THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 473-2010

ON STREET TRANSIT PRIORITY IMPROVEMENTS – PHASE 3 – PORTAGE CORRIDOR GEOMETRIC IMPROVEMENTS AND GRAHAM TRANSIT MALL REHABILITATION

TABLE OF CONTENTS

PART A - BID SUBMISSION

Form A: Bid 1
Form B: Prices 4
Form G1: Bid Bond and Agreement to Bond 9
Form G2: Irrevocable Standby Letter of Credit and Undertaking 11

PART B - BIDDING PROCEDURES

B1. Contract Title 1
B2. Submission Deadline 1
B3. Enquiries 1
B4. Addenda 1
B5. Substitutes 2
B6. Bid Components 3
B7. Bid 3
B8. Prices 4
B9. Qualification 4
B10. Bid Security 5
B11. Opening of Bids and Release of Information 6
B12. Irrevocable Bid 6
B13. Withdrawal of Bids 6
B14. Evaluation of Bids 7
B15. Award of Contract 7

PART C - GENERAL CONDITIONS

C0. General Conditions 1

PART D - SUPPLEMENTAL CONDITIONS

General
D1. General Conditions 1
D2. Scope of Work 1
D3. Contract Administrator 1
D4. Contractor's Supervisor 2
D5. Notices 2
D6. Furnishing of Documents 2

Submissions
D7. Authority to Carry on Business 2
D8. Safe Work Plan 3
D9. Insurance 3
D10. Performance Security 3
D11. Subcontractor List 4
D12. Detailed Work Schedule 4

Schedule of Work
D13. Commencement 4
D14. Restricted Work Hours 4
D15. Work By Others 5
D16. Sequence of Work 5
D17. Critical Stages 5
D18. Substantial Performance 6
D19. Total Performance 6
D20. Liquidated Damages 6
D21. Scheduled Maintenance 6

Control of Work
D22. Job Meetings 7

D23. Prime Contractor – The Workplace Safety and Health Act (Manitoba) 7

Warranty
D24. Warranty 7

Form H1: Performance Bond 8
Form H2: Irrevocable Standby Letter of Credit 10
Form J: Subcontractor List 12
Form L: Detailed Work Schedule 13

PART E - SPECIFICATIONS

General
E1. Applicable Specifications and Drawings 1
E2. Protection Of Existing Trees 1
E3. Traffic Control 2
E4. Traffic Management 2
E5. Pedestrian Safety 3
E6. Water Obtained From the City 3
E7. Surface Restorations 3
E8. Recycled Concrete Base Course Material 3
E9. Supply and Install Detectable Warning Surface Tiles 4
E10. Teraspan 13
E11. Hydro Excavation 13
E12. Removal of Concrete Foundations 14
E13. Cast-In-Place Concrete Foundations 15
E14. Demolish Concrete Raised Planter Wall 23
E15. Extend Concrete Raised Planter Wall 23
E16. Sidewalk Construction 24
E17. Lean Mix concrete base 24
E18. Paving Stones 24
E19. Reset granite curb 27
E20. Reset granite curb ramp 29
E21. Replace granite curb 29
E22. RElocation of existing site furniture 30
E23. Electrical connection for totem sign 31
E24. Fencing 32
E25. Raised Planter Preparation 33
E26. Tree Vaults 34
E27. Expansion of Existing Tree Pits 36
E28. Plant Material 37
E29. Extended Maintenance of Plant Material 40

PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 ON STREET TRANSIT PRIORITY IMPROVEMENTS – PHASE 3 – PORTAGE CORRIDOR GEOMETRIC IMPROVEMENTS AND GRAHAM TRANSIT MALL REHABILITATION

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, July 13th, 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;

(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.

B6.5 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.

B8.2 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).

B8.5 Form B: Prices is organized into Parts: Part 1 of the Work and Part 2 of the Work. Bidders shall provide a total price for each Part and, on the summary sheet, a Total Bid Price consisting of the sum of prices for Part 1 and Part 2.

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.

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) Part 1: Portage Corridor Geometric Improvements

(b) Part 2: Graham Transit Mall Rehabilitation

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

(a) Part 1: Portage Corridor Geometric Improvements
  (i) Adjustment and installation of catchbasins and drainage pipe
  (ii) Removal and salvage of existing paving stones in sidewalk
  (iii) Removal of existing curb and sidewalk
  (iv) Removal of existing concrete roadway
  (v) Placement and preparation of concrete road structure
  (vi) Construction of cast in place concrete structures (kiosk and flag foundations, raised planter walls)
  (vii) Construction of concrete curb and sidewalk c/w detectible warning tiles
  (viii) Construction of tree vaults and wells
  (ix) Installation of plant material
  (x) Placement of salvaged and new paving stones
  (xi) Installation of various transit amenities (benches, kiosks, etc.)

(b) Part 2: Graham Transit Mall Rehabilitation
  (i) Adjustment of catchbasins
  (ii) Removal and salvage of existing paving stones in crosswalks and sidewalks
  (iii) Reconstruction of concrete roadway
  (iv) Resetting of existing granite curb
  (v) Replacement of granite curb where damaged or missing.
  (vi) Construction of sidewalk c/w detectible warning tiles
  (vii) Placement of salvaged and new paving stones

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is Dillon Consulting Limited, represented by:

David Wiebe, P.Eng.,
Project Manager
200 – 895 Waverley Street

Telephone No. (204) 453-2301
Facsimile No. (204) 453-4412

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

D4. CONTRACTOR'S SUPERVISOR

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

D4.2 At least two (2) business days prior to the commencement of any Work on the site, the Contractor shall provide the Contract Administrator with a phone number where the supervisor identified in D4.1 or an alternate can be contacted 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 added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability, broad form property damage cover and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;

(b) automobile liability insurance for owned automobiles used for or in connection with the Work in the amount of at least two million dollars ($2,000,000.00) at all times during the performance of the Work and until the date of Total Performance;

(c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation.

D9.2 Deductibles shall be borne by the Contractor.

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

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

D10. PERFORMANCE SECURITY

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

(a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; or

(b) an irrevocable standby letter of credit issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form attached to these Supplemental Conditions (Form H2: Irrevocable Standby Letter of Credit), in the amount of fifty percent (50%) of the Contract Price; or

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

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

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

D11. SUBCONTRACTOR LIST

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

D12. DETAILED WORK SCHEDULE

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

SCHEDULE OF WORK

D13. COMMENCEMENT

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

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

(a) the Contract Administrator has confirmed receipt and approval of:

(i) evidence of authority to carry on business specified in D7;

(ii) evidence of the workers compensation coverage specified in C6.15;

(iii) the twenty-four (24) hour emergency response phone number specified in D4.2.

(iv) the Safe Work Plan specified in D8;

(v) evidence of the insurance specified in D9;

(vi) the performance security specified in D10;

(vii) the Subcontractor list specified in D11;

(viii) the detailed work schedule specified in D12; and

(b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.

D13.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.

D13.4 The City intends to award this Contract by July 26, 2010.

D13.4.1 If the actual date of award is later than the intended date, the dates specified for Substantial Performance and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D14. RESTRICTED WORK HOURS

D14.1 Further to clause 3.10 of CW 1130, the Contractor shall require written permission forty-eight (48) hours in advance from the Contract Administrator for any work to be performed between 2000 hours and 0700 hours, or on Saturdays, Sundays, Statutory Holidays and or Civic Holidays.

D15. WORK BY OTHERS

D15.1 Work by others on or near the Site will include but not necessarily be limited to:

(a) Portage Avenue

(i) Traffic Signal Pole Relocations by Traffic Signals Branch at Spence Street and Colony Street

(ii) TeraSpan Communication cable network expansion near Balmoral Street

(iii) Construction of the Balmoral Transit Terminal on Balmoral Street north of Portage Avenue. Scheduled to be completed by end of August, 2010.

D16. SEQUENCE OF WORK

D16.1 Further to C6.1, the sequence of work shall be as follows:

D16.1.1 The Work shall be divided into 2 Parts, each Part is sequenced independently. .

D16.1.2 **Part 1** – Portage Corridor Geometric Improvements

(a) Construction Sequencing

(i) No specific sequencing is required.

(ii) It is suggested that construction start on the east side of the project between Colony Street and Vaughan Street and generally proceed to the west.

D16.1.3 Immediately following the completion of the works of Part 2, the Contractor shall clean up the Site and remove all plant, surplus material, waste and debris, other than that left by the City or other Contractors.

D16.1.4 It should be noted that more than one concrete crew may be required at any one time to complete Part 1 within the allotted timeframe.

D16.1.5 **Part 2** – Graham Transit Mall RehabilitationConstruction Sequencing

(i) Three construction stages have been defined with the Transit Department to effectively reroute buses. Each stage is three blocks long.

(ii) Only one stage may be under construction at any one time.

(iii) Work will proceed from the most easterly stage and proceed to the west.

D16.1.6 Immediately following the completion of the works of Part 2, the Contractor shall clean up the Site and remove all plant, surplus material, waste and debris, other than that left by the City or other Contractors.

D16.1.7 It should be noted that more than one concrete crew may be required at any one time to complete Part 2 within the allotted timeframe.

D17. CRITICAL STAGES

D17.1 "Part 1 - Portage Corridor Geometric Improvements" shall be completed by September 3rd, 2010. When the Contractor considers the Work associated with "Part 1 - Portage Corridor Geometric Improvements" to be completed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Completion. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected

D17.3 The date on which the "Part 1 - Portage Corridor Geometric Improvements" Work has been accepted by the Contract Administrator as being completed to the requirements of the Contract is the date on which completion of "Part 1 - Portage Corridor Geometric Improvements" has been achieved.

D18. SUBSTANTIAL PERFORMANCE

D18.1 The Contractor shall achieve Substantial Performance by October 15, 2010.

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

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

D19. TOTAL PERFORMANCE

D19.1 The Contractor shall achieve Total Performance by October 22, 2010.

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

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

D20. LIQUIDATED DAMAGES

D20.1 If the Contractor fails to achieve Critical Stages, or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Calendar Day for each and every Calendar Day following the days fixed herein for same during which such failure continues:

(a) Critical Stage completion of Part 1 – Portage Corridor Geometric Improvements – Two Thousand Dollars ($2,000);

(b) Total Performance – Two Thousand Dollars ($2,000);

D20.2 The amounts specified for liquidated damages in 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.

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

D21. SCHEDULED MAINTENANCE

D21.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

(a) Sodding (Maintenance Period) as specified in CW 3510

(b) Extended Maintenance of Plant Material as per E29.

D21.2 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

D22. JOB MEETINGS

D22.1 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.

D22.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

D23. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

D23.1 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

D24. WARRANTY

D24.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) years thereafter unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D24.1.1 Extended Maintenance on plant material is covered by an additional warranty described in E29.

D24.2 Notwithstanding C13.2, 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 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.

D24.2.1 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. 473-2010

ON STREET TRANSIT PRIORITY IMPROVEMENTS – PHASE 3 – PORTAGE CORRIDOR GEOMETRIC IMPROVEMENTS AND GRAHAM TRANSIT MALL REHABILITATION
which is by reference made part hereof and is hereinafter referred to as the “Contract”.

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

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

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

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

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

_____ day of _____ , 20____ .

SIGNED AND SEALED
in the presence of:

_____
(Witness as to Principal if no seal)

_____
(Name of Principal)

Per: _____ (Seal)

Per: _____

_____
(Name of Surety)

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

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

_____
(Date)

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

RE: PERFORMANCE SECURITY – BID OPPORTUNITY NO. 473-2010

ON STREET TRANSIT PRIORITY IMPROVEMENTS – PHASE 3 – PORTAGE CORRIDOR GEOMETRIC IMPROVEMENTS AND GRAHAM TRANSIT MALL REHABILITATION

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

_____ ,
(Name of Contractor)

_____
(Address of Contractor)

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

_____

_____ Canadian dollars.

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

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

Partial drawings are permitted.

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

_____
(Address)

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

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

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

_____ .
(Date)

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

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

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

_____
(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

FORM J: SUBCONTRACTOR LIST
(See D11)

ON STREET TRANSIT PRIORITY IMPROVEMENTS – PHASE 3 – PORTAGE CORRIDOR GEOMETRIC IMPROVEMENTS AND GRAHAM TRANSIT MALL REHABILITATION

Portion of the Work	Name	Address
SURFACE WORKS:		
Supply Of Materials:		
Concrete		
Base Course		
Topsoil, Sod, and Plant Material		
Reservoir Seal (Sonneborn® NP2)		
Paving Stones		
Granite Curbs		
Installation/Placement:		
Concrete		
Base Course		
Topsoil, Sod, and Plant Material		
Paving Stones		
Granite Curbs		
Cast-In-Place Concrete Foundations		
UNDERGROUND WORKS:		
Supply of Materials:		
CatchBasin (SD-024)		
Piping		
Installation/Placement:		
CatchBasin (SD-024)		
Piping		

FORM L: DETAILED WORK SCHEDULE

(See D12)

ON STREET TRANSIT PRIORITY IMPROVEMENTS – PHASE 3 – PORTAGE CORRIDOR GEOMETRIC IMPROVEMENTS AND GRAHAM TRANSIT MALL REHABILITATION

For each item of Work, indicate the proposed date that each cumulative percentage to be completed will be achieved.					
Items of Work	Date Work Completed				
	Aug. 3	Sept. 3	Oct. 3	Oct. 15	Oct. 22
Part 1 - Portage Corridor Geometric Improvements					
➢ Vaughan St to Colony St					
➢ Colony St to Balmoral St					
➢ Balmoral St to Spence St					
Part 2 – Graham Transit Mall Rehabilitation					
➢ Main St to Smith St					
➢ Smith St to Carlton St					
➢ Carlton St to Vaughan St					

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:

Drawing No.	Drawing Name/Title	Drawing (Original) Sheet Size
P-3324-1	Cover Sheet	A-1
P-3324-2	Portage Corridor – Spence St. to Balmoral St.	A-1
P-3324-3	Portage Corridor – Balmoral St. to Colony St.	A-1
P-3324-4	Portage Corridor – Colony St. to Vaughan St.	A-1
P-3324-5	Portage Corridor – Sections and Details	A-1
P-3324-6	Portage Corridor – Structural Details	A-1
P-3324-7	Portage Corridor – Enlargements 1 of 2	A-1
P-3324-8	Portage Corridor – Enlargements 2 of 2	A-1
P-3324-9	Portage Corridor – Landscape Details 1 of 2	A-1
P-3324-10	Portage Corridor – Landscape Details 2 of 2	A-1
P-3324-11	Graham Transit Mall – Traffic Staging	A-1
P-3324-12	Graham Transit Mall – Vaughan St. to Carlton St.	A-1
P-3324-13	Graham Transit Mall – Carlton St. to Main St.	A-1
P-3324-14	Graham Transit Mall – Smith St. to Main St.	A-1
P-3324-15	Graham Transit Mall – Sections and Details 1 of 2	A-1
P-3324-16	Graham Transit Mall – Sections and Details 2 of 2	A-1

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 (c) and (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 CW 3410.

(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 Part 1 – Portage Corridor Geometric Improvements

(a) On Portage Avenue the Contractor may close the lane adjacent to the lane under construction to facilitate equipment staging except between 1530 – 1730 hours. This will maintain two westbound lanes on Portage Avenue during all hours, with three westbound lanes available betwen 1530 – 1730 hours..

(b) On Spence Street the Contractor must maintain access for southbound vehicles at all times (this is a "bus only" street). When constructing the catch basin at this location the Contractor will be required, as necessary, to provide a temporary asphalt access for vehicles.

(c) On Balmoral Street the Contractor must maintain a single lane at all times. This lane must accommodate the turning radius of City of Winnipeg Transit vehicles.

(d) On Colony Street the Contractor may close the southbound lane adjacent to the southbound curb lane under construction to facilitate equipment staging except between 1530 – 1730 hours. The Contractor may close the northbound lane adjacent to the northbound curb lane under construction to facilitate equipment staging except between 0700 – 0900 hours.

(e) Pedestrian access will be maintained on the south side of Portage Avenue. The Contractor is permitted to block pedestrian through traffic on the north side of Portage Avenue for one consecutive block at a time. Pedestrian access cannot be blocked for two consecutive blocks simultaneously. Cross street pedestrian access must be maintained on one side at all times.

E4.1.2 Part 2 – Graham Transit Mall Rehabilitation

(a) Refer to Contract Drawing Sheet 11 for traffic and construction staging drawings

(b) In general, the stages between Main Street and Smith Street, and Smith Street and Carlton Street are closed to traffic, except at cross streets. The stage from Carlton Street to Vaughan Street is to be rehabilitated "lane at a time".

(a) Pedestrian access must be maintained on one of two crosswalks crossing Graham Ave at each intersection at all times. Similarly, pedestrian access must be maintained on one of two crosswalks along Graham Ave at the intersection with each cross street.

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 Ambulance/emergency vehicle access must be maintained at all times.

E5. PEDESTRIAN SAFETY

E5.1 During the project, a temporary snow fence shall be installed in all locations where an open excavation is adjacent to a pedestrian facilities or open park space. The Contractor shall be responsible for maintaining the snow fence in a proper working condition. No measurement for payment shall be made for this work.

E6. WATER OBTAINED FROM THE CITY

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

E7. SURFACE RESTORATIONS

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

E8. RECYCLED CONCRETE BASE COURSE MATERIAL

DESCRIPTION

E8.1 General

(a) Further to CW 3110, this specification covers recycled concrete as base course material.

E8.2 Definitions

(a) 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.

E8.3 Referenced Standard Construction Specifications

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

MATERIALS

E8.4 Recycled Concrete Base Course Material

(a) Recycled concrete base course material must meet the approval of the Contract Administrator.

(b) 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.

(c) 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%

(d) 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.

(e) The amount of deleterious material will be limited to a maximum of two percent of the total dry weight.

CONSTRUCTION METHODS

E8.5 Placement of Recycled Concrete Base Course Material

(a) Spread materials uniformly to avoid segregation free of pockets of fine and coarse material.

(b) Place and compact recycled concrete base course material to a minimum 75millimetres in thickness for pavement, approaches and asphalt pathways to a minimum of 100% Standard Proctor Density for the full width of the excavation unless otherwise shown on the Drawings or as directed by the Contract Administrator..

(c) Maintain the finished material until the hard surfacing is placed.

MEASUREMENT AND PAYMENT

E8.6 Recycled Concrete Base Course Material

(a) Recycled concrete base course material will be paid as Base Course Material in accordance with CW 3110.

E9. SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES

DESCRIPTION

E9.1 This specification covers the supply and installation of detectable warning surface tiles in sidewalk ramps and multi-use path ramps.

SPECIFICATIONS AND DRAWINGS

E9.2 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

E9.3 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

E9.4 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

E9.4.1 Detectable warning surface tiles shall be Highway Yellow (USA) or Safety Yellow (Canada).

E9.4.2 Detectable warning surface tiles shall be cast in place type.

E9.4.3 Truncated domes on detectable warning surface tiles shall be in accordance with ADA Accessibility Guidelines (ADAAG).

CONSTRUCTION METHODS

E9.5 General

(a) Construct curb ramps, sidewalk ramps and multi-use path in accordance with referenced Standard Construction Specifications, Standard Details, and SDE drawings (attached).

(b) Construct the lip of the depressed curb in accordance with SDE–229E.

(c) Construct sidewalk ramp grades in accordance with SD-229C and SD-229D.

(d) 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.

(e) Trim the corner of the tile at radii in accordance with SDE-229A, SDE-229AA and SDE-228AB

(f) Install and orient the detectable warning surface tiles as shown on the referenced drawings or as directed by the Contract Administratorr.

E9.6 Paving Stones

(a) Where the Detectable Warning Surface Tile is being installed in place of existing paving stones. The existing paving stones shall be removed and replaced with concrete sidewalk as shown on the Contract Drawings.

E9.7 Medians and Refuge Islands:

(a) 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.

(b) 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.

E9.8 Multi-use Paths

(a) Construct a curb ramp with a depressed curb to the full width of the multi-use path in accordance with SDE-229E.

(b) 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.

(c) 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.

(d) 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

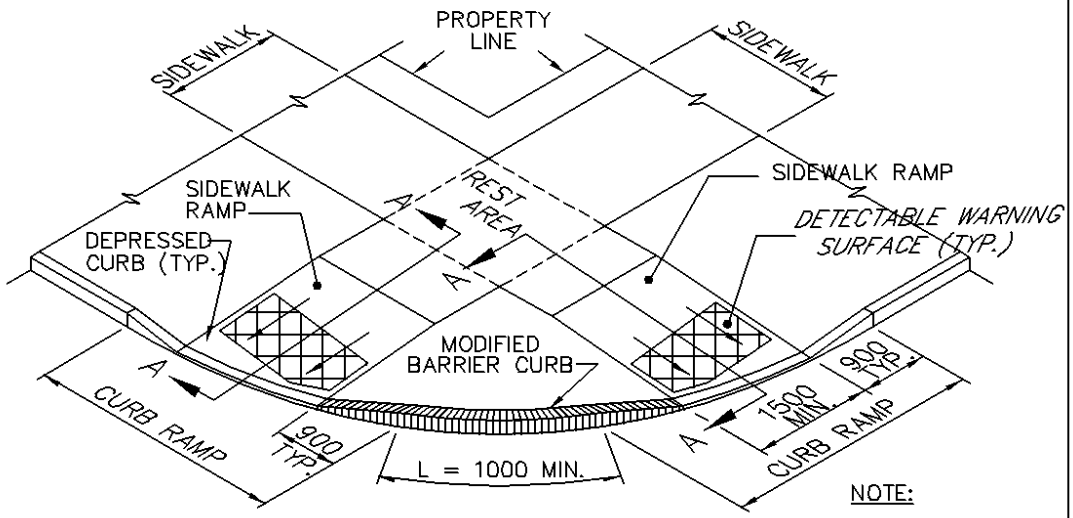
E9.9 Supply and installation of detectable warning surface tiles will be measured on a unit basis and paid for at the Contract Unit Price for "Detectable Warning Surface Tiles". The number of units to be paid for will be the total number of full or trimmed tiles supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

E9.9.1 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.

E9.9.2 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.

E9.9.3 Curb ramp will be paid in accordance with CW 3240 or CW 3310.

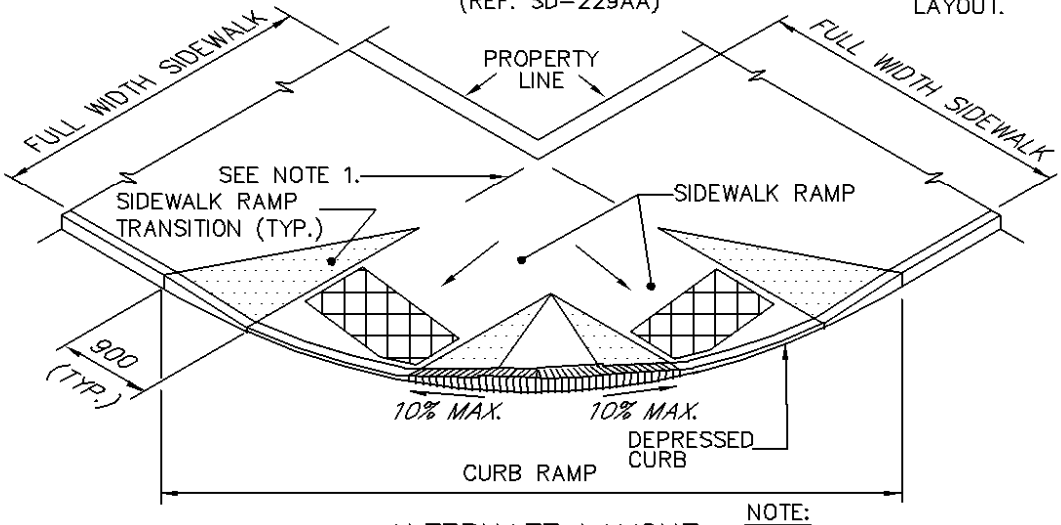
DRAWINGS AND INSTALLATION MANUAL



STANDARD LAYOUT
(REF. SD-229AA)

NOTE:

IF L<1000 USE ALTERNATE LAYOUT.



ALTERNATE LAYOUT
(REF. SD-229AA)

NOTE:

1. DEPRESSED CURB RAMP TO LINE UP WITH BACK OF SIDEWALK.
2. FOR SECTION A-A SEE SD-229C & SD-229D
3. SEE SDE-229AA, SDE-229BB & SDE-229E FOR DETECTABLE WARNING SURFACES.

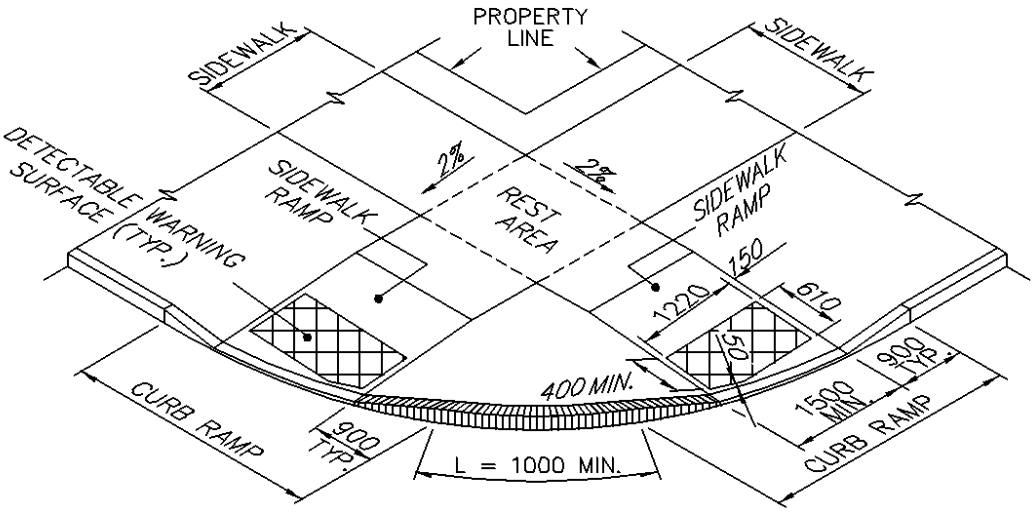
DIMENSIONS ARE IN MILLIMETRES

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

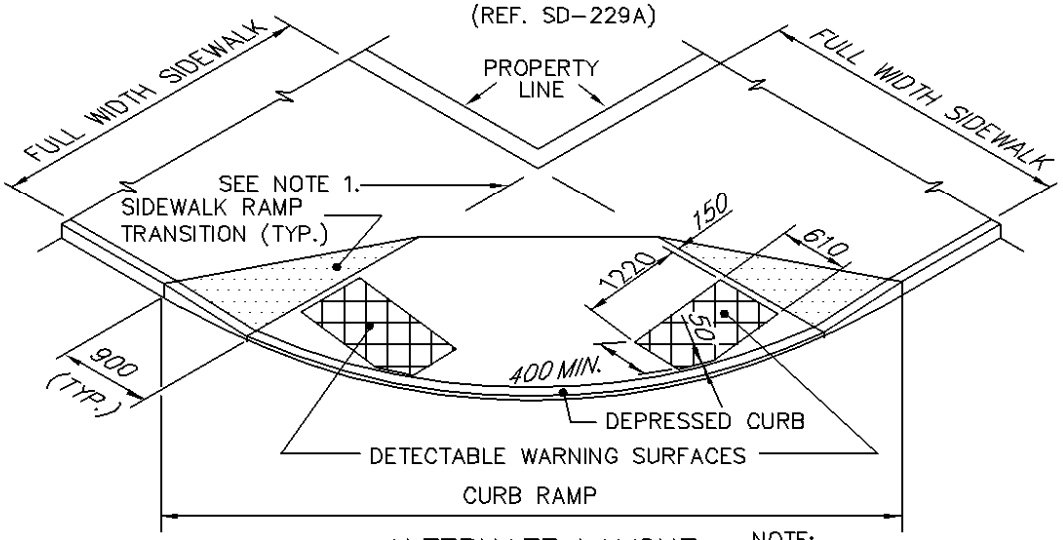
Reference Spec. No.
CW 3235, CW 3310, CW 3325
E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE

CURB RAMP LAYOUT FOR INTERSECTIONS

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



STANDARD LAYOUT
(REF. SD-229A)



ALTERNATE LAYOUT
(REF. SD-229A)

NOTE:

1. DEPRESSED CURB RAMP TO LINE UP WITH BACK OF SIDEWALK.
2. FOR A 1.83m WIDE SIDEWALK USE A DETECTABLE WARNING SURFACE MEASURING 610 X 1520

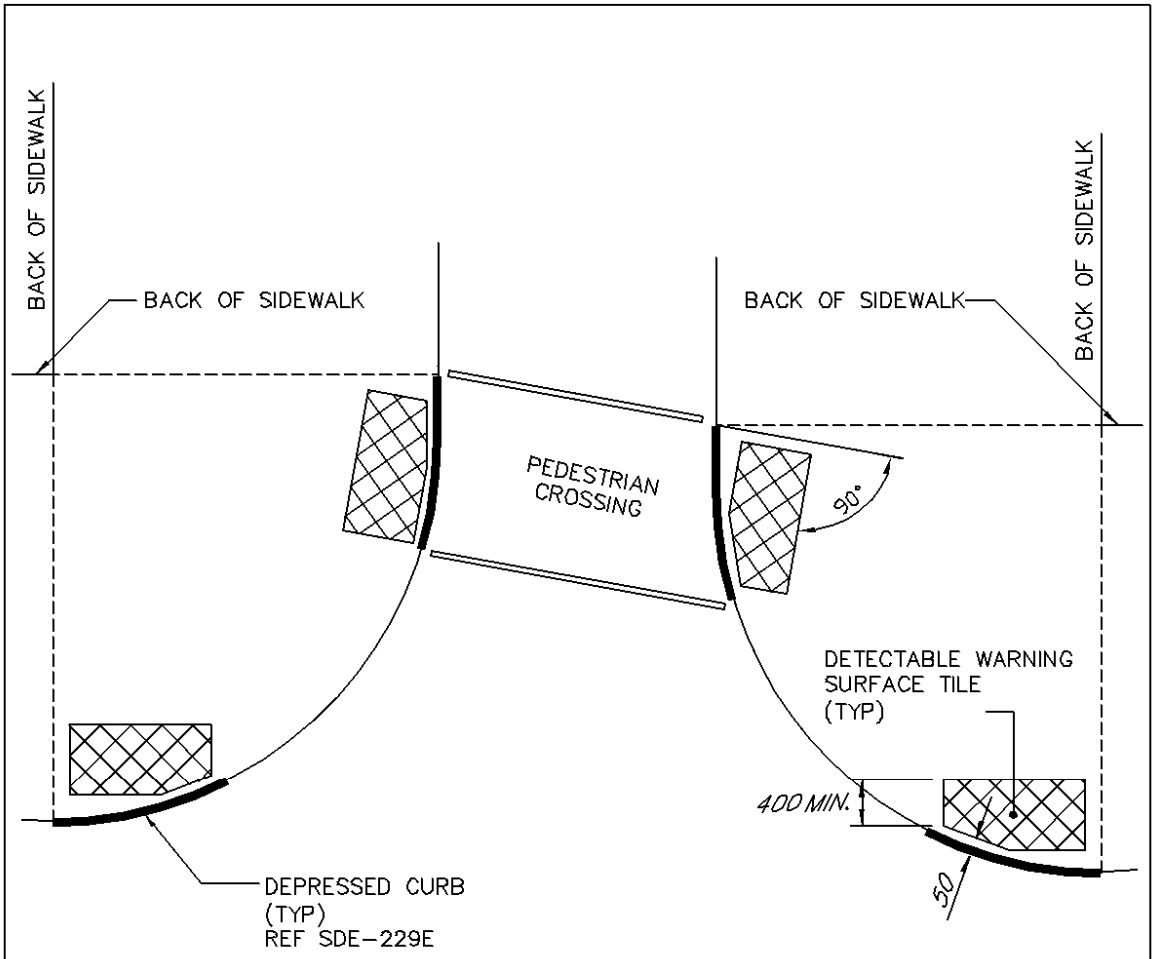
DIMENSIONS ARE IN MILLIMETRES

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. SDE-229AA
Approved:		



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.

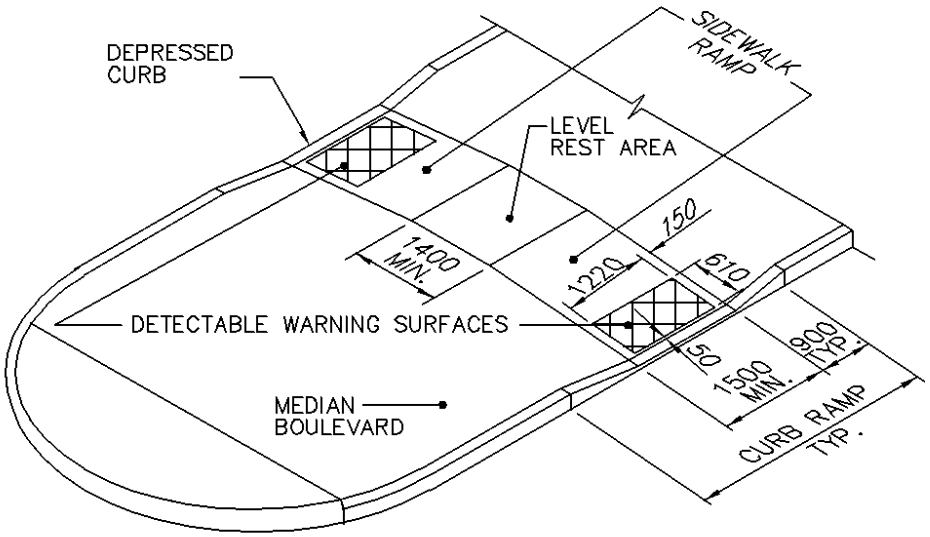
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

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

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



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.

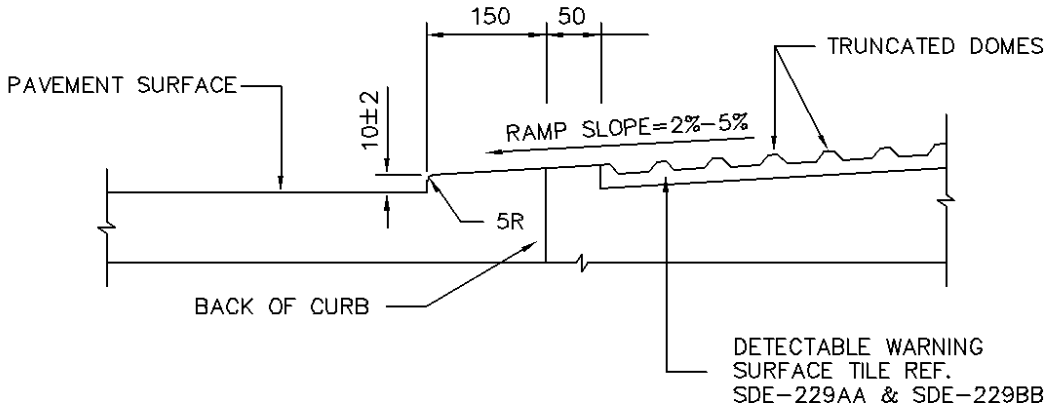
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

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



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			
Reference Spec. No. CW 3235, CW 3310, CW 3325 E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE	DIMENSIONS ARE IN MILLIMETRES		
CURB RAMP DEPRESSED CURB	Designed By: B.P.	Drawn By: T.G.A.	Scale : N.T.S.
	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 ¼ 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.~~

E10. TERASPAN

E10.1 Description

(a) There is a TeraSpan emergency services communication cable installed in the Donald Street right-of-way (crossing Graham Ave) and in the Balmoral St right-of-way at Portage Ave. TeraSpan is potentially expanded their network along Portage Ave in 2010. It is the responsibility of the Contractor to obtain utility locates and mark out the exact location of the TeraSpan communication cable at the location given and at all other locations of construction. When reconstruction is in the vicinity of the TeraSpan cable, the cable must be extricated from the existing sidewalk, paving stones, or roadway and buried in the underlying base course prior to placement of new sidewalk or concrete pavement.

(b) The cable cannot be taken out of service and shall not be damaged.

(c) TeraSpan representative shall be on site during to concrete removal. Contractor shall notifiy TeraSpan two (2) weeks prior to concrete removal.

(d) Contact information:

TeraSpan
Darryl Stotski
Tel: 204-783-2050
Cell: 204-999-3657

E10.2 Materials

(a) Not applicable.

E10.3 Construction Methods

(a) Where the cable is in a paving stone field, remove the adjacent paving stones by hand prior to removing the concrete. Sawcut the existing sidewalk/pavement 150mm on either side of the cable. Break and remove concrete outside of the sawcuts as per CW 3110.

(b) Concrete in between the sawcuts shall be hand removed, ensuring no damage occurs to the cable.

(c) Construct 100 mm wide by 100 mm deep trench in existing base course. Construct trench along same alignment as original install.

(d) Place 50 mm of base course material in the trench. Install cable including tracer wire.

(e) Cover remainder of trench with base course material and tamp with hand tools. Do not mechanically compact.

(f) If any cable is exposed overnight or when Contractor is not onsite, the area shall be barricaded.

(g) Contractor to protect newly buried cable until sidewalk and pavement is restored.

E10.4 Measurement and Payment

(a) No measurement or payment will be made for this item.

E11. HYDRO EXCAVATION

E11.1 Description

E11.1.1 General

(a) This specification shall cover the removal of earthen material immediately adjacent to underground utilities infrastructure by means of high pressure water spray, and the recovery of evacuated material by vacuum type means or equivalent method as approved by the Contract Administrator.

(b) Hydro excavation around existing trees in tree pit applications is not included and is incidental to the work under E27.

E11.2 Equipment

(a) Hydro Excavation unit shall be capable of maintaining a minimum working pressure of 10,000 psi, at a rate of flow of 10 to 12 gallons per minute. Unit should be adjustable, so as to provide adequate pressure to remove earthen material identified by the Contract Administrator.

(b) Spray head shall be equipped with a rotating type nozzle, in order to provide a wider path of cut.

E11.3 Construction Methods

(a) Hydro-removal of earthen material

(i) Earthen material adjacent to utility entity shall be sprayed with high pressure water so as to remove all such material identified by the Contract Administrator.

E11.3.2 Recovery of Excavated Material

(a) The recovery of excavated material shall be done using vacuum type method, or other type method as approved by the Contract Administrator.

(b) The recovery of material shall follow immediately behind the excavation, to avoid excavated areas from filling with excavated material.

(c) The use of mechanical sweepers will not be allowed.

(d) Dispose of material in accordance with Section 3.4 of CW 1130.

E11.3.3 Backfill of Hydro Excavated Hole

(a) The Contractor shall be responsible for the backfill of the hydro excavated hole upon the completion of the Work described herein, to the approval of the Contract Administrator.

E11.4 Measurement and Payment

E11.4.1 Hydro Excavation

(a) Hydro Excavation of earthen material will be measured on an hourly basis and paid for at the Contract Unit Price per hour for “Hydro Excavation”. The hours to be paid for will be the total number of hours of Hydro Excavation in accordance with this specification, accepted and measured by the Contract Administrator. Travel to and from the Site will not be accounted for in the payment of this item.

E12. REMOVAL OF CONCRETE FOUNDATIONS

E12.1 Description

E12.1.1 General

(a) This specification applies to the removal of existing concrete foundations as identified on the Drawings.

E12.2 Construction Methods

E12.2.1 Removal of Concrete Foundations

(a) Remove any signs metal fixtures, flag poles, totems or attachments from the concrete foundation and store on site in a clean, dry, safe and secure manor or dispose of if directed by the Contract Administrator.

(b) Disconnect and make safe electrical power supply if necessary as per E23.

(c) After structure removed, Contractor to remove or demolish concrete foundation, including steel reinforcement to a minimum of 300mm below the elevation of the surface of the adjacent sidewalk or paving stones

E12.3 Measurement and Payment

E12.3.1 Removal of Concrete Foundation

(a) Removal of concrete foundations will be measured on a per item basis and paid for at the Contract Unit Price per item for the "Items of Work" listed below. The amount to be paid for will be the total number of each item removed in accordance with this specification and accepted by the Contract Administrator.

(i) Items of Work:
Removal of Concrete Foundations:

- Kiosk Foundation
- Bus Stop Totem Foundation

E13. CAST-IN-PLACE CONCRETE FOUNDATIONS

E13.1 Description

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

(b) The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

E13.2 Materials

E13.2.1 General

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

E13.2.2 Handling and Storage of Materials

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

E13.2.3 Testing and Approval

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

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

E13.2.4 Patching Mortar

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

E13.2.5 Cement

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

E13.2.6 Concrete

(a) General

(i) Concrete repair material shall be compatible with the concrete substrate.

(b) The Contractor shall be responsible for the design and performance of all concrete mixes supplied under this specification. Either ready mix concrete or proprietary repair mortars, where applicable, may be used having the following minimum properties in accordance with CSA A23.1-04:

(i) Class of Exposure: S-1

(ii) Compressive Strength @ 56 days = 35 MPa

(iii) Water / Cementing Materials Ratio = 0.4

(iv) Air Content: Category 2 per Table 4 of CSA A23.1-04 (4-7%)

(v) Cement – shall be as specified in E13.2.5

(c) Mix design for ready mix concrete shall be submitted to Contract Administrator at least two weeks prior to concrete placing operations.

(d) The workability of each concrete mix shall be consistent with the Contractor's placement operations. Self compacting concrete may be used for the foundations.

(e) Any proposed proprietary repair mortar shall be subject to the approval of the Contract Administrator and must meet or exceed the properties of the ready mix concrete.

(f) The temperature of all types of concrete shall be between 15˚C and 25˚C at discharge. Temperature requirements for concrete containing silica fume shall be between 10˚C and 18˚C at discharge unless otherwise approved by the Contract Administrator.

(g) Concrete materials susceptible to frost damage shall be protected from freezing

E13.2.7 Aggregate

(a) The Contractor shall be responsible for testing the fine and coarse aggregates to establish conformance to these specifications, and the results of these tests shall be provided to the Contract Administrator if requested. All aggregates shall comply with CSA A23.1.

(b) Coarse Aggregate

(i) The maximum nominal size of coarse aggregate shall be sized to suit the Contractor's mix design. Gradation shall be in accordance with CSA A23.1, Table 11, Group 1. The coarse aggregate shall satisfy the Standard Requirements specified in CSA A23.1, Table 12, "Concrete Exposed to Freezing and Thawing".

(ii) Coarse aggregate shall consist of crushed stone or gravel or a combination thereof, having hard, strong, durable particles free from elongation, dust, shale, earth, vegetable matter or other injurious substances. Coarse aggregate shall be clean and free from alkali, organic or other deleterious matter; and shall have an absorption not exceeding 2.25%.

(iii) The aggregate retained on the 5 mm sieve shall consist of clean, hard, tough, durable, angular particles with a rough surface texture, and shall be free from organic material, adherent coatings of clay, clay balls, and excess of thin particles or any other extraneous material.

(iv) Coarse aggregate when tested for abrasion in accordance with ASTM C131 shall not have a loss greater than 30%.

(v) Tests of the coarse aggregate shall not exceed the limits for standard for requirements prescribed in CSA A23.1, Table 12, for concrete exposed to freezing and thawing.

(c) Fine Aggregate

(vi) Fine aggregate shall meet the grading requirements of CSA A23.1, Table 10, Gradation FA1.

(vii) Fine aggregate shall consist of sand, stone, screenings, other inert materials with similar characteristics or a combination thereof, having clean, hard, strong, durable, uncoated grains free from injurious amounts of dust, lumps, shale, alkali, organic matter, loam, or other deleterious substances.

(viii) Tests of the fine aggregate shall not exceed the limits for standard requirements prescribed in CSA A23.1, Table 12

E13.2.8 Cementing Materials

(a) Cementing materials shall conform to the requirements of CSA A3001.

(b) Silica Fume

(i) Should the Contractor choose to include silica fume in the concrete mix design, it shall not exceed 8% by mass of cement.

(c) Fly Ash

(ii) Fly ash shall be Type C1 or Type F and shall not exceed 25% by mass of cement.

(d) Cementitious materials shall be stored in a suitable weather-tight building that shall protect these materials from dampness and other destructive agents. Cementitious materials that have been stored for a length of time resulting in the hardening or formation of lumps shall not be used in the Work.

E13.2.9 Admixtures

(a) Air entraining admixtures shall conform to the requirements of ASTM C260.

(b) Chemical admixtures shall conform to the requirements of ASTM C494 or C1017 for flowing concrete.

(c) All admixtures shall be compatible with all other constituents. The addition of calcium chloride, accelerators, and air-reducing agents will not be permitted, unless otherwise approved by the Contract Administrator.

(d) Appropriate low range water reducing and/or superplasticizing admixtures shall be used in concrete containing silica fume. Approved retarders or set controlling admixtures may be used for concrete containing silica fume.

(e) An aminocarboxylate based migrating corrosion inhibitor admixture shall be used in concrete that will be used as a repair material that will either be in contact with or adjacent to reinforcing steel in existing concrete. Proposed admixtures shall be subject to the approval of the Contract Administrator.

E13.2.10 Water

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

E13.2.11 Concrete Supply

(a) Concrete shall be proportioned, mixed, and delivered in accordance with the requirements of CSA A23.1, except that the transporting of ready mixed concrete in non-agitating equipment will not be permitted unless prior written approval is received from the Contract Administrator.

(b) Unless otherwise directed by the Contract Administrator, the discharge of ready mixed concrete shall be completed within 120 minutes after the introduction of the mixing water to the cementing materials and aggregates.

(c) The Contractor shall maintain all equipment used for handling and transporting the concrete in a clean condition and proper working order.

E13.2.12 Reinforcing Steel

(a) Reinforcing steel shall be deemed to include all reinforcing bars, tie-bars, and dowels.

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

E13.2.13 Anchor Bolts, Nuts, and Washers

(a) Anchor bolts, nuts and washers shall be supplied by the Contract Administrator.

E13.2.14 Anchor Bolt Templates

(a) Anchor bolt templates shall be supplied by the Contract Administrator.

(b) Anchor bolt templates will be incidental to construction of new concrete foundation and no separate payment will be made.

E13.2.15 Fibre Joint Filler

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

E13.2.16 Anti-Graffiti Coating

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

E13.2.17 Waterproofing Membrane

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

E13.2.18 Miscellaneous Materials

(a) Miscellaneous materials shall be of the type specified on the Drawings or approved by the Contract Administrator.

E13.3 Construction Methods

E13.3.1 Location and Alignment of Foundations

(a) Foundation construction shall not commence until the Contractor has obtained clearance from the appropriate Utility Authorities.

(b) Foundations shall be placed in the positions shown on the Drawings and as directed by the Contract Administrator in the field.

(c) The deviation of the axis of any finished foundation shall not differ by more than 1 percent from the vertical.

E13.3.2 Buried Utilities

(a) The Contractor shall exercise extreme caution when constructing the foundations in the vicinity of existing buried utilities and buildings. The Drawings show the approximate locations of existing buried utilities. The Contractor shall be responsible for obtaining the exact location of the buried utilities from the appropriate Utility Authorities prior to installing the foundations.

(b) The proposed locations of the foundations may be changed by the Contract Administrator if they interfere with the buried utilities.

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

E13.3.3 Excavation

(a) The Contractor is responsible for determining the excavation method at each foundation location.

(b) Excavations for foundations shall be made with equipment designed to remove a core of the diameter shown on the Drawings, or hydro-jet excavation to a depth to bypass and/or expose adjacent utilities.

(c) Upon reaching the required elevation, the bottom of the excavation shall be cleaned as directed by the Contract Administrator in the field.

(d) All excavated material from the foundations shall be promptly hauled away from the Site to an approved disposal area as located by the Contractor.

(e) Upon completion of the cleaning out of the bottom to the satisfaction of the Contract Administrator, the reinforcement and anchor bolts shall be set in place and the concrete poured immediately. Under no circumstances shall a hole be left to stand open after boring has been complete.

E13.3.4 Sleeving

(a) Timber or steel sleeving shall be used to temporarily line the bore to prevent bulging or caving of the walls and to protect men at work in the bore.

(b) The sleeving shall be designed by the Contractor and constructed to resist all forces that may tend to distort it.

(c) The sleeving shall be withdrawn as the concrete is placed in the bore. The sleeving shall extend at least 1 m below the top of the freshly deposited concrete at all times.

(d) The clearance between the face of the bore hole and the sleeving shall not exceed 75 mm.

E13.3.5 Inspection of Bores

(a) Concrete shall not be placed in a bore until the bore has been inspected and approved by the Contract Administrator.

(b) The Contractor shall have available suitable light for the inspection of each bore throughout its entire length.

(c) All improperly set sleeving, bore, or bottom shall be corrected to the satisfaction of the Contract Administrator.

E13.3.6 Placing Reinforcing Steel

(a) Reinforcement shall be:

(i) placed in accordance with the details shown on the Drawings

(ii) rigidly fastened together, and

(iii) lowered into the bore intact before concrete is placed.

(b) Spacers shall be utilized to properly locate the reinforcing steel cage in the bore.

E13.3.7 Placing Anchor Bolts

(a) The anchor bolts shall be aligned with a steel template supplied by the Contract Administrator matching the bolt holes in the sign structure base plate. **Extreme care shall be used in this operation to ensure bolts are aligned properly.** Placement of anchor bolts without the steel template will not be permitted.

(b) The threaded portion of the anchor bolts projecting above the top surface of foundation shall be coated with oil, before the concrete is poured, to minimize the fouling of threads splattered by concrete residue

E13.3.8 Placing Metal Bases

(a) Contractor to install metal bases as supplied by the Contract Administrator following curing of concrete foundations.

(b) Metal bases are to be installed plumb, level, and flush to the concrete foundation. Contractor to use stainless steel washers to level bases as required.

E13.3.9 Forms

(a) Forms for exposed surfaces that require an “ordinary surface finish” shall be made of good quality plywood, or an approved equivalent, or uniform thickness, with or without a form liner.

(b) Architectural concrete form liner shall be as specified on the Plans or equivalent as approved by the Engineer.

(c) Permeable formwork liner shall be Drainoform, Zemdrail II, or equivalent as approved by the Engineer.

(d) Formwork materials shall conform to CSA Standard CAN/CSA-A23.1, and American Concrete Publication SP:4, “Formwork for Concrete”.

(e) No “stay-in-place” formwork or falsework is permitted.

(f) Form sheeting plywood to be covered with form liner or to be directly in contact with soil shall be exterior Douglas Fir, concrete form grade, conforming to CSA Standard O121-M1978, a minimum of 20 mm thick.

(g) Where form liner is not being used, form sheeting shall be Douglas Fir, overlay form liner type conforming to CSA Standard O121-M1978. Approved manufacturers are “Evans” and “C-Z”.

(h) Boards used for formwork shall be fully seasoned and free from defects such as knots, warps, cracks, etc., which may mark the concrete surface.

(i) No formwork accessories will be allowed to be left in place within 50 mm of the surface following form removal. Items to be left in place, must be made from a non-rusting material or galvanized steel; and they shall not stain, blemish, or spall the concrete surface for the life of the concrete.

(j) Forms for exposed concrete surfaces that do not require a form liner may be either new plywood or steel as authorized by the Contract Administrator.

(k) Studding shall be spruce or pine and shall have such dimensions and spacing that they shall withstand distortion from all the forces to which the forms will be subjected. Minimum dimensions shall be 50 mm x 150 mm.

(l) Walers shall be spruce or pine, with minimum dimensions of 100 mm x 150 mm.

(m) All forms are incidental to these Works and must be removed by the Contractor once adequate strength and curing of the concrete has been achieved.

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

E13.3.10 Placing Concrete

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

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

(c) Concrete shall be placed to the elevations as shown on the Drawings. The top surface of the foundation shall be finished smooth and even with a hand float.

(d) The shaft shall be free of water prior to placing of concrete. Concrete shall not be placed in or through water unless authorized by the Contract Administrator.

E13.3.11 Protection of Newly Placed Concrete

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

E13.3.12 Construction Joints

(a) Construction joints shall be located only where shown on the Drawings or as otherwise approved in writing by the Contract Administrator. Construction joints shall be at right angles to the direction of the main reinforcing steel. All reinforcing steel shall be continuous across the joints. Bevelled shear keys, as shown on the Drawings or approved by the Contract Administrator, shall be provided at all joints.

(b) In lieu of shear keys, the Contractor may roughen the surface as follows. The surface shall be rough, with a minimum amplitude of 6 mm. Acceptable procedures to obtain this rough surface are as follows:

(i) By removing the mortar from between the larger aggregate particles with a water jet and soft brush when the concrete is in a semi-hardened state (green-cut).

(ii) By first applying a chemical retarder to the surface and then removing the mortar from the larger aggregate particles with a water jet and brush.

(c) The face of joints shall be cleaned of all laitance and dirt, after which the cementitious grout or an approved bonding agent shall be applied. Forms shall be retightened, and all reinforcing steel shall be thoroughly cleaned at the joint prior to concreting.

E13.3.13 Curing Concrete

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

(b) After the finishing is completed, the surface shall be promptly covered with a minimum of a single layer of clean, damp polyester blanket.

(c) Concrete shall be protected from the harmful effects of sunshine, drying winds, surface dripping or running water, vibration, and mechanical shock. Concrete shall be protected from freezing until at least twenty-four hours after the end of the curing period.

(d) Changes in temperature of the concrete shall be uniform and gradual and shall not exceed 3º in one hour or 20º in twenty-four hours.

E13.3.14 Form Removal

(a) Forms shall not be removed for a period of at least 24 hours after the concrete has been placed. Removal of forms shall be done in a manner to avoid damage to, or spalling of, the concrete.

(b) The minimum strength of concrete in place for safe removal of forms shall be 20 MPa.

(c) Field-cured test specimens, representative of the in-place concrete being stripped, will be tested to verify the concrete strength.

E13.3.15 Patching of Formed Surfaces

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

(b) All formed concrete surfaces shall have bolts, ties, struts, and all other timber or metal parts not specifically required for construction purposes cut back fifty (50) mm from the surface before patching.

(c) Minor surface defects caused by honeycomb, air pockets greater than 5 mm in diameter, and voids left by strutting, and tie holes shall be repaired by removing the defective concrete to sound concrete, dampening the area to be patched and then applying patching mortar. A slurry grout consisting of water and cement, shall be well-brushed onto the area to be patched. When the slurry grout begins to lose the water sheen, the patching mortar shall be applied. It shall be struck-off slightly higher than the surface and left for one hour before final finishing to permit initial shrinkage of the patching mortar and it shall be touched up until it is satisfactory to the Contract

Administrator. The patch shall be cured as specified in this Specification, and the final colour shall match the surrounding concrete.

E13.3.16 Cold Weather Concreting

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

E13.3.17 Anti-Graffiti Coating

(a) Anti-graffiti coating shall be applied to all raised planter walls shown on the drawings or identified by the Contract Administrator.

(b) The anti-graffiti coating shall be applied according to manufactures specifications.

(c) Maintain anti-graffiti coating on all vertical concrete surfaces for a period of two (2) years.

E13.3.18 Waterproofing

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

E13.3.19 Quality Control

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

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

E13.4 Measurement and Payment

E13.4.1 Construction of Cast-in-Place Concrete Foundations

(d) Construction of cast-in-place concrete foundations will be measured on a unit basis and will be paid for at the Contract Lump Sum Price per foundation for the “Items of Work” listed here below for concrete foundations constructed in accordance with this Specification and accepted by the Contract Administrator.

(i) Items of Work:

- Bus Stop Flag Foundation
- Bus Stop Totem Foundation
- Tree Well
- Raised Planter – West of Balmoral
- Raised Planter – East of Balmoral
- Extend Raised Planter – East of Vaughan

E14. DEMOLISH CONCRETE RAISED PLANTER WALL

E14.1 Description

(a) This specification will cover this demolition and disposal of a portion of the cast-in-place concrete raised planter wall at the north east corner of Portage Ave and Colony St.

E14.2 Construction Methods

(a) The Contractor shall sawcut the full perimeter of the existing concrete raised planter wall at the limits shown on the drawing or otherwise directed by the Contract Administrator to a depth of 20mm.

(b) The Contractor shall demolish, remove and dispose of existing concrete cast-in-place concrete raised planter wall to the location of the sawcut perimeter in such a manner that the sawcut perimeter remains intact without chips or cracking. The demolition shall be undertaken in such a manner as to not damage the existing reinforcing steel, which shall be kept for connecting the new cast-in-place structure.

(c) All existing plants and trees shall be protected as per E2.

(d) The existing reinforcing steel shall be cleaned by grit or high pressure water blasting prior to forming and placing the new cast-in-place concrete.

(e) Reinforcing steel shall be free of all foreign material in order to ensure a positive bond between the concrete and steel. Remove any dry concrete, which may have been deposited on the steel from previous concrete placement, before additional concrete is placed.

(f) Reinforcing steel shall not be bent or straightened or rebent in a manner that will injure the metal. Bars with bends not shown on the Drawing shall not be used. Heating of reinforcing steel will not be permitted without the prior approval of the Contract Administrator.

E14.3 Measurement and Payment

(a) Demolition of the existing concrete raised planter wall will be measured on a unit basis and paid for at the Contract Lump Sum Price for “Demolish Concrete Raised Planter Wall” for demolition constructed in accordance with this Specification and accepted by the Contract Administrator.

E15. EXTEND CONCRETE RAISED PLANTER WALL

E15.1 Description

(a) This specification will cover the extension of the cast-in-place Concrete Raised Planter Wall at the corner of Portage Ave and Vaughan St.

E15.2 Materials

(a) Materials as per E13.

E15.3 Construction Methods

(a) Prior to construction the existing concrete planter wall must be demolished as per E14.

(b) Where the existing concrete planter wall is tied into the newly constructed concrete planter wall the horizontal steel reinforcement must be lap spliced. The splice shall be a minimum of 900mm in length. Splices shall be approved by the Contract Administrator prior to the placement of any concrete.

(c) The remainder of the concrete planter wall shall be constructed in accordance with E13.

E15.4 Measurement and Payment

(a) Extension of the existing concrete raised planter wall will be measured and paid for under “Extend Raised Planter – East of Vaughan” according to E13

E16. SIDEWALK CONSTRUCTION

E16.1 Description

(a) This specification will cover this installation of concrete sidewalk as identified on the drawings, including areas under paving patterns and fields.

E16.2 Materials

(a) Concrete mix design shall comply with Clause 6.2a) of CW 3310

(b) All other materials as per Clause 5 of CW 3310.

E16.3 Construction Methods

(a) Construction as per Contract Drawings and as per CW 3310 and CW3325.

(b) Blockouts for all paving patterns and paving fields in sidewalk to be constructed as per the Drawings. All forming is incidental to the unit price Bid for this specification.

(c) Thickened edge of sidewalk will be incidental to the unit price Bid for the concrete sidewalk.

E16.4 Measurement and Payment

(a) Supply and Installation of concrete sidewalk will be measured on an area basis and paid for at the Contract Unit Price for “Sidewalk”. The area to be paid for shall be the total number of square metres supplied and placed in accordance with this Specification and as measured and accepted by the Contract Administrator.

E17. LEAN MIX CONCRETE BASE

E17.1 Description

(a) This specification will cover the installation of lean mix concrete base for use under paving patterns and fields as identified on the drawings.

E17.2 Materials

(a) Materials as Per CW 3335

E17.3 Construction Methods

(a) Construction as per Contract Drawings and as per CW 3335.

(b) All forming is incidental to the unit price Bid for this specification.

(c) Lean mix concrete base is to be a minimum 100mm thick except where the lean mix concrete base is being constructed on top of the existing concrete roadway. In this case the lean mix thickness is dependant on the existing roadway grade and design sidewalk grade.

E17.4 Measurement and Payment

(a) Supply and Installation of Lean Mix Concrete Base will be measured on an area basis and paid for at the Contract Unit Price for “Lean Mix Concrete Base”. The area to be paid for shall be the total number of square metres supplied and placed in accordance with this Specification and as measured and accepted by the Contract Administrator.

E18. PAVING STONES

E18.1 Description

E18.1.1 General

(a) Further to CW 3335 this Specification shall cover the:

(i) supply and installation of interlocking paving stones (unit pavers);

(ii) supply and installation of sand setting bed;

(iii) supply and installation of grout.

(b) The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary or and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

(c) Part 1: Portage Corridor Geometric Improvements has a substantial area of 60mm paving stones to be salvaged and reused, and a substantial area of 60mm paving stones to supply and install new. All paving stone works are in the sidewalk area.

(d) Part 2: Graham Transit Mall Rehabilitation has a substantial area of 60mm and 80mm paving stones to be salvaged and reused after the underlying concrete has been rehabilitated. New 60mm and 80mm paving stones are to supplement only when existing paving stones cannot be reused. However, the 80mm paving stones in "Transit Blue" colour in the paving stone crosswalks is to be completely replaced with new paving stones.

E18.1.2 Referenced Standard Construction Specifications

(a) CW 3130 – Supply and Installation of Geotextile Fabrics

(b) CW 3330 – Installation of Interlocking Paving Stones

(c) CW 3335 – Installation of Interlocking Paving Stones on a Lean Concrete Base

E18.2 Materials

E18.2.1 Concrete interlocking paving stones (unit pavers) for both Part 1 and Part 2 shall be Holland Stone Pavers, supplied by Barkman Concrete, (contact Wayne Wiebe, phone 667-3310), as shown on the Drawings and as follows:

(a) Supply and Install 60mm Paving Stones

(i) Ebony Half-Holland Paver 60x105x210mm

(ii) Mahogany Holland Square Paver 60x210x210mm

(iii) Natural Holland Square Paver 60x210x210mm

(iv) Charcoal Holland Paver 60x105x210mm

(v) Transit Blue Holland Paver 60x105x210mm

(b) Supply and Install 80mm Paving Stones (except Transit Blue)

(i) Charcoal Holland Paver 80x105x210mm

(ii) Natural Holland Paver 80x105x210mm

(c) Supply and Install 80mm Paving Stones (Transit Blue)

(i) Transit Blue Holland Paver 80x105x210mm

E18.2.2 Sand:

(a) Clean brick sand as joint filler;

(b) Clean brick sand as minimum 13mm depth setting bed.

E18.2.3 Grout:

(a) Grout as specified hereinafter shall be used for grouting paving stone under 50mm x 50mm in size. The grout shall have a compressive strength of 25 MPA at 28 days, determined on 50 mm cubes stored and tested in accordance with ASTM C109, and shall consist of normal Portland cement, sand and water;

(b) The water-cement ratio shall be kept in the range of 0.45 to 0.55;

(c) The grout shall have between 3% and 5% entrained air;

(d) Acryl-Stik or approved equal in accordance with B5 to be used in grout at approximately 4 litres Acryl-Stik to 3 litres water;

(e) Admixtures to be used in the grout shall be supplied in accordance with the requirements of the City of Winnipeg Standard CW 3310;

(f) The grout shall be of a consistency suitable for the application intended as approved by the Contract Administrator;

(g) The Contractor shall provide the Contract Administrator with a mix design statement certifying the constituent materials and mix proportions that will be used in the grout for approval prior to construction.

E18.2.4 Geotextile Fabric:

(a) Separation (drainage) geotextile fabric as per CW 3130.

E18.3 Construction Methods

(a) Contractor to verify the exact dimensions of pavers prior to construction of block outs in concrete sidewalk.

(b) Remove, Salvage and Store Paving Stones as directed by the Contract Administrator.

(c) Where specified on Contract drawings or by the Contract Administrator, reconstruct underlying and adjacent concrete roadway or sidewalk.

(d) Install concrete sidewalk and concrete pavement complete with blockouts for paving stones as specified on Drawings.

(e) Drill drain holes through concrete as shown on Drawings in all paving stone crosswalks.

(f) Install separation geotextile fabric on the concrete surface of the paving stone crosswalks prior to placing sand setting bed.

(g) Install sand bed to minimum 13 mm depth as specified on Drawings.

(h) Do not compact setting bed prior to installation of pavers.

(i) Spread only sufficient area which can be covered with pavers same day.

(j) Lay salvaged paving stones on sand bed hand tight, matching existing paving stone pattern. In pedestrian crosswalk paving stone areas all Paving Stones colored blue shall be replaced by new “Transit Blue Holland Paver 80x105x210mm”. Where salvaged paving stones are broken or chipped they shall be replaced by new paving stones of identical size and color as approved by the Contract Administrator.

(k) Reinstall salvaged paving stones randomly with new stones.

(l) In areas where pavers are to be grouted in place, clean existing concrete, install grout bed and then place pavers on grout.

(m) Grout between pavers as required ensuring stability.

(n) Remove adjacent pavers in patterns as required to ensure that bricks do not require cutting to fit existing paving pattern.

(o) Where paving pattern is interrupted by vertical structural elements, pavers must be sawcut and fit true and hand tight.

(p) Commence installation of pavers against edge to obtain straightest possible course for installation.

(q) Pavers shall be cut with a saw only, to obtain true even undamaged edges. Chipped pavers are unacceptable.

(r) Crews shall Work on installed pavers, not on sand layer.

(s) Spread and fine grade brick sand over paving surface and sweep into joints, in several directions. Sand is incidental to the price for supply and installation of pavers.

(t) Compact pavers with vibratory plate compactor having mass of at least 113kg. Compaction is incidental to the price for supply and installation of paving stone.

(u) Sweep remaining sand over all paving areas and remove from Site.

(v) Remove cracked, chipped, broken or otherwise damaged paving materials from Site immediately.

(w) Upon completion, clean in accordance with manufacturer's recommendations.

E18.3.1 If cutting of existing concrete sidewalk is required, this shall be incidental to the pay item described in this specification.

E18.4 Measurement and Payment

(a) Interlocking paving stones work will be measured on an area basis and will be paid for at the Contract Unit Price per square metre for “Items of Work”, measured as specified herein, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification.

(b) The Contractor shall supply a list of new paving stones delivered to the site on a weekly basis to assist in “back calculating” the area of new paving stones supplied and installed. The list may take the form of a bill of lading, or delivery slip, or other approved format, and must list the amount of paving stones delivered in number and size, or area.

E18.4.1 The area to be paid for shall be the installed area of new or reinstalled paving stones.

(a) Items of Work:

Paving Stones

(i) Supply and Install 60mm Paving Stones

(ii) Supply and Install 80mm Paving Stones (except Transit Blue)

(iii) Supply and Install 80mm Paving Stones (Transit Blue)

(iv) Removal, Salvage and Reinstallation of Paving Stones

E19. RESET GRANITE CURB

E19.1 Description

(a) This specification will cover the resetting of existing granite curb and the installation of a salvaged granite curb.

E19.2 Materials

E19.2.1 Granite Curb

(a) Granite curbs are required in two different lengths. Exact dimension may vary slightly.

(i) Radius Curb - 300mm Length

(ii) Tangent Curb - 900mm Length

(b) Salvaged Granite curbs previously removed from Graham Ave are available in limited quantity at the PCL yard at 1540 Gamble Place (Contact James Melendez – 204-227-7518). Approximately 28 pieces of mixed 300mm and 900mm length Granite curb are available.

(c) Granite Curb from the PCL yard must be approved on a piece by piece basis by the Contract Administrator prior to installation.

(d) When the supply of salvaged granite curb is exhausted the supply and installation of new granite curbs will be required as per E20.

(e) All Granite Curb currently stored at the PCL yard must be removed from the PCL yard and stored on Site in a suitable manner. Where the Contract Administrator determines the Granite curb is not suitable it shall be disposed of by the Contractor.

(f) The use of Granite Curb from the PCL yard will take preference for installation over the supply and installation of new Granite Curb described in E20.

(g) The cost of transporting the granite curb from the PCL yard to Site shall be incidental to the cost of the Items of Work described in this Specification.

E19.2.2 Bonding Grout as per CW 3310 Section 5.4.12.

E19.2.3 Reservoir Seal shall be Sonneborn® NP2.

E19.3 Construction Methods

(a) Reset Granite Curb will follow this procedure:

E19.3.1 Reset Granite Curb on a Radius will follow this procedure:

(a) Remove sidewalk and paving stones immediately adjacent to granite curb. Sidewalk is to be reconstructed such that it provides proper drainage over the reset granite curb. The area of sidewalk to be removed will be directed by the Contract Administrator.

(b) Remove, salvage and store granite curb.

(c) Where specified on Contract drawings or by the Contract Administrator, reconstruct underlying and adjacent concrete roadway.

(d) Clean and inspect concrete road where granite curb is to be placed.

(e) Clean and inspect granite curb.

(f) Clean and inspect the Drilled Hole in the Granite Curb. If Drilled Hole does not exist drill hole with location and size as per Contract Drawings.

(g) Place epoxy coated reinforcing steel in granite curb as per Contract Drawings and CW 3240 Section 2.1.

(h) Place bonding grout on concrete blockout as per Contract Drawings.

(i) Place granite curb, plumb and level, on bonding grout.

(j) Place 10mm Reservoir Seal with Sonneborn NP2 between granite curb and concrete as per Contract Drawing. Follow manufacturers application recommendations.

(k) Reconstruct all disturbed sidewalk and paving stone immediately adjacent to the granite curb that was reset.

E19.3.2 Reset Granite Curb on a Tangent will follow this procedure:

(a) Remove sidewalk and paving stones immediately adjacent to granite curb. Sidewalk is to be reconstructed such that it provides proper drainage over the reset granite curb. The area of sidewalk to be removed will be directed by the Contract Administrator.

(b) Remove, salvage and store granite curb.

(c) Where specified on Contract drawings or by the Contract Administrator, reconstruct underlying and adjacent concrete roadway.

(d) Clean and inspect concrete road where granite curb is to be placed.

(e) Clean and inspect granite curb.

(f) Place bonding grout on concrete blockout as per Contract Drawings.

(g) Place granite curb, plumb and level, on bonding grout.

(h) Place 10mm Reservoir Seal with Sonneborn NP2 between granite curb and concrete as per Contract Drawing. Follow manufacturers' application recommendations.

(i) Reconstruct all disturbed sidewalk and paving stone immediately adjacent to the granite curb that was reset.

E19.4 Measurement and Payment

(a) Reset Granite Curb will be measured on a length basis and paid for at the Contract Unit Price for "Reset Granite Curb". The unit to be paid for shall be the total length reset in accordance with this Specification and as measured and accepted by the Contract Administrator.

(b) The length to be paid for shall be the installed length of reset granite curb.

(c) Reconstruction of adjacent sidewalk, paving stones, and/or lean mix concrete required to complete Reset Granite curb will be paid for according to E16, E18 and E17. All other operations herein described and all other items incidental to the Work included in this Specification shall be incidental.

E20. RESET GRANITE CURB RAMP

E20.1 Description

(a) This specification will cover the resetting of existing granite curb ramp.

E20.2 Materials

E20.2.1 General

(a) Curbs ramps consist of individual granite curb pieces cut with transitions from full height to a depressed curb as shown on the Contract Drawings.

(b) A Curb Ramp shall generally consist of a 900mm height transition on each side of a 1500mm depressed curb for a total width of 3.3m.

E20.2.2 Bonding Grout as per CW 3310 Section 5.4.12

E20.2.3 Reservoir Seal shall be Sonneborn® NP2

E20.3 Construction Methods

E20.3.1 Reset Granite Curb Ramp:

(a) Reset Granite Curb Ramp will be performed as per E18.

E20.4 Measurement and Payment

(a) Reset Granite Curb Ramp will be measured on a length basis and paid for at the Contract Unit Price for “Reset Granite Curb Ramp”. The length to be paid for shall be the total number of metres of Granite Curb Ramp sections replaced in accordance with this Specification and as measured and accepted by the Contract Administrator.

(b) The length to be paid for shall be the installed length of reset granite curb ramp.

(c) Reconstruction of adjacent sidewalk, paving stones, and/or lean mix concrete required to complete “Reset Granite Curb Ramp” will be paid for according to E16, E20 and E17. All other operations herein described and all other items incidental to the Work included in this Specification shall be incidental.

E21. REPLACE GRANITE CURB

E21.1 Description

(a) This specification will cover the replacement of existing granite curb where the existing granite curb is missing or where the Contract Administrator determines that the existing granite curb cannot be salvaged and the task cannot be completed according to E18.

E21.2 Materials

E21.2.1 General

(a) Granite curbs are required in two different formations as shown on the Contract Drawings:

(i) Radius Curb - 300mm Length

(ii) Tangent Curb - 900mm Length

(b) Granite Curb supplied from the PCL yard and described in E18 will take preference for installation over new Granite Curb described in this specification.

(c) New Granite curbs may be supplied by Canital Granite (Contact Murray Leighton 204-224-2286)

(d) New granite curb must match the color of existing granite curbs and dimensions shown on the drawings and shall be approved by the Contract Administrator.

(e) New 300 mm length granite curb to have holes pre-drilled for reinforcing steel.

(f) Bonding Grout as per CW 3310 Section 5.4.12.

(g) Reservoir Seal shall be Sonneborn® NP2.

E21.3 Construction Methods

(a) Replace Granite Curb on a Radius will follow this procedure:

(i) As per E19.3.1

(b) Replace Granite Curb on a Tangent will follow this procedure:

(i) As per E19.3.2

E21.4 Measurement and Payment

(a) Replace Granite Curb will be measured on a length basis and paid for at the Contract Unit Price for "Items of Work" below. The length to be paid for shall be the total number of metres supplied and placed in accordance with this Specification and as measured and accepted by the Contract Administrator.

(i) Items of Work:
Replace Granite Curb

- 900mm Length
- 300mm Length

E21.4.1 Reconstruction of adjacent sidewalk, paving stones, and/or lean mix concrete required to complete "Replace Granite Curb" will be paid for according to E16, E18 and E17, All other operations herein described and all other items incidental to the Work included in this Specification shall be incidental.

E22. RELOCATION OF EXISTING SITE FURNITURE

E22.1 Description

E22.1.1 General

(a) This specification shall cover the removal, storage and reinstallation of existing illuminated sign, benches and recycling centre.

E22.2 Materials

E22.2.1 Bolts to be 12mm tamper proof stainless steel.

E22.2.2 Grout to be CPD Non-shrink grout pre-mix or approved alternate.

E22.2.3 Epoxy to be Anchor-it HS-200 or approved equal.

E22.3 Removal and Storage

(a) Remove from Site all Site furniture to be reinstalled and store in a secure facility. Ensure Site furniture is not damages during removal, transport and storage.

E22.4 Installation

(a) Illuminated sign to be disconnected and reconnected by licensed electrician as per E23.

(b) Install sign on metal base and fix in place with locking bolts. Use fabric straps for moving and lifting sign. Do not damage sign during installation. All damage to be repaired to the satisfaction of the Contract Administrator at the Contractors own costs.

(c) Install benches on thickened concrete sidewalk paving as shown on the Drawings.

(d) Drill holes and install stainless steel threaded insert to fit bolts. Epoxy in place.

(e) Set benches level and plumb. Dry fit bench with bolts.

(f) Fill under bench legs with non-shrinking grout where legs do not fit flush to sidewalk, maximum 15mm depth. Finish exposed edges with smooth trowel finish with consistent slope to sidewalk surface. Install grout as per manufacturer's specifications. Notify Contract Administrator of grout requirements prior to placing bench.

(g) Fasten benches with stainless steel, tamper proof bolts. Surface of bolt head to be flush or slightly recessed from base plate of legs.

(h) Bolt recycling centre to unit pavers with tamper proof bolts. Predrill holes for bolts and epoxy in place. Bolts to be minimum 100mm long.

E22.5 Measurement and Payment

(a) Relocation of existing sign shall be measured and paid on a per unit basis for "Relocate Existing Totem Sign". The number to be paid shall be the total number of signs reinstalled in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

(b) Relocation of existing benches shall be measured and paid on a per unit basis for "Relocate Existing Benches ". The number to be paid shall be the total number of benches reinstalled in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

(c) Relocation of existing recycling centre shall be measured and paid on a per unit basis for "Relocate Existing Recycling Centre ". The number to be paid shall be the total number of recycling centers reinstalled in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E23. ELECTRICAL CONNECTION FOR TOTEM SIGN

E23.1 Description

(a) This specification will cover the disconnection of electrical service from the existing totem prior to totem relocation, the supply and installation of materials to provide power to the relocated totem, and the reconnection and repowering at the new location.

E23.2 Materials

(a) Wiring shall be copper, RWU-90, insulated, minimum #12 AWG with ground. Provide two wires for illuminated sign and electronic display.

(b) All equipment, wiring, conduit, grounding, seals, etc., shall be in compliance with the latest edition of the "Canadian Electrical" and local "Codes". Wiring in finished grade shall be in rigid PVC conduits, complete with ground conductor.

(c) Conduit to be 50mm rigid PVC conduit.

E23.3 Construction Methods

(a) Disconnect existing totem sign on Site to be relocated. Reconnect in new location.

(b) Furnish all labour, new material, equipment and services for the complete installation of the electrical Work as shown on the plans and specified. Complete system to operate to total satisfaction of Contract Administrator.

(c) Examine the Site and local conditions affecting the Work under this Contract.

(i) Install all Work promptly and in advance of concrete pouring and/or construction.

(d) Contractor to push wires where possible at all locations.

(e) All Work shall be executed in a first class and workmanlike manner. All supports, hangers, and securing devices shall be solid and substantial. All Work shall be laid out neatly in its mechanical appearance. It shall be logically arranged for simplicity of installation and accessibility.

(f) Provide shop drawings for approval of all major electrical items. Provide three (3) copies of manufacturers maintenance instructions bound in hard covered book for each piece of major electrical equipment.

(g) Identify circuits/equipment with lamacoid nameplates.

(h) All electrical apparatus shall be properly grounded according to the latest edition of the "Canadian Electrical Code"

(i) Wire and connect to sign where indicated. Re-connect to existing power source.

(j) Electronic sign to have 24 hour power source.

(k) Co-ordinate installation with Manitoba Hydro and City of Winnipeg. Installation to conform with all utility requirements.

(l) Obtain all permits and inspections. Provide copies of all paperwork to the Contract Administrator prior to completion of the Work.

(m) The concrete foundation for the totem will be provided under E13 Contractor to co-ordinate location of sleeves.

(n) Coordinate relocation of the sign for electrical connection requirements and timing of installation.

(o) Provide ground rod and grounding connections to suit Manitoba Hydro and City of Winnipeg Inspection Department.

(p) All distribution equipment to be weather proof.

(q) Conform with all Codes and pay all permits and Fees. Upon completion, present a "Certificate of Approval" for electrical Work from the Inspection Department.

E23.4 Measurement and Payment

(a) Electrical Connection for Totem Sign will be measured on a unit basis and will be paid for at the Contract Lump Sum Price for "Electrical Connection for Totem Sign", which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification.

E24. FENCING

E24.1 Description

(a) This specification shall cover the supply and installation of 1200 mm height aluminium fencing.

E24.2 Materials

(a) 1.2m height aluminum fencing to be Canadian Eagle II aluminum fencing by Iron Eagle as supplied by:

Wallace and Wallace
Lowson Crescent
Winnipeg MB, R3P 2H8
Ph: 204-452-2700
Attn. Kori Buhler

(b) Aluminum fence to be painted black. All paint to be powder paint.

E24.3 Installation

(a) Measure length of fencing to be installed prior to construction. Install posts as per detail and adjust post spacing at ends of fencing runs to provide minimum 1.5m length panels at ends.

(b) Construct concrete bases as per the drawings. All bases are incidental to the unit price for fencing.

(c) Construct fence as per manufacturers' specifications and details.

E24.4 Measurement and Payment

(a) 1.2 m height aluminium fencing shall be measured and paid on a linear metre basis for "1.2 m Height Aluminum Fence". The number to be paid shall be the total number of lineal metres constructed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E25. RAISED PLANTER PREPARATION

E25.1 Description

E25.1.1 The following list generally describes the scope of this Section:

(a) Cultivate subsoil;

(b) Supply and install drainage course and drainage pipe;

(c) Supply and install insulation and geotextile;

(d) Supply and install planting soil mixture in planters;

(e) Supply and install bark nugget mulch and geotextile.

E25.1.2 Submit to the Contract Administrator samples of the following materials:

(a) Planting Soil Mixture: 1 kg

(b) Bark nugget mulch: 500 g

(c) Geotextile

E25.2 Materials

(a) Planting Soil: For mix imported topsoil with 20% peatmoss loose by volume, and 5% sand loose by volume. Incorporate bonemeal into planting soil at rate of 5 lbs /cu.yd. of soil mixture. Planting soil items to be comprised as follows:

(i) Peatmoss: horticultural grade Class "A" decomposed plant material, fairly elastic and homogeneous. Free of decomposed colloidal residue, weed, sulphur and iron. To have pH value of 5.9 to 7.0, 60% organic matter by weight, moisture content not exceeding 15% and water absorption capacity of not less than 300% by weight on oven dry basis.

(ii) Bonemeal: shall be raw bonemeal, finely ground with a minimum analysis of 3% nitrogen and 20% phosphoric acid.

(iii) Imported topsoil: natural, fertile, agricultural soil typical of locality, capable of sustaining vigorous plant growth, from well drained Site that is free of flooding, not in frozen or muddy condition, not less than 6% organic matter to a maximum 25% organic matter by volume, and pH value of 5.9 to 7.0. Free from subsoil, slag or clay, stones, lumps, live plants and their roots, sticks, crabgrass, couchgrass, noxious weeds and foreign matter.

(iv) Sand: hard, granular natural beach sand, washed free of impurities, chemical or organic matter.

(b) Fertilizer: commercial type with 50% of the elements derived from organic sources. Deliver and store fertilizer in waterproof bags showing weight, analysis and name of manufacturer.

(c) Separation Geotextile Fabric as per CW 3130 for each application.

(d) Drainage material as per CW 3120.

(e) Drainage pipe as per CW 3120.

(f) Insulation to be 50mm thick rigid closed cell high density foam insulation.

(g) Bark nugget mulch: commercial grade bagged redwood cedar bark nugget.

E25.3 Construction Methods

(a) Remove debris, broken roots, branches, stones in excess of 50mm diameter and other deleterious materials. Remove subsoil that has been contaminated with oil, gasoline or calcium chloride. Dispose of removed materials as directed.

(b) Excavate planters to depths as per the Drawings.

(c) Place subdrain pipe, drainage fabric and drainage material as per the Drawings. Connect subdrain to catch basins as shown on the drawings. All Work related to subdrain for planters is incidental to the unit prices Bid for planter preparation.

(d) Install insulation continuous against walls and cover with geotextile.

(e) Do not spread planting soil mixture until Contract Administrator has inspected subdrain and insulation.

(f) Mix fertilizer at manufacturer's recommended rate of application. Mix fertilizer thoroughly into upper 150mm of planting soil to be placed.

(g) Spread planting soil mixture with adequate moisture in uniform layers during dry weather over approved, dry, unfrozen sub-grade, where planting is indicated.

(h) Bring insulation and planting soil mixture up to 100 mm below finished grade in planters.

(i) Remove stones, roots, grass, weeds, construction materials, debris and foreign non-organic objects from soil mixture.

(j) Fine grade entire planting soil area. Eliminate rough spots.

(k) Compact planting soil to leave surface smooth, uniform, firm against deep foot printing, with a fine, loose texture. Tolerance: plus or minus 15mm of design grade.

(l) Supply and install 100mm bark nugget mulch in planters.

E25.4 Measurement and Payment

(a) Planter preparation will be measured and paid on an area basis at the Contract unit price per square metre for “Raised Planter Preparation” which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the Work included in this Specification. The area to be paid for shall be the total number of square metres in place in accordance with this Specification acceptable to the Contract Administrator, as computed from measurements made by the Contract Administrator.

E26. TREE VAULTS

E26.1 Description

(a) This Specification covers the installation of cast-in-place concrete tree vaults with precast concrete tree covers, sidewalk panels and related excavation, tree vault sub drainage, geotextile, planting medium and mulch.

(b) The construction of tree wells (thickened concrete sidewalk slab used to support precast concrete tree covers and sidewalk panels) is not included and is specified under E13.

E26.2 Materials

(a) Granular drainage material in accordance with Specification CW 3120 - Installation of Sub Drains.

(b) To Specification CW 3120 - Installation of Sub Drains.

(c) Geotextile in accordance with CW 3120.

(d) Tree cover to be two-piece precast concrete tree cover with 500mm diameter opening in centre.

(e) Sidewalk panel to be min. 150mm thick reinforced precast concrete panel to accommodate AASHTO HS-20 loading. Manufacturer to supply shop drawings stamped by a structural Engineer.

(f) Precast concrete tree covers and sidewalk panels supplied by Barkman Concrete Ltd., 909 Gateway Road, Winnipeg, MB , Phone: 667-3310, or approved equal.

(g) Planting Medium to be in accordance with E22.

(h) Tree Guard to be two piece A-coated black Terressa tree guard as supplied by Urban Park. 49 Life Sciences Parkway, Steinbach, MB 1-800-775-0018. Contact Myron Krentz.

E26.3 Submittals

(a) Prior to installation, submit to the Contract Administrator samples of the following materials:
  (i) Geotextile: 1 sq.m
  (ii) Root barrier: 1 panel

(b) Prior to installation, arrange for inspection and approval of the following materials:
  (i) Tree cover: 1 panel
  (ii) Sidewalk panel: 1 panel

E26.4 Construction Methods

(a) The Contractor must ensure that all buried utilities and services are located and if necessary, protected and exposed prior to any excavation in accordance with Specification CW 1120.

(b) Excavate the tree vault to the dimensions and depth shown on the Drawings. Hydro-excavation/day lighting process to be used in area of existing underground utilities. Ensure base of tree pit slopes to drain toward roadway drainage system (min 2% slope).

(c) Remove roadway base and sub base where required to achieve tree pit width indicated on the Drawings. Do not remove any base or sub-base material within 450mm of back of curb.

(d) Clear excavation of all construction debris, trash, rubble and any foreign material. Excavate and remove oil spills and other soil contamination sufficiently to remove the harmful material. Fill over excavations with approved fill and compact to the required subgrade compaction.

(e) All excavated material shall be disposed of off site.

(f) Backfill between roadway base gravel and tree vault edge with compacted granular where required.

(g) Supply and place 150 mm depth granite drainage course with perforated pipe in accordance with Specification CW 3120 – Installation of Sub Drains and as shown on the Drawings. Ensure pipe has minimum 25mm cover of drainage course above and below.

(h) Construct cast-in-place concrete tree well in accordance with Concrete Foundations and the Drawings.

(i) Cover drainage course and sides of tree pit with geotextile in accordance with Specification CW 3120 – Installation of Sub Drains and as shown on the Drawings.

(j) Remove and dispose of all construction related debris from tree vault prior to placing planting medium.

(k) Backfill with street tree planting medium compacting sufficiently to provide good soil consistency for tree planting and to minimize settlement.

(l) Plant trees in locations as per the Drawings. Ensure tree trunk is centred on opening of tree covers.

(m) After tree planting, ensure that the finished soil level is 100 mm below bottom edge of tree cover and 25mm below bottom edge of sidewalk panel.

(n) Install sidewalk panels and tree covers ensuring edges are supported by tree well.

(o) Where indicated on the Drawings, install tree guard.

(p) Supply and install tree guard on tree cover as per manufacturer's specifications.

E26.5 Measurement and Payment

(a) Tree vault construction will be measured and paid on an area basis at the Contract unit price per square metre for “Tree Vault” which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental

to the Work included in this Specification. The area to be paid for shall be the total number of square metres constructed in accordance with this Specification acceptable to the Contract Administrator, as computed from measurements made by the Contract Administrator.

(b) No separate measurement or payment will be made for drainage course, drain lines, geotextile and soil. All work is incidental to tree vault construction.

(c) Tree covers will be measured and paid on a per unit basis at the Contract unit price per item for "Supply and install tree cover" which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the Work included in this Specification. The number to be paid for shall be the total number installed in accordance with this Specification acceptable to the Contract Administrator, as computed from measurements made by the Contract Administrator.

(d) Sidewalk panels will be measured and paid on a per unit basis at the Contract unit price per item for "Supply and install sidewalk panels" which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the Work included in this Specification. The number to be paid for shall be the total number installed in accordance with this Specification acceptable to the Contract Administrator, as computed from measurements made by the Contract Administrator.

(e) Tree guards will be measured and paid on a per unit basis at the Contract unit price per item for "Supply and install tree guards" which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the Work included in this Specification. The number to be paid for shall be the total number installed in accordance with this Specification acceptable to the Contract Administrator, as computed from measurements made by the Contract Administrator.

E27. EXPANSION OF EXISTING TREE PITS

E27.1 Description

(a) This specification shall cover the expansion of the existing tree pits

E27.2 Materials

(a) Planting medium to be in accordance with E22.

(b) Drainage course and drainage pipe to be in accordance with Tree Vault.

(c) Geotextile to be in accordance with Tree Vault.

(d) Granite mulch to be 6mm black granite mulch as supplied by J&D Penner.

(e) Tree grate to be 24" tree grate as supplied by Barkman Concrete. Contact Wayne Wiebe at 667-3310.

E27.3 Construction Methods

(a) Contractor to remove and stockpile existing tree grates in good condition for reuse.

(b) Tree pit to be constructed following sidewalk construction

(c) Hydro-excavate around existing tree pit to extend it to the dimensions shown on the drawing. City of Winnipeg Forestry personnel to be on site during hydro-excavation to ensure exposure of tree roots is acceptable.

(d) Supply and place drainage course and drain line as per the Drawings. Ensure tree roots are not damaged.

(e) Supply and place geotextile over drainage course and up sides of new edge of tree pit as per the Drawings.

(f) Fill around existing tree roots with planting medium to 100mm below finish grade of sidewalk.

(g) Water tree well thoroughly to ensure soil is compacted sufficiently to remove air pockets and to minimize settlement.

(h) Cover new and existing planting soil with geotextile and fix in position with staples at 300mm o.c.

(i) Place tree grates on geotextile in pattern as shown on the drawings. Fill all voids with granite mulch.

E27.4 Measurement and Payment

(a) Expansion of existing tree pits shall be measured and paid on a per unit basis for "Expand Existing Tree Pits". The number to be paid shall be the total number of constructed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E28. PLANT MATERIAL

E28.1 Description

E28.1.1 General

(a) The following list generally describes the scope of this section:

(i) Supply and planting of trees and shrubs;

(ii) Maintenance to date of total performance.

(b) Obtain approval of plant material at source.

(c) Notify Contract Administrator of source of material at least 7 days in advance of shipment. No Work under this Section is to proceed without approval.

(d) Acceptance of plant material at source does not prevent rejection at Site prior to or after planting operations.

(e) Source of all plant material to be from an area within the same hardiness zone and soil conditions as Winnipeg.

E28.1.2 Shipment and Pre-Planting Care

(a) Co-ordinate shipping of plants and excavation of holes to ensure minimum time lapse between digging and planting. Tie branches of trees and shrubs securely and protect plant material against abrasion, exposure and extreme temperature change during transit. Avoid binding of planting stock with rope or wire which would damage bark, break branches or destroy natural shape of plant. Give full support to root ball of large trees during lifting.

(b) Cover plant foliage with tarpaulin, and protect bare roots by means of dampened straw, peatmoss, sawdust or other acceptable material to prevent loss of moisture during transit and storage.

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

(d) Keep roots moist and protected from sun and wind.

E28.2 Materials

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

(b) Stakes to be galvanized t-rails with rubber hose and wire ties as per the Drawings.

(c) Anti-desiccant should be wax-like emulsion to provide film over plant surface reducing evaporation but permeable enough to permit transpiration.

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

E28.2.1 Plant Material

(a) Quality and Source: Comply with City of Winnipeg tree planting guidelines, referring to size and development of plant material and root ball. All plant material to be approved by City and Contract Administrator at source.

(b) Measure plants when branches are in their natural position. Height and spread dimensions refer to main body of plant and not from branch tip to branch tip. Use trees of No. 1 grade.

(c) Additional plant material qualifications:

(i) Use shrubs and vines with strong fibrous root system free of disease, insects, defects or injuries and structurally sound.

(ii) Trees must have been root pruned regularly, but not later than one growing season prior to arrival on Site.

(d) Approval required for plant material, which has been held in cold storage.

(e) Acceptable if containers large enough for root development. 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.

(f) Substitutions to plant material as indicated on plantings plan are not permitted unless written approval has been obtained as to type, variety and size prior to award of Contract. Plant substitutions must be similar species and of equal size to those originally specified.

E28.2.2 Root balls

(a) 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. Lift root ball from hole, place in wire basket designed for purpose and line with burlap. Secure root balls with burlap, heavy twine and wire basket. Protect root balls against sudden changes in temperature and exposure to heavy rainfall. Take care not to injure trunk of tree with wire basket ties or rope.

(b) Tree spade material shall not be accepted. Unless dug in field and secured as above.

E28.3 Construction Methods

(a) Stake out location of trees and shrubs as per the Construction Drawings. Obtain approval by City and Contract Administrator prior to excavating.

(b) Apply anti-desiccant in accordance with material manufacturer's instructions only as required.

(c) Co-ordinate operations. Keep Site clean and planting holes drained. Immediately remove soil or debris spilled onto pavement.

E28.3.1 Planting Time

(a) Plant deciduous plant material during dormant period, before buds have broken. Plant material noted for spring planting only, must be planted in dormant period.

(b) When permission has been obtained to plant materials after buds have broken, spray plants with anti-desiccant to slow down transpiration prior to transplanting.

(c) When permission has been obtained, shrubs and perennials growing in containers may be planted throughout growing season.

(d) Plant only under conditions that are conducive to health and physical conditions of plants.

(e) Provide planting schedule. Executing planting operations over long period using limited crew will not be accepted.

E28.3.2 Excavations

(a) Prepare planters as shown on the Drawings and as specified.

(b) Protect bottom of excavations against freezing.

(c) Remove water, which enters excavations prior to planting. Ensure source of water is not ground water.

E28.3.3 Planting

(a) Plant trees and shrubs vertically with roots placed straight out in hole. Orient plant material to give best appearance in relation to structure, roads and walks.

(b) Place plant material to depth equal to depth they were originally growing in nursery. Allow for soil settlement in planting.

(c) With balled and burlapped roots balls, loosen burlap and cut away minimum top 1/2 without disturbing root ball. Cut vertical slits in remaining burlap around root ball at 250mm intervals. Remove all rope, string, or other ties from around trunk. Do not pull burlap or rope from under root ball. With container stock, remove entire container without disturbing root ball. Non bio-degradable wrappings must be removed, wire baskets to be cut vertically and the top rings bent over below grade.

(d) Tamp planting soil around root system in layers of 150mm 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 completely penetrated into soil, complete backfilling.

(e) Build 100 mm deep saucer around outer edge of hole to assist with maintenance watering. Install 100mm depth wood chip mulch in saucer as shown on drawings.

(f) When planting is completed, give surface of planting saucer dressing of organic 10-6-4 fertilizer at rate of 12 kg/100 m for shrub beds or 40 to 50 g/mm of calliper for trees. Mix fertilizer thoroughly with top layer of planting soil and water in well.

(g) Prune trees and shrubs after planting only as required to remove broken diseased or dead branches. Employ clean sharp tools and make cuts flush with main branch, smooth and sloping as to prevent accumulation of water.

(h) Stake and guy trees as required in planters as per the Drawings.

E28.3.4 Maintenance

(a) After completion of planting operation to the satisfaction of the Contract Administrator and City of Winnipeg, the Contractor shall be responsible for the maintenance of the plant material until date of Total Performance and commencement of two year warranty.

(b) Replace any dead or damaged plant material during the maintenance period, including replacement of vandalized material.

(c) Water sufficiently to maintain optimum growing conditions. Ensure adequate moisture in root zone at freeze-up.

(d) The Contractor shall provide all necessary equipment, including: tractors, mowers, hand mowers, trimmers, fertilizer spreaders, pruning tools, hoses, water meters, and any other items necessary for the maintenance of the plant material indicated in this Specification.

(e) Remove all weeds and debris from planters on a weekly basis.

(f) Turn and top up mulch in planters prior to start of extended maintenance.

(g) Personnel

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

(ii) 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.

E28.3.5 Maintenance Methods

(a) Watering

(i) Plants shall be watered twice weekly, or during the summer, if temperatures are fairly high and there has been no rainfall, water approximately once a week.

(ii) To determine the need for watering, make a soil test weekly with a one-inch auger. Take a test sample from both the planting soil and from the root ball by drilling to a minimum depth of 600 mm. The soil shall contain enough moisture to hold together when compressed in the hand, but not be muddy.

E28.3.6 Fertilizing

(a) Because of the specialized nature of such operations, fertilizing is to be done by a qualified local arborist.

(b) Fertilize in the fall over the surface of the ground surrounding the plants, then soak the area thoroughly, use 10-6-4 analysis fertilizer spreading a maximum of 0.13 kg per square metre.

E28.3.7 Spraying

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

E28.3.8 Insects and Diseases

(a) Spray plants to combat pests and diseases. Do not use DDT or sprays prohibited by Agriculture Canada.

E28.4 Measurement and Payment

(a) Supply and installation of plant material will be measured on a unit basis and will be paid for at the Contract Unit Price per unit for “Items of Work”, measured as specified herein, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification.

(i) Items of Work:

Supply and Install

- American Elm
- Japanese Tree Lilac
- Summerwine Ninebark
- Pygmy Carragana

E29. EXTENDED MAINTENANCE OF PLANT MATERIAL

E29.1 Description

(a) This Specification shall deal with the maintenance of the trees and shrubs for two (2) calendar years after the date of the Total Performance.

E29.2 Materials

(a) The Contractor shall provide all necessary equipment, including: tractors, trimmers, fertilizer spreaders, pruning tools, water trucks, hoses, water meters, and any other items necessary for the maintenance of the area indicated in this Specification.

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

E29.3 Construction Methods

(a) The following areas shall be part of the maintenance jurisdiction:

(i) The trees and vines as indicated on the Drawings;

(ii) Mulch in planters as indicated on the Drawings.

E29.3.1 Maintenance of Trees and Vines

(a) Watering

(i) All plant material shall be watered bi-weekly, or during the summer, if temperatures are fairly high and there has been no rainfall, water approximately once a week. Where irrigation is not available this should be executed by leaving a hose, with a gentle rate of flow, running into the saucer of the root ball for about one hour.

(ii) To determine the need for watering, make a soil test weekly with a one-inch auger. Take a test sample from both the planting soil and from the root ball by drilling to a minimum depth of 600 mm. The soil shall contain enough moisture to hold together when compressed in the hand, but shall not be muddy.

E29.3.2 Fertilizing and pest control

(a) Fertilizing, Pruning and Spraying Deciduous Trees and Shrubs. Because of the specialized nature of such operations, this should be done by a qualified local arborist.

(b) Fertilize in the fall over the surface of the ground surrounding the plants, then soak the area thoroughly. Use 10-6-4 analysis fertilizer spreading a maximum of 0.13 kg per square metre.

(c) Spray to control insect pests and diseases. Use horticulturally recommended compounds specific for the problem to be contained.

E29.3.3 Weeding

(a) Remove all weeds in planters by hand on a weekly basis. Do not use chemical weed killer.

(b) Remove all debris from beds, including weeds, and dispose of off Site in a legal manor.

E29.3.4 Other Maintenance

(a) Tighten, or remove, turnbuckles or guy wires for trees as required or directed by the Contract Administrator.

(b) Straighten trees as required and directed by the Contract Administrator.

(c) Remove stakes and guys prior to end of maintenance.

E29.3.5 Replacements

(a) The Contractor shall agree and guarantee to replace and replant any nursery stock found dead or in poor condition during and at the completion of the maintenance period.

(b) All plant material to be replaced and maintained for a minimum of 30 days prior to end of maintenance period.

(c) Replaced plant material to be maintained for two (2) years following date of replacement and is subject to the same conditions for warranty and maintenance as original planting. Where a tree has died in the same location a second time the tree hole is to be filled, the surface repaired to match surrounding area and a new location for the replacement tree determined by the Contract Administrator.

(d) "Poor Condition" shall be interpreted as meaning nursery stock in which branches are dead or dying, or have not shown satisfactory growth of leaves.

(e) All replacements shall be of same size and species, as specified.

E29.3.6 Quality Assurance

(a) Upon the end of the required maintenance period, a Site inspection shall be held. If at this time, all material and Works is satisfactory the Contract for maintenance and warranty shall be terminated. If materials and Works are found unacceptable the warranty shall be extended by 30 days for a follow up inspection. Extension of

warranty will continue in 30 day increments for inspection until all Work and material are satisfactory.

E29.4 Measurement and Payment

(a) Extended Maintenance will be measured on a per year lump sum basis and paid for at the per year Contract Lump Sum Price “Extended Maintenance of Plant Material”, in accordance with this Specification and accepted by the Contract Administrator.