



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 384-2012**

**PEMBINA HIGHWAY MILL AND FILL / ACTIVE TRANSPORTATION CORRIDOR  
AND ASSOCIATED WORKS**

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## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

B1.1 Pembina Highway Mill and Fill / Active Transportation Corridor and Associated Works

### **B2. SUBMISSION DEADLINE**

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, June 21, 2012.

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

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

### **B3. ENQUIRIES**

B3.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.

B3.2 If the Bidder finds errors, discrepancies or omissions in the Bid Opportunity, or is unsure of the meaning or intent of any provision therein, the Bidder shall notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.

B3.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator to all Bidders by issuing an addendum.

B3.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator only to the Bidder who made the enquiry.

B3.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B3 unless that response or interpretation is provided by the Contract Administrator in writing.

### **B4. ADDENDA**

B4.1 The Contract Administrator may, at any time prior to the Submission deadline, issue addenda correcting errors, discrepancies or omissions in the Bid Opportunity, or clarifying the meaning or intent of any provision therein.

B4.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.

B4.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/bidopp.asp>

B4.2.2 The Bidder is responsible for ensuring that he/she has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.

B4.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

### **B5. SUBSTITUTES**

B5.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.

- B5.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B5.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B5.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
  - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
  - (c) identify any anticipated cost or time savings that may be associated with the substitute;
  - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
  - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.
- B5.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/her 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/she 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/her 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.
- B5.10 Notwithstanding B5.2 to B5.9, in accordance with B6.6, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B14.1(a).

## **B6. BID COMPONENTS**

- B6.1 The Bid shall consist of the following components:
- (a) Form A: Bid;

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

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

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

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

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

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

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

B6.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B14.1(a).

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

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

## **B7. BID**

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

B7.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:

- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, his/her 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/her own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.

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

- B7.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.
- B7.4 Paragraph 12 of Form A: Bid shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her 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/her own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- B7.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.
- B7.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

## **B8. PRICES**

- B8.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B8.1.1 For the convenience of Bidders, and pursuant to B6.4.2 and B14.4.3, an electronic spreadsheet Form B: Prices in Microsoft Excel (.xls) format is available along with the Adobe PDF documents for this Bid Opportunity on the Bid Opportunities page at the Materials Management Division 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.
- B8.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

## **B9. QUALIFICATION**

- B9.1 The Bidder shall:
- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba; and
  - (b) be financially capable of carrying out the terms of the Contract; and
  - (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.
- B9.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/debar.stm>

- B9.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) have successfully carried out work similar in nature, scope and value to the Work; and
  - (b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and
  - (c) have a written workplace safety and health program if required pursuant to The Workplace Safety and Health Act (Manitoba);
- B9.4 Further to B9.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:
- (a) a valid COR certification number under the Certificate of Recognition (COR) Program administered by the Manitoba Construction Safety Association or by the Manitoba Heavy Construction Association's Safety, Health and Environment Program; or
  - (b) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>)
- B9.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.
- B9.6 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.
- B10. BID SECURITY**
- B10.1 The Bidder shall provide bid security in the form of:
- (a) a bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in the form included in the Bid Submission (Form G1: Bid Bond and Agreement to Bond); or
  - (b) an irrevocable standby letter of credit, in the amount of at least ten percent (10%) of the Total Bid Price, and undertaking issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form included in the Bid Submission (Form G2: Irrevocable Standby Letter of Credit and Undertaking); or
  - (c) a certified cheque or draft payable to "The City of Winnipeg", in the amount of at least fifty percent (50%) of the Total Bid Price, drawn on a bank or other financial institution registered to conduct business in Manitoba.
- B10.1.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.
- B10.1.2 All signatures on bid securities shall be original.
- B10.1.3 The Bidder shall sign the Bid Bond.
- B10.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.
- B10.2 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly

executed by the successful Bidder and the performance security furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.

- B10.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B10.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.
- B10.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.
- B10.3 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Bid Opportunity.

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

- B11.1 Bids will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Division, or in such other office as may be designated by the Manager of Materials.
  - B11.1.1 Bidders or their representatives may attend.
  - B11.1.2 Bids determined by the Manager of Materials, or his/her designate, to not include the bid security specified in B10 will not be read out.
- B11.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>
- B11.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>
- B11.4 The Bidder is advised that any information contained in any Bid may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

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

- B12.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.
- B12.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly executed and the performance security furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid.

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

- B13.1 A Bidder may withdraw his/her Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.
  - B13.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.
  - B13.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid, and only such person, has authority to give notice of withdrawal.

- B13.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:
- (a) retain the Bid until after the Submission Deadline has elapsed;
  - (b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid; and
  - (c) if the notice has been given by any one of the persons specified in B13.1.3(b), declare the Bid withdrawn.
- B13.2 A Bidder who withdraws his/her Bid after the Submission Deadline but before his/her Bid has been released or has lapsed as provided for in B12.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law, including the right to retain the Bidder's bid security.

## **B14. EVALUATION OF BIDS**

- B14.1 Award of the Contract shall be based on the following bid evaluation criteria:
- (a) compliance by the Bidder with the requirements of the Bid Opportunity, or acceptable deviation therefrom (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/her Bid or in other information required to be submitted, that he/she is responsible and qualified.
- B14.4 Further to B14.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.
- B14.4.1 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each item, the sum of the quantities multiplied by the unit prices for each item shall take precedence.
- B14.4.2 Further to B14.1(a), in the event that a unit price is not provided on Form B: Prices, the City will determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.
- B14.4.3 The electronic Form B: Prices and the formulas imbedded in that spreadsheet are only provided for the convenience of Bidders. The City makes no representations or warranties as to the correctness of the imbedded formulas. It is the Bidder's responsibility to ensure the extensions of the unit prices and the sum of Total Bid Price performed as a function of the formulas within the electronic Form B: Prices are correct.

## **B15. AWARD OF CONTRACT**

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

- B15.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.
- B15.2.1 Without limiting the generality of B15.2, the City will have no obligation to award a Contract where:
- (a) the prices exceed the available City funds for the Work;
  - (b) the prices are materially in excess of the prices received for similar work in the past;
  - (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
  - (d) only one Bid is received; or
  - (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.
- B15.3 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B14.
- B15.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.

## PART C - GENERAL CONDITIONS

### C0. GENERAL CONDITIONS

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

## **PART D - SUPPLEMENTAL CONDITIONS**

### **GENERAL**

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

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

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

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

- (a) Pavement Widening (Center Median)
  - (i) Pembina Highway – Bishop Grandin Boulevard to Chevrier Boulevard
- (b) Asphalt Mill and Fill (Average Thickness 75mm)
  - (i) Pembina Highway – Plaza Drive to Chevrier Boulevard (Northbound)
- (c) Bus Stop Improvements
  - (i) Pembina Highway – Bishop Grandin Boulevard to Chevrier Boulevard

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

- (a) Pavement Widening (Center Median)
  - (i) Removal of existing curb
  - (ii) Excavation of boulevard – all excavations within 1.0 meters of any natural gas main must be completed by hand or soft dig methods
  - (iii) Compaction of existing sub-grade
  - (iv) Placement of separation geotextile fabric
  - (v) Placement and compaction of sub-base and base coarse materials
  - (vi) Adjustment of pavement and boulevard structures
  - (vii) Construction of 200mm concrete pavement (reinforced)
  - (viii) Construction of 750mm splash strip with monolithic barrier curb
  - (ix) Boulevard restoration
- (b) Asphalt Mill and Fill (Average Thickness 75mm)
  - (i) Renewal of existing sidewalk
  - (ii) Planing of existing asphalt
  - (iii) Concrete pavement repairs
  - (iv) Adjustment of existing pavement and boulevard structures
  - (v) Renewal of existing curb
  - (vi) Landscaping
  - (vii) Placement of asphalt overlay
  - (viii) Placement of asphalt pavement tie-ins and approaches
- (c) Bus Stop Improvements
  - (i) Removal of existing curb and sidewalk
  - (ii) Excavation
  - (iii) Installation of catch basins and sewer service pipes
  - (iv) Compaction of existing sub-grade
  - (v) Placement of separation geotextile fabric
  - (vi) Placement and compaction of sub-base and base coarse materials
  - (vii) Construction of Bus Stop Flag Foundation
  - (viii) Construction of 200mm concrete pavement (reinforced)

- (ix) Construction of 100mm monolithic concrete sidewalk and curb
- (x) Renewal of existing sidewalk
- (xi) Boulevard restoration

### **D3. CONTRACT ADMINISTRATOR**

D3.1 The Contract Administrator is:

Derek Teperto, C.E.T.  
Technologist III

Telephone No. (204) 232-9527  
Facsimile No. (204) 986-5302

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

D3.3 Bids Submissions must be submitted to the address in B6.8

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

D4.1 At the pre-construction meeting, the Contractor shall identify his/her designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

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

### **D5. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE**

D5.1 The Contract, all deliverables produced or developed, and information provided to or acquired by the Contractor are the property of the City and shall not be appropriated for the Contractors own use, or for the use of any third party.

D5.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.

D5.3 The following shall be confidential and shall not be disclosed by the Contractor to the media or any member of the public without the prior written authorization of the Contract Administrator;

- (a) information provided to the Contractor by the City or acquired by the Contractor during the course of the Work;
- (b) the Contract, all deliverables produced or developed; and
- (c) any statement of fact or opinion regarding any aspect of the Contract.

D5.4 A Contractor who violates any provision of D5 may be determined to be in breach of Contract.

### **D6. NOTICES**

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

D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3

or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the facsimile number identified in D3.1.

- D6.3 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 facsimile number:

The City of Winnipeg  
Legal Services Department  
Attn: Director of Legal Services  
Facsimile No.: 204-947-9155

## **D7. FURNISHING OF DOCUMENTS**

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

## **SUBMISSIONS**

### **D8. AUTHORITY TO CARRY ON BUSINESS**

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

### **D9. SAFE WORK PLAN**

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

### **D10. INSURANCE**

- D10.1 The Contractor shall provide and maintain the following insurance coverage:
- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability, 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) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence;
  - (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.

- D10.2 Deductibles shall be borne by the Contractor.
- D10.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in the C4.1 for the return of the executed Contract.
- D10.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

## **D11. PERFORMANCE SECURITY**

- D11.1 The Contractor shall provide and maintain performance security until the expiration of the warranty period in the form of:
- (a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; or
  - (b) an irrevocable standby letter of credit issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form attached to these Supplemental Conditions (Form H2: Irrevocable Standby Letter of Credit), in the amount of fifty percent (50%) of the Contract Price; or
  - (c) a certified cheque or draft payable to "The City of Winnipeg", drawn on a bank or other financial institution registered to conduct business in Manitoba, in the amount of fifty percent (50%) of the Contract Price.
- D11.1.1 Where the performance security is in the form of a certified cheque or draft, it will be deposited by the City. The City will not pay any interest on certified cheques or drafts furnished as performance security.
- D11.2 If the bid security provided in his/her 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.

## **D12. SUBCONTRACTOR LIST**

- D12.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at 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.

## **D13. DETAILED WORK SCHEDULE**

- D13.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the General Conditions for the return of the executed Contract.
- D13.2 The detailed work schedule shall consist of the following:
- (a) a Gantt chart for the Work acceptable to the Contract Administrator.
- D13.3 Further to D13.2(a), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

## **SCHEDULE OF WORK**

### **D14. COMMENCEMENT**

D14.1 The Contractor shall not commence any Work until he/she is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.

D14.2 The Contractor shall not commence any Work on the Site until:

- (a) the Contract Administrator has confirmed receipt and approval of:
  - (i) evidence of authority to carry on business specified in D8;
  - (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 D9;
  - (v) evidence of the insurance specified in D10;
  - (vi) the performance security specified in D11;
  - (vii) the subcontractor list specified in D12;
  - (viii) the detailed work schedule specified in D13.
- (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.

D14.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.

D14.4 The City intends to award this Contract by July 9, 2012

D14.4.1 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

### **D15. WORKING DAYS**

D15.1 Further to C1.1(gg);

D15.1.1 The Contract Administrator will determine daily if a Working Day has elapsed and will record his/her 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/she agrees with the Contract Administrator's determination of the Working Days assessed for the report period.

D15.1.2 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.

D15.1.3 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.

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

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

## **D17. WORK BY OTHERS**

D17.1 Work by others on or near the Site will include but not necessarily be limited to:

- (a) City of Winnipeg Transit – Remove and reinstall transit shelters and totems;
- (b) City of Winnipeg Traffic Signals Branch – Traffic signals poles and associated infrastructure will be renewed by the City of Winnipeg Traffic Signals Branch. Work in the vicinity of the pole relocations must be coordinated with Traffic Signals;
- (c) City of Winnipeg Graffiti/Festive Lighting Branch – Soda blasting lane lines;
- (d) City of Winnipeg Traffic Services Branch – Traffic signage and line painting;
- (e) City of Winnipeg Urban Forestry Branch – Review tree conditions;
- (f) City of Winnipeg Geomatics Branch – Miscellaneous works on survey monuments;
- (g) MTS – Adjusting manhole vaults and frames at various locations throughout the site;
- (h) Manitoba Hydro – Adjusting Light Standard.

## **D18. SEQUENCE OF WORK**

D18.1 Further to C6.1, the sequence of work shall be as follows:

D18.1.1 The Work shall be divided into four Phases. Each Phase shall be subdivided into stages. Stages are further subdivided into major items of work.

D18.1.2 **Phase I** – Pavement Widening (Center Median) – Pembina Highway from Chevrier Boulevard to Plaza Drive

- (a) **Stage I** – Pavement Widening Median Lane (Northbound and Southbound)
  - (i) Removal of existing curb;
  - (ii) Excavation of boulevard – all excavations within 1.0 meters of any natural gas main must be completed by hand or soft dig methods;
  - (iii) Compaction of existing sub-grade;
  - (iv) Placement of separation geotextile fabric;
  - (v) Placement and compaction of sub-base and base coarse materials;
  - (vi) Adjustment of pavement and boulevard structures;
  - (vii) Construction of 200mm concrete pavement (reinforced);
  - (viii) Construction of 750mm splash strip with monolithic barrier curb;
  - (ix) Boulevard restoration; and
  - (x) Placement of asphalt scratch coat.
- (b) Placing the topsoil and finished grading of all boulevard and median areas shall be completed prior to commencing construction of the asphaltic concrete overlay, including the scratch course.

D18.1.3 Immediately following the completion of the asphaltic concrete works of Phase I, the Contractor shall clean up the Site and remove all plant, surplus material, waste and debris, other than that left by the City or other Contractors.

D18.1.4 **Phase II** – Asphalt Mill and Fill – Pembina Highway from Plaza Drive to Chevrier Boulevard

- (a) **Stage I** – Asphalt Resurfacing Median Lane (Northbound)
  - (i) Planing of existing asphalt;
  - (ii) Concrete pavement repairs;
  - (iii) Adjustment of existing pavement structures; and
  - (iv) Placement of asphalt scratch coat.
- (b) **Stage II** – Asphalt Resurfacing Center Lane (Northbound)
  - (i) Planing of existing asphalt;

- (ii) Concrete pavement repairs;
- (iii) Adjustment of existing pavement structures; and
- (iv) Placement of asphalt scratch coat.
- (c) **Stage III – Asphalt Resurfacing Gutter Lane (Northbound)**
  - (i) Planing of existing asphalt;
  - (ii) Removal of existing curb and sidewalk as required;
  - (iii) Installation of catch basins and sewer service pipes;
  - (iv) Concrete pavement repairs on existing gutter lane;
  - (v) Renewal of existing sidewalk and curb as required;
  - (vi) Boulevard restoration;
  - (vii) Placement of asphalt scratch coat.

D18.1.5 **Phase III – Bus Stop Improvements – Pembina Highway from Plaza Drive to Chevrier Boulevard**

- (a) **Stage I – Bus Stop Improvements Curb Lane (Northbound and Southbound)**
  - (i) Planing of asphalt;
  - (ii) Removal of existing curb and sidewalk;
  - (iii) Excavation;
  - (iv) Installation of catch basins and sewer service pipes;
  - (v) Concrete pavement repairs on existing gutter lane;
  - (vi) Compaction of existing sub-grade;
  - (vii) Placement of separation fabric;
  - (viii) Placement and compaction of sub-base and base coarse materials;
  - (ix) Construct Bus Stop Flag Foundation
  - (x) Construct 200mm concrete pavement (reinforced);
  - (xi) Construct 100mm monolithic concrete sidewalk;
  - (xii) Renewal of existing sidewalk and curb as required;
  - (xiii) Boulevard restoration;
  - (xiv) Placement of asphalt overlay; and
  - (xv) Placement of tie-in asphalt.

D18.1.6 **Phase IV – Asphalt Final Lift – Pembina Highway from Plaza Drive to Chevrier Boulevard**

**Stage I – Asphalt Overlay Final Lift (Northbound and Southbound)**

- (i) Adjustment of pavement structures;
- (ii) Placement of asphalt final lift.

**D19. SUBSTANTIAL PERFORMANCE**

- D19.1 The Contractor shall achieve Substantial Performance within sixty (60) consecutive Working Days of the commencement of the Work as specified in D14.
- D19.2 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.
- D19.3 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.

## **D20. TOTAL PERFORMANCE**

- D20.1 The Contractor shall achieve Total Performance within sixty five (65) consecutive Working Days of the commencement of the Work as specified in D14.
- D20.2 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.
- D20.3 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.

## **D21. LIQUIDATED DAMAGES**

- D21.1 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 three thousand dollars (\$3000.00) per Working Day for each and every Working Day following the day fixed herein for Substantial Performance during which such failure continues.
- D21.2 The amount specified for liquidated damages in D21.1 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Total Performance by the day fixed herein for same.
- D21.3 If the Contractor fails to achieve Total Performance in accordance with the Contract by the day fixed herein for Total Performance, the Contractor shall pay the City one thousand dollars (\$1000.00) per Working Day for each and every Working Day following the day fixed herein for Total Performance during which such failure continues.
- D21.4 If Total Performance is not completed by the date of Total Performance, the assessment of Liquidated Damages in D 21.3 will be made in addition to the Liquidated Damages in D21.1.
- D21.5 The amount specified for liquidated damages in D21.3 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Total Performance by the day fixed herein for same.
- D21.6 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

## **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) Sod Maintenance as specified in CW 3510-R9;
  - (b) Reflective Crack Maintenance as specified in CW 3250-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 and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator 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).

## **MEASUREMENT AND PAYMENT**

### **D25. PAYMENT**

- D25.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

## **WARRANTY**

### **D26. WARRANTY**

- D26.1 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.
- D26.2 Notwithstanding C13.2 or D26.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if:
- (a) a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use; or
- D26.2.1 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 D11)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

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

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

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

BID OPPORTUNITY NO. 384-2012

Pembina Highway Mill and Fill / Active Transportation Corridor and Associated Works  
which is by reference made part hereof and is hereinafter referred to as the "Contract".

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

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

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

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

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

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

SIGNED AND SEALED  
in the presence of:

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

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

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

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

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

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

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

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

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

RE: PERFORMANCE SECURITY – BID OPPORTUNITY NO. 384-2012

Pembina Highway Mill and Fill / Active Transportation Corridor and Associated Works

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 D12)

Pembina Highway Mill and Fill / Active Transportation Corridor and Associated Works

<u>Portion of the Work</u>	<u>Name</u>	<u>Address</u>
<b>SURFACE WORKS:</b>		
<u>Supply of Materials:</u>		
Geotextile Fabrics		
Sub-base and Base Course		
Concrete		
Asphalt		
Topsoil/Sod		
Paving Stones		
<u>Installation/Placement:</u>		
Geotextile Fabrics		
Sub-base and Base Course		
Concrete		
Asphalt		
Topsoil/Sod		
Joint Sealant		
Electrical		
<b>UNDERGROUND WORKS:</b>		
<u>Supply of Materials:</u>		
Pre-cast Concrete Catch Pit/Catch Basin/Risers		
Catch Pit/Catch Basin/Manhole Frames, Covers and Boxes		
Drainage Connection Pipes/Sewer Service Pipes		
Watermain Valve/Service Boxes		
<u>Installation/Placement:</u>		
Pre-cast Concrete Catch Pit/Catch Basin/Risers		
Catch Pit/Catch Basin/Manhole Frames, Covers and Boxes		
Drainage Connection Pipes/Sewer Service Pipes		

## PART E - SPECIFICATIONS

### GENERAL

#### E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

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

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
	Cover Sheet	A1
SE-12-33-R1	General Site Plan	A1
SE-12-34-R1	From South Limit of Construction to Sta. 02+50	A1
SE-12-35-R1	From Sta. 02+50 to Sta. 05+50	A1
SE-12-36-R1	From Sta. 05+50 to Sta. 08+50	A1
SE-12-37-R1	From Sta. 08+50 to Sta. 11+50	A1
SE-12-38-R1	From Sta. 11+50 to North Limit of Construction	A1
SE-12-39-R1	Miscellaneous Details 1 of 2	A1
SE-12-40-R1	Miscellaneous Details 2 of 2	A1

#### E2. OFFICE FACILITIES

- E2.1 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 25 square metres, 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.
  - The building shall be furnished with one desk, one drafting table, table 3m x 1.2m, one stool, one four drawer legal size filing cabinet and a minimum of 8 chairs.
  - 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.

E2.2 The Contractor shall be responsible for all installation and removal costs, all operating costs, and the general maintenance of the office facilities.

E2.3 The office facilities will be provided from the date of the commencement of the Work to the date of Substantial Performance.

### **E3. PROTECTION OF EXISTING TREES**

E3.1 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.

E3.2 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/her designate.

E3.3 No separate measurement or payment will be made for the protection of trees.

E3.4 Except as required in clause E3.1(c) and E3.1(e), Elm trees shall not be pruned at any time between April 1 and July 31.

### **E4. TRAFFIC CONTROL**

E4.1 Further to clauses 3.6 and 3.7 of CW 1130:

- (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. Payment shall be in accordance with CW3410.
- (b) In accordance with the Manual of Temporary Traffic Control in Work Areas on City Streets, the Contractor ("Agency" in the manual) shall make arrangements with the Traffic Services Branch of the City of Winnipeg to place all temporary regulatory signs. The Contractor shall bear all costs associated with the placement of

temporary traffic control devices by the Traffic Services Branch of the City of Winnipeg in connection with the works undertaken by the Contractor.

## **E5. TRAFFIC MANAGEMENT**

E5.1 Further to clause 3.7 of CW 1130:

E5.1.1 Maintain a minimum of two lanes of traffic southbound and two lanes of traffic northbound during their respective construction times;

E5.1.2 Where left turn lanes exist, an additional lane to accommodate the left turn storage lane shall be maintained at all times.

E5.1.3 North/South traffic at Pembina Highway and Plaza Drive intersection and Pembina Highway and Chevrier Boulevard intersection must be maintained during construction to allow for two lanes of traffic in each direction to go straight through and another lane in each direction to turn left. When no work is being performed in the intersection north and south lane closures in the intersection will not be permitted.

E5.1.4 Intersecting street and private approach access shall be maintained at all times.

E5.1.5 Should the Contractor be unable to maintain pedestrian or vehicular access to a residence or business, he shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.

E5.1.6 Pedestrian and ambulance/emergency vehicle access must be maintained at all times.

E5.1.7 Winnipeg Transit service shall be maintained at all times.

## **E6. WATER OBTAINED FROM THE CITY**

E6.1 Further to clause 3.7 of CW 1120, the Contractor shall pay for all costs, including sewer charges, associated with obtaining water from the City in accordance with the Waterworks and Sewer By-laws.

## **E7. SURFACE RESTORATIONS**

E7.1 Further to clause 3.3 of CW 1130, when Total Performance is not achieved in the year the Contract is commenced, the Contractor shall temporarily repair any Work commenced and not completed to the satisfaction of the Contract Administrator. The Contractor shall maintain the temporary repairs in a safe condition as determined by the Contract Administrator until permanent repairs are completed. The Contractor shall bear all costs associated with temporary repairs and their maintenance.

## **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. SALT TOLERANT GRASS SEEDING**

### DESCRIPTION

- E9.1 Further to CW 3520 and CW3540, this specification shall cover sub-grade preparation and the supply and placement of Salt Tolerant Grass Seed.

### MATERIALS

- E9.2 Salt Tolerant Grass Seed
- E9.2.1 Salt Tolerant Grass Seed for regional and collector boulevards, medians and interchange areas shall be a mixture composed of:
- (a) Seventy percent (70%) Fulfs or Nuttals Alkaligrass (*Puccinellia* spp.), twenty percent (20%) Audubon or Aberdeen Creeping Red Fescue and ten percent (10%) Perennial Ryegrass.

### EQUIPMENT

- E9.3 Scarification equipment shall be suitable for the area being scarified, shall be capable of scarifying the sub-grade to the specified depth and shall be accepted by the Contract Administrator. For confined areas a toothed bucket may be acceptable. For larger areas tilling equipment may be required.

### CONSTRUCTION METHODS

- E9.4 Preparation of Existing Grade
- E9.4.1 Prior to placing topsoil, in areas to be seeded greater in width than 600mm, prepare the existing sub-grade by scarifying to a minimum depth of 75mm and to a maximum depth of 100mm to the satisfaction of the Contract Administrator.
- E9.4.2 Scarification shall consist of breaking up and loosening the sub-grade. No scarification shall occur within the edge of a tree canopy (or drip line).
- E9.5 Salt Tolerant Grass Seeding
- E9.5.1 Salt Tolerant Grass Seed shall be sown at a rate of 2.2 kilograms per 100 square meters.

### MEASUREMENT AND PAYMENT

- E9.6 Supply, placement and maintenance of Salt Tolerant Grass Seed will be paid for at the Contract Unit Price per square metre for "Salt Tolerant Grass Seeding", measured as specified herein, which price shall be payment in full for supplying all materials and for completing all operations herein described and all other items incidental to the work included in this Specification. Payment for Salt Tolerant Grass Seeding shall be in accordance with the following:
- (a) Sixty five (65%) percent of quantity following supply and placement.
  - (b) Remaining thirty five (35%) percent of quantity following termination of the Maintenance Period.

## **E10. SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES**

### DESCRIPTION

- E10.1 This specification covers the supply and installation of detectable warning surface tiles in sidewalk ramps and multi-use path ramps.

### SPECIFICATIONS AND DRAWINGS

- E10.2 Referenced Standard Construction Specifications and Standard Details
- (a) CW 3235 - Renewal of Existing Miscellaneous Concrete Slabs

- (b) CW 3240 - Renewal of Existing Curbs
- (c) CW 3310 - Portland Cement Concrete Pavement Works
- (d) CW 3325 - Portland Cement Concrete Sidewalk
- (e) SD-229C - Curb Ramp for Concrete Pavement
- (f) SD-229D - Curb Ramp for Asphalt Overlay

#### E10.3 SDE Drawings

- (a) SDE-229A - Curb Ramp Layout for Intersections
- (b) SDE-229AA - Detectable Warning Surface Tile in Curb Ramps for Intersections, Layout Option 1
- (c) SDE-229AC – 300x300 Detectable Warning Surface Tile, Layout Option 3
- (d) SDE-229AD – 300x300 Detectable Warning Surface Tile, Layout Option 3 DETAIL
- (e) SDE-229AE – Curb Ramp for Pedestrian Corridor with a Traffic Control Device
- (f) SDE-229AF – Detectable Warning Surface Tile Orientation for Offset Intersections
- (g) SDE-229BB – Detectable Warning Surface Tile in Curb Ramps for Medians
- (h) SDE-229E - Curb Ramp Depressed Curb

#### MATERIALS

#### E10.4 Acceptable Detectable Warning Surface Tile product is:

- (a) 610 x 1220mm (2'x 4') Cast in Place (Federal Yellow).
- (b) 300 x 300mm (1'x1') Cast in Place (Federal Yellow).

Manufacturer - ADA Solutions Inc.,  
Supplier -  
Brock White Canada  
879 Keewatin Street  
Winnipeg, Manitoba

Attention: Bernie Giesbrecht  
Ph: 204-479-8089

or

Manufacturer - Armor Tile Tactile Systems  
Supplier –  
Alsip's Building Products  
1 Cole Avenue  
Winnipeg, Manitoba

Attention: Jason Alsip  
Ph. 204-667-3330

E10.4.1 Detectable warning surface tiles shall be Federal Yellow (USA); or Safety Yellow (Canada).

E10.4.2 Detectable warning surface tiles shall be cast in place type with ribs. (Anchored type is not allowed)

E10.4.3 Truncated domes on detectable warning surface tiles shall be in accordance with ADA Accessibility Guidelines (ADAAG).

#### E10.5 Acceptable Directional Bar Tile product is:

- (a) 305mm x 610mm (12"x24") Cast in Place (Wet Set) with Anchors – Manufactured by ADA Solutions

- (i) Part # 1224BAR375Y
- (ii) Flush Mount, Federal Yellow
- (iii) Fasteners: 6mm Dia. x 38mm Long SS FH Bolts (Hex Drive) and 6mm Dia. x 38mm Long Zinc Inserts.
- (iv) Sealant: Manufacturer recommended

## CONSTRUCTION METHODS

### E10.6 Selection of Layout Options

E10.6.1 Select the appropriate design layout for detectable warning surface tiles according to the following prioritized order:

E10.6.2 Layout Option One – Install detectable warning surface tiles in accordance with SDE-229A and SDE-229AA.

E10.6.3 If two 610mm x 1220mm tiles would physically overlap each other, or would be within 150mm of each other, or if one tile would lie within the circulation path towards the other tile, then install the detectable warning surface tiles according to the following order, Layout Option Two(2) or Three(3).

E10.6.4 Layout Option Two – Separate the tiles by moving either one or both tiles along the curb line in opposite directions, in accordance with this Specification, and keeping the ramp and pedestrian road crossing as perpendicular to the road as is possible, as directed by the Contact Administrator.

E10.6.5 Layout Option Three – Install detectable warning surface tiles in accordance with SDE-229AC and SDE-229AD.

### E10.7 General

E10.7.1 Construct curb ramps, sidewalk ramps and multi-use paths in accordance with the referenced Standard Construction Specifications, Standard Details, and SDE drawings.

E10.7.2 Detectable warning surface tile shall not be placed at private approaches or alleys.

E10.7.3 All curb ramps opposite each other shall have the same width.

E10.7.4 Construct the lip of the depressed curb in accordance with SDE – 229E.

E10.7.5 Construct ramp slopes in accordance with SD-229C and SD-229D. Use a ramp slope with preference for a slope as close to 5% maximum as possible.

E10.7.6 Construct flare and curb taper slopes according to the following:

- a) If the curb taper is within a grassed area, construct the curb taper 900mm in length.
- b) When the flare and curb taper are in a full width sidewalk and the sidewalk area at the top of the ramp is <1500mm in width, construct the flare and curb taper at 5% slope to allow safe passage for wheelchairs in this area.
- c) When the flare and curb taper are in a full width sidewalk and the sidewalk area at the top of the ramp is  $\geq$  1500mm in width, construct the flare and curb taper at 10% slope.

E10.7.7 Install the detectable warning surface tile in accordance with E10.11.

E10.7.8 Trim the corner of the tile at curb radii in accordance with SDE-229AA and SDE-229AD.

E10.7.9 Install the detectable warning surface tiles as shown on the referenced drawings or as directed by the Contract Administrator.

E10.7.10 Orient the detectable warning surface tiles perpendicular to the crossing direction.

E10.7.11 Locate gratings, access covers and other appurtenances outside of the sidewalk ramps, depressed curbs, rest areas, and gutters in front of the depressed curbs, as directed by the Contact Administrator.

#### E10.8 Medians and Refuge Islands

E10.8.1 Where the distance from back of curb to back of curb is 1.32m or greater, install one detectable warning surface tile 50mm from the back of each curb.

E10.8.2 Where the distance from back of curb to back of curb is less than 1.32m, place the tiles 50mm from the back of curb and cut the tile(s) to fill the remaining area between the curbs.

#### E10.9 2.0m Wide Depressed Curb for Multi-use Paths

E10.9.1 Construct a curb ramp with a 2.0m depressed curb at high volume collector and regional street intersections in accordance with SDE-229E, in accordance with Public Works Department guidelines and as directed by the Contract Administrator.

E10.9.2 Construct the concrete ramp 2.0m wide and a minimum of 1.50m deep from back of curb.

E10.9.3 Construct the curb ramp in accordance with SD-229C and SD229D.

E10.9.4 Install one 610mm x 1220mm tile centered to the 2.0m wide depressed curb. The part of the tile nearest the curb must be 50mm from the back of curb similar to tile placement in SDE-229AA.

#### E10.10 3.5m Wide Depressed Curb for Multi-use Paths

E10.10.1 Construct a curb ramp with a 3.5m depressed curb at low volume collector and residential street intersections in accordance with SDE-229E, in accordance with Public Works Department guidelines and as directed by the Contact Administrator.

E10.10.2 Construct the concrete ramp 3.5m wide and a minimum of 1.50m deep from back of curb.

E10.10.3 Construct the curb ramp in accordance with SD-229C and SD229D.

E10.10.4 Install two (2) tiles in each concrete ramp, one (1) on each side for each direction. Place the short edge of each tile 150mm from the edge of the concrete ramp, with both tiles in line with each other transversely across the concrete ramp. The tile(s) nearest the curb must be 50mm from back of curb similar to tile placement in SDE-229AA.

E10.10.5 Saw cut the middle of the concrete slab, perpendicular to the curb and to a depth of D/4. Cut additional sawcuts as directed by the Contract Administrator.

### INSTALLATION INSTRUCTIONS

#### E10.11 Installation Instructions for Cast In Place Inline Dome Detectable/Tactile Warning Surface Tile

- (a) During Cast In Place Detectable/Tactile Warning Surface Tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.
- (b) The specifications of the structural embedment flange system and related materials shall be in strict accordance with the contract documents and the guidelines set by their respective manufacturers. Do not set Cast In Place tiles in asphaltic concrete.
- (c) The physical characteristics of the concrete shall be consistent with the contract specifications. An overly wet mix will cause the tile to float. Under these conditions, suitable weights such as 2 concrete blocks or sandbags (12 kg) shall be placed on each tile.
- (d) Prior to placement of the Cast In Place Detectable/Tactile Warning Surface Tile system, the contract drawings shall be reviewed.
- (e) Pour and finish the concrete using typical mason's tools, however, 12 kg weights, and a large non-marring rubber mallet are specific to the installation of the Cast In Place Detectable/Tactile Warning Surface Tile system. A vibrating mechanism can be

employed, if desired. The vibrating unit should be fixed to a soft base such as wood, at least 300mm square.

- (f) The factory-installed plastic sheeting must remain in place during the entire installation process to prevent the splashing of concrete onto the finished surface of the tile. Remove the plastic sheeting after the concrete has set.
- (g) When preparing to set the tile, it is important that NO concrete be removed in the area to accept the tile. It is imperative that the installation technique eliminates any air voids under the tile. Holes in the tile perimeter allow air to escape during the installation process. Concrete will flow through the large holes in each embedment flange on the underside of the tile. This will lock the tile solidly into the cured concrete.
- (h) Drill additional 6mm vent holes in the ribs under the tile as required to help seat the tile in the concrete.
- (i) The concrete shall be poured and finished true and smooth to the required dimensions and slope prior to the tile placement. The tile shall be placed in accordance with the contract drawings.
- (j) The Cast In Place Detectable/Tactile Warning Surface Tiles shall be tamped (or vibrated) into the fresh concrete to ensure that the surface of the truncated domes are flush to the adjacent concrete surface. Embedment of the tile so the top of the truncated domes are flush with the adjacent concrete will reduce the possibility of damage due to snow clearing operations. The embedment process should not be accomplished by stepping on the tile as this may cause uneven setting which can result in air voids under the tile surface.
- (k) While concrete is workable, a 3/8" radius edging tool shall be used to create a finished edge of concrete, a steel trowel shall then be used to finish the concrete around the tile's perimeter.
- (l) During and after the tile installation and the concrete curing stage, it is imperative that there is no walking, leaning or external force placed on the tile that may rock the tile causing a void between the underside of tile and concrete.
- (m) Following tile placement, review installation tolerances to contract drawings and adjust tile before the concrete sets. Two suitable weights of 12kg each shall be placed on each tile as necessary to ensure solid contact of the underside of tile to concrete.
- (n) If required, individual tiles can be bolted together using 1/4 inch or equivalent hardware. This can help to ensure that adjacent tiles are flush to each other during the installation process. Tape or caulking can be placed on the underside of the bolted butt joint to ensure that concrete does not rise up between the tiles during installation. Any protective plastic wrap which was peeled back to facilitate bolting or cutting, should be replaced and taped to ensure that the tile surface remains free of concrete during the installation process.
- (o) Following the concrete curing stage, protective plastic wrap is to be removed from the tile surface by cutting the plastic with a sharp knife, tight to the concrete/tile interface. If concrete bled under the plastic, a soft brass wire brush will clean the residue without damage to the tile surface.
- (p) Tiles can be cut using a continuous rim diamond blade in a circular saw or mini-grinder. Use of a straightedge to guide the cut is advisable where appropriate.
- (q) Bolt 300mm x 300mm tiles together prior to placing in plastic concrete. This ensures that the surface of the tiles are flush with each other.

#### E10.12 Installation Instructions for Directional Bar Tiles

- (a) Install Wet Set Replaceable units as per manufacturer's recommendations, and as shown on contract drawings.
- (b) Refer to Section 03 33 00 Cast In Place Concrete

- (c) Where necessary, cut Wet Set Replaceable units accurately using a 60 tooth carbide or diamond blade with a suitable cutting device. No cut unit shall measure less than 250mm in length. In accordance with manufacturer's recommendations, supplemental fasteners and Inserts shall be added as needed when the distance between the cut face of the unit and the original hardware exceeds 100mm.
- (d) Install Wet Set Replaceable units true to grade, in location, layout and pattern as indicated on the contract drawings.
- (e) Wet Set Replaceable units shall be set flush into a minimum 65mm depth of concrete (100mm-175mm slump). Vibrate or tamp (with a rubber mallet) the Wet Set Replaceable units into the fresh concrete to insure that there are no voids underlying the units and that the units are flush with the adjacent substrate. Temporary weights can be added as necessary in the event of float during initial set of the units.
- (f) Joint Lines between successive Wet Set Replaceable Units: Maintain a 3mm-5mm consistent joint line between successive units.
- (g) Tooled Edge Detail: Maintain a 3mm to 6mm tooled edge detail along the perimeter of the Wet Set Replaceable unit installation. Installation of the tooled edge detail facilitates future removal and replacement of the units.
- (h) Sealant: Fill all Joints and Tooled Edge Details with Sikaflex 1A, BASF NP1, or Tremco Dynamic Sealant in the color(s) indicated on the contract drawings. Sealant renders the installation water resistant and provides for a pleasing architectural finish.
- (i) Protective Plastic Sheet: Particularly in direct sunlight and when temperatures exceed 25 degrees C, remove the protective plastic sheeting from the Wet Set Replaceable units within 48 hours of installation of the unit. Failure to do so will be solely at Contractor risk and may result in the protective plastic bonding to the unit thus requiring a considerable effort to remove the protective plastic sheeting.

#### MEASUREMENT AND PAYMENT

##### E10.13 Detectable Warning Surface Tiles

- E10.13.1 Detectable Warning Surface Tiles shall be measured on a unit basis and paid for at the Contract Unit Price per unit for the "Items of Work" listed here below. The number of units to be paid for shall be the total number of detectable warning surface tiles supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

##### Detectable Warning Surface Tiles:

- i) 300mm x 300mm tiles
  - ii) 610mm x 1220mm tiles
- E10.13.2 The area under the detectable warning surface tile is part of the concrete sidewalk ramp and will be paid in accordance with CW 3235 or CW 3325.
- E10.13.3 The concrete sidewalk ramp and the concrete ramp for multi-use paths will be paid as 100mm sidewalk in accordance with CW 3235 or CW 3325.
- E10.13.4 Curb ramp will be paid in accordance with CW 3240 or CW 3310.

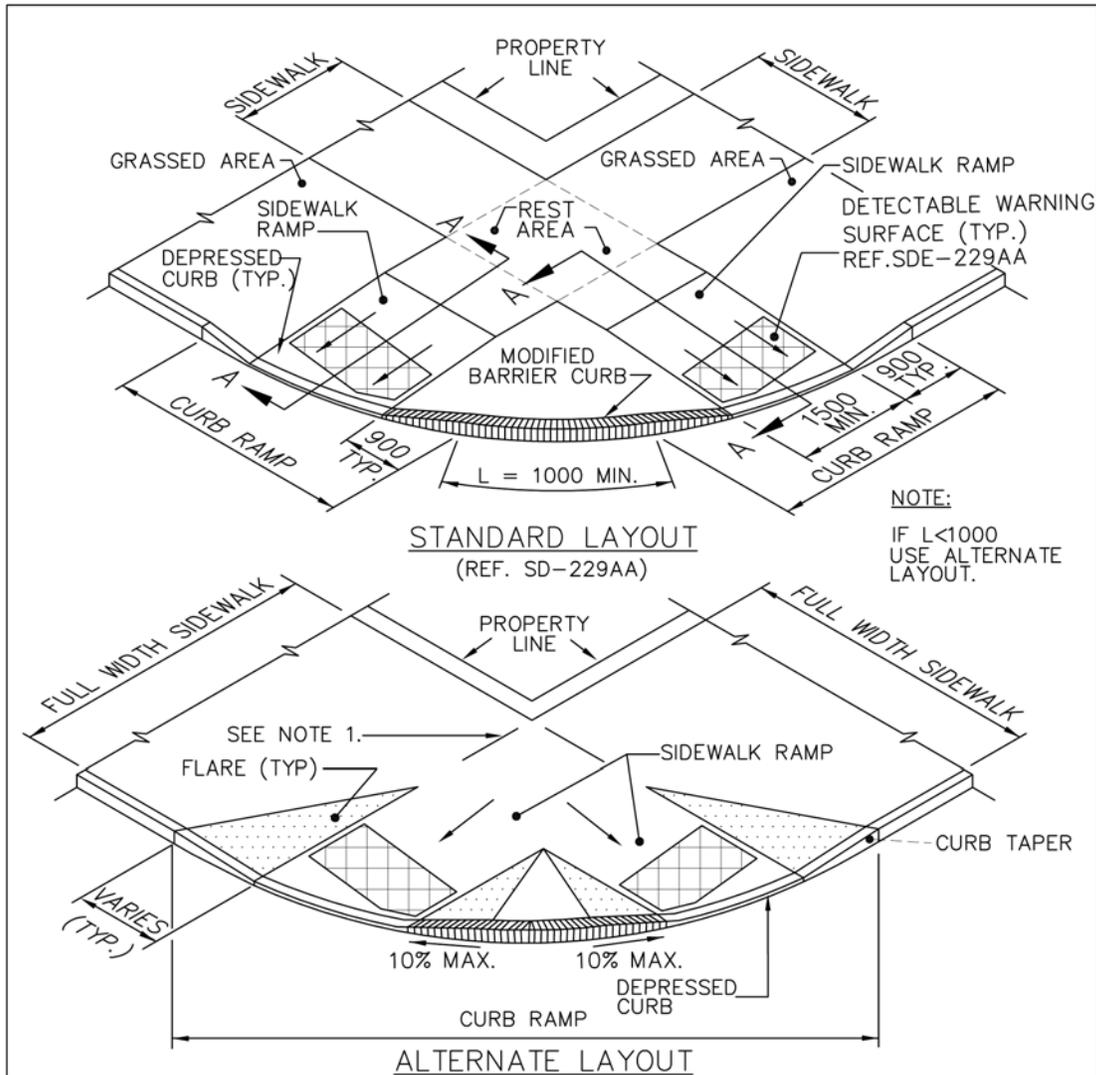
##### E10.14 Directional Bar Tiles

- E10.14.1 Directional Bar Tiles shall be measured on a unit basis and paid for at the Contract Unit Price per unit for the "Items of Work" listed here below. The number of units to be paid for shall be the total number of Directional Bar Tiles supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

##### Directional Bar Tiles:

- i) 305mm x 610mm tiles

DRAWINGS



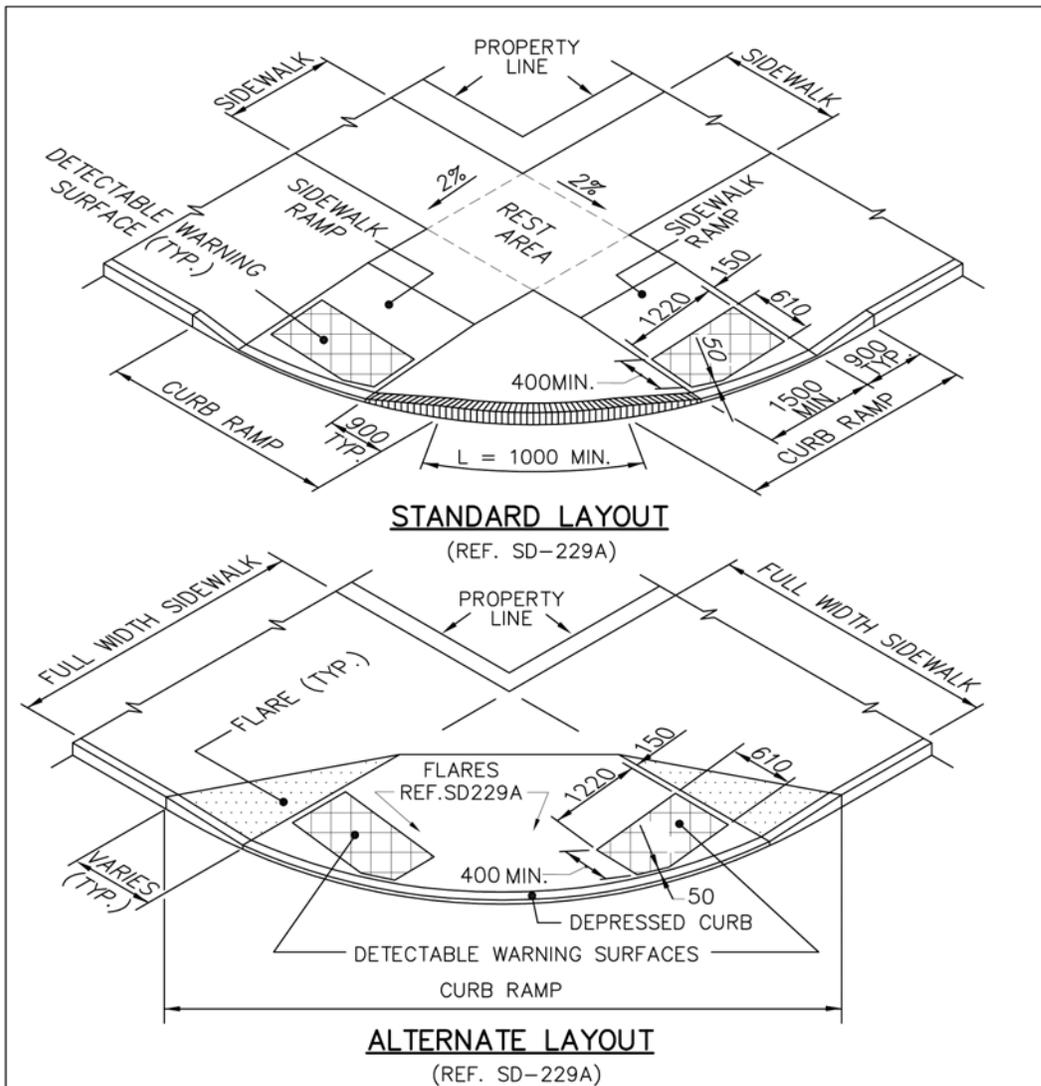
NOTE:  
 IF L < 1000  
 USE ALTERNATE  
 LAYOUT.

DIMENSIONS ARE IN MILLIMETRES

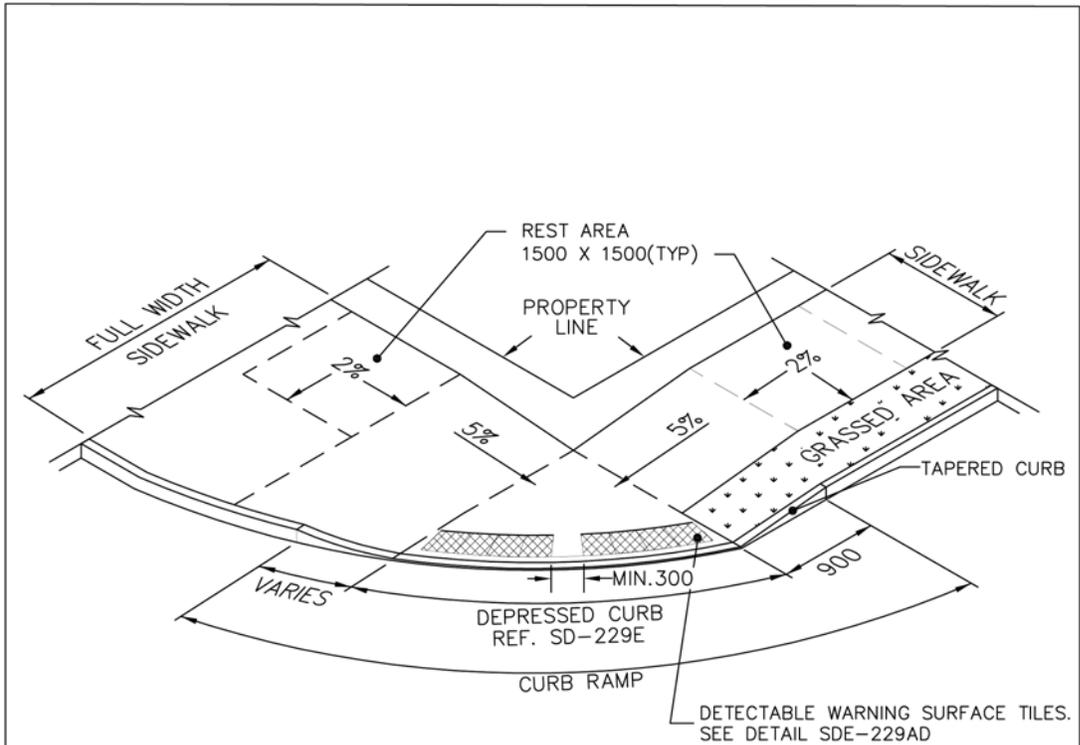
- NOTE:
1. LINEUP DEPRESSED CURB WITH BACK OF SIDEWALK.
  2. FOR SECTION A-A SEE SD-229C & SD-229D
  3. CONSTRUCT FLARE AND CURB TAPER SLOPE IN ACCORDANCE WITH SECTION 1.6 OF THIS SPECIFICATION
  4. REST AREA MINIMUM 1500 X 1500

 <b>THE CITY OF WINNIPEG</b> PUBLIC WORKS DEPARTMENT	
	Reference Spec. No. E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE
CURB RAMP LAYOUT FOR INTERSECTIONS	

Designed By: B.P.	Drawn By: T.G.A..	Scale : N.T.S.
Checked By: F.W.C.	Date: 11-02-10	Drawing No.
Approved:		SDE-229A

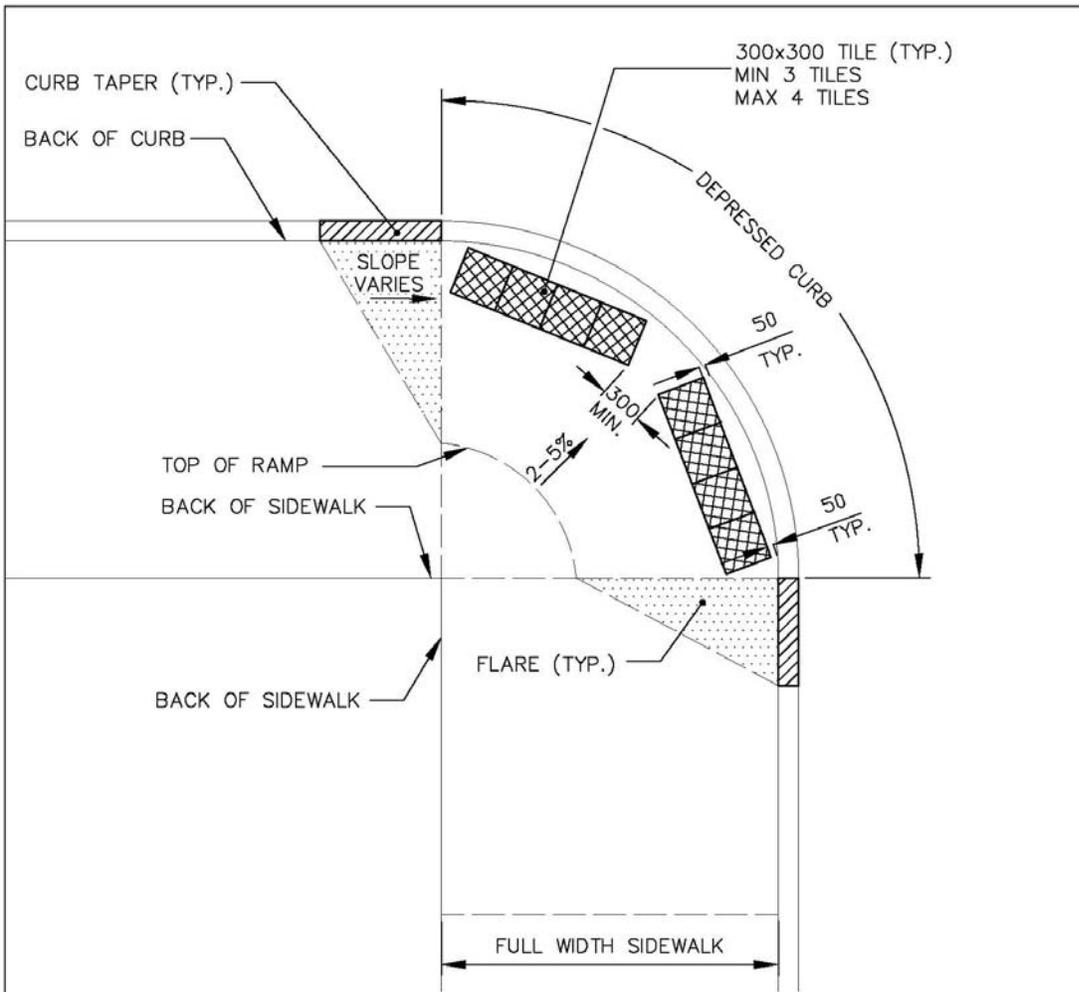


 <b>THE CITY OF WINNIPEG</b> PUBLIC WORKS DEPARTMENT		DIMENSIONS ARE IN MILLIMETRES		
Reference Spec. No. CW 3235, CW 3310, CW 3325 E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE		Designed By: B.P.	Drawn By: T.G.A.	Scale : N.T.S.
DETECTABLE WARNING SURFACE TILE SURFACE IN CURB RAMPS FOR INTERSECTIONS. <b>LAYOUT OPTION 1</b>		Checked By: F.W.C.	Date: 11-02-10	Drawing No.
		Approved:		SDE-229AA



**NOTES:**  
 1. PLACE 300x300 DETECTABLE WARNING SURFACE TILES IN ACCORDANCE WITH "SELECTION OF LAYOUT OPTIONS" IN THIS SPECIFICATION.

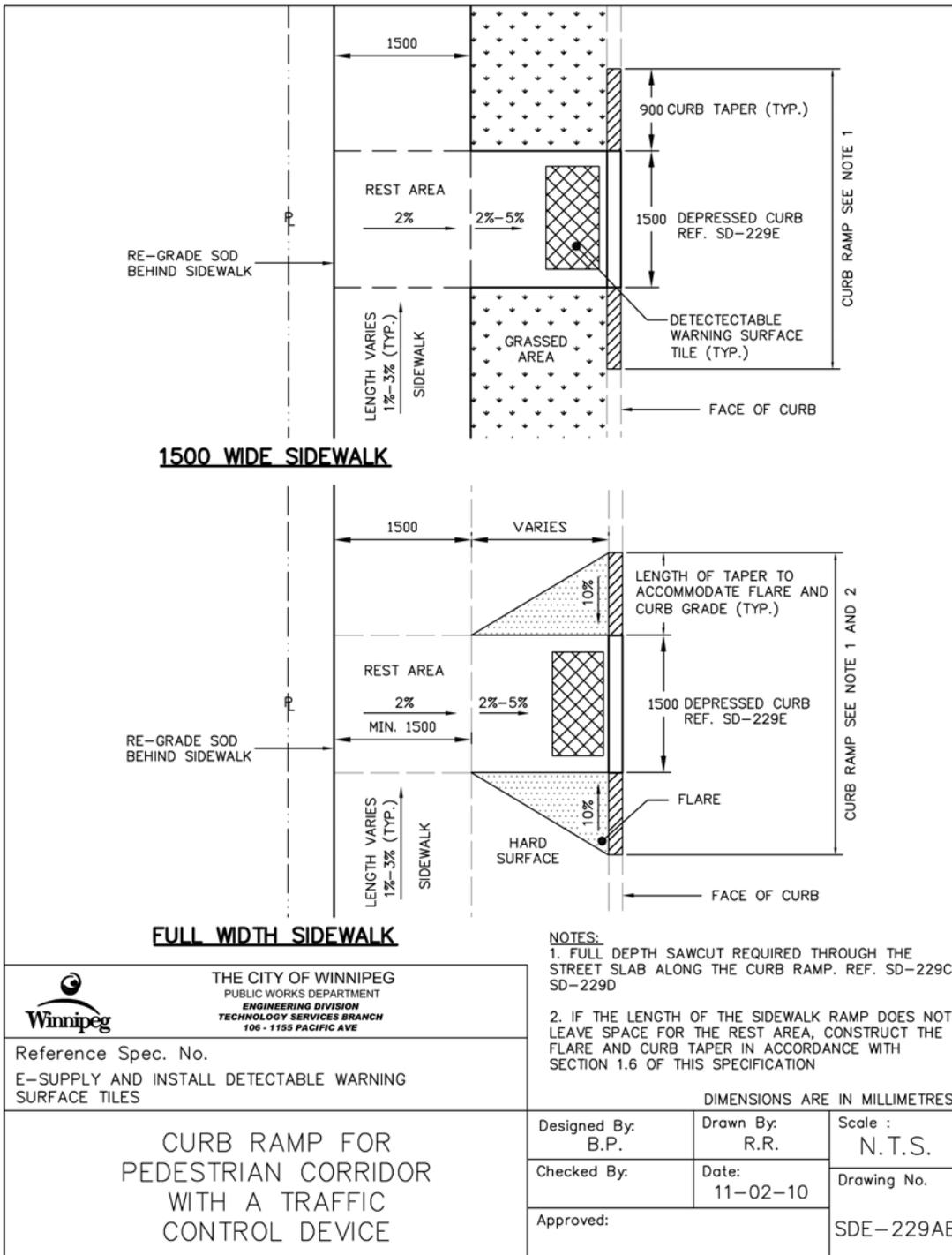
 <b>THE CITY OF WINNIPEG</b> PUBLIC WORKS DEPARTMENT	DIMENSIONS ARE IN MILLIMETRES		
	Reference Spec. No. E-SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES	Designed By: B.P.	Drawn By: R.R.
<b>300 X 300 mm DETECTABLE WARNING SURFACE TILE LAYOUT OPTION 3</b>	Checked By:	Date: 11-02-10	Drawing No.
	Approved:	SDE-229AC	



**NOTES:**  
 1. WHEN THE SIDEWALK AREA AT THE TOP OF THE RAMP IS  $\geq 1500\text{mm}$  OR  $< 1500\text{mm}$  IN WIDTH, CONSTRUCT THE SLOPE OF THE CURB RAMP AND THE CURB TAPER IN ACCORDANCE WITH SECTION 1.6 OF THIS SPECIFICATION.

 <p>THE CITY OF WINNIPEG                  PUBLIC WORKS DEPARTMENT                  ENGINEERING DIVISION                  TECHNOLOGY SERVICES BRANCH                  106 - 1185 PACIFIC AVE</p>	Reference Spec. No.	
	E-SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES	
<p>300x300mm DETECTABLE WARNING SURFACE TILE LAYOUT OPTION 3 DETAIL</p>		

DIMENSIONS ARE IN MILLIMETRES		
Designed By: B.P.	Drawn By: R.R.	Scale : N.T.S.
Checked By:	Date: 11-02-10	Drawing No.
Approved:		SDE-229AD

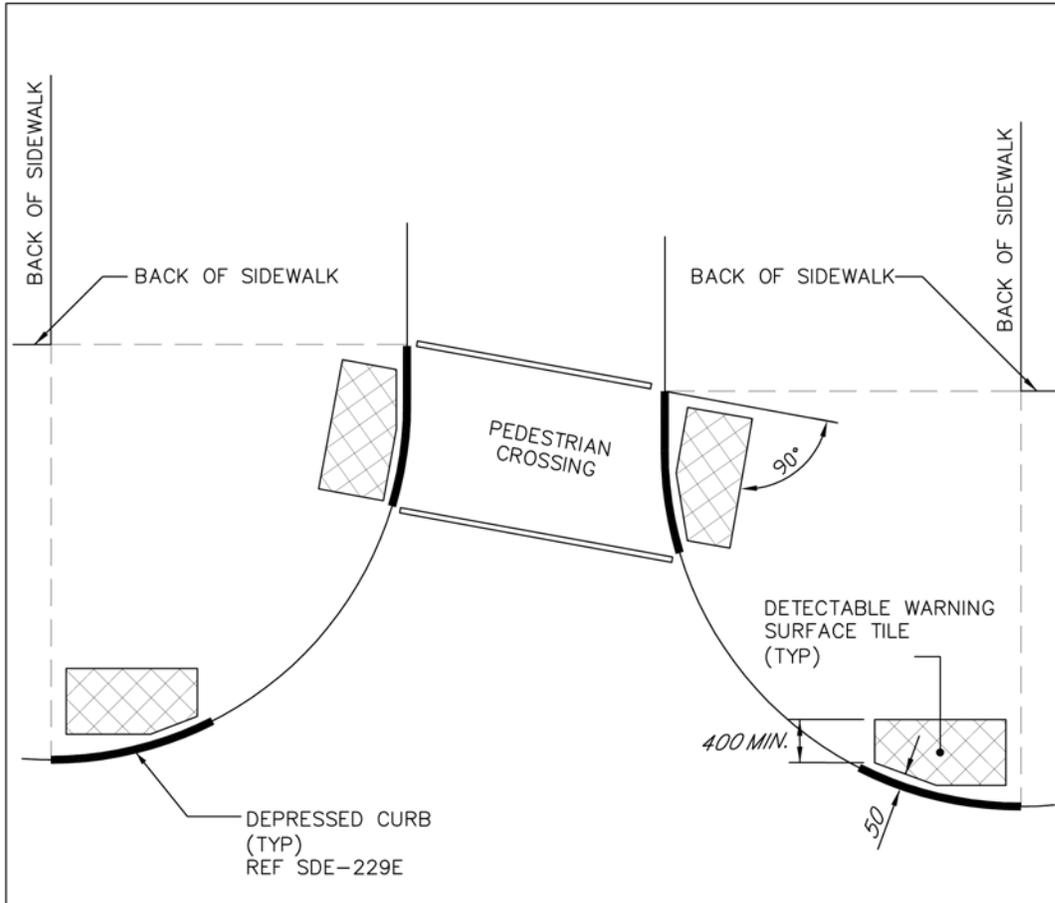


 THE CITY OF WINNIPEG  
 PUBLIC WORKS DEPARTMENT  
 ENGINEERING DIVISION  
 TECHNOLOGY SERVICES BRANCH  
 106 - 1155 PACIFIC AVE

Reference Spec. No.  
 E-SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES

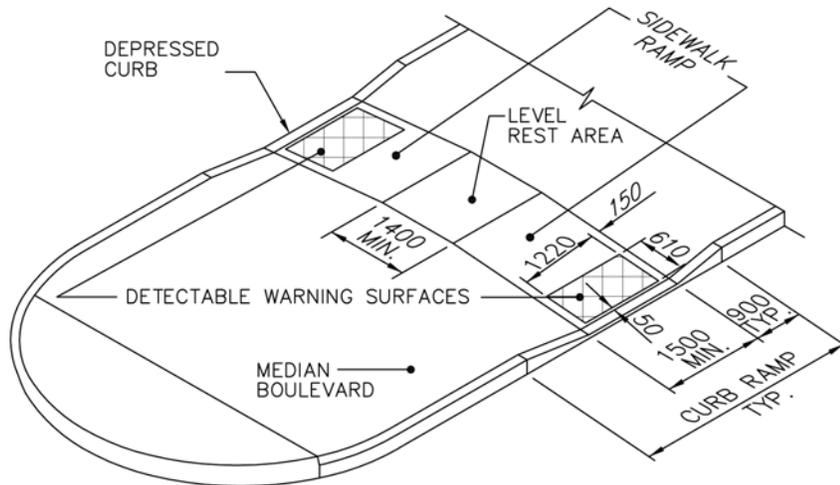
**CURB RAMP FOR PEDESTRIAN CORRIDOR WITH A TRAFFIC CONTROL DEVICE**

Designed By: B.P.	Drawn By: R.R.	Scale : N.T.S.
Checked By:	Date: 11-02-10	Drawing No.
Approved:	SDE-229AE	



- NOTES:**  
 1. LOCATE END OF DEPRESSED CURB IN LINE WITH PROJECTED BACK OF SIDEWALK.  
 2. CONSTRUCT FLARES IN ACCORDANCE WITH SDE-229A

 <b>THE CITY OF WINNIPEG</b> PUBLIC WORKS DEPARTMENT		
Reference Spec. No. CW 3235, CW 3310, CW 3325 E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE TILES		
DIMENSIONS ARE IN MILLIMETRES		
DETECTABLE WARNING SURFACE TILE ORIENTATION FOR OFFSET INTERSECTIONS	Designed By: B.P.	Drawn By: T.G.A.
	Checked By: F.W.C.	Date: 11-02-10
	Approved:	
		Scale : N.T.S. Drawing No. SDE-229AF

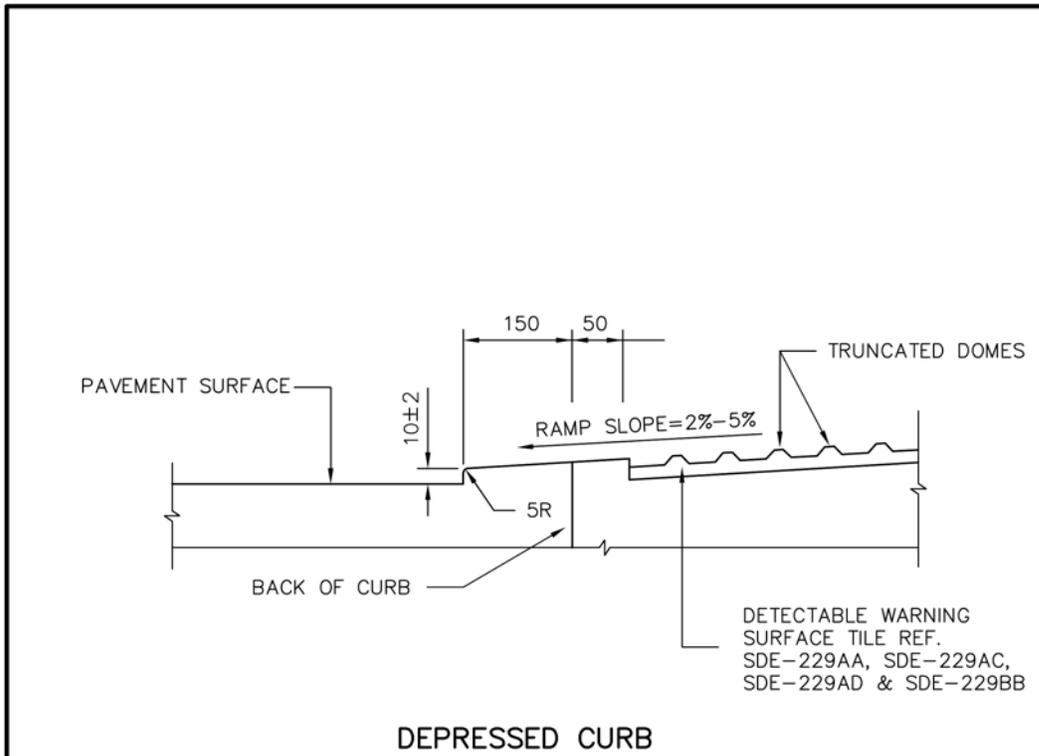


MEDIAN SIDEWALK CROSSING  
 (REF. SD-229B)

**NOTE:**

1. FOR NARROW MEDIANS AND REFUGE ISLANDS < 1.32m IN WIDTH, PLACE DETECTABLE WARNING SURFACE FULL WIDTH, MAINTAINING 50mm SPACING FROM BACK OF CURB.

 <b>THE CITY OF WINNIPEG</b> PUBLIC WORKS DEPARTMENT	DIMENSIONS ARE IN MILLIMETRES		
	Reference Spec. No. CW 3235, CW 3310, CW 3325 E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE		
DETECTABLE WARNING SURFACE TILE IN CURB RAMPS FOR MEDIANS	Designed By: B.P.	Drawn By: T.G.A.	Scale : N.T.S.
	Checked By: F.W.C.	Date: 11-02-10	Drawing No.
	Approved:		SDE-229BB



**NOTES:**

- 1) SIDEWALK RAMP SURFACE SHALL BE GIVEN A PARALLEL TEXTURED BROOM FINISH.
- 2) INSTALL DETECTABLE WARNING SURFACE SO THAT THE TOP OF THE TRUNCATED DOMES ARE FLUSH WITH THE SURFACE FO THE ADJACENT SIDEWALK.

<b>THE CITY OF WINNIPEG</b> PUBLIC WORKS DEPARTMENT	DIMENSIONS ARE IN MILLIMETRES		
Reference Spec. No. CW 3235, CW 3310, CW 3325 E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE	Designed By: B.P.	Drawn By: T.G.A.	Scale : <b>N.T.S.</b>
<b>CURB RAMP                  DEPRESSED CURB</b>	Checked By: F.W.C.	Date: 11-02-10	Drawing No. <b>SDE-229E</b>
	Approved:		

**E11. TREE REMOVAL**

E11.1 Further to CW 3010 – Clearing and Grubbing, tree removal including the roots shall be measured on a unit basis for the number of trees removed in accordance with CW 3010. Payment shall be at the Contract Unit Price bid for “Tree Removal” measured as specified herein for the total number of trees removed in accordance with this Specification, accepted and measured by the Contract Administrator.

## **E12. MONOLITHIC CURB AND 100MM CONCRETE SIDEWALK WITH BLOCK-OUTS FOR PAVERS**

### GENERAL

- E12.1 Further to Specification CW 3325 the Contractor shall construct the proposed Monolithic Curb and 100mm Concrete Sidewalk with Block-outs for Pavers with a minimum 100mm depth of concrete below pavers. The “block-outs” shall be constructed utilizing forming techniques capable of accommodating the proposed paving stones to the dimensions and tolerances as confirmed with interlocking paving stone manufacturer.
- E12.2 A 50mm levelling course of Granular Base Course Material will be used for the Monolithic Curb and 100mm Concrete Sidewalk with Block-outs for Pavers. Quarried limestone and/or crushed concrete will **not** be acceptable.
- E12.3 The concrete sidewalk shall be poured such that the “block-outs” and remaining sidewalk act as a monolithic section.
- E12.4 All costs in connection with the additional forming and placement of concrete as a result of the “block-outs”, shall be included in the Contract Unit Price for Monolithic Curb and 100mm Concrete Sidewalk with Block-outs for Pavers.
- E12.5 Where concrete sidewalk is to be poured up to adjacent buildings, an approved bond breaker shall be supplied and installed from the base of the concrete slab up to the concrete surface. Cost of the bond breaker shall be included in the Contract Unit Price for Monolithic Curb and 100mm Concrete Sidewalk with Block-outs for Pavers.

### MEASUREMENT AND PAYMENT

- E12.6 Construction of Monolithic Curb and 100mm Concrete Sidewalk with Block-outs for Pavers will be measured on an area basis and paid for at the Contract Unit Price per square metre for “Monolithic Curb and 100mm Concrete Sidewalk with Block-outs for Pavers”. The area to be paid for will be the total number of square metres constructed of Monolithic Curb and 100mm Concrete Sidewalk with Block-outs for Pavers in accordance with this Specification, accepted and measured by the Contract administrator.
- E12.7 The supply, placement and compaction of Granular Base Course Material for Monolithic Curb and 100mm Concrete Sidewalk with Block-outs for Pavers shall be included in the cost of Monolithic Curb and 100mm Concrete Sidewalk with Block-outs for Pavers and no separate measurement and payment will be made.

## **E13. UNIT PAVER INSERT FOR BUS STOP**

### DESCRIPTION

- E13.1 Further to CW 3330 this Specification shall cover the:
- (a) Supply and installation of interlocking paving stones (unit pavers),
  - (b) supply and installation of sand setting bed,
  - (c) supply and installation of grout.
- E13.2 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 other things necessary or and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

## MATERIALS

- E13.3 Concrete interlocking paving stones (unit pavers) shall be Holland Stone Pavers and Cycle Pavers, supplied by Barkman Concrete, contact Wayne Wiebe, phone 667-3310, as shown on the Drawings and as follows:
- (a) Blue Holland Stone 105 x 210 x 60mm
  - (b) Charcoal Holland Stone 105 x 210 x 60mm
  - (c) Natural Holland Stone 105 x 210 x 60mm
  - (d) Yellow Cycle Paver 305 x 605 x 100mm
- E13.4 Contractor to provide the Contract Administrator a colour sample of the Cycle Paver prior to production.
- E13.5 Sand:
- (a) Clean brick sand as joint filler.
  - (b) Clean brick sand as minimum 13mm depth setting bed
- E13.6 Grout:
- (a) Grout as specified hereinafter shall be used for grouting paving stone and brick in areas indicated on the drawings. The grout shall have a compressive strength of 25 MPA at 28 days, determined on 50 mm cubes stored and tested in accordance with ASTM C109, and shall consist of normal Portland cement, sand and water.
  - (b) The water-cement ratio shall be kept in the range of 0.45 to 0.55.
  - (c) The grout shall have between 3% and 5% entrained air.
  - (d) Acryl-Stik or approved equal to be used in grout at approximately 4 litres Acryl-Stik to 3 litres water.
  - (e) Admixtures to be used in the grout shall be supplied in accordance with the requirements of the City of Winnipeg Standard CW 3310.
  - (f) The grout shall be of a consistency suitable for the application intended as approved by the Contract Administrator.
  - (g) The Contractor shall provide the Contract Administrator with a mix design statement certifying the constituent materials and mix proportions that will be used in the grout for approval prior to construction.

## CONSTRUCTION METHODS

- E13.7 Interlocking paving stones shall be installed in block out in concrete sidewalk or on granular base as per the Drawings.
- E13.8 If cutting of existing concrete sidewalk is required, this shall be incidental to the pay item described in this specification.
- E13.9 Install sand setting bed for pavers on granular base as shown on the Drawings.
- E13.10 Contractor to verify the exact dimensions of pavers and panels prior to construction of block outs in concrete sidewalk.
- E13.10.1 Install concrete sidewalk as specified on Drawings.
- E13.10.2 Install sand bed to minimum 13mm depth as specified on Drawings. Adjust depth of pavers under areas to be re-levelled to ensure surface of pavers is flush with adjacent paving.
- E13.10.3 Do not compact setting bed prior to installation of pavers.
- E13.10.4 Spread only sufficient area which can be covered with pavers same day.
- E13.10.5 Lay pavers on sand bed hand tight.

- E13.10.6 In areas where pavers are to be grouted in place clean existing concrete, install grout bed and then place pavers on grout.
- E13.10.7 Grout between pavers as required ensuring stability.
- E13.10.8 Remove adjacent pavers in bands as required to ensure that bricks do not require cutting on straight bands.
- E13.10.9 Where paving pattern is interrupted by vertical structural elements pavers must be sawcut and fit true and hand tight.
- E13.10.10 Commence installation of pavers against edge to obtain straightest possible course for installation.
- E13.10.11 Pavers shall be cut with a saw only, to obtain true even undamaged edges. Chipped pavers are unacceptable.
- E13.10.12 Crews shall Work on installed pavers, not on sand layer.
- E13.10.13 Spread and fine grade brick sand over paving surface and sweep into joints, in several directions. Sand is incidental to the price for supply and installation of pavers.
- E13.10.14 Place plywood sheet on top of Yellow Broadway Paver before compaction to protect ridges. Ridges on Yellow Broadway Paver to be flush with top of sidewalk. Compact all pavers with vibratory plate compactor having mass of at least 113kg. Compaction is incidental to the price for supply and installation of paving stone.
- E13.10.15 Sweep remaining sand over all paving areas and remove from Site.
- E13.10.16 Replace at no extra cost all whole or cut stones marked as unacceptable.
- E13.10.17 Remove cracked, chipped, broken or otherwise damaged paving materials from Site immediately.
- E13.10.18 Upon completion, clean in accordance with manufacturer's recommendations.

#### MEASUREMENT AND PAYMENT

- E13.11 Measurement and payment for the supply and installation of "Interlocking Paving Stones" shall be as per City of Winnipeg Specification CW 3330.

#### **E14. CAST-IN-PLACE CONCRETE FOUNDATIONS**

##### E14.1 Description

- (a) The Work covered under this Item shall include all concreting operations related to construction of cast-in-place concrete foundations in accordance with this Specification and as shown on the Drawings.
- (b) 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.

##### E14.2 Materials

###### E14.2.1 General

- (a) The Contractor shall be responsible for the supply, safe storage, and handling of all materials set forth in this Specification.

###### E14.2.2 Handling and Storage of Materials

- (a) All materials shall be handled and stored in a careful and workmanlike manner, to the satisfaction of the Contract Administrator. Storage of materials shall be in accordance with CSA Standard A23.1-04.

###### E14.2.3 Testing and Approval

- (a) 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.
- (b) All materials shall be approved by the Contract Administrator at least seven (7) days before any construction is undertaken. If, in the opinion of the Contract Administrator, such materials in whole or in part, do not conform to the Specifications detailed herein or are found to be defective in manufacture or have become damaged in transit, storage, or handling operations, then such materials shall be rejected by the Contract Administrator and replaced by the Contractor at his own expense.

#### E14.2.4 Patching Mortar

- (a) The patching mortar shall be made of the same cementitious material and of approximately the same proportions as used for the concrete, except that the coarse aggregate shall be omitted and the mortar shall consist of not more than 1 part cement to 2 parts sand by damp loose volume. White Portland Cement shall be substituted for a part of the grey Portland Cement on exposed concrete in order to produce a colour matching the colour of the surrounding concrete, as determined by a trial patch. The quantity of mixing water shall be no more than necessary for handling and placing.

#### E14.2.5 Cement

- (a) Cement shall be Type HS or HSb, high-sulphate-resistant hydraulic cement, conforming to the requirements of CSA Standard A23.1-04.

#### E14.2.6 Concrete

- (a) General
  - (i) Concrete repair material shall be compatible with the concrete substrate.
- (b) The Contractor shall be responsible for the design and performance of all concrete mixes supplied under this specification. Either ready mix concrete or proprietary repair mortars, where applicable, may be used having the following minimum properties in accordance with CSA A23.1-04:
  - (i) Class of Exposure: S-1
  - (ii) Compressive Strength @ 56 days = 35 MPa
  - (iii) Water / Cementing Materials Ratio = 0.4
  - (iv) Air Content: Category 2 per Table 4 of CSA A23.1-04 (4-7%)
  - (v) Cement – shall be as specified in E14.2.5
- (c) Mix design for ready mix concrete shall be submitted to Contract Administrator at least two weeks prior to concrete placing operations.
- (d) The workability of each concrete mix shall be consistent with the Contractor's placement operations. Self compacting concrete may be used for the foundations.
- (e) Any proposed proprietary repair mortar shall be subject to the approval of the Contract Administrator and must meet or exceed the properties of the ready mix concrete.
- (f) The temperature of all types of concrete shall be between 15°C and 25°C at discharge. Temperature requirements for concrete containing silica fume shall be between 10°C and 18°C at discharge unless otherwise approved by the Contract Administrator.
- (g) Concrete materials susceptible to frost damage shall be protected from freezing.

#### E14.2.7 Aggregate

- (a) The Contractor shall be responsible for testing the fine and coarse aggregates to establish conformance to these specifications, and the results of these tests shall be

provided to the Contract Administrator if requested. All aggregates shall comply with CSA A23.1.

(b) Coarse Aggregate

- (i) The maximum nominal size of coarse aggregate shall be sized to suit the Contractor's mix design. Gradation shall be in accordance with CSA A23.1, Table 11, Group 1. The coarse aggregate shall satisfy the Standard Requirements specified in CSA A23.1, Table 12, "Concrete Exposed to Freezing and Thawing".
- (ii) Coarse aggregate shall consist of crushed stone or gravel or a combination thereof, having hard, strong, durable particles free from elongation, dust, shale, earth, vegetable matter or other injurious substances. Coarse aggregate shall be clean and free from alkali, organic or other deleterious matter; and shall have an absorption not exceeding 2.25%.
- (iii) The aggregate retained on the 5 mm sieve shall consist of clean, hard, tough, durable, angular particles with a rough surface texture, and shall be free from organic material, adherent coatings of clay, clay balls, and excess of thin particles or any other extraneous material.
- (iv) Coarse aggregate when tested for abrasion in accordance with ASTM C131 shall not have a loss greater than 30%.
- (v) Tests of the coarse aggregate shall not exceed the limits for standard for requirements prescribed in CSA A23.1, Table 12, for concrete exposed to freezing and thawing.

(c) Fine Aggregate

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

E14.2.8 Cementing Materials

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

E14.2.9 Admixtures

- (a) Air entraining admixtures shall conform to the requirements of ASTM C260.
- (b) Chemical admixtures shall conform to the requirements of ASTM C494 or C1017 for flowing concrete.
- (c) All admixtures shall be compatible with all other constituents. The addition of calcium chloride, accelerators, and air-reducing agents will not be permitted, unless otherwise approved by the Contract Administrator.

- (d) Appropriate low range water reducing and/or superplasticizing admixtures shall be used in concrete containing silica fume. Approved retarders or set controlling admixtures may be used for concrete containing silica fume.
- (e) An aminocarboxylate based migrating corrosion inhibitor admixture shall be used in concrete that will be used as a repair material that will either be in contact with or adjacent to reinforcing steel in existing concrete. Proposed admixtures shall be subject to the approval of the Contract Administrator.

E14.2.10 Water

- (a) 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.

E14.2.11 Concrete Supply

- (a) Concrete shall be proportioned, mixed, and delivered in accordance with the requirements of CSA A23.1, except that the transporting of ready mixed concrete in non-agitating equipment will not be permitted unless prior written approval is received from the Contract Administrator.
- (b) Unless otherwise directed by the Contract Administrator, the discharge of ready mixed concrete shall be completed within 120 minutes after the introduction of the mixing water to the cementing materials and aggregates.
- (c) The Contractor shall maintain all equipment used for handling and transporting the concrete in a clean condition and proper working order.

E14.2.12 Reinforcing Steel

- (a) Reinforcing steel shall be deemed to include all reinforcing bars, tie-bars, and dowels.
- (b) All reinforcing steel shall conform to the requirements of CSA Standard G30.18, Grade 400 W, Billet-Steel Bars for Concrete Reinforcement. All reinforcing steel shall be new deformed billet steel bars. All bars, including ties, shall be hot-dip galvanized in accordance with CSA Standard G164 for a minimum net retention of 600 g/m<sup>2</sup>. Reinforcing steel supply and installation will be incidental to construction of concrete foundation and no separate payment will be made.

E14.2.13 Anchor Bolts, Nuts, and Washers

- (a) Anchor bolts, nuts, and washers shall be supplied by the Contract Administrator.
- (b) Anchor bolt supply and installation will be incidental to construction of concrete foundation and no separate payment will be made.

E14.2.14 Anchor Bolt Templates

- (a) Anchor bolt templates shall be supplied by the Contract Administrator.
- (b) Anchor bolt templates will be incidental to construction of new concrete foundation and no separate payment will be made.

E14.2.15 Fibre Joint Filler

- (a) Fibre joint filler shall be rot-proof and of the preformed, non-extruding, resilient-type, made with a bituminous fibre such as "Flexcell," and shall conform to the requirements of ASTM Standard D1751, or approved equal in accordance with B6.

E14.2.16 Anti-Graffiti Coating

- (a) Anti-graffiti coating shall be "Professional Water Sealant & Anti-Graffiti System" or approved equivalent by Contract Administrator.

E14.2.17 Waterproofing Membrane

- (a) Waterproofing membrane shall be "Sonoshield HLM 5000 R" or approved equivalent by the Contract Administrator.

- E14.2.18      Miscellaneous Materials
- (a) Miscellaneous materials shall be of the type specified on the Drawings or approved by the Contract Administrator.
- E14.3          Construction Methods
- E14.3.1        Location and Alignment of Foundations
- (a) Foundation construction shall not commence until the Contractor has obtained clearance from the appropriate Utility Authorities.
  - (b) Foundations shall be placed in the positions shown on the Drawings and as directed by the Contract Administrator in the field.
  - (c) The deviation of the axis of any finished foundation shall not differ by more than 1 percent from the vertical.
- E14.3.2        Buried Utilities
- (a) The Contractor shall exercise extreme caution when constructing the foundations in the vicinity of existing buried utilities and buildings. The Drawings show the approximate locations of existing buried utilities. The Contractor shall be responsible for obtaining the exact location of the buried utilities from the appropriate Utility Authorities prior to installing the foundations.
  - (b) The proposed locations of the foundations may be changed by the Contract Administrator if they interfere with the buried utilities.
  - (c) The Contractor shall be responsible for all costs that may be incurred for repair/rectification of any damage caused to the existing buried utilities as a result of the Contractor's operations in constructing cast-in-place concrete foundations, as determined by the Contract Administrator.
- E14.3.3        Excavation
- (a) The Contractor is responsible for determining the excavation method at each foundation location.
  - (b) Excavations for foundations shall be made with equipment designed to remove a core of the diameter shown on the Drawings, or hydro-jet excavation to a depth to bypass and/or expose adjacent utilities.
  - (c) Upon reaching the required elevation, the bottom of the excavation shall be cleaned as directed by the Contract Administrator in the field.
  - (d) All excavated material from the foundations shall be promptly hauled away from the Site to an approved disposal area as located by the Contractor.
  - (e) Upon completion of the cleaning out of the bottom to the satisfaction of the Contract Administrator, the reinforcement and anchor bolts shall be set in place and the concrete poured immediately. Under no circumstances shall a hole be left to stand open after boring has been completed.
- E14.3.4        Sleeving
- (a) 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.
  - (b) The sleeving shall be designed by the Contractor and constructed to resist all forces that may tend to distort it.
  - (c) 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.
  - (d) The clearance between the face of the bore hole and the sleeving shall not exceed 75 mm.

#### E14.3.5 Inspection of Bores

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

#### E14.3.6 Placing Reinforcing Steel

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

#### E14.3.7 Placing Anchor Bolts

- (a) The anchor bolts shall be aligned with a steel template supplied by the Contract Administrator matching the bolt holes in the sign structure base plate. **Extreme care shall be used in this operation to ensure bolts are aligned properly.** Placement of anchor bolts without the steel template will not be permitted.
- (b) The threaded portion of the anchor bolts projecting above the top surface of foundation shall be coated with oil, before the concrete is poured, to minimize the fouling of threads splattered by concrete residue.

#### E14.3.8 Placing Metal Bases

- (a) Contractor to install metal bases as supplied by the Contract Administrator following curing of concrete foundations.
- (b) Metal bases are to be installed plumb, level, and flush to the concrete foundation. Contractor to use stainless steel washers to level bases as required.

#### E14.3.9 Forms

- (a) Forms for exposed surfaces that require an "ordinary surface finish" shall be made of good quality plywood, or an approved equivalent, or uniform thickness, with or without a form liner.
- (b) Architectural concrete form liner shall be as specified on the Plans or equivalent as approved by the Engineer.
- (c) Permeable formwork liner shall be Drainoform, Zemdrail II, or equivalent as approved by the Engineer.
- (d) Formwork materials shall conform to CSA Standard CAN/CSA-A23.1, and American Concrete Publication SP:4, "Formwork for Concrete".
- (e) No "stay-in-place" formwork or falsework is permitted.
- (f) Form sheeting plywood to be covered with form liner or to be directly in contact with soil shall be exterior Douglas Fir, concrete form grade, conforming to CSA Standard O121-M1978, a minimum of 20 mm thick.
- (g) Where form liner is not being used, form sheeting shall be Douglas Fir, overlay form liner type conforming to CSA Standard O121-M1978. Approved manufacturers are "Evans" and "C-Z".
- (h) Boards used for formwork shall be fully seasoned and free from defects such as knots, warps, cracks, etc., which may mark the concrete surface.
- (i) No formwork accessories will be allowed to be left in place within 50 mm of the surface following form removal. Items to be left in place, must be made from a non-

rusting material or galvanized steel; and they shall not stain, blemish, or spall the concrete surface for the life of the concrete.

- (j) Forms for exposed concrete surfaces that do not require a form liner may be either new plywood or steel as authorized by the Contract Administrator.
- (k) Studding shall be spruce or pine and shall have such dimensions and spacing that they shall withstand distortion from all the forces to which the forms will be subjected. Minimum dimensions shall be 50 mm x 150 mm.
- (l) Walers shall be spruce or pine, with minimum dimensions of 100 mm x 150 mm.
- (m) All forms are incidental to these Works and must be removed by the Contractor once adequate strength and curing of the concrete has been achieved.
- (n) 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.

#### E14.3.10 Placing Concrete

- (a) 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.
- (b) Concrete shall not have a free fall of more than 2.0 m and shall be placed so that the aggregates will not separate or segregate. The slump of the concrete shall not exceed 110 mm. The concrete shall be vibrated throughout the entire length of the foundation.
- (c) Concrete shall be placed to the elevations as shown on the Drawings. The top surface of the foundation shall be finished smooth and even with a hand float.
- (d) The shaft shall be free of water prior to placing of concrete. Concrete shall not be placed in or through water unless authorized by the Contract Administrator.

#### E14.3.11 Protection of Newly Placed Concrete

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

#### E14.3.12 Construction Joints

- (a) Construction joints shall be located only where shown on the Drawings or as otherwise approved in writing by the Contract Administrator. Construction joints shall be at right angles to the direction of the main reinforcing steel. All reinforcing steel shall be continuous across the joints. Bevelled shear keys, as shown on the Drawings or approved by the Contract Administrator, shall be provided at all joints.
- (b) In lieu of shear keys, the Contractor may roughen the surface as follows. The surface shall be rough, with a minimum amplitude of 6 mm. Acceptable procedures to obtain this rough surface are as follows:
  - (i) By removing the mortar from between the larger aggregate particles with a water jet and soft brush when the concrete is in a semi-hardened state (green-cut).
  - (ii) By first applying a chemical retarder to the surface and then removing the mortar from the larger aggregate particles with a water jet and brush.
- (c) The face of joints shall be cleaned of all laitance and dirt, after which the cementitious grout or an approved bonding agent shall be applied. Forms shall be retightened, and all reinforcing steel shall be thoroughly cleaned at the joint prior to concreting.

#### E14.3.13 Curing Concrete

- (a) The top of the freshly finished concrete foundations shall be covered and kept moist by means of wet polyester blankets immediately following finishing operations and shall be maintained at above 10°C for at least seven (7) consecutive days thereafter.
- (b) After the finishing is completed, the surface shall be promptly covered with a minimum of a single layer of clean, damp polyester blanket.

- (c) 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.
- (d) 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.

#### E14.3.14 Form Removal

- (a) 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.
- (b) The minimum strength of concrete in place for safe removal of forms shall be 20 MPa.
- (c) Field-cured test specimens, representative of the in-place concrete being stripped, will be tested to verify the concrete strength.

#### E14.3.15 Patching of Formed Surfaces

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

#### E14.3.16 Cold Weather Concreting

- (a) 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.

#### E14.3.17 Anti-Graffiti Coating

- (a) Anti-graffiti coating shall be applied to all planter walls shown on the drawings or identified by the Contract Administrator.
- (b) The anti-graffiti coating shall be applied according to manufactures specifications.
- (c) Maintain anti-graffiti coating on all vertical concrete surfaces for a period of two (2) years.

#### E14.3.18 Waterproofing

- (a) Waterproofing membrane shall be applied to all new concrete planter interior walls and existing concrete columns within the planters which will come into contact with planting soil, as identified on the drawings or by the Contract Administrator. The

waterproofing membrane shall be roller applied according to manufactures specifications.

E14.3.19 Quality Control

- (a) 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.
- (b) 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.

E14.4 Measurement and Payment

E14.4.1 Construction of Cast-in-Place Concrete Foundations

- (a) Construction of cast-in-place concrete foundations will be measured on a unit basis and will be paid for at the Contract Unit Price per foundation for the "Items of Work" listed here below for concrete foundations constructed in accordance with this Specification and accepted by the Contract Administrator.
  - (i) Items of Work:
    - Cast-in-Place Concrete Foundations
      - (a) Information Kiosk Foundation
      - (b) Bus Stop Flag Foundation

