

**Canada-Manitoba
Infrastructure Program**

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Manitoba 



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 307-2010

**2010 ACTIVE TRANSPORTATION – INFRASTRUCTURE STIMULUS PROGRAM:
RIVER HEIGHTS AND FORT ROUGE**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 2010 ACTIVE TRANSPORTATION – INFRASTRUCTURE STIMULUS PROGRAM: RIVER HEIGHTS AND FORT ROUGE

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, June 24, 2010.

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 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 sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B5.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.
- B5.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he wishes to inform.
- B5.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B5.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B14.
- B5.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.
- 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 own name, his name shall be inserted;
- (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
- (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;

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

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

B7.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.

B7.4 Paragraph 12 of Form A: Bid shall be signed in accordance with the following requirements:

- (a) if the Bidder is a sole proprietor carrying on business in his own name, it shall be signed by the Bidder;
- (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
- (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, shall be affixed;
- (d) if the Bidder is carrying on business under a name other than his own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.

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

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

B8. PRICES

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

B8.1.1 For the convenience of Bidders, and pursuant to B6.4.2 and B14.4.3, an electronic spreadsheet Form B: Prices in Microsoft Excel (.xls) format is available along with the Adobe PDF documents for this Bid Opportunity on the Bid Opportunities page at the Materials Management Division 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 Prices from Non-Resident Bidders are subject to a 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 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 Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

- B13.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.
- B13.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid, and only such person, has authority to give notice of withdrawal.
- B13.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:
- (a) retain the Bid until after the Submission Deadline has elapsed;
 - (b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid; and
 - (c) if the notice has been given by any one of the persons specified in B13.1.3(b), declare the Bid withdrawn.
- B13.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B12.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law, including the right to retain the Bidder's bid security.

B14. EVALUATION OF BIDS

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

B15. AWARD OF CONTRACT

- B15.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B15.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.
- B15.2.1 Without limiting the generality of B15.2, the City will have no obligation to award a Contract where:
- (a) the prices exceed the available City funds for the Work;
 - (b) the prices are materially in excess of the prices received for similar work in the past;
 - (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
 - (d) only one Bid is received; or
 - (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.
- B15.3 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B14.
- B15.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for Construction* (Revision 2006 12 15) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm
- 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) Traffic Calming Circles
 - (i) Warsaw Avenue at Thurso Street, at Wilton Street, at Arbutnot Street, at Cockburn Street N., at Hugo Street N. and at Daly Street N.
 - (ii) Grosvenor Avenue at Lanark Street, at Borebank Street, at Brock Street, at Waterloo Street, and at Waverley Street
 - (iii) Nassau Street N. at Wardlaw Avenue, at Gertrude Avenue, at McMillan Avenue, and at Warsaw Avenue
 - (iv) Hay Street at Bartlet Avenue, at Oakwood Avenue, at Ashland Avenue, at Clare Avenue, and at Montgomery Avenue
 - (v) Montgomery Avenue at Casey Street
- (b) Multi-Use Path Construction
 - (i) Corydon Avenue from Renfrew Street to Lindsay Street
 - (ii) Lindsay Street from Corydon Avenue to Fleet Avenue
 - (iii) Grosvenor Avenue from Lockwood Street lane to Centennial Street lane
 - (iv) Jubilee Avenue from Argue Street (near the Pembina Highway Overpass) to Cockburn Street S.
- (c) Parking Lane Construction
 - (i) Harrow Street from Corydon Avenue to Mulvey Avenue
 - (ii) Harrow Street from Ebby Avenue to Taylor Avenue
- (d) Curb Extensions
 - (i) Fleet Avenue from Lindsay Street to Oxford Street
 - (ii) Grosvenor Avenue from Cambridge Street to Harrow Street
 - (iii) Harrow Street from Wellington Crescent to Dromore Avenue
 - (iv) Nassau Street N. from Rosyln Road to River Avenue lane
- (e) Raised Crosswalk
 - (i) Fleet Avenue at Brock Street
- (f) Raised Intersection
 - (i) Warsaw Avenue at Lilac Street
- (g) Intersection Realignment/Reconstruction
 - (i) Harrow Street at Harrow Street East
 - (ii) Harrow Street at Academy Road
- (h) Street One-way Conversions
 - (i) Warsaw Avenue from Pembina Highway to Nassau Street N.
 - (ii) Nassau Street N. from Gertrude Avenue to McMillan Avenue
 - (iii) Nassau Street N. from Corydon Avenue to Jessie Avenue

- (i) Sidewalk Construction
 - (i) Harrow Street from Wellington Crescent to Academy Road
 - (ii) Harrow Street from Corydon Avenue to Warsaw/Mulvey lane
 - (iii) Rosyln Road from Evergreen Place to Nassau Street N.
 - (iv) Nassau Street N. from Rosyln Road to River Avenue
 - (v) Grosvenor Avenue from Centennial Street to West Centennial Lane
 - (vi) Riverside Drive from Jubilee Avenue to Jubilee/ Merriam lane
- (j) Cycle Track Construction
 - (i) Churchill Drive to Osborne Street Ramp from Montgomery Avenue to Montgomery/Wavell lane

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

- (a) Traffic Calming Circles
 - (i) Excavation and removal of existing pavement
 - (ii) Construct 150 mm barrier curb (separate) and 150 mm modified barrier curb (dowelled)
 - (iii) Installation of interlocking paving stones on lean concrete base
 - (iv) Manhole adjustment
 - (v) Asphalt overlay
 - (vi) Landscaping
- (b) Multi-Use Path Construction (Asphalt)
 - (i) Excavation and subgrade compaction
 - (ii) Placement of geotextile fabric
 - (iii) Sub-base and base course construction
 - (iv) Placement of asphalt pavement (100 mm thick)
 - (v) Landscaping
- (c) Multi-use Path Construction (Concrete)
 - (i) Removal of concrete curb, concrete sidewalk and driveway approaches
 - (ii) Excavation and subgrade compaction
 - (iii) Construction of 180 mm dowelled concrete barrier curb with splash strip
 - (iv) Hydrant relocations
 - (v) Interlocking paving stones
 - (vi) Placement of sub-base and base course
 - (vii) Construction of 100 mm concrete sidewalk
 - (viii) Construction of 150 mm reinforced concrete approaches
 - (ix) Landscaping
- (d) Parking Lane Construction
 - (i) Excavation, removal of existing curbs, and subgrade compaction
 - (ii) Placement of geotextile fabric
 - (iii) Sub-base and base course construction
 - (iv) Catchbasin installation and connection or adjustment
 - (v) Construction of 200 mm reinforced concrete pavement
 - (vi) Construct 150 or 180 mm barrier curb (integral or dowelled)
 - (vii) Placement of asphalt overlay (50 mm thick)
 - (viii) Landscaping
- (e) Curb Extensions
 - (i) Removal of existing curb and pavement

- (ii) Construction of 150 mm dowelled barrier curb
- (iii) Catchbasin installation and connection (where applicable)
- (iv) Imported clay fill
- (v) Construction of concrete sidewalk and concrete bus stop pads
- (vi) Asphalt overlay
- (vii) Landscaping
- (f) Raised Crosswalk
 - (i) Pavement removal
 - (ii) Renewal of concrete curbs and concrete sidewalk
 - (iii) Construction of concrete ramps
 - (iv) Interlocking paving stones on lean concrete base
 - (v) Asphalt overlay
 - (vi) Landscaping
- (g) Raised Intersection
 - (i) Asphalt milling
 - (ii) Construction of 150 mm reinforced concrete pavement (crosswalks)
 - (iii) Placement of asphalt overlay (thickness varies from 50 mm to 200 mm)
 - (iv) Renewal of concrete curbs and concrete sidewalk
 - (v) Landscaping
- (h) Intersection Realignment
 - (i) Pavement removal, excavation and subgrade compaction
 - (ii) Placement of geotextile fabric
 - (iii) Sub-base and base course construction
 - (iv) Construction of 200 mm reinforced concrete pavement
 - (v) Construct 180 mm barrier curb (integral)
 - (vi) Construct 100 mm concrete sidewalk
 - (vii) Asphalt overlay (thickness 50 mm)
 - (viii) Landscaping
- (i) Street One-way Conversions
 - (i) Removal of Concrete Curbs
 - (ii) Construction of 150 mm dowelled barrier curb
 - (iii) Construction of monolithic concrete median slab
 - (iv) Construction of 100 mm concrete sidewalk
 - (v) Imported clay fill
 - (vi) Landscaping
- (j) Sidewalk Construction
 - (i) Construction of 100 mm concrete sidewalk
 - (ii) Landscaping
- (k) Cycle Track Construction
 - (i) Removal of concrete curb
 - (ii) Excavation and subgrade compaction
 - (iii) Construction of bike lane median
 - (iv) Construction of 200 mm reinforced concrete pavement
 - (v) Construction of 180 mm dowelled concrete barrier curb
 - (vi) Landscaping

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is AECOM, represented by:

Jeff Crang, P.Eng., PTOE
Senior Transportation Engineer
99 Commerce Drive, Winnipeg, MB R3P 0Y7

Telephone No. (204) 928-8428

Facsimile No. (204) 284-2040

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

D4. CONTRACTOR'S SUPERVISOR

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

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

D5. NOTICES

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

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

D5.3 Notwithstanding C21., all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following address or facsimile number:

The City of Winnipeg
Chief Financial Officer
Administration Building, 3rd Floor
510 Main Street
Winnipeg MB R3B 1B9

Facsimile No.: (204) 949-1174

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

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

Facsimile No.: (204) 947-9155

D6. FURNISHING OF DOCUMENTS

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

SUBMISSIONS

D7. AUTHORITY TO CARRY ON BUSINESS

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

D8. SAFE WORK PLAN

- D8.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.
- D8.2 The Safe Work Plan shall be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/safety/default.stm>

D9. INSURANCE

- D9.1 The Contractor shall provide and maintain the following insurance coverage:
- (a) Commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive with the City of Winnipeg, the Province of Manitoba and the Government of Canada, including authorized officials and representatives of the aforementioned, added as an additional insureds: such liability policy to also contain a cross-liability clause, contractual liability, unlicensed motor vehicle liability (contractors' equipment), 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;
 - (i) Completed operations cover shall extend for a minimum of twenty-four (24) months beyond Total Performance date;
 - (ii) The policy shall provide coverage for the aforementioned entities as well as all contractors and consultants and their directors, officers, employees and agents. A wrap-up liability policy, covering the entire scope of the Work may be purchased in place of a commercial general liability policy;

- (b) Automobile liability insurance for owned and non-owned automobiles used for or in connection with the Work in the amount of at least two million dollars (\$2,000,000.00) to be retained at all times during the performance of the Work and until the date of Total Performance; such insurance may be met through the commercial general liability cover where applicable;
- (c) Builder's Risk insurance (Broad Form) including testing and commissioning, in the amount of one hundred percent (100%) of the total construction costs; written in the name of the Contractor, the City of Winnipeg and all other contractors, sub-contractors, engineering and architectural consultants, etc.;
- (d) Any other insurances, carrying suitable limits and deductibles, as may be required to cover the scope of Work.

D9.2 All Policies shall be taken out with insurers licensed to and carrying on business in the Province of Manitoba.

D9.3 Deductibles shall be borne by the Contractor.

D9.4 The Contractor shall provide the Contract Administrator with a certificate of insurance of each policy, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work on the site.

D9.5 The Contractor shall not cancel, or cause any such policy or policies to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

D9.6 The Contractor shall provide written notice to the City of Winnipeg of any material changes to their policies within thirty (30) days of the change taking effect.

D9.7 The City shall have the right to alter the limits and/or coverage's as reasonably required from time to time during the continuance of this agreement.

D10. PERFORMANCE SECURITY

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

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

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

D10.2 If the bid security provided in his Bid was not a certified cheque or draft pursuant to B10.1(c), the Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of letter of intent and prior to the commencement of any Work on the Site and in no event later than the date specified in the C4.1 for the return of the executed Contract.

D11. SUBCONTRACTOR LIST

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

D12. DETAILED WORK SCHEDULE

D12.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the General Conditions for the return of the executed Contract.

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

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

D12.3 Further to D12.2(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

D13. COMMENCEMENT

D13.1 The Contractor shall not commence any Work until he is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.

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

- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D7;
 - (ii) evidence of the workers compensation coverage specified in C6.15;
 - (iii) the twenty-four (24) hour emergency response phone number specified in D4.2.
 - (iv) the Safe Work Plan specified in D8;
 - (v) evidence of the insurance specified in D9;
 - (vi) the performance security specified in D10;
 - (vii) the subcontractor list specified in D11;
 - (viii) the detailed work schedule specified in D12.
- (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.

D13.3 The Contractor shall commence the Work on Site no later than July 12, 2010, as directed by the Contract Administrator and weather permitting.

D13.4 The City intends to award this Contract by July 5, 2010.

D13.4.1 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.

D13.5 The Contractor shall not commence work at the following locations until the City of Winnipeg has obtained the property. It is assumed that all property will be in the City's possession by July 31, 2010. If any of these properties is not in the City's possession, the City shall have the right to eliminate all or any portion of the Work associated with this property.

- (a) Multi-use paths on Corydon Avenue and Lindsay Street.

- (b) Corner cut for sidewalk on Nassau Street at River Avenue.

D14. WORKING DAYS

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

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

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

D14.1.3 When the Work includes two or more major types of Work that can be performed under different atmospheric conditions, the Contract Administrator shall consider all major types of Work in determining whether the Contractor was able to work in assessing Working Days.

D15. RESTRICTED WORK HOURS

D15.1 Further to clause 3.10 of CW 1130, the Contractor shall require written permission 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.

D15.2 In accordance with the Manual of Temporary Traffic Control, Sections 2.03, 2.04, 2.05 and 2.06, should the Traffic Management Branch of the Public Works Department require that work on Regional and Residential Streets be carried out at night or on Sundays or on public holidays, where permitted by the City of Winnipeg Police Department, or that work be restricted or suspended during peak traffic hours, no additional compensation will be considered to meet these requirements.

D16. WORK BY OTHERS

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

- (a) Winnipeg Transit – relocation of bus stops;
- (b) Traffic Services – relocating traffic signs and painting;
- (c) Traffic Signals – installation of signals at Academy and Harrow; relocation of crosswalk at Grosvenor and Guelph;
- (d) Manitoba Hydro – manhole adjustments and street light relocations;
- (e) Manitoba Hydro Gas Division – miscellaneous rock wrapping, relocating of gas main, and lowering of gas main and services as necessary;
- (f) MTS – miscellaneous relocations and manhole adjustments;
- (g) Shaw – miscellaneous relocations;
- (h) Teraspan – miscellaneous relocations;
- (i) Various work on survey monuments by City of Winnipeg Geomatics Branch;
- (j) Watermain renewal on Jubilee Avenue by others (Bid Opportunity No. 212-2010);
- (k) Jubilee Avenue overpass rehabilitation and associated works by others (Bid Opportunity No. 133-2010);
- (l) Canadian Pacific Railway & Burlington Northern – installation of multi-use path crossing on Corydon Avenue.

D16.2 The Contract Administrator will attempt to arrange and coordinate Work to be performed by others so that such Work does not interfere with the Work and Schedule of the Contractor. Where Work by others interferes, as determined by the Contract Administrator, with the Contractor's planned Work, the Contractor shall modify his plans and do other Work. Unless the Contract Administrator determines that there was no opportunity for the Contractor to do a similar amount of Work, no consideration will be made to extending the Contract time.

D16.3 The City of Winnipeg Water and Waste Department has schedule a watermain renewal on Jubilee Avenue. It is anticipated that this Work will be completed by July 16, 2010. The Contractor shall not begin any Work in the affected areas until Work by Water and Waste is completed.

D17. SEQUENCE OF WORK

D17.1 Further to C6.1, the sequence of work shall comply with the following:

D17.1.1 Providing that the Work on each street is completed in a similar order to the order that the Work was commenced in, the Contractor will be permitted to have a maximum of two (2) streets under construction at any one time. Completion of a street means that all of the necessary concrete, asphalt including approaches and landscaping Work is completed to the satisfaction of the Contract Administrator.

D17.1.2 Where the Contractor utilizes two (2) or more crews that work independently on the same major component of the Work as identified in D2, the Contract Administrator may approve an increase to the maximum number of streets under construction at any time.

D17.1.3 Placing the topsoil and finished grading of all boulevard and median areas shall be completed prior to commencing construction of asphaltic concrete overlays, including scratch courses.

D18. CRITICAL STAGES

D18.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:

- (a) Lilac Street and Warsaw Avenue shall be totally completed by August 31, 2010;
- (b) Harrow Street Parking Lanes from Corydon to Mulvey and Ebby to Taylor shall be totally completed by August 31, 2010;
- (c) Coordination of work with Bridge Contract on Jubilee.

D19. SUBSTANTIAL PERFORMANCE

D19.1 The Contractor shall achieve Substantial Performance within fifty five (55) consecutive Working Days of the commencement of the Work as specified in D13.

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 (60) consecutive Working Days of the commencement of the Work as specified in D13.

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 or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:

- (a) Substantial Performance – three thousand dollars (\$3,000);
- (b) Total Performance – one thousand dollars (\$1,000).

D21.2 The amounts specified for liquidated damages in D21.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve critical stages, Substantial Performance or Total Performance by the days fixed herein for same.

D21.3 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 during one year maintenance warranty 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, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

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

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

D24.1 Further to C6.24, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

WARRANTY

D25. WARRANTY

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

D25.2 Notwithstanding D25.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if:

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

D25.2.1 In such case the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

FORM H1: PERFORMANCE BOND
(See D10)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

_____ dollars (\$_____.)

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

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

BID OPPORTUNITY NO. 307-2010

2010 ACTIVE TRANSPORTATION – INFRASTRUCTURE STIMULUS PROGRAM: RIVER HEIGHTS
AND FORT ROUGE

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)

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

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

(Date)

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

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

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

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS 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>
307-2010_Drawing_00-R0	Cover Sheet	A1
307-2010_Drawing_01-R0	Fleet/Warsaw Avenue: Renfrew Street to Lindsay Street: Multi-Use Path	A1
307-2010_Drawing_02-R0	Fleet/Warsaw Avenue: Lindsay Street: Corydon Avenue to Fleet Avenue: Multi-Use Path	A1
307-2010_Drawing_03-R0	Fleet/Warsaw Avenue: Fleet Avenue: Lindsay Street to Brock Street: Multi-Use Path, Curb Extensions, Raised Crosswalk	A1
307-2010_Drawing_04-R0	Fleet/Warsaw Avenue: Fleet Avenue: Queenston Street to Ash Street: Curb Extensions	A1
307-2010_Drawing_05-R0	Fleet/Warsaw Avenue: Fleet Avenue: Oak Street to Waverley Street: Curb Extensions	A1
307-2010_Drawing_06-R0	Fleet/Warsaw Avenue: Fleet Avenue at Oxford Street: Warsaw Avenue: Thurso Street to Lilac Street: Curb Extensions, Traffic Calming Circles, Raised Intersection	A1
307-2010_Drawing_07-R0	Fleet/Warsaw Avenue: Warsaw Avenue: Arbutnot Street to Daly Street N: Traffic Calming Circles	A1
307-2010_Drawing_08-R0	Grosvenor Avenue: Lockwood Street to Brock Street: Multi-Use Path, Traffic Calming Circles, Curb Extensions	A1
307-2010_Drawing_09-R0	Grosvenor Avenue: Waterloo Street to Rockwood Street: Traffic Calming Circles, Curb Extensions	A1
307-2010_Drawing_10-R0	Grosvenor Avenue: Wilton Street to Stafford Street: Curb Extensions	A1
307-2010_Drawing_11-R0	Harrow Street: Wellington Crescent to Dromore Avenue: Curb Extensions, Intersection reconstruction, including Planting Details	A1
307-2010_Drawing_12-R0	Harrow Street: Corydon Avenue to Mulvey Avenue: Parking Lane, Sidewalk	A1
307-2010_Drawing_13-R0	Harrow Street: Ebby Avenue to Harrow Street E: Parking Lane, Intersection Realignment	A1
307-2010_Drawing_14-R0	Roslyn Road: Evergreen Place to Nassau Street N: Nassau Street N: Roslyn Road to River Avenue: Curb Extensions, Sidewalk	A1

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
307-2010_Drawing_15-R0	Nassau Street N: Wardlaw Avenue to McMillan Avenue: Traffic Calming Circles, Curb Extensions, and One-Way Conversions	A1
307-2010_Drawing_16-R0	Nassau Street N: Corydon Avenue to Pembina Highway: Traffic Calming Circles, Partial Closure, and One-Way Conversions	A1
307-2010_Drawing_17-R0	Hay Street: Bartlet Avenue to Ashland Avenue: Traffic Calming Circles	A1
307-2010_Drawing_18-R0	Hay Street at Claire Avenue: Casey Street at Montgomery Avenue: Traffic Calming Circles, Contra-Flow Bike Lane	A1
307-2010_Drawing_19-R0	Jubilee Avenue: Pembina Highway to Cockburn Street S: Multi-Use Path	A1
307-2010_Drawing_20-R0	Jubilee Avenue: Pembina Highway to Cockburn Street S: Multi-Use Path	A1
307-2010_Drawing_21-R0	Jubilee Avenue: Pembina Highway to Cockburn Street S: Multi-Use Path	A1
307-2010_Drawing_22-R0 L2.1	Details Details (Winnipeg Transit)	A1 11x17

E2. PROTECTION OF EXISTING TREES

- E2.1 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.
- E2.2 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his designate.
- E2.3 No separate measurement or payment will be made for the protection of trees.
- E2.4 Except as required in clause E2.1(c) and E2.1(e), Elm trees shall not be pruned at any time between April 1 and July 31.

E3. TRAFFIC CONTROL

E3.1 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.

E4. TRAFFIC MANAGEMENT

E4.1 Further to clause 3.7 of CW 1130:

- E4.1.1 Maintain a minimum of one lane of traffic in each direction at all times during construction.
- E4.1.2 Intersecting street and private approach access shall be maintained at all times.
- E4.1.3 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.
- E4.1.4 Pedestrian and ambulance/emergency vehicle access must be maintained at all times.

E5. REFUSE AND RECYCLING COLLECTION

E5.1 While access to refuse and/or recycling collection vehicles is restricted, on collection day(s) the Contractor shall move all of the affected property owners refuse and/or recycling materials to a nearby common area, prior to an established time, in accordance with E5.2 to permit the normal collection vehicles to collect the materials. Immediately following recycling collection the Contractor shall return recycling receptacles to the addresses marked on the receptacles.

E5.2 Collection Schedule:

Jubilee Avenue from Pembina Highway Overpass to Cockburn Street South.

Collection Day(s): South side Jubilee from Cockburn to 844 Jubilee Garbage and Recycling Day 1.
South side 849 Jubilee to Pembina Garbage and Recycling Day 3.

Collection Time: 7:00 a.m. to 6:00 p.m.

Common Collection Area: South side Jubilee from Cockburn to 844 Jubilee front street pick-up and will require garbage and recycling relocation and placement for proper access. South side 849 Jubilee to Pembina back lane pick-up.

E5.3 No measurement or payment will be made for the work associated with this specification.

E9. WATER OBTAINED FROM THE CITY

E9.1 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.

E10. SURFACE RESTORATIONS

E10.1 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.

E11. REMOVAL OF HAZARD BARRIER

E11.1 The hazard barriers currently in place at the junction of the Centennial Street back lane and Grosvenor Avenue will require removal before construction of the multi-use path. The Contractor shall remove these hazard barriers, as instructed by the Contract Administrator, and then return these to the City of Winnipeg maintenance yards. The Contractor shall bear all costs associated with the removal and hauling of these hazard barriers.

E12. TREE REMOVALS

DESCRIPTION

E12.1 This specification shall supplement CW3010 Clearing and Grubbing.

CONSTRUCTION METHODS

E12.2 Tree Removals

E12.2.1 Individual trees marked and confirmed for removal in the field by the Contract Administrator shall be removed to a minimum of 200 mm below the proposed pavement structure.

E12.2.2 The Contractor shall arrange for any Elm wood to be disposed of by the City of Winnipeg.

MEASUREMENT AND PAYMENT

E12.3 Tree Removals

E12.3.1 Tree removal will be measured on a unit basis and paid for at the Contract Unit price for "Removal of Trees". The number to be paid for shall be the total number of trees removed as measured by the Contract Administrator.

E13. RECYCLED CONCRETE BASE COURSE MATERIAL

DESCRIPTION

E13.1 General

E13.1.1 Further to CW 3110, this specification covers supply and placement of recycled concrete base course material for Full-Depth Partial Slab Patches (Class A, B, C, & D), miscellaneous concrete slabs and sidewalks.

E13.2 Definitions

E13.2.1 Deleterious material – are materials such as vegetation, organic material, wood, glass, plastic, metal, reinforcing steel, building rubble, brick, salvaged asphalt materials, clay, shale, and friable particles.

E13.3 Referenced Standard Construction Specifications

(a) CW 3110 – Sub-Grade, Sub-Base and Base Course Construction.

(b) CW 3230 – Full-Depth Patching of Existing Pavement Slabs and Joints.

(c) CW 3235 – Renewal of Existing Miscellaneous Concrete Slabs.

(d) CW 3325 – Portland Cement Concrete Sidewalk.

MATERIALS

E13.4 Recycled Concrete Base Course Material

E13.4.1 Recycled concrete base course material when used for Full-Depth Partial Slab Patches (Class A, B, C, & D), miscellaneous concrete slabs and sidewalks will be considered equal to granular or limestone base course material specified in Section 2.2 of CW 3110.

E13.4.2 Recycled concrete base course material will be approved by the Contract Administrator.

E13.4.3 Recycled concrete base course material will consist of sound durable particles produced by crushing, screening, and grading of recovered concrete materials, free from soft material that would disintegrate through decay or weathering.

E13.4.4 The recycled concrete base course material will be well graded and conform to the following grading requirements:

Recycled Concrete Base Course Material Grading Requirements

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

E13.4.5 Recycled concrete base course material when subjected to the abrasion test will have a loss of not more than 35% when tested in accordance with grading B of ASTM C131, Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

E13.4.6 The amount of deleterious material will be limited to a maximum of two percent of the total dry weight.

CONSTRUCTION METHODS

E13.5 Placement of Recycled Concrete Base Course Material

E13.5.1 Place and compact recycled concrete base course material as a levelling course to a maximum thickness of 50 millimetres.

E13.5.2 Spread materials uniformly to avoid segregation free of pockets of fine and coarse material.

E13.5.3 Level and compact to the finished elevation. Compact to 100% Standard Proctor Density for Full-Depth Partial Slab Patches (Class A, B, C, & D) and 90% Standard Proctor Density for miscellaneous concrete slabs and sidewalks.

E13.5.4 Maintain the finished material until the pavement or sidewalk is placed.

MEASUREMENT AND PAYMENT

E13.6 Recycled Concrete Base Course Material

E13.6.1 The supplying, placing and compaction of recycled concrete base course material will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for the "Supplying and Placing Base Course Material" as specified in accordance with CW 3110.

E13.6.2 No measurement or payment will be made for material placed as a levelling course under miscellaneous concrete slabs and sidewalks where the costs are included in accordance with CW 3235 and CW 3325.

E13.6.3 No measurement or payment will be made for materials rejected by the Contract Administrator.

E14. DETECTABLE WARNING SURFACE TILES

DESCRIPTION

E14.1 This specification covers the supply and installation of detectable warning surface tiles in sidewalk ramps and multi-use path ramps.

SPECIFICATIONS AND DRAWINGS

E14.2 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

E14.3 Attached SDE Drawings and Installation Manual

- (a) SDE-229A - Curb Ramp Layout for Intersections
- (b) SDE-229AA - Detectable Warning Surface in Curb Ramps for Intersections
- (c) SDE-229AB - Curb Ramp Layout for Offset Intersections
- (d) SDE-229BB - Detectable Warning Surface in Curb Ramps for Medians
- (e) SDE-229E - Curb Ramp Depressed Curb
- (f) Manufacturer's Installation Manual – Armor-Tile Cast in Place Inline Dome Detectable/Tactile Warning Surface Tile.

MATERIALS

E14.4 Acceptable Detectable Warning Surface Tile product is:

2'x 4' (610 x 1220mm) Armor-Tile Cast in Place (yellow).

Available from:

Engineered Plastics Inc.
1400 Cornwall Road Unit 6
Oakville, Ontario L6J 7W5

Attention: Manny Burgio
Ph: 800-682-2525
Fax: 800-769-4463

or

Alsip's Building Products
1 Cole Avenue
Winnipeg, Manitoba

Attention: Jason Alsip
Ph. 204-667-3330

- E14.4.1 Detectable warning surface tiles shall be Highway Yellow (USA) or Safety Yellow (Canada).
- E14.4.2 Detectable warning surface tiles shall be cast in place type.
- E14.4.3 Truncated domes on detectable warning surface tiles shall be in accordance with ADA Accessibility Guidelines (ADAAG).

CONSTRUCTION METHODS

E14.5 General

- E14.5.1 Construct curb ramps, sidewalk ramps and multi-use path in accordance with referenced Standard Construction Specifications, Standard Details, and SDE drawings (attached).
- E14.5.2 Construct the lip of the depressed curb in accordance with SDE-229E.
- E14.5.3 Construct sidewalk ramp grades in accordance with SD-229C and SD-229D.
- E14.5.4 Install the detectable warning surface tile in accordance with the amended Manufacturer's Installation Manual (attached). Drill additional 6mm air vent holes in ribs under the tile as required and use vibration to help seat the tile, to facilitate the installation process.
- E14.5.5 Trim the corner of the tile at radii in accordance with SDE-229A, SDE-229AA and SDE228AB
- E14.5.6 Install and orient the detectable warning surface tiles as shown on the referenced drawings or as directed by the Contract Administrator.

E14.6 Medians and Refuge Islands

- E14.6.1 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.
- E14.6.2 Where the distance from back of curb to back of curb is less than 1.32m, leaving 50mm between the back of curb and the tile, cut the tile(s) to fill the remaining area between the curbs.

E14.7 Multi-use Paths

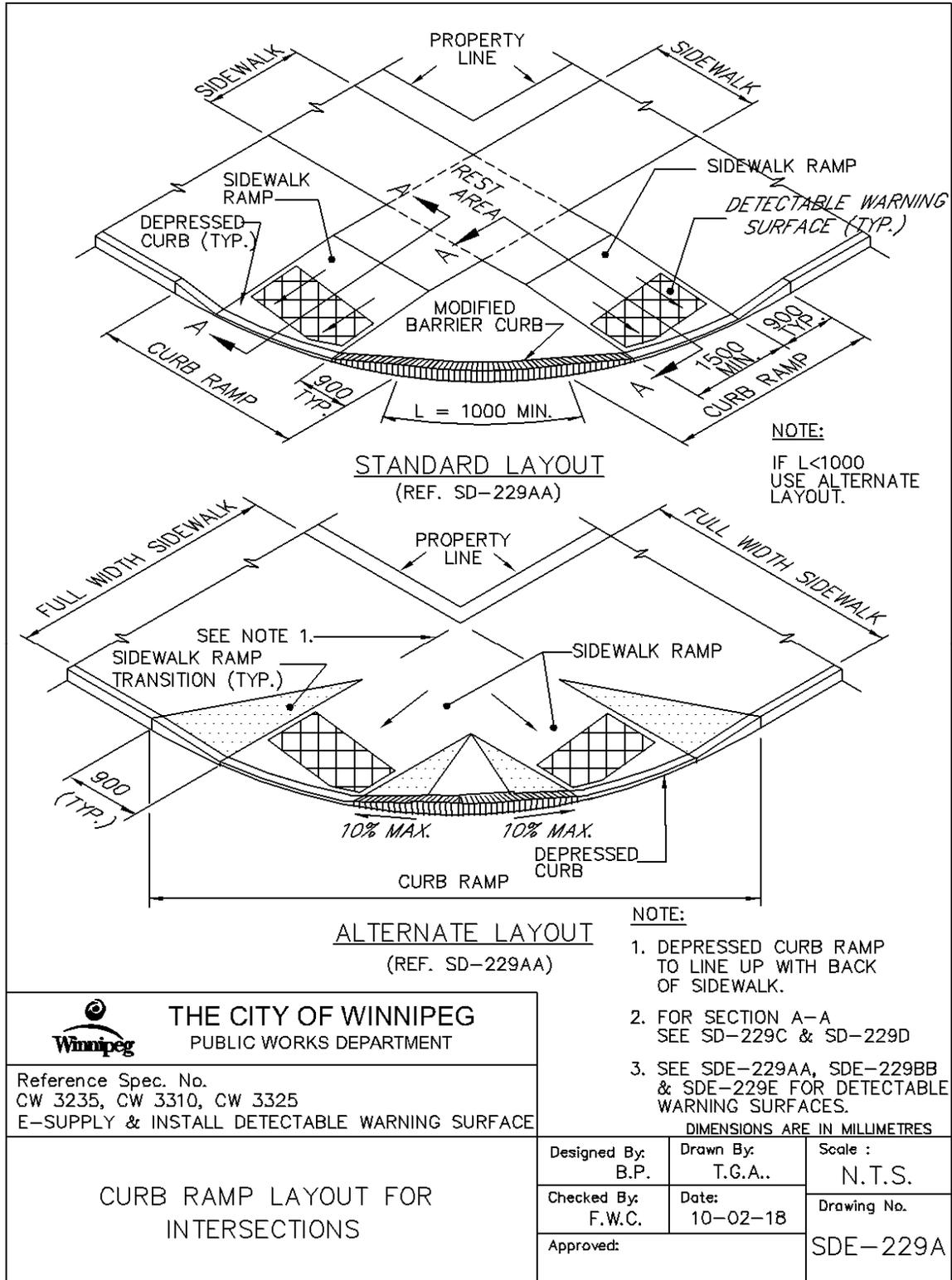
- E14.7.1 Construct a curb ramp with a depressed curb to the full width of the multi-use path in accordance with SDE-229E.
- E14.7.2 Construct a concrete ramp the width of the multi-use path and a minimum of 1.50m deep from back of curb in accordance with SD-229C and SD-229D.
- E14.7.3 Install two (2) 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-229A.
- E14.7.4 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.

MEASUREMENT AND PAYMENT

- E14.8 Supply and installation of detectable warning surface tiles will be measured on a unit basis and paid for at the Contract Unit Price for "Detectable Warning Surface Tiles". The number of units to be paid for will be the total number of full or trimmed tiles supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.
 - E14.8.1 The area under the detectable warning surface tile is part of the concrete sidewalk ramp and will be paid in accordance with CW 3235 and CW 3325.
 - E14.8.2 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.

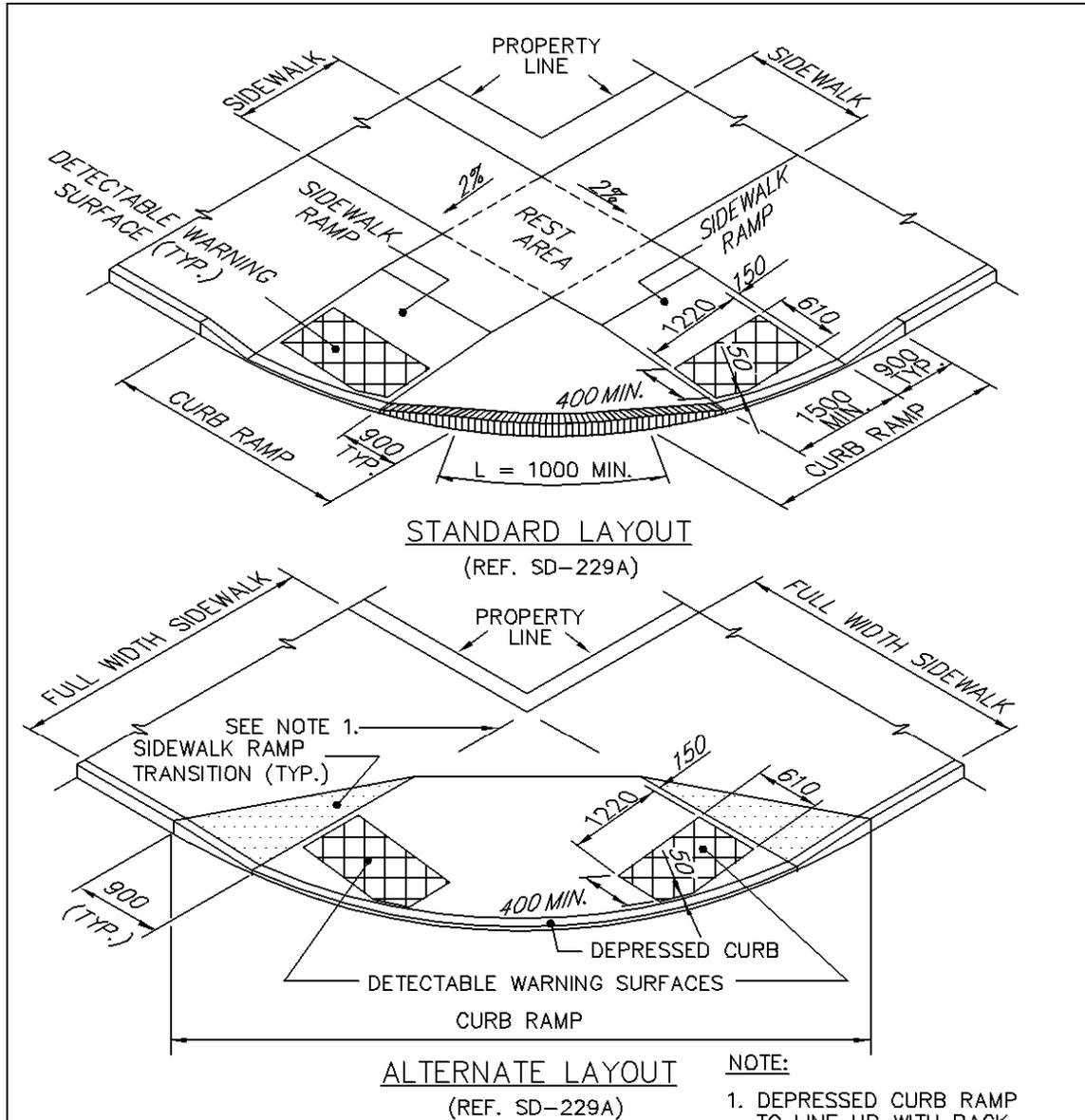
E14.8.3 Curb ramp will be paid in accordance with CW 3240 or CW 3310.

DRAWINGS AND INSTALLATION MANUAL



THE CITY OF WINNIPEG
 PUBLIC WORKS DEPARTMENT

Reference Spec. No.
 CW 3235, CW 3310, CW 3325
 E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE

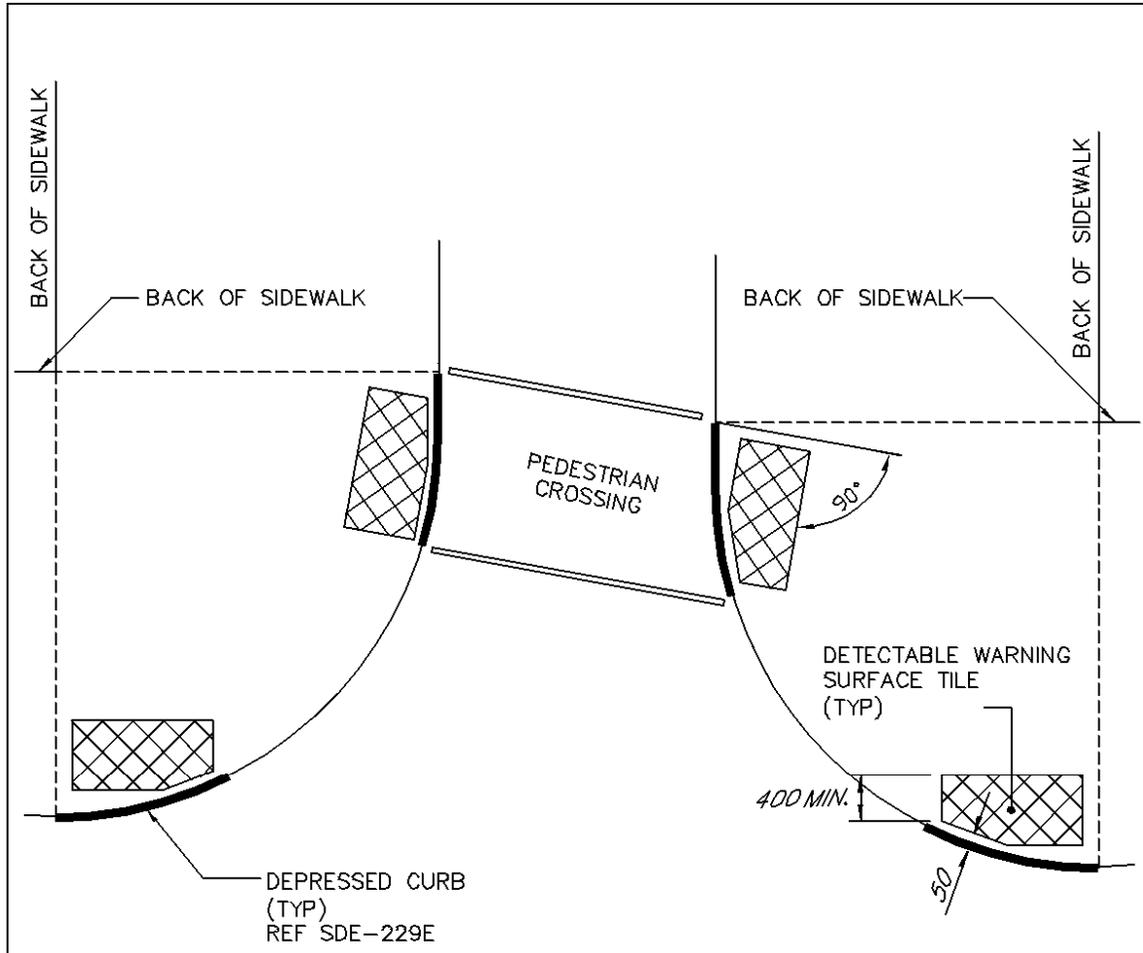


 **THE CITY OF WINNIPEG**
 PUBLIC WORKS DEPARTMENT

Reference Spec. No.
 CW 3235, CW 3310, CW 3325
 E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE

DETECTABLE WARNING SURFACE
 IN CURB RAMPS FOR
 INTERSECTIONS

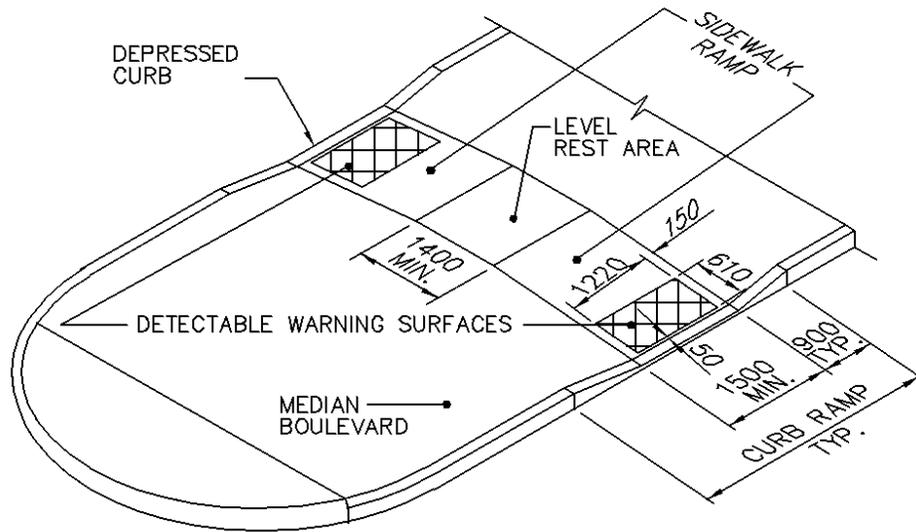
Designed By: B.P.	Drawn By: T.G.A.	Scale : N.T.S.
Checked By: F.W.C.	Date: 10-02-18	Drawing No.
Approved:	SDE-229AA	



NOTES:

1. LOCATE GRATINGS, ACCESS COVERS AND OTHER APPURTENANCES OUTSIDE OF CURB RAMPS, DEPRESSED CURBS, CLEAR SPACE LANDINGS AND GUTTERS AS DIRECTED BY THE CONTRACT ADMINISTRATOR.
2. LOCATE END OF DEPRESSED CURB IN LINE WITH PROJECTED BACK OF SIDEWALK.

	THE CITY OF WINNIPEG PUBLIC WORKS DEPARTMENT									
Reference Spec. No. CW 3235, CW 3310, CW 3325 E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE										
DIMENSIONS ARE IN MILLIMETRES										
CURB RAMP LAYOUT FOR OFFSET INTERSECTIONS	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Designed By: B.P.</td> <td style="width: 33%;">Drawn By: T.G.A.</td> <td style="width: 33%;">Scale: N.T.S.</td> </tr> <tr> <td>Checked By: F.W.C.</td> <td>Date: 10-02-18</td> <td>Drawing No.</td> </tr> <tr> <td colspan="2">Approved:</td> <td>SDE-229AB</td> </tr> </table>	Designed By: B.P.	Drawn By: T.G.A.	Scale: N.T.S.	Checked By: F.W.C.	Date: 10-02-18	Drawing No.	Approved:		SDE-229AB
	Designed By: B.P.	Drawn By: T.G.A.	Scale: N.T.S.							
	Checked By: F.W.C.	Date: 10-02-18	Drawing No.							
Approved:		SDE-229AB								



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.
2. DETECTABLE WARNING SURFACE SHALL NOT BE PLACED AT PRIVATE APPROACHES OR ALLEYS.



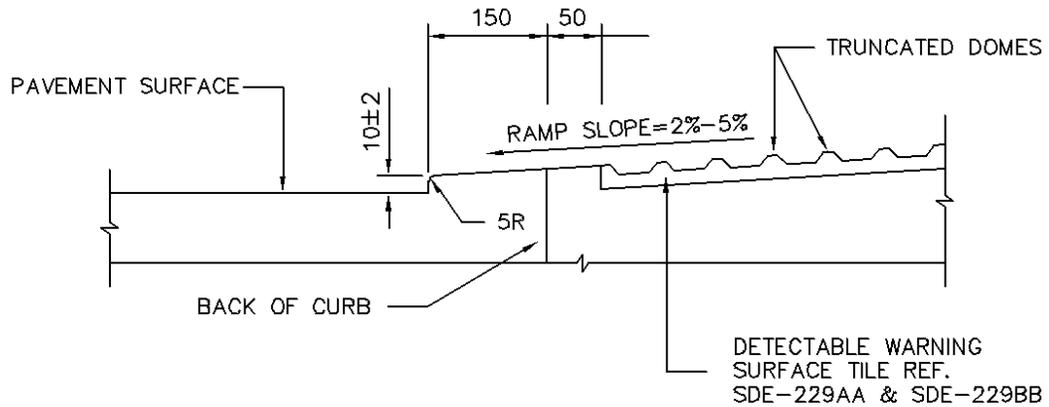
THE CITY OF WINNIPEG
 PUBLIC WORKS DEPARTMENT

Reference Spec. No.
 CW 3235, CW 3310, CW 3325
 E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE

DIMENSIONS ARE IN MILLIMETRES

DETECTABLE WARNING SURFACE
 IN CURB RAMPS FOR
 MEDIANS

Designed By: B.P.	Drawn By: T.G.A.	Scale : N.T.S.
Checked By: F.W.C.	Date: 10-12-18	Drawing No.
Approved:		SDE-229BB



DEPRESSED CURB

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.

 THE CITY OF WINNIPEG 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.
CURB RAMP DEPRESSED CURB	Checked By: F.W.C.	Date: 10-02-18	Drawing No. SDE-229E
	Approved:		

Manufacturer's Installation Manual Armor-Tile 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. Not recommended for asphalt applications.
- C. The physical characteristics of the concrete shall be consistent with the contract specifications while maintaining a slump range of 4 – 7 to permit solid placement of the Cast In Place Detectable/Tactile Warning Surface Tile system. An overly wet mix will cause the tile to float. Under these conditions, suitable weights such as 2 concrete blocks or sandbags (25 lb) 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. The concrete pouring and finishing operations require typical mason's tools, however, a 4' long level with electronic slope readout, 25 lb. 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 such as that manufactured by Vibco can be employed, if desired. The vibrating unit should be fixed to a soft base such as wood, at least 1 foot 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.
- 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. The concrete shall be poured and finished true and smooth to the required dimensions and slope prior to the tile placement. Immediately after finishing concrete, the electronic level should be used to check that the required slope is achieved. The tile shall be placed in accordance with the contract drawings. The Cast In Place Detectable/Tactile Warning Surface Tiles shall be tamped (or vibrated) into the fresh concrete to ensure that the field level of the tile is flush to the adjacent concrete surface. 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. ~~The contract drawings indicate that the tile field level (base of truncated dome) is flush to adjacent surfaces to permit proper water drainage and eliminate tripping hazards between adjacent finishes.~~
- I. In cold weather climates it is recommended that the Cast In Place Detectable/Tactile Warning Surface Tiles be set deeper such that the top of domes are level to the adjacent concrete on the top and sides of ramp and that the base of domes to allow water drainage. This installation will reduce the possibility of damage due to snow clearing operations.
- J. Immediately after placement, the tile elevation is to be checked to adjacent concrete. The elevation and slope should be set consistent with contract drawings to permit water drainage to curb as the design dictates.
- K. While concrete is workable, a 3/8" radius edging tool shall be used to create a finished edge of concrete, then a steel trowel shall be used to finish the concrete around the tile's perimeter, flush to the field level of the tile.
- 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 25 lb each shall be placed on each tile as necessary to ensure solid contact of the underside of tile to concrete.
- N. 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.
- O. If desired, 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.
- P. Tiles can be cut to custom sizes, or to make a radius, 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. ~~Any sound amplifying plates on the underside of the tile, which are dislodged during handling or cutting, should be replaced and secured with construction adhesive. The air gap created between these plates and the bottom of the tile is important in preserving the detectability properties of the Armor-Tile system as required in various jurisdictions.~~

E15. BOLLARDS

GENERAL

E15.1 This specification covers the supply and installation of wooden pathway bollards.

MATERIALS

E15.2 Wooden Bollards

- (a) The (uprights) shall be 8"(in) x 10"(in) x 8'(ft) timbers, S4S, square edge to CAS 080, pressure treated pine or fir to National Lumber Grades Authority standard grading rules, all kiln dried to a moisture content of 19%;
- (b) Detailing shall be ¼"(in) radius on all exposed edges except on reveille and top peak, 1"(in) dado reveille 4"(in) from the top of timber on all four sides, peaked 1"(in) relief on top of timer, equal distance front and back;
- (c) The colour finish shall be a solid colour deck and siding stain (428 Pebblestone Clay, FloodPro Series) or an approved alternate;
- (d) All timber bollards shall be free of defects, warping, checking or bent materials as they will be rejected;
- (e) The timber bollards shall be identified by an official grade mark, continuing symbol of grading agency, mill number or name, grade of lumber, species or species grouping or combination designation, rules under which grade and conditions of seasoning at the time of manufacture.

E15.3 Crushed Limestone Base

- (a) Supply crushed limestone base course in accordance with CW 3110.

E15.4 Warranty

- E15.4.1 Goods determined to be defective within thirty (30) Calendar Days from the date of delivery of an order shall, except when otherwise authorized by the Contract Administrator, be replaced with new and unused goods at no cost to the City. If goods are supplied as an assembly, the entire assembly shall be replaced as a whole.
- E15.4.2 Goods determined to be defective after the first thirty (30) Calendar Days but within the one (1) year warranty period shall, except when otherwise authorized by the Contract Administrator, be repaired at no cost to the City. The Contractor may, at his/her option, replace the defective goods with new and unused goods at no cost to the City.

CONSTRUCTION METHODS

E15.5 Wooden pathway bollards shall be installed in a careful workmanlike manner to grade and alignment as directed by the Contract Administrator. A 500 mm diameter hole shall be augered into the ground to the specified depth. The bollards shall be set exactly vertical into the augered hole and backfilled with crushed limestone base, installed 6" lifts, tramped thoroughly on each lift to an elevation within 75 mm of path grade. Ensure posts are plumb.

MEASUREMENT AND PAYMENT

E15.6 The Supply and Installation of the Wooden Pathway Bollards shall be paid for at a Contract Unit Price per bollard, for "Supply and Installation of Bollard" and will cover all other items incidental to the work included in the specification.

E16. TRAFFIC CALMING CIRCLES

GENERAL

E16.1 This specification covers the construction of traffic calming circles.

E16.2 Referenced Standard Construction Specifications

- (a) CW3110 – Sub-grade, Sub-Base and Base Course Construction
- (b) CW3310 – Portland Cement Concrete Pavement Works
- (c) CW3335 – Installation of Interlocking Paving Stones on a Lean Concrete Base
- (d) CW3410 – Asphaltic Concrete Pavement Works
- (e) CW3450 – Planing of Pavement

MATERIALS

- E16.3 Paving stones for traffic calming circles shall be Barkman Concrete “Victorian” as found in the Barkman Concrete Ltd. 2010 Catalogue. Pavers shall be installed in a Soldier Course Pattern using mainly 121mm x 121mm and 60mm x 121mm shapes, from the Standard Bundle. All pavers to be “Antique Brown” in colour.
- E16.4 Paving stones shall conform to the requirements of CAN3-A231.2, Precast Concrete Pavers.
- E16.5 Further to CAN3-E231.2.6.1.1, where concrete pavers are shipped for installation before the pavers are twenty-eight (28) days old, the average compressive strength of these pavers at the time of delivery to the Site shall be not less than 40 MPa.

CONSTRUCTION METHODS

- E16.6 Asphalt overlay (if applicable) shall be saw-cut and then milled to the dimensions specified by the Contract Administrator. If the edges of the saw-cut deteriorate during construction of the Traffic Calming Circle then a new edge shall be re-sawn and the associated asphalt overlay removed before installation of the new asphalt overlay.
- E16.7 Pavement removal and excavation shall be in accordance with CW3110 and as specified by the Contract Administrator.
- E16.8 Adjust manhole to height specified on the Drawings and in accordance with CW3210.
- E16.9 Construction of concrete curbs shall be in accordance with CW3310 and as shown on the Drawings.
- E16.10 The Contractor shall place the barrier curb and base for the paving stones monolithically and in accordance with CW3335 and as shown on the Drawings, except concrete utilized shall be in accordance with CW 3310.
- E16.11 Place paving stones in accordance with CW3335 and as shown on the Drawings.
- E16.12 Landscaping of the Traffic Calming Circle shall be undertaken in accordance with specification E29 through E32 as shown on the Drawings.
- E16.13 Place asphalt overlay in area surrounding traffic calming circle.

MEASUREMENT AND PAYMENT

- E16.14 Traffic Calming Circles will be measured on a unit basis and paid for at the Contract Unit Price for “Traffic Calming Circles” for each diameter listed on Form B., which shall be payment in full for all operations necessary or incidental thereto, including saw-cutting or re-saw-cutting, pavement removal, excavation, curb construction, tie bars, and installation of pavers on concrete base.
- E16.15 Manhole adjustments will be measured and paid for in accordance with CW3210.
- E16.16 Planing of asphalt overlay, if applicable, will be measured and paid for in accordance with CW3450. Initial saw-cutting and any necessary re-saw-cutting due to deterioration of the first

saw-cut edge will be considered incidental to the measurement and payment for Planing of Pavement.

E16.17 Placement of asphalt overlay will be measured and paid for in accordance with CW3410.

E16.18 Landscaping will be measured and paid for in accordance with sections E29 through E32, if applicable.

E17. RAISED CROSSWALK

GENERAL

E17.1 This specification covers the construction of a raised crosswalk.

E17.2 Referenced Standard Construction Specifications

(a) CW3110 – Sub-grade, Sub-Base and Base Course Construction

(b) CW3235 – Renewal of Existing Miscellaneous Concrete Slabs

(c) CW3240 – Renewal of Existing Curbs

(d) CW3310 – Portland Cement Concrete Pavement Works

(e) CW3335 – Installation of Interlocking Paving Stones on a Lean Concrete Base

(f) CW3410 – Asphaltic Concrete Pavement Works

(g) CW3450 – Planing of Pavement

MATERIALS

E17.3 Paving stones for a raised crosswalk shall be Barkman Concrete “Holland” as found in the Barkman Concrete Ltd. 2010 Catalogue. Pavers shall be placed in accordance with the pattern as shown on the Drawings. Pavers to be “Rustic Red” or “Natural” in colour as shown on the Drawings.

E17.4 Paving stones shall conform to the requirements of CAN3-A231.2, Precast Concrete Pavers.

E17.5 Further to CAN3-E231.2.6.1.1, where concrete pavers are shipped for installation before the pavers are twenty-eight (28) days old, the average compressive strength of these pavers at the time of delivery to the Site shall be not less than 40 MPa.

CONSTRUCTION METHODS

E17.6 Asphalt overlay shall be saw-cut and then milled to the dimensions specified by the Contract Administrator. If the edges of the saw-cut deteriorate during construction of the Raised Crosswalk then a new edge shall be re-sawn and the associated asphalt overlay removed before installation of the new asphalt overlay.

E17.7 Pavement removal and excavation shall be in accordance with CW3110 and to the dimensions as directed by the Contract Administrator.

E17.8 Remove existing curb as directed by the Contract Administrator and in accordance with CW3240.

E17.9 Remove sidewalk as directed by the Contract Administrator in accordance with CW3235.

E17.10 Construction of the concrete ramps (sinusoidal shape) shall be in accordance with CW3235 and as shown on the Drawings.

E17.11 Construction of 150 mm barrier curb complete with ramp curb shall be in accordance with CW3240 and as directed by the Contract Administrator.

- E17.12 Installation of paving stones on a lean concrete base shall be in accordance with CW3335 and as shown on the Drawings.
- E17.13 Place asphalt overlay butting against the existing asphalt overlay sawcut and the concrete ramp.
- E17.14 Construct new sidewalk in accordance with CW3235 and as shown on the Drawings. While constructing the new sidewalk install Detectable Warning Surface Tiles as per E14.

MEASUREMENT AND PAYMENT

- E17.15 Planing of asphalt overlay will be measured and paid for in accordance with CW3450. Initial saw-cutting and any necessary re-saw-cutting due to deterioration of the first saw-cut edge will be considered incidental to the measurement and payment for Planing of Pavement.
- E17.16 Construction of concrete ramps will be measured on a length basis (perpendicular to the roadway centreline) and paid for at the Contract Unit Price for "Concrete Ramps for Raised Crosswalk", which will be payment in full for all operations necessary or incidental thereto. No additional measurement or payment will be made for reinforcing steel or for drilling into existing concrete pavement.
- E17.17 Supplying and installing Detectable Warning Surface Tiles will be measured and paid for in accordance with E14.
- E17.18 All other items of work will be measured and paid for in accordance to the applicable standard construction specification.

E18. RAISED INTERSECTION

GENERAL

- E18.1 This specification covers the construction of a raised intersection.
- E18.2 Referenced Standard Construction Specifications
 - (a) CW3110 – Sub-grade, Sub-Base and Base Course Construction
 - (b) CW3235 – Renewal of Existing Miscellaneous Concrete Slabs
 - (c) CW3240 – Renewal of Existing Curbs
 - (d) CW3310 – Portland Cement Concrete Pavement Works
 - (e) CW3410 – Asphaltic Concrete Pavement Works
 - (f) CW3450 – Planing of Pavement

CONSTRUCTION METHODS

- E18.3 Asphalt overlay shall be saw-cut and then milled to the dimensions specified by the Contract Administrator. If the edges of the saw-cut deteriorate during construction of the raised intersection then a new edge shall be re-sawn and the associated asphalt overlay removed before installation of the new asphalt overlay.
- E18.4 Remove existing curb as directed by the Contract Administrator and in accordance with CW3240.
- E18.5 Remove sidewalk as directed by the Contract Administrator in accordance with CW3235.
- E18.6 Construction of 150 mm barrier curb complete with ramp curb shall be in accordance with CW3240 and as directed by the Contract Administrator.
- E18.7 Construction of concrete crosswalk shall be in accordance with CW3310 and as shown on the Drawings. The concrete crosswalk slab thickness is approximately 130 mm. The crosswalk

slabs shall be tied to the existing concrete pavement by means of 20M tie bars placed 600 mm o/c along its centre line.

- E18.8 Raise manhole that lies within the centre of the intersection to the grades indicated by the Contract Administrator.
- E18.9 Place asphalt overlay abutting the existing asphalt overlay and concrete crosswalk. Then place asphalt overlay inside the intersection abutting the concrete crosswalk.
- E18.10 Construct new sidewalk in accordance with CW3235 and as shown on the Drawings. While constructing the new sidewalk install Detectable Warning Surface Tiles as per E14.
- E18.11 Adjust the adjacent valve boxes as indicated by the Contract Administrator.

MEASUREMENT AND PAYMENT

- E18.12 Planing of asphalt overlay will be measured and paid for in accordance with CW3450. Initial saw-cutting and any necessary re-saw-cutting due to deterioration of the first saw-cut edge will be considered incidental to the measurement and payment for Planing of Pavement.
- E18.13 Construction of concrete crosswalk will be measured on a length basis (perpendicular to the roadway centreline) and paid for at the Contract Unit Price for "Concrete Crosswalk for Raised Intersection", which will be payment in full for all operations necessary or incidental thereto. No additional measurement or payment will be made for supply or installation of tie bars or for variation in concrete crosswalk thickness.
- E18.14 Supplying and installing Detectable Warning Surface Tiles will be measured and paid for in accordance with E14.
- E18.15 All other items of work will be measured and paid for in accordance to the applicable standard construction specification.

E19. REMOVAL OF EXISTING PIPES

DESCRIPTION

- E19.1 This Specification shall amend and supplement Specification CW 2130 and CW 3210.

CONSTRUCTION METHODS

- E19.2 Removal of existing pipes shall consist of existing catchbasin or curb inlet leads which are to be removed in order to facilitate the installation of new catchbasin or catch pits.

MEASUREMENT AND PAYMENT

- E19.3 The removal of existing pipes by excavating, removing and disposing of existing pipe will not be measured. Removal of existing pipes and performance of all operations required to complete the work as specified shall be included in the price paid for curb inlet removal or catchbasin removal.

E20. OPERATING CONSTRAINTS FOR WORK IN CLOSE PROXIMITY TO FEEDERMAINS

DESCRIPTION

- E20.1 This Section details operating constraints for all work to be carried out in close proximity to Feeder mains. Close proximity shall be deemed to be any construction activity within a 5 m offset from the centreline of the Feeder main.
- E20.2 General Considerations for Work in Close Proximity to Feeder mains
- E20.2.1 Work around the Feeder main shall be planned and implemented to minimize the time period that work is carried out in close proximity to the pipe and to ensure that the pipeline is not subjected to excessive construction related loads, including excessive vibrations and/or concentrated or asymmetrical lateral loads during backfill placement.
- E20.3 Excavation
- (a) Where there is less than 1.6 metres of earth cover over the Feeder main and further excavation is required either adjacent to or over the Feeder main, utilize only smooth edged excavation buckets, soft excavation or hand excavation techniques.
 - (b) Where there is less than 2.5 m of cover over the Feeder main, offset backhoe or excavation equipment from Feeder main, a minimum of 2.5 m from Feeder main centerline, to carry out excavation.
 - (c) Excavated materials intended for reuse shall not be dumped directly on pipelines but shall be carefully bladed in place.
- E20.4 Subgrade Construction
- (a) Subgrade compaction shall be limited to static compaction methods and only with equipment that are well within the rated loading superimposed loading capacity of the Feeder main.
 - (b) Stage work activities to minimize the time period that unprotected subgrade is exposed to the environment and protect the subgrade against the impacts of adverse weather if subbase/base course construction activities are not sequential with excavation.
- E20.5 Sub-base and Base Course Construction
- (a) Sub-base or base course materials shall not be dumped directly on pipelines but shall be carefully bladed in-place.
 - (b) Sub-base compaction shall be either carried out by static methods without vibration or with smaller approved equipment such as hand held plate packers or smaller roller equipment.
- E20.6 The Contractor shall ensure that all work crew members understand and observe the requirements of this specification. Prior to commencement of on-site work, the Contractor shall jointly conduct an orientation meeting with the Contractor Administrator with all superintendents, foremen and heavy equipment operators to make all workers on site fully cognizant of the limitations of altered loading on the Feeder main, the ramifications of inadvertent damage to the pipelines and, the constraints associated with work in close proximity to the Feeder main.
- E20.7 Employees of the Contractor or any Subcontractor that fail to comply with the conditions for working in close proximity to the Feeder main shall be promptly removed from the Site.

MEASUREMENT AND PAYMENT

- E20.8 No measurement or payment will be made for the Work described in this specification. They shall be considered incidental to other items.

E21. CSP BAR SCREENS

DESCRIPTION

- E21.1 This Specification shall cover all operations relating to the supply and installation of CSP bar screens.
- E21.1.1 The work to be done by the Contractor under this Specification shall include the supply of all materials and the furnishings of all superintendence, overhead, labour, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all work as hereinafter specified.

MATERIALS

- E21.2 As per construction drawings.

CONSTRUCTION METHODS

- E21.3 Contractor to install CSP bar screen as indicated on the construction drawings.

MEASUREMENT AND PAYMENT

- E21.4 The supply and installation of CSP bar screens will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Supply and Installation of CSP Bar Screens". The number of units to be paid for will be the total number of CSP bar screens supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

E22. REMOVAL AND RELOCATION OF EXISTING PARKING FENCE

DESCRIPTION

- E22.1 General
- E22.1.1 This specification covers the removal and relocation of the parking fence, located at #1670 Corydon Avenue.
- E22.1.2 Referenced Standard Construction Specifications
(a) CW 3550 – Chain Link Fencing

MATERIALS

- E22.2 The materials are to match existing or better, as approved by the Contract Administrator.

CONSTRUCTION METHODS

- E22.3 Removal of Existing Parking Fence
- E22.3.1 Any parking fence materials that can not be reused, based upon approval by the Contract Administrator, shall be removed and disposed of off-site. All other materials are to be salvaged and stored so as not to be damaged or stolen from the site.
- E22.3.2 The Contractor shall remove the fence post and concrete bases. The post hole remaining following the removal of the fencing shall be backfilled and compacted with gravel-pitrun to the satisfaction of the Contract Administrator. All concrete rubble shall be removed and disposed of by the Contractor.
- E22.3.3 Dispose of Material in Accordance With Section 3.4 of CW 1130.
- E22.4 Re-installation of Existing Parking Fence
- E22.4.1 The Contractor shall utilize the salvaged parking fence materials to re-build the fence to the location as indicated on the Drawings and refined by the Contract Administrator in the field.

- E22.4.2 New fence posts and concrete bases shall be supplied and placed to the identical size, finish, and geometry as the existing.

MEASUREMENT AND PAYMENT

- E22.5 Removal and Relocation of Existing Parking Fence

- E22.5.1 The removal and relocation of the existing parking fence will be measured on a length basis and paid for at the Contract Unit Price per metre for "Remove and Relocate Parking Fence". The length to be paid for will be the total number of metres of parking fence removed and replaced in accordance with this specification, accepted and measured by the Contract Administrator.

E23. REMOVAL AND RELOCATION OF PRIVATE LIGHT POLE

DESCRIPTION

- E23.1 General

- E23.1.1 This specification covers the removal and relocation of the private light pole, which interferes with the new multi-use path, located at #1670 Corydon Avenue.

CONSTRUCTION METHODS

- E23.2 General

- E23.2.1 The Contractor shall salvage the existing light pole.
- E23.2.2 The Contractor shall remove the light pole concrete base. The post hole remaining following the removal of the light pole concrete base shall be backfilled and compacted with gravel-pitrun to the satisfaction of the Contract Administrator. All concrete rubble shall be removed and disposed of by the Contractor.
- E23.2.3 A new concrete base c/w with reinforcing and anchor bolts as per light pole manufacturer's recommendations shall be placed in a location of similar configuration to that of the existing parking fence with the relocated parking fence.

MEASUREMENT AND PAYMENT

- E23.3 General

- E23.3.1 The removal and relocation of the private light pole will be measured on a lump sum basis and paid for at the Contract Unit Price for "Remove and Relocate Private Light Standard". The amount paid will be the reconstructed railing terminal in accordance with this specification, accepted by the Contract Administrator.

E24. REMOVAL AND RECONSTRUCTION OF STEEL RAILING TERMINAL

DESCRIPTION

- E24.1 General

- E24.1.1 This specification covers the removal and reconstruction of the railing which interferes with the new sidewalk, located at #55 Nassau Street.
- E24.1.2 Referenced Standard Construction Specifications
(a) CW 3550 – Chain Link Fencing

MATERIALS

- E24.2 If new materials are required, the Contractor shall replace them with the same as existing. These materials are to be approved by the Contract Administrator prior to installation.

CONSTRUCTION METHODS

- E24.3 Removal of Existing Steel Railing Terminal
 - E24.3.1 The railing shall be removed to a point 0.3 west of the new sidewalk edge. The existing sidewalk shall be saw-cut and removed to the west edge of the new sidewalk.
 - E24.3.2 The railing terminal is to be salvaged.
- E24.4 Reconstruction of Railing Terminal
 - E24.4.1 The Contractor shall use the salvaged railing termination and re-attach it to align 0.3 m west of the new west sidewalk edge.
 - E24.4.2 Weld and re-paint the railing to match existing construction style.
 - E24.4.3 Replace private sidewalk if necessary.

MEASUREMENT AND PAYMENT

- E24.5 Removal and Reconstruction of Railing Terminal
 - E24.5.1 The removal and reconstruction of the railing terminal will be measured on a lump sum basis and paid for at the Contract Unit Price for "Removal and Reconstruction of Steel Railing at 55 Nassau Street". The amount paid will be the reconstructed railing terminal in accordance with this specification, accepted by the Contract Administrator.
 - E24.5.2 If the Contractor is required to remove and replace sidewalk slabs to reconstruct the railing termination these items will be paid at contract unit prices.

E25. REMOVAL OF EXISTING CONCRETE FENCE

DESCRIPTION

- E25.1 General
 - E25.1.1 This specification covers the removal of the parking fence, located at #176 Roslyn Road.
 - E25.1.2 Referenced Standard Construction Specifications
 - (a) CW 3550 – Chain Link Fencing

MATERIALS

- E25.2 Not applicable

CONSTRUCTION METHODS

- E25.3 Removal of Existing Fence
 - E25.3.1 Any fence materials that can be salvaged shall be returned to the homeowner.
 - E25.3.2 The Contractor shall remove the fence, including any posts and concrete bases. If a post hole remains following the removal of the fence it shall be backfilled and compacted with gravel-pitrun to the satisfaction of the Contract Administrator. All concrete rubble shall be removed and disposed of by the Contractor.
 - E25.3.3 Dispose of Material in Accordance With Section 3.4 of CW 1130.

MEASUREMENT AND PAYMENT

- E25.4 Removal Existing Fence
 - E25.4.1 The removal of the existing fence will be measured on a length basis and paid for at the Contract Unit Price per metre for "Removal of Concrete Fence". The length to be paid for

will be the total number of metres of fence removed in accordance with this specification, accepted and measured by the Contract Administrator.

E26. HYDRANT RELOCATIONS AND CATHODIC PROTECTION

GENERAL

E26.1 This specification shall amend the following Standard Construction Specifications:

(a) CW2110-R10 – Watermains

CONSTRUCTION METHODS

E26.2 Hydrant relocations are to be Type A except as follows:

E26.2.1 Salvage existing hydrants and valves and deliver to City yard as directed by the Contract Administrator.

E26.2.2 Supply and install new hydrant, hydrant isolation valve, elbows, couplings and piping as required to complete the relocation.

E26.2.3 Any cathodic protection systems on piping to remain that is disturbed or damaged shall be restored at the Contractor's cost.

MEASUREMENT AND PAYMENT

E26.3 Type A Hydrant Relocations

E26.3.1 Type A Hydrant relocations will be measured on a length basis and paid for at the Contract Unit Price for "Type A Relocation of Hydrant", which shall be payment in full for all operations necessary or incidental thereto.

E27. ADJUSTMENT OF EXISTING CATHODIC PROTECTION MONITORING STATION BOXES

DESCRIPTION

E27.1 This specification covers the adjustment of existing cathodic protection monitoring station boxes.

CONSTRUCTION METHODS

E27.2 General

E27.2.1 The adjustment involves removing the screws that attach the monitoring station to a PVC sleeve and disconnecting the wires from the monitoring station. The monitoring station shall be lifted up and the wires tucked inside the PVC sleeve. The PVC sleeve shall then be cut to the desired height. The wires shall be reconnected to the monitoring station at which point it shall be screwed back onto the PVC sleeve.

E27.2.2 If monitoring station is damaged and unusable the Contract Administrator shall coordinate the supply of a new cathodic protection monitoring box.

MEASUREMENT AND PAYMENT

E27.3 General

E27.3.1 The Adjustment of existing cathodic protection monitoring station boxes shall be paid for at the Contract Unit Price for "Adjustment of Existing Cathodic Protection Monitoring Station Boxes", as indicated in the Schedule of Prices.

E28. BIKE LANE MEDIAN

GENERAL

E28.1 This specification covers the construction of a Bike Lane Median.

E28.2 Referenced Standard Construction Specifications

(a) CW3310-R14 – Portland Cement Concrete Pavement Works

MATERIALS

E28.3 Bike Lane Median

E28.3.1 All materials required for the construction of bike lane median shall be in accordance with CW3310.

CONSTRUCTION METHODS

E28.4 Bike Lane Median

E28.4.1 Construction of bike lane median shall be in accordance with CW3310 and as shown on the Drawings.

MEASUREMENT AND PAYMENT

E28.5 Bike Lane Median

E28.5.1 Bike lane median will be measured on a length basis and paid for at the Contract Unit Price for "Bike Lane Median", which shall be payment in full for all operations necessary or incidental thereto.

E28.5.2 No measurement or payment shall be made for supply or placement of bonding grout for the bike lane median.

E28.5.3 No measurement or payment shall be made for reinforcing steel or for drilling into existing concrete pavement.

E29. TREES AND SHRUBS

DESCRIPTION

E29.1 General

E29.1.1 This specification covers the supply and installation of nursery-grown trees and shrubs plantings in areas indicated on the Drawings, including preparation, digging, transport and planting, and maintenance.

E29.2 Nomenclature

E29.2.1 Nomenclature of specified nursery stock shall conform to the International Code of Nomenclature for Cultivated Plants and shall be in accordance with the approved scientific names given in the latest edition of Standardized Plant Names. The names of varieties not named therein are generally in conformity with the names accepted in the nursery trade.

E29.3 Source Quality Control

E29.3.1 All nursery stock supplied shall be nursery grown and of species and sizes as indicated on the Drawings. Nursery stock shall be No. 1 Grade material in accordance with the current edition of Landscape Canada's (CNTA) "Guide Specifications for Nursery Stock".

E29.3.2 Any nursery stock dug from native stands, wood lots, orchards, or neglected nurseries, which have not received proper cultural maintenance, shall be designated as "collected plants". Obtain permission of the Contract Administrator to use collected plants.

- E29.3.3 The Contractor shall notify Contract Administrator of source of plant material at least seven (7) days in advance of shipment.
- E29.3.4 Acceptance of plant material at source does not prevent rejection of same plant material on site prior to or after planting operations.
- E29.3.5 Imported plant material must be accompanied with necessary permits and import licenses. Conform to federal and provincial regulations.
- E29.4 Shipment and Pre-Planting Care
- E29.4.1 Coordinate shipping of plants and excavation of holes to ensure minimum time lapse between digging and planting.
- E29.4.2 Tie branches of trees and shrubs securely and protect plant material against abrasion, exposure and extreme temperature change during transit. Avoid binding of planting stock with rope or wire, which would damage bark, break branches or destroy natural shape of plant. Give full support to root balls, especially of large trees, during lifting.
- E29.4.3 Cover plant foliage with tarpaulin, and protect bare roots by means of dampened straw, peat, saw dust or other acceptable material to prevent loss of moisture during transit and storage.
- E29.4.4 Remove broken and damaged roots with sharp pruning shears. Make clean cut and cover cuts over 50 mm diameter with wound dressing.
- E29.4.5 Keep roots moist and protect from sun and wind. Heel-in trees and shrubs that cannot be planted immediately in shaded areas; water well.
- E29.5 Replacement
- E29.5.1 During the first two (2) years following completion of planting operations, remove from site any plants that have died or failed to grow satisfactorily, as determined by the Contract Administrator. As an example, plant material installed in 2010 that has failed to grow satisfactorily and has not been replaced by October 31, 2011 would be required to be replaced in the Spring of 2012.

MATERIALS

- E29.6 Water
- E29.6.1 Water shall be potable and free of minerals that may be detrimental to plant growth.
- E29.7 Fertilizer
- E29.7.1 Fertilizer shall be slow release organic. Fertilizer shall contain N-P-K in ratio as recommended by soil test results from an approved agricultural soil testing laboratory.
- E29.8 Root Ball Burlap
- E29.8.1 Root ball burlap shall be 150 g Hessian burlap.
- E29.9 Anti-desiccant
- E29.9.1 Anti-desiccant shall be wax-like emulsion to provide film over plant surfaces reducing evaporation but permeable enough to permit transpiration.
- E29.10 Wound Dressing
- E29.10.1 Wound dressing shall be horticultural accepted non-toxic, non-hardening emulsion.
- E29.11 Plant Material
- E29.11.1 All plant material specified for this project shall be containerized and/or ball and burlap nursery stock. All plants shall be from the Winnipeg area and the Oak-Aspen Forest Eco-region.

- E29.11.2 Comply with latest edition of the "Guide Specification for Nursery Stock", produced by Landscape Canada (CNTA), referring to quality, size and development of nursery-grown plant material and root balls.
- E29.11.3 Nursery stock shall be No. 1 grade trees, shrubs and vines.
- E29.11.4 All plant material shall be measured when branches are in their natural position. Height and spread dimensions specified in the Plant List on the Drawings refer to the main body of the plant, and not from branch tip to root base or from branch tip to branch tip. Where trees are measured by calliper (cal.), reference is made to the diameter of the trunk measured at 300 mm above ground as the tree stands properly planted in the nursery.
- E29.11.5 All containerized whips and herbaceous plant material shall have a minimum of one full year's growth. Roots shall be healthy, reaching the sides of the containers, and developed such that the root ball can be kept intact during transplanting. Roots shall not encircle each other to the extent of inhibiting plant growth.
- E29.11.6 Any plants designated as nursery stock but dug from native stands, wood lots, orchards, or neglected nurseries that have not received proper cultural maintenance, shall be designated as "collected stock". Material sources are to be approved by Contract Administrator prior to ordering or collecting. The Contractor shall provide all of the necessary nursery certificates to ensure that the plant species comply with this specification.
- E29.11.7 All trees shall have one, only, sturdy, reasonably straight and vertical trunk, and a well-balanced crown with fully developed leader, unless designated "multi-stem". All evergreens shall be symmetrically grown and branched from ground level, up.
- E29.11.8 Use trees, shrubs and groundcovers with structurally sound, strong fibrous root systems, and free of disease, insects, defects or injuries, including rodent damage, sun scald, frost cracks, abrasions or scars to the bark. Plants must have been root pruned regularly, but not later than one growing season prior to arrival on site.
- E29.11.9 All parts of the plants shall be moist and show live, green cambium tissue when cut.
- E29.11.10 At least one (1) plant of each variety supplied shall bear a tag showing both the botanical and common name of the plant.
- E29.11.11 Additional Plant Material Qualifications:
- (a) Imported Plant Material
 - (i) Plant material obtained from areas with milder climatic conditions from those of site acceptable only when moved to site prior to the breaking of buds in their original location and heeled-in in a protected area or placed in cold storage until conditions suitable for planting. Obtain Contract Administrator's approval to use imported plant material.
 - (b) Cold Storage
 - (i) Approval required for plant material that has been held in cold storage.
 - (c) Container-Grown Stock
 - (i) Acceptable if containers large enough for root development. Trees and shrubs must have grown in container for minimum of one growing season but not longer than two. Root system must be able to hold soil when removed from container. Plants that have become root bound are not acceptable. Container stock must have been fertilized with slow releasing fertilizer.
 - (d) Balled and Burlapped Plant Material
 - (i) Deciduous trees in excess of 3 m height must have been dug with large firm ball. Root balls must include 75% of fibrous and feeder root system. This excludes use of native trees grown in light sandy or rocky soil. Secure root balls with burlap, heavy twine and rope. For large trees: wrap ball in double layer of burlap and drum lace with minimum 10 mm diameter rope. Protect root balls against sudden changes in temperature and exposure to heavy rainfall.

- (e) Tree Spade Dug Material
 - (i) Obtain approval of the Contract Administrator for digging plant material with mechanized digging equipment, hydraulic spade or clam-shell type. Dig root balls to satisfy Landscape Canada (CNTA) standards. Lift root ball from hole, place in wire basket designed for purpose, line with burlap. Tie basket to ball with heavy rope. Take care not to injure trunk of tree with wire basket ties or rope.
- (f) Substitutions
 - (i) Substitutions to plant material as indicated on the Plant List will not be permitted unless written approval has been obtained as to type, variety and size prior to award of Contract. Plant substitutions must be of similar species and of equal size to those originally specified.

CONSTRUCTION METHODS

E29.12 Workmanship

- E29.12.1 The Contractor shall stake out location of trees, shrubs and planting beds as per the Drawings. Obtain Contract Administrator's approval prior to excavating.
- E29.12.2 The Contractor shall obtain clearances from all utilities, with respect to underground lines located in the areas to be excavated, prior to commencing planting operations.
- E29.12.3 The Contractor shall apply anti-desiccant in accordance with material manufacturer's instructions.
- E29.12.4 The Contractor shall coordinate planting operations; keep the site clean and planting holes drained, and immediately remove soil or debris spilled onto pavement.

E29.13 Planting Time

- E29.13.1 The Contractor shall plant deciduous plant material during dormant period before buds have broken. Plant material noted for spring planting only must be planted in dormant stage.
- E29.13.2 Plant material imported from region with warmer climatic conditions may only be planted in early spring.
- E29.13.3 When permission has been obtained to plant deciduous plant material after buds have broken, spray plants with anti-desiccant to slow down transpiration prior to transplanting.
- E29.13.4 When permission has been obtained, trees, shrubs and ground covers growing in containers may be planted throughout growing season.
- E29.13.5 Plant only under conditions that are conducive to health and physical conditions of plants.
- E29.13.6 The Contractor shall provide the Contract Administrator with a planting schedule at least two weeks prior to planting operations. Extending planting operations over long period using limited crew will not be accepted.

E29.14 Excavations

- E29.14.1 Shrub beds: excavate to minimum depth of 500 mm, as indicated on the Drawings. Individual shrubs shall be planted in 600 mm deep holes backfilled with planting soil mixture.
- E29.14.2 Trees: excavate to depth such that the top of the root ball is even with existing grade, with a surface width of two times the diameter of the root ball. Backfill around trees with planting soil mixture.
- E29.14.3 The sides of all tree pits shall be scarified to the depth of one shovel blade.
- E29.14.4 Provide drainage for planting holes in heavy soil if natural drainage does not exist. Have method approved.

- E29.14.5 Protect the bottoms of excavations against freezing.
- E29.14.6 Remove water that enters excavations prior to planting. Ensure source of water is not ground water.
- E29.15 Planting
- E29.15.1 Trees shall be placed on undisturbed soil and to a depth equal to that at which they were originally growing at the nursery.
- E29.15.2 For shrubs, loosen bottom of planting hole to depth of 150 to 200 mm. Cover bottom of each excavation with minimum of 150 mm of planting soil mixture.
- E29.15.3 Plant trees and shrubs vertically, with roots placed straight out in hole. Orient plant material to give best appearance in relation to structures, roads and walkways.
- E29.15.4 Place plant material to depth equal to depth they were originally growing in nursery or in locations collected.
- E29.15.5 Ball and burlap root balls: loosen burlap and cut away minimum top 1/3 without disturbing root ball. Do not pull burlap or rope from under root ball. With container stock, remove entire container without disturbing root ball. Non-biodegradable wrappings must be removed.
- E21.15.6 Tree spade excavated materials:
- (a) Tree spade planting shall be permitted only by approval of the Contract Administrator.
 - (b) Dig tree pit with same mechanical equipment as used to dig plant material. Ensure hole dug is upright as possible. Place in hole a mixture of 40 L of planting soil and fertilizer mixed with water to soupy consistency. This will be forced up sides of ball as root ball is placed in hole.
 - (c) Loosen bottom of planting hole to depth of 150 to 200 mm. Cover bottom of each excavation with minimum 150 mm topsoil mixture.
- E29.15.6 Tamp planting soil mixture around root system in layers of 150 mm eliminating air voids. Frozen or saturated planting soil is unacceptable. When 2/3 of planting soil has been placed, fill hole with water. After water has been completely penetrated into soil, complete backfilling.
- E29.15.7 Excavate 200 mm depth an additional 600 mm beyond planting pits around the perimeter of all tree planting pits, and fill with planting soil mixture.
- E29.15.8 Construct 100 mm deep saucers around the outer edge of planting pits to assist with maintenance watering.
- E29.15.9 When planting is completed apply slow release organic fertilizer at minimum rate of 12 kg/100 m for shrub beds or 50 g/mm of calliper for trees, or as recommended by the soil analysis. Mix fertilizer thoroughly with top layer of planting soil and water in well.
- E29.16 Pruning
- E29.16.1 Prune trees, shrubs and groundcover after planting, as indicated. Postpone pruning of those trees where heavy bleeding may occur, until in full leaf. Employ clean sharp tools and make cuts flush with main branch, smooth and sloping as to prevent accumulation of water. Remove projecting stumps on trunks or main branches. Remove dead and injured branches and branches that rub causing damage to bark. Trim trees and shrubs without changing their natural shape. Do not damage lead branches or remove smaller twigs along main branches.
- E29.17 Standards
- E29.17.1 All roots shall be cleanly cut; split roots are not acceptable.
- E29.17.2 Branches and trunks shall be tied and protected; broken or abraded branches or trunks are not acceptable.

- E29.17.3 Planting shall be protected from drying conditions; desiccated material not acceptable.
- E29.17.4 All plants shall be free of insects and disease: galls, blight and other manifestations of insect infestation or disease not acceptable.
- E29.18 Wood Chip Mulch
- E29.18.1 All planting beds shall be covered with a 100 mm depth of wood chip mulch to the limits shown on the planting details.
- E29.18.2 Wood chip mulch shall extend under all tree limbs, but shall not be installed within 150 mm of the tree trunk.
- E29.18.3 The saucers of all trees not planted in beds shall be covered with a 100 mm depth of wood chip mulch.
- E29.19 Maintenance
- E29.19.1 Watering
- (a) Plant material shall be watered once a week for first four weeks following installation, and once every second week, thereafter. Ensure adequate moisture in root zone at freeze-up.
- E29.19.2 Weeding
- (a) Keep mulched shrub beds and tree saucers weed-free by manually removing weeds during the maintenance period.
- E29.19.3 Insects and Diseases
- (a) Spray plants to combat pests and diseases. Use organic chemical insecticides approved by Agriculture Canada.
- E29.19.4 Adjustments
- (a) Make adjustments requested by the Contract Administrator, including straightening trees, tightening guy wires and removing tree stakes.
- E29.19.5 Maintenance Period
- (a) Maintain plant material for a period of two years following acceptance to start maintenance period of planting operations, as determined by the Contract Administrator.

MEASUREMENT AND PAYMENT

- E29.20 Trees and Shrubs
- E29.20.1 Supply and installation of trees and shrubs will be measured on a unit price basis for each tree, shrub and vine listed on the Plant List and paid for at the Contract Unit Price for each species and size shown on the Plant List. The number of trees and shrubs to be paid for will be the total number of trees and shrubs installed in accordance with this specification and accepted by the Contract Administrator, as computed by the Contract Administrator.
- E29.20.2 Supply and installation of fertilizer for plant material will be included in payment for the plant material.

E30. PLANTING SOIL

DESCRIPTION

E30.1 General

E30.1.1 This specification shall amend and supplement City of Winnipeg Standard Construction Specification CW 3540-R5 "Topsoil and Finish Grading for Establishment of Turf Areas", and shall cover supply, preparation and placement of planting soil.

E30.1.2 Referenced Standard Construction Specifications

(a) CW 3540-R5 Topsoil and Finish Grading for Establishment of Turf Areas

MATERIALS

E30.2 Peatmoss

E30.2.1 Peat moss shall be decomposed plant material, fairly elastic and homogenous, free of colloidal residue, wood, sulphur and iron; containing a minimum of 60% organic material by weight, with moisture content not exceeding 15%. Shredded particles shall not exceed 6 mm in size. Minimum pH value of peat shall be 4.5; maximum 6.0.

E30.3 Sand

E30.3.1 Sand shall be hard, granular, sharp sand to CSA A82.56-M1976, well-washed and free of impurities, chemicals and organic matter.

E30.4 Bonemeal

E30.4.1 Bonemeal shall be raw, finely ground with a minimum chemical analysis of 3% nitrogen and 20% phosphoric acid.

E30.5 Wood Chip Mulch

E30.5.1 Wood chip mulch shall be chipped ash, maple, poplar, birch and other deciduous trees. Mulch shall be chipped to sizes ranging from 50mm to 100mm. Mulch may NOT contain stringy twigs and seed, free of non-organic material, wood preservatives or diseased wood. The mulch shall contain no more than 5% of the following materials in total: soil, sawdust, peatmoss, coniferous wood and needles.

E30.5.2 The Contractor shall supply a wood chip mulch sample to the Contract Administrator for approval prior to installation.

E30.6 Fertilizer

E30.6.1 Chemical fertilizers shall have N-P-K compositions as recommended by an agricultural soil-testing laboratory approved by the Contract Administrator provided for each of the following:

(a) Horticultural trees and shrubs with planting soil mix;

E30.7 Chemical Application

E30.7.1 Roundup or similar chemical herbicides approved by Agriculture Canada shall be used only with the approval of the Contract Administrator.

E30.8 Plastic Edging

E30.8.1 Use heavy-duty 125 mm deep black PVC garden edging with rolled top.

CONSTRUCTION METHODS

E30.9 Planting Soil Mixture for Trees and Shrubs

E30.9.1 Planting soil mixture shall be a mix of 75% topsoil and 20% peatmoss, loose by volume. Incorporate 5% sand, or as required, to improve soil texture. Incorporate bonemeal at 3 kg/cubic metre of planting soil mixture.

E30.10 Construction of Planting Beds

E30.10.1 Excavate planting beds to a depth of 500 mm.

E30.10.2 Install planting soil mixture, loosely compacted, 500 mm deep in planting beds with a smooth top surface to match surrounding contours. Level planting soil mixture by hand around existing and newly planted trees and shrubs.

E30.10.3 Install 100 mm wood chip mulch in all beds following planting operations.

E30.11 Plastic Edging

E30.11.1 Install 125 mm plastic edging with rolled top to separate planting beds from sod or seeded areas.

METHOD OF MEASUREMENT

E30.12 Planting Soil Mixture

E30.12.1 Construction of planting beds, and supply and installation of planting soil mixture shall be measured on an area basis for the number of square metres of 500 mm depth planting bed constructed, complete with 500 mm depth planting soil mixture, all in accordance with the Drawings and this specification, and accepted by the Contract Administrator, as computed by the Contract Administrator.

E30.12.2 There will be no separate measurement for planting soil mixture used in planting individual trees and shrubs that are not planted in beds.

E30.13 Wood Chip Mulch

E30.13.1 Supply and installation of wood chip mulch shall be measured on an area basis for the number of square metres of 100 mm wood chip mulch installed in planting beds in accordance with the Drawings and this specification, and accepted by the Contract Administrator, as computed by the Contract Administrator.

E30.13.2 There will be no separate measurement for wood chip mulch used in individual trees saucers.

E30.14 Plastic Edging

E30.14.1 Plastic edging will be measured on a length basis for the number of linear metres of plastic edging installed in accordance with the Drawings and this specification, and accepted by the Contract Administrator, as computed by the Contract Administrator.

BASIS OF PAYMENT

E30.15 Planting Soil Mixture

E30.15.1 Construction of planting beds and supply and installation of planting soil mixture will be paid for at the Contract Unit Price for "Planting Beds with Planting Soil Mixture", which price shall be payment in full for supplying all materials and performing all operations herein specified, and all other items included in the work of this specification.

E30.16 Wood Chip Mulch

E30.16.1 Supply and installation of wood chip mulch will be paid for at the Contract Unit Price for "Wood Chip Mulch", which price shall be payment in full for supplying all materials and performing all operations herein specified, and all other items included in the work of this specification.

E30.17 Plastic Edging

- E30.17.1 Plastic edging will be paid for at the Contract Unit Price for "Plastic Edging", which price shall be payment in full for supplying all materials and performing all operations herein specified, and all other items incidental to the Work of this Specification.

E31. LONG TERM SCHEDULED MAINTENANCE OF PLANT MATERIAL

DESCRIPTION

E31.1 General

- E31.1.1 This specification covers the maintenance of plant material and planting beds following acceptance of the work by the Contract Administrator.

MATERIALS

E31.2 Materials

- E31.2.1 The Contractor shall provide all necessary materials and equipment including: additional topsoil, soil ameliorates, mulches, sod, seed, fertilizers and pesticides, and tractors, mowers, hand mowers, trimmers, fertilizer spreaders, pruning tools, water trucks, hoses, water metres and any other items necessary for the maintenance of the areas indicated in this specification.

CONSTRUCTION METHODS

E31.3 Provision of Maintenance Personnel

- E31.3.1 The Contractor shall provide all necessary personnel for the ongoing maintenance operations.

E31.4 Capability of Personnel

- E31.4.1 Maintenance personnel should have at least one year of experience in landscape maintenance and should be under the direction of a foreman, in all cases, with not less than five years of experience with similar maintenance operations.
- E31.4.2 The maintenance foreman shall be familiar with native plantings and plant identification techniques.

E31.5 Maintenance Period

- E31.5.1 Maintain trees, shrubs and planting beds for a period of two (2) years from the completion of the Maintenance for Establishment period, as determined by the Contract Administrator. Note: Completion shall not occur after October 30, or before May 15 of any year.

E31.6 Maintenance Schedule

- E31.6.1 Provide the Contract Administrator a Schedule of Proposed Maintenance Activities for the two-year scheduled maintenance period, based on the requirements outlined herein. The scheduled maintenance period shall not commence until the schedule has been reviewed by the Contract Administrator.

E31.7 Recording Maintenance Operations

- E31.7.1 The Contractor shall provide a detailed maintenance log, including but not limited to the following: hours of labour undertaken, number of personnel employed and equipment used. The log will itemize watering, spraying and any other maintenance work. Contractor shall submit logs monthly at regularly scheduled meetings with the Contract Administrator. Maintenance log will be included in payment for the maintenance work

E31.8 Traffic

E31.8.1 Do not conduct maintenance operations during peak traffic periods (Monday to Friday from 07:00 to 09:00 and from 15:30 to 17:30).

E31.9 Maintenance of Trees, Shrubs and Planting Beds

E31.9.1 Maintain trees, shrubs and planting beds as indicated in E29.19.

E31.9.2 Watering Trees and Shrubs

- (a) Newly planted trees, and shrubs require water to become established; however, watering too often can kill a plant. During the summer, if temperatures are fairly high and there has been no rainfall, water approximately once a week.
- (b) Contractor shall determine the need for watering by taking soil tests weekly with a one-inch auger. Take a test sample from both the planting soil and from the tree root balls by drilling to a minimum depth of 600 mm. The soil shall contain enough moisture to hold together when compressed in the hand, but shall not be muddy.
- (c) Testing shall be undertaken at a minimum of 10 sites per week at a minimum of 10m between sites. The installed plant material and bioengineering shall not be allowed to dry out to the detriment of the viability of the plant material. Contractor shall monitor and submit lots to the Contract Administrator monthly. Contractor shall water-in plant material works in late fall during the scheduled maintenance period.
- (d) Thoroughly soak coniferous trees prior to winter freeze-up.

E31.9.3 Fertilizing, Pruning and Spraying Deciduous Trees and Shrubs

- (a) Because of the specialized nature of such operations, employ a qualified local arborist. (Refer to E29)

E31.9.4 Pruning Deciduous Trees and Shrubs

- (a) Prune in accordance with E29.16 by thinning out unnecessary limbs or portions of limbs and by cutting back the terminal growth. Cut with pruning shears and with handsaws for limb-wood. When cutting the terminal growth, make the cuts one-quarter inch above the bud or lead twig. Where an entire limb is removed, make the cuts flush with the main stem or trunk.

E31.9.5 Cultivation

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

E31.9.6 Spraying

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

E31.9.7 Straightening

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

- E31.9.8 Mulching Wood Chip
- (a) Add wood chip mulch to planting areas as required to maintain an even fresh surface.
- E31.9.9 Weeding
- (a) Hand weed and lightly rake a minimum of once per month, or as determined by the Contract Administrator, to remove competition for installed plant material/undesirable plant material. Dispose of undesirable material off-site.
 - (b) The Contractor shall be responsible for any fines or weed control notices issued for the planting areas. All such notices shall be dealt with by the Contractor in a timely fashion. Copies of any fines and notices shall be provided to the Contract Administrator within five (5) working days of receipt by the Contractor.
- E31.9.10 General Cleanup
- (a) Remove garbage and debris from planting beds as required or as directed by the Contract Administrator

METHOD OF MEASUREMENT

- E31.10 General Maintenance of Trees, Shrubs and Planting Beds
- E31.10.1 Two year general maintenance of trees and shrubs, and planting beds including fertilizing, pruning, spraying for insects, disease control, cultivation, care of guy wires and turnbuckles, straightening, mulching, watering, weeding and cleanup will be measured twice each season, typically in July and October, for a six month annual growing season from April 15 to October 15 each year
- E31.10.2 All measured work will be in accordance with the Drawings and this specification and accepted by the Contract Administrator, as computed by the Contract Administrator.

BASIS OF PAYMENT

- E31.11 General Maintenance of Trees, Shrubs and Planting Beds
- E31.11.1 General maintenance will be paid for at the Contract Unit Price for "General Plant Material and Planting Bed Maintenance", which price shall be payment in full for supplying all labour, equipment and materials and performing all operations herein described, and all other items included in the Work of this specification.

E32. PLANT MATERIAL WARRANTY

DESCRIPTION

- E32.1 General
- E32.1.1 This specification covers the provision of warranty for all plant material itemized on the Plant List, for the two-year maintenance period and for the individual areas identified within the overall Contract Area.
- E32.2 Timing
- E32.2.1 Warranty shall be for two (2) years, commencing upon acceptance of installed plant material.
- E32.3 Warranty
- E32.3.1 The Contractor hereby warrants that the plant material as itemized on the Plant Lists and on the Drawings will remain free of defects for the maintenance period indicated for each area of the Contract.

E32.4 End-of-Warranty Inspection

E32.4.1 Contract Administrator reserves the right to extend the Contractor's warranty responsibilities for an additional year, at the end of the designated warranty period for the appropriate area, if at that time plant material leaf development and growth are not sufficient to ensure future survival.

E32.5 Replacement

E32.5.1 During the warranty period, remove from site any plant material that has died or failed to grow satisfactorily, as determined by the Contract Administrator and replace with healthy plant material of the same species and size.

E32.5.2 Replace plant material in the following spring or fall as directed.

E32.5.3 Extend warranty on replacement plant material for an additional period until the end of the specified warranty period or for one full growing season, whichever is the longer period.

E32.5.4 Continue such replacement and warranty until plant material is acceptable.

E32.5.5 Trees determined by the Contract Administrator to have been damaged by vandalism shall be replaced and such replacement trees will be paid for at the Contract Unit Prices for the species indicated on the Drawings.

MEASUREMENT AND PAYMENT

E32.6 Warranty

E32.6.1 Warranties on plant material will not be measured or paid for.

E32.6.2 Warranties on plant material shall be included in payment for the supply and installation of plant material.

E33. CONSTRUCTION OF TRANSIT STOPS

GENERAL

E33.1 This specification covers the construction of transit stops.

E33.2 Referenced Standard Construction Specifications

(a) CW3110 – Sub-grade, Sub-Base and Base Course Construction

(b) CW3235 – Renewal of Existing Miscellaneous Concrete Slabs

(c) CW3310 – Portland Cement Concrete Pavement Works

(d) CW3335 – Installation of Interlocking Paving Stones on a Lean Concrete Base

MATERIALS

E33.3 Paving stones for the transit bus stops shall be Barkman Concrete "Holland". Pavers shall be placed in accordance with the pattern and dimensions as shown on Drawing L2.1, following this specification. Pavers to be blue in colour with dimensions of 105x210x60mm.

E33.4 Paving stones shall conform to the requirements of CAN3-A231.2, Precast Concrete Pavers.

E33.5 Further to CAN3-E231.2.6.1.1, where concrete pavers are shipped for installation before the pavers are twenty-eight (28) days old, the average compressive strength of these pavers at the time of delivery to the Site shall be not less than 40 MPa.

CONSTRUCTION METHODS

E33.6 The Contractor shall remove existing transit stops and dispose of existing concrete. If the existing stop is constructed of patio blocks then these shall be salvaged and taken to a City of Winnipeg maintenance yard. Exact location to be determined by Contract Administrator.

- E33.7 Contrary to CW3335, the concrete upon which the paving stones are to lay shall not be lean mix concrete. Rather, concrete as per CW3310 shall be used for the entire transit bus stop pad.
- E33.8 Construct the new sidewalk (Transit Stop) in accordance with CW3235 and as shown on the Drawings. The paving stones are to be set into a block out as per Drawing L2.1.

MEASUREMENT AND PAYMENT

- E33.9 Supply and installation of blue holland pavers will be measured on an area basis and paid for at the Contract Unit Price for "Interlocking Paving Stones i) Blue Holland Pavers", which will be payment in full for all operations necessary or incidental thereto.
- E33.10 All other items of work will be measured and paid for in accordance to the applicable standard construction specification.