place. St. Mary's Road shall be signed "No Stopping" at any time from Fermor Avenue to Sherwood Place.

E6.1.4 In Stage 3A, Part 1 shall commence in the northbound median lane of St. Mary's Road from station 12+60 to Dunraven Avenue and the left-hand southbound left turn lane of St. Mary's Road from Dunraven Avenue to St. Anne's Road. Northbound traffic shall be maintained in the northbound gutter and parking lanes of St. Mary's Road. Southbound through traffic shall be maintained in the southbound gutter lane of St. Mary's Road. The right-hand southbound left turn lane and southbound median lane of St. Mary's Road will be used for southbound left turns to St. Anne's Road. Immediately following completion of work in the left-hand southbound left turn lane, work shall commence in the right-hand southbound left turn lane of St. Mary's Road from Dunraven Avenue to St. Anne's Road. All traffic patterns will remain unchanged except that the left-hand southbound left turn lane will now be used for left turns to St. Anne's Road.

Part 2 shall then commence in the northbound gutter and southbound median lanes of St. Mary's Road from the south median tip at St. Anne's Road to Dunraven Avenue. Northbound traffic shall be maintained in the northbound median and parking lanes of St. Mary's Road. Southbound through traffic shall be maintained in the southbound gutter lane of St. Mary's Road. Southbound left turning traffic to St. Anne's Road shall be maintained in the two left turn lanes.

Part 3 shall be completed in the northbound parking and southbound gutter lanes of St. Mary's Road from the south median tip at St Anne's Road to Dunraven Avenue. Northbound traffic shall be maintained in the northbound median and gutter lanes of St. Mary's Road. Southbound through traffic shall be maintained in the southbound median lane of St. Mary's Road. Southbound left-turning traffic to St. Anne's Road shall be maintained in the two left turn lanes.

Existing traffic will remain unaffected south of St. Anne's Road. Two through lanes shall be maintained at all times from northbound St. Anne's Road to northbound St. Mary's Road. St. Mary's Road shall be signed "No Stopping" at any time from St. Anne's Road to Dunraven Avenue.

- E6.1.5 During Stage 3B, the Contractor shall maintain northbound traffic in the northbound gutter lane of St. Mary's Road from Sherwood Place to Dunraven Avenue and the northbound parking lane of St. Mary's Road from Mager Drive to Dunraven Avenue. Southbound through traffic shall be maintained in the southbound median lane of St. Mary's Road from Dunraven Avenue to St. Anne's Road and diverted to the northbound median lane of St. Mary's Road from St. Anne's Road to Sherwood Place. Both left turn lanes from southbound St. Mary's Road to St. Anne's Road shall be maintained. St. Mary's Road shall be signed "No Stopping" at any time from Sherwood Place to Dunraven Avenue. Existing traffic will remain unaffected south of Sherwood Place.
- E6.1.6 During Stage 4, the Contractor shall maintain northbound traffic in the southbound median lane of St. Mary's Road from Sherwood Place to Station 12+60. Northbound traffic shall be diverted to the northbound median lane of St. Mary's Road from Station 12+60 to Dunraven Avenue. Southbound traffic shall be maintained in the southbound gutter lane of St. Mary's Road from Dunraven Avenue to Sherwood Place. Both left turn lanes from southbound St. Mary's Road to St. Anne's Road shall be maintained. St. Mary's Road shall be signed "No Stopping" at any time from Sherwood Place to St. Anne's Road. Existing traffic will remain unaffected south of Sherwood Place. Either the northbound gutter or parking lane of St. Mary's Road must be open from Station 12+60 to St. Anne's Road during the hours of 07:00 to 09:00.
- E6.1.7 Left turn storage lanes will be maintained for southbound St. Mary's Road at St. Anne's Road and Fermor Avenue at all times. All other left turns may be restricted by Traffic Services in one side at a time construction areas. Left turns will be allowed in lane at a time construction areas as applicable.
- E6.1.8 Intersecting street and private approach access shall be maintained as indicated on staging plans.
- E6.1.9 Should the Contractor be unable to maintain pedestrian or vehicular access to a residence or a 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.
- E6.1.10 Pedestrian and ambulance/emergency vehicle access must be maintained at all times.
- E6.1.11 All side street approaches to St. Mary's Road shall be signed for Right Turn Entry and Exit Only. No left turns will be permitted to side streets at any time for northbound and southbound traffic on St. Mary's Road in sections of one side at a time construction.

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. INFRASTRUCTURE SIGNS

- E8.1 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.

E9. RECYCLED CONCRETE BASE COURSE MATERIAL

DESCRIPTION

E9.1 General

E9.1.1 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.

E9.2 Definitions

E9.2.1 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.

E9.3 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

E9.4 Recycled Concrete Base Course Material

E9.4.1 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.

E9.4.2 Recycled concrete base course material will be approved by the Contract Administrator.

E9.4.3 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.

E9.4.4 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%

E9.4.5 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.

E9.4.6 The amount of deleterious material will be limited to a maximum of two percent of the total dry weight.

CONSTRUCTION METHODS

E9.5 Placement of Recycled Concrete Base Course Material

- E9.5.1 Place and compact recycled concrete base course material as a levelling course to a maximum thickness of 50 millimetres.
- E9.5.2 Spread materials uniformly to avoid segregation free of pockets of fine and coarse material.
- E9.5.3 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.
- E9.5.4 Maintain the finished material until the pavement or sidewalk is placed.

MEASUREMENT AND PAYMENT

E9.6 Recycled Concrete Base Course Material

- E9.6.1 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.
- E9.6.2 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.
- E9.6.3 No measurement or payment will be made for materials rejected by the Contract Administrator.

E10. CONCRETE CURB

- E10.1 Further to CW 3235-R6 and CW 3310-R12, slope-faced bullnoses will be constructed on island bullnoses as directed by the Contract Administrator.
- E10.2 All costs associated with construction of slope-faced bullnoses at locations of "Construction of Monolithic Concrete Median Slab" are included in "Construction of Monolithic Concrete Median Slab", and no additional payment shall be made.

E11. MONOLITHIC CURB AND SIDEWALK

- E11.1 Further to CW 3235-R6, no payment shall be made for the construction of modified curb on radii as part of the construction of monolithic curb and sidewalk.

E12. SEEDING

- E12.1 Further to CW 3520-R7 and CW3540-R5, this specification covers the supply and placement of grass seed and preparation of existing grade for regional street boulevards and medians.

E12.2 Grass Seed

- E12.2.1 Add revised grass seed mixture to clause 5.3 of CW 3520-R7:
 - (a) the Contract Administrator has confirmed receipt and approval of:
- E12.2.2 For regional street boulevards and medians a mixture composed of:
 - (a) Seventy percent (70%) Fults Alkaligrass (*Puccinellia distans*), twenty percent (20%) Audubon or Aberdeen Creeping Red Fescue and ten percent (10%) Perennial Ryegrass."

E12.3 Seeding

- E12.3.1 Replace first paragraph of clause 9.5 of CW 3520-R7 with the following wording:
(a) "Grass seed will be sown at a rate of 2.2 kilograms per 100 square metres".

E12.4 Preparation of Existing Grade

- E12.4.1 Add paragraph to clause 9.2 of CW 3540-R5:
(a) "Prior to placing topsoil for seeded areas, all sub-grade areas for regional street boulevards and medians except in areas within the edge of a tree canopy (or drip line) shall be scarified or pulverized to a minimum depth of 50 mm."

E13. CONSTRUCTION OF MEDIAN PLANTER CURB

DESCRIPTION

E13.1 General

- E13.1.1 This Specification covers the construction of median planter curb and the backfilling of median planters with topsoil.

CONSTRUCTION

E13.2 General

- E13.2.1 Construct median planter curb at the locations shown on the drawings.
- E13.2.2 Further to CW 3310-R12, construct median planter curb as per the Typical Median Planter Curb Detail shown on Drawing No. CT12.
- E13.2.3 Remove all concrete rubble and gravel from the planter prior to placing topsoil.
- E13.2.4 Supply and place topsoil in median planters to a depth of 300 mm.

MEASUREMENT AND PAYMENT

E13.3 Construction of Median Planter Curb

- E13.3.1 The construction of median planter curb will be measured on a length basis and paid for at the Contract Unit Price per metre for "Construction of Median Planter Curb". Supply and placement of topsoil will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for "Supply and Place Topsoil".

E14. NEW CAST-IN-PLACE CONCRETE PILE FOUNDATIONS

DESCRIPTION

E14.1 General

- E14.1.1 The Work covered under this Item shall include all concreting operations related to construction of cast-in-place concrete pile foundations in accordance with this Specification and as shown on the Drawings.
- E14.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

MATERIALS

E14.2 General

E14.2.1 The Contractor shall be responsible for the supply, safe storage, and handling of all materials set forth in this Specification.

E14.3 Handling and Storage of Materials

E14.3.1 All materials shall be handled and stored in a careful and workmanlike manner, to the satisfaction of the Contract Administrator. Storage of materials shall be in accordance with CSA Standard CAN3-A23.1-00.

E14.4 Testing and Approval

E14.4.1 All materials supplied under this Specification shall be subject to inspection and testing by the Contract Administrator or by the Testing Laboratory designated by the Contract Administrator. There shall be no charge to the City for any materials taken by the Contract Administrator for testing purposes.

E14.4.2 All materials shall conform to CSA Standard CAN/CSA-A23.1-00.

E14.4.3 All testing of materials shall conform to CSA Standard CAN/CSA-23.2-00.

E14.5 Cement

E14.5.1 Cement shall be Type HS, high sulphate-resistant hydraulic cement, conforming to the requirements of CSA A3001-03.

E14.6 Supplementary Cementing Materials

E14.6.1 Use of pozzolans, fly ash, or silica fume will not be permitted for use in structural concrete supplied under this Specification.

E14.7 Water

E14.7.1 Water used for mixing concrete shall be clean and free from injurious amounts of oil, acid, alkali, organic matter, or other deleterious substances. It shall be equal to potable water in physical and chemical properties.

E14.8 Aggregate

E14.8.1 The Contractor shall furnish in writing to the Contract Administrator, the location of the sources where aggregate will be obtained, in order that same may be inspected and tentatively approved by the Contract Administrator. Changes in the source of aggregate supply during the course of the Contract will not be permitted without notification in writing to and the expressed approval of the Contract Administrator.

(a) Fine Aggregate

(i) Fine aggregate shall consist of sand having clean, hard, strong, durable, uncoated grains; free from injurious amounts of dust, soft or flaking particles, shale, alkali, organic matter, loam, or other deleterious substances.

(ii) Fine aggregate shall be well-graded throughout and shall conform to the following grading requirements:

Gradation of Fine Aggregates	
Canadian Metric Sieve Size	Percent of Total Dry Weight Passing Each Sieve
10,000	100%
5,000	95% - 100%
2,500	80% - 100%
1,250	50% - 90%
630	25% - 65%
315	10% - 35%
160	2% - 10%
80	0% - 3%

(iii) The fineness modulus of fine aggregate shall not be less than 2.2 nor more than 3.1 unless otherwise approved by the Contract Administrator.

(b) Coarse Aggregate (20 mm Nominal)

- (i) Standard coarse aggregate shall be used for cast-in-place concrete foundations required in this Specification.
- (ii) Standard coarse aggregate shall consist of natural gravel, crushed stone, or other approved materials of similar characteristics, having clean, hard, strong, durable, uncoated particles, free from injurious amounts of soft, friable, thin, elongated, or laminated pieces, alkali, organic, or other deleterious matter. Coarse aggregate shall be well graded throughout and shall conform to the grading requirements shown in the following table:

Gradation of 20 mm Coarse Aggregate	
Canadian Metric Sieve Size	Percent of Total Dry Weight Passing Each Sieve
28,000	100%
20,000	90% - 100%
10,000	25% - 60%
5,000	0% - 10%
2,500	0% - 5%
80	0% - 1%

E14.9 Admixtures

E14.9.1 No admixtures other than air-entraining agent shall be used without the written authorization of the Contract Administrator, unless otherwise specified in these Specifications. It shall be the Contractor's responsibility to ensure that any admixture is compatible with all other constituent materials.

E14.10 Reinforcing Steel

E14.10.1 Reinforcing steel shall be deemed to include all reinforcing bars, tie-bars, and dowels.

E14.10.2 All reinforcing steel shall conform to the requirements of CSA Standard G30.12, Grade 400 MPa, Billet-Steel Bars for Concrete Reinforcement. All reinforcing steel shall be new deformed billet steel bars. Reinforcing steel supply and installation will be incidental to construction of concrete pile foundation and no separate payment will be made.

E14.11 Anchor Bolts, Nuts, and Washers

E14.11.1 Anchor bolts, nuts, and washers shall be in accordance with CSA Standard G40.21 Grade 300W, and shall be hot-dip galvanized full length in accordance with CSA G164 for a minimum net retention of 600 g/m², for the entire length of the anchor bolts. The threaded

portion of the anchor bolts shall extend to the concrete surface. Anchor bolt supply and installation will be incidental to construction of concrete pile foundation and no separate payment will be made.

E14.12 Anchor Bolt Templates

E14.12.1 Anchor bolt templates shall be CSA G40.21 Grade 300W, minimum 10 mm thick, and will be incidental to construction of new concrete pile foundation and no separate payment will be made.

E14.13 Miscellaneous Materials

E14.13.1 Miscellaneous materials shall be of the type specified on the Drawings or approved by the Contract Administrator.

E14.14 Concrete Mix Design

E14.14.1 Proportioning of fine aggregate, coarse aggregate, cement, water, and air entraining agent shall be such as yield concrete having the required strength and workability as follows:

(a) Minimum Compressive Strength at 28 days = 35 MPa

(b) Maximum Water/Cement Ratio = 0.45

(c) Minimum Cement Content = 340 kg/m³

(d) Slump = 80 mm ± 30 mm

(e) Aggregate: 20 mm nominal

(f) Air Content: 5.0 to 8.0 percent

(g) Cement: Type HS, high sulphate-resistant

E14.15 Equipment

E14.15.1 All equipment shall be of a type approved by the Contract Administrator and shall be kept in good working order.

CONSTRUCTION METHODS

E14.16 Location and Alignment of Piles

E14.16.1 Piles shall be placed in the positions shown on the Drawings except at St. Mary's Road and Nichol Avenue, where one pile shall be constructed on each side of the street. The exact location of all piles shall be confirmed by the Contract Administrator in the field.

E14.16.2 The deviation of the axis of any finished pile shall not differ by more than 1 percent from the vertical.

E14.17 Buried Utilities

E14.17.1 The Contractor shall exercise extreme caution when constructing the pile foundations in the vicinity of existing buried utilities. The Drawings show the approximate locations of existing buried utilities. The Contractor shall be responsible for obtaining the exact location of the buried utilities from the appropriate Utility Authority prior to installing the piles.

E14.17.2 The proposed locations of the pile foundations may be changed by the Contract Administrator if they interfere with the buried utilities.

E14.17.3 The Contractor shall be responsible for all costs that may be incurred for repair/rectification of any damage caused to the existing buried utilities as a result of the Contractor's operations in constructing cast-in-place concrete piles, as determined by the Contract Administrator.

E14.18 Restoration of Adjacent Property

- E14.18.1 The restoration of existing concrete sidewalks/medians and curbs, as well as boulevard median, paving stone, or sodding, required as shown on the Drawings, will be incidental to the construction of cast-in-place concrete pile foundations, and no separate payment will be made. Backfill and preparation of subgrade for sidewalk restoration shall conform to CW3325-R6 and CW3310-R12.
- E14.18.2 Sidewalk or median concrete paving shall be saw cut a minimum of 300 mm all around from the edge of pile or to the nearest existing joints, and restored flush with adjacent surface level after the new pile has been installed.

E14.19 Excavation

- E14.19.1 Excavations for piles shall be made with equipment designed to remove a core of the diameter shown on the Drawings.
- E14.19.2 Upon reaching the required elevation, the bottom of the bore shall be cleaned and, if called for, belled out to the required dimensions and elevations as shown on the Drawings or as directed by the Contract Administrator in the field.
- E14.19.3 All excavated material from the piles shall be promptly hauled away from the site to an approved disposal area as located by the Contractor.
- E14.19.4 Upon completion of the belling out and cleaning out of the bottom to the satisfaction of the Contract Administrator, the reinforcement and anchor bolts shall be set in place and the concrete poured immediately. Under no circumstances shall a hole be left to stand open after boring has been completed.
- E14.19.5 If any hole is condemned because of caving, it shall be filled with lean-mix concrete and a new hole bored as near as possible to the location shown on the Drawings. Payment will not be made for filling of condemned holes.

E14.20 Sleeving

- E14.20.1 Timber or steel sleeving shall be used to temporarily line the bore to prevent bulging or caving of the walls and to protect men at work in the bore.
- E14.20.2 The sleeving shall be designed by the Contractor and constructed to resist all forces that may tend to distort it.
- E14.20.3 The sleeving shall be withdrawn as the concrete is placed in the bore. The sleeving shall extend at least 1 m below the top of the freshly deposited concrete at all times.
- E14.20.4 The clearance between the face of the bore hole and the sleeving shall not exceed 75 mm.

E14.21 Inspection of Bores

- E14.21.1 Concrete shall not be placed in a bore until the bore has been inspected and approved by the Contract Administrator.
- E14.21.2 The Contractor shall have available suitable light for the inspection of each bore throughout its entire length.
- E14.21.3 All improperly set sleeving, bore, bell, or bottom shall be corrected to the satisfaction of the Contract Administrator.

E14.22 Placing Reinforcing Steel

- E14.22.1 Reinforcement shall be:
- (a) placed in accordance with the details shown on the Drawings
 - (b) rigidly fastened together, and
 - (c) lowered into the bore intact before concrete is placed.

E14.22.2 Spacers shall be utilized to properly locate the reinforcing steel cage in the bore and to provide the clear concrete cover shown on the Drawings.

E14.23 Placing Anchor Bolts

E14.23.1 The anchor bolts shall be aligned with a steel template matching the bolt hole configuration in the sign structure base plate. The setting template shall be held in place by the top and bottom nuts of the anchor bolts. Extreme care shall be used in this operation. Placement of anchor bolts without the steel template will not be permitted.

E14.23.2 The threaded portion of the anchor bolts shall be coated with oil, before the concrete is poured, to minimize the fouling of threads splattered by concrete residue. The portion of anchor bolts projecting from the pile shall be fully threaded.

E14.24 Forms

E14.24.1 The top 1.0 m of the piles shall be formed with tubular forms (Sonotube).

E14.24.2 The forms shall be sufficiently rigid to prevent lateral or vertical distortions from the loading environment to which they shall be subjected. Forms shall be set to the design grades, lines, and dimensions, as shown on the Drawings.

E14.25 Placing Concrete

E14.25.1 Care shall be taken to ensure that anchor bolts are vertically aligned and that anchor bolts and conduits are properly positioned prior to placement of concrete.

E14.25.2 Concrete shall not have a free fall of more than 2.0 m and shall be placed so that the aggregates will not separate or segregate. The slump of the concrete shall not exceed 110 mm. The concrete shall be vibrated throughout the entire length of the pile.

E14.25.3 Concrete shall be placed to the elevations as shown on the Drawings. The top surface of the pile shall be finished smooth and even with a hand float. The top edge of the pile shall be rounded around the perimeter with a radius of 10 mm.

E14.25.4 The shaft and bell shall be free of water prior to placing of concrete. Concrete shall not be placed in or through water unless authorized by the Contract Administrator. In the event that tremie concrete is allowed by the Contract Administrator, the concrete shall be placed as specified herein.

E14.26 Tremie Concrete

E14.26.1 The shaft of the pile shall be pumped clear of water so that the bottom can be cleaned and belled. Pumping shall then be stopped and water shall be allowed to come into the bore until a state of equilibrium is reached. Concrete shall then be placed by means of a tremie pipe. The tremie pipe shall have a suitable gate in the bottom to prevent water from entering the pipe. The bottom of the pipe shall be maintained below the surface of the freshly placed concrete. The pipe shall be capable of being raised or lowered quickly in order to control the flow of concrete.

E14.26.2 Tremie concrete shall only be poured up to the top of the bell or as the Contract Administrator directs. Pumps shall then be lowered into the bore and the excess water pumped out. The laitance that forms on top of the tremie shall then be removed and the remainder of the concrete shall be placed in the dry.

E14.27 Protection of Newly Placed Concrete

E14.27.1 Newly laid concrete threatened with damage by rain, snow, fog, or mist shall be protected with a tarpaulin or other approved means.

E14.28 Curing Concrete

E14.28.1 The top of the freshly finished concrete piles shall be covered and kept moist by means of wet polyester blankets immediately following finishing operations and shall be maintained at above 10°C for at least seven (7) consecutive days thereafter.

- E14.28.2 After the finishing is completed, the surface shall be promptly covered with a minimum of a single layer of clean, damp polyester blanket.
- E14.28.3 Concrete shall be protected from the harmful effects of sunshine, drying winds, surface dripping or running water, vibration, and mechanical shock. Concrete shall be protected from freezing until at least twenty-four hours after the end of the curing period.
- E14.28.4 Changes in temperature of the concrete shall be uniform and gradual and shall not exceed 3° in one hour or 20° in twenty-four hours.
- E14.28.5 Immediately after stripping and patching, formed surfaces shall receive and application of the approved concrete cure and protection system in accordance with the manufacturer's instructions.

E14.29 Form Removal

- E14.29.1 Forms shall not be removed for a period of at least 24 hours after the concrete has been placed. Removal of forms shall be done in a manner to avoid damage to, or spalling of, the concrete.
- E14.29.2 The minimum strength of concrete in place for safe removal of forms shall be 20 MPa.
- E14.29.3 Field-cured test specimens, representative of the in-place concrete being stripped, will be tested to verify the concrete strength.

E14.30 Patching of Formed Surfaces

- E14.30.1 Immediately after forms around top of pile have been removed, but before any repairing or surface finishing is started, the concrete surface shall be inspected by the Contract Administrator. Any repair of surface finishing started before this inspection may be rejected and required to be removed.
- E14.30.2 All formed concrete surfaces shall have bolts, ties, struts, and all other timber or metal parts not specifically required for construction purposes cut back fifty (50) mm from the surface before patching.
- E14.30.3 Minor surface defects caused by honeycomb, air pockets greater than 5 mm in diameter, and voids left by strutting, and tie holes shall be repaired by removing the defective concrete to sound concrete, dampening the area to be patched and then applying patching mortar. A slurry grout consisting of water and cement, shall be well-brushed onto the area to be patched. When the slurry grout begins to lose the water sheen, the patching mortar shall be applied. It shall be struck-off slightly higher than the surface and left for one hour before final finishing to permit initial shrinkage of the patching mortar and it shall be touched up until it is satisfactory to the Contract Administrator. The patch shall be cured as specified in this Specification, and the final colour shall match the surrounding concrete.

E14.31 Cold Weather Concreting

- E14.31.1 Protection of concrete shall be considered incidental to its placement. The temperature of the concrete shall be maintained at or above 10°C for a minimum of three (3) days or till the concrete has reached a minimum compressive strength of 20 MPa, by whatever means are necessary. Concrete damaged as a result of inadequate protection against weather conditions shall be removed and replaced by the Contractor at his own expense. Also, concrete allowed to freeze prior to the three (3) days will not be accepted for payment.

E14.32 Quality Control

- E14.32.1 All workmanship and all materials furnished and supplied under this Specification are subject to close and systematic inspection and testing by the Contract Administrator, including all operations from the selection and production of materials, through to final acceptance of the Work. The Contractor shall be wholly responsible for the control of all operations incidental thereto notwithstanding any inspection or approval that may have been previously given. The Contract Administrator reserves the right to reject any materials or Works that are not in accordance with the requirements of this Specification.

- E14.32.2 The Contractor shall be responsible for making a thorough inspection of materials to be supplied under this Contract. All material shall be free of surface imperfections and other defects.

MEASUREMENT AND PAYMENT

E14.33 Construction of New Cast-in-Place Concrete Pile Foundations

- E14.33.1 Construction of new cast-in-place concrete pile foundations including supply and installation of anchor bolts and steel template will be measured on a unit basis and will be paid for at the Contract Price per pile for the "Items of Work" listed here below for piles constructed in accordance with this Specification and accepted by the Contract Administrator.

Items of Work:

Construction of New Cast-in-Place Concrete Pile Foundations

E15. PREPARATION OF TREE WELLS

DESCRIPTION

E15.1 General

- E15.1.1 This specification covers the supply and placement of weed barrier and bark mulch in new median tree wells with existing trees.

MATERIALS

E15.2 General

- E15.2.1 Wood Chip mulch shall be standard tree chipped branches, limbs and leaves. Maximum 10% conifer needles.

CONSTRUCTION

E15.3 General

- E15.3.1 Grade all tree well areas shown on the drawings to a depth of 125 mm below finished grade. Cut and tightly place weed barrier against surrounding curbs. Install a uniform 75 mm depth of wood chip mulch in each tree well. When completed, no soil shall be visible and the top of the mulch should be 50 mm below finished grade.

MEASUREMENT AND PAYMENT

E15.4 Preparation of Tree Wells

- E15.4.1 The preparation of tree wells will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Preparation of Tree Wells". The area to be paid for will be the total number of square metres of tree wells prepared in accordance with this specification, accepted and measure by the Contract Administrator.