



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 531-2012

**RECONSTRUCTION OF MARKET AVENUE – FROM MAIN STREET TO RORIE
STREET**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 Reconstruction of Market Avenue – From Main Street to Rorie Street

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, July 18, 2012.

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

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

B3. ENQUIRIES

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

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

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

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

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

B4. ADDENDA

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

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

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

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

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

B5. SUBSTITUTES

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

- B5.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B5.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B5.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
 - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
 - (c) identify any anticipated cost or time savings that may be associated with the substitute;
 - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
 - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.
- B5.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/her sole discretion grant approval for the use of a substitute as an "approved equal" or as an "approved alternative", or may refuse to grant approval of the substitute.
- B5.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.
- B5.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.
- B5.7 If the Contract Administrator approves a substitute as an "approved equal", any Bidder may use the approved equal in place of the specified item.
- B5.8 If the Contract Administrator approves a substitute as an "approved alternative", any Bidder bidding that approved alternative may base his/her Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B14.
- B5.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.
- B5.10 Notwithstanding B5.2 to B5.9, in accordance with B6.6, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B14.1(a).

B6. BID COMPONENTS

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

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

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

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

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

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

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

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

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

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

B6.8 Bids shall be submitted to:

The City of Winnipeg
Corporate Finance Department
Materials Management Division
185 King Street, Main Floor
Winnipeg MB R3B 1J1

B7. BID

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

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

- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, his/her name shall be inserted;
- (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
- (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
- (d) if the Bidder is carrying on business under a name other than his/her own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.

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

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

- B7.4 Paragraph 12 of Form A: Bid shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, it shall be signed by the Bidder;
 - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
 - (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, shall be affixed;
 - (d) if the Bidder is carrying on business under a name other than his/her own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- B7.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.
- B7.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

B8. PRICES

- B8.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B8.1.1 For the convenience of Bidders, and pursuant to B6.4.2 and B14.4.3, an electronic spreadsheet Form B: Prices in Microsoft Excel (.xls) format is available along with the Adobe PDF documents for this Bid Opportunity on the Bid Opportunities page at the Materials Management Division website at <http://www.winnipeg.ca/matmgt/>
- B8.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.
- B8.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.
- B8.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B9. QUALIFICATION

- B9.1 The Bidder shall:
- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba; and
 - (b) be financially capable of carrying out the terms of the Contract; and
 - (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.
- B9.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/debar.stm>
- B9.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

B9.4 Further to B9.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

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

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

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

B10. BID SECURITY

B10.1 The Bidder shall provide bid security in the form of:

- (a) a bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in the form included in the Bid Submission (Form G1: Bid Bond and Agreement to Bond); or
- (b) an irrevocable standby letter of credit, in the amount of at least ten percent (10%) of the Total Bid Price, and undertaking issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form included in the Bid Submission (Form G2: Irrevocable Standby Letter of Credit and Undertaking); or
- (c) a certified cheque or draft payable to "The City of Winnipeg", in the amount of at least fifty percent (50%) of the Total Bid Price, drawn on a bank or other financial institution registered to conduct business in Manitoba.

B10.1.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.

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

B10.1.3 The Bidder shall sign the Bid Bond.

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

B10.2 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly executed by the successful Bidder and the performance security furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.

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

B11. OPENING OF BIDS AND RELEASE OF INFORMATION

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

B12. IRREVOCABLE BID

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

B13. WITHDRAWAL OF BIDS

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

- B13.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:
- (a) retain the Bid until after the Submission Deadline has elapsed;
 - (b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid; and
 - (c) if the notice has been given by any one of the persons specified in B13.1.3(b), declare the Bid withdrawn.

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

B14. EVALUATION OF BIDS

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

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

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

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

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

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

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

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

B15. AWARD OF CONTRACT

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

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

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for Construction* (Revision 2006 12 15) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm
- 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) Watermain Renewal
 - (i) Market Avenue from Main Street to Rorie Street
- (b) Road Works
 - (i) Market Avenue from Main Street to Rorie Street
- (c) Streetscaping
 - (i) Market Avenue from Main Street to Rorie Street

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

- (a) Watermain Renewal
 - (i) Watermain renewal using trenchless installation;
 - (ii) Supply and installation of hydrant assemblies;
 - (iii) Supply and installation of watermain valves;
 - (iv) Supply and installation of fittings (tees, bends, vertical bends, reducers);
 - (v) Water services using trenchless installation;
 - (vi) Supply and installation of corporation stops;
 - (vii) Replacing existing curb stops;
 - (viii) Replacing existing curb stop boxes;
 - (ix) Connecting to existing watermains and water services;
 - (x) Connecting existing copper water services to new watermains;
 - (xi) Supply and installation of sacrificial zinc anodes;
 - (xii) Supply and installation of continuity bonding;
 - (xiii) Concrete curb renewal;
 - (xiv) Regrading of existing interlocking paving stone; and
 - (xv) Construction of asphaltic concrete patches.
- (b) Road Works
 - (i) Concrete pavement removal;
 - (ii) Asphalt pavement removal;
 - (iii) Planing of asphalt pavement;
 - (iv) Excavation;
 - (v) Installation of subdrains;
 - (vi) Compaction of existing sub-grade;
 - (vii) Installation of catch basins and connection pipe;
 - (viii) Plugging of existing sewers and sewer services smaller than 300 mm;
 - (ix) Placement of separation geotextile fabric;
 - (x) Placement of sub-base and base course materials;
 - (xi) Construction of 230 mm concrete pavement partial slab patches;
 - (xii) Construction of 230 mm concrete pavement (reinforced);

- (xiii) Construction of 200 mm concrete pavement (reinforced);
 - (xiv) Construction of asphaltic pavement;
 - (xv) Adjustment of existing manholes and catch basins;
 - (xvi) Adjustment of valve boxes;
 - (xvii) Supply and installation of valve box extensions;
 - (xviii) Concrete curb renewal;
 - (xix) Construction of 180 mm barrier curb;
 - (xx) Construction of 180 mm barrier curb and gutter using slip form paving methods;
 - (xxi) Construction of 180 mm modified barrier curb and gutter using slip form paving methods; and
 - (xxii) Joint sealing.
- (c) Streetscaping
- (i) Excavations and removals;
 - (ii) Concrete works;
 - (iii) Paving works;
 - (iv) Tree wells and covers;
 - (v) Site furniture;
 - (vi) Electrical work; and
 - (vii) Plant material.

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is Stantec Consulting Ltd., represented by:

Vilko Maroti, CET, P.Eng.
Senior Transportation Engineer
Telephone No. 204 928-8834
Facsimile No. 204 284-4795

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

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

D4. CONTRACTOR'S SUPERVISOR

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

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

D5. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE

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

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

- D5.3 The following shall be confidential and shall not be disclosed by the Contractor to the media or any member of the public without the prior written authorization of the Contract Administrator;
- (a) information provided to the Contractor by the City or acquired by the Contractor during the course of the Work;
 - (b) the Contract, all deliverables produced or developed; and
 - (c) any statement of fact or opinion regarding any aspect of the Contract.
- D5.4 A Contractor who violates any provision of D5 may be determined to be in breach of Contract.

D6. NOTICES

- D6.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.
- D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the facsimile number identified in D3.1.
- D6.3 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following facsimile number:
- The City of Winnipeg
Legal Services Department
Attn: Director of Legal Services
Facsimile No.: 204-947-9155

D7. FURNISHING OF DOCUMENTS

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

SUBMISSIONS

D8. AUTHORITY TO CARRY ON BUSINESS

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

D9. SAFE WORK PLAN

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

D10. INSURANCE

D10.1 The Contractor shall provide and maintain the following insurance coverage:

- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability, broad form property damage cover and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
- (b) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence;
- (c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation.

D10.2 Deductibles shall be borne by the Contractor.

D10.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in the C4.1 for the return of the executed Contract.

D10.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

D11. PERFORMANCE SECURITY

D11.1 The Contractor shall provide and maintain performance security until the expiration of the warranty period in the form of:

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

D11.1.1 Where the performance security is in the form of a certified cheque or draft, it will be deposited by the City. The City will not pay any interest on certified cheques or drafts furnished as performance security.

D11.2 If the bid security provided in his/her Bid was not a certified cheque or draft pursuant to B10.1(c), the Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of letter of intent and prior to the commencement of any Work on the Site and in no event later than the date specified in the C4.1 for the return of the executed Contract.

D12. SUBCONTRACTOR LIST

D12.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at or prior to a pre-construction meeting, or at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the C4.1 for the return of the executed Contract.

D13. EQUIPMENT LIST

D13.1 The Contractor shall provide the Contract Administrator with a complete list of the equipment which the Contractor proposes to utilize (Form K: Equipment 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.

D14. DETAILED WORK SCHEDULE

D14.1 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.

D14.2 The detailed work schedule shall consist of the following:

- (a) a critical path method (C.P.M.) schedule for the Work;
 - (b) a Gantt chart for the Work based on the C.P.M. schedule; and
 - (c) a daily manpower schedule for the Work
- all acceptable to the Contract Administrator.

D14.3 Further to D14.2(a), the C.P.M. schedule shall clearly identify the start and completion dates of all of the following activities/tasks making up the Work as well as showing those activities/tasks on the critical path:

D14.4 Further to D14.2(b), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

D14.5 Further to D14.2(c), the daily manpower schedule shall list the daily number of individuals on the Site for each trade.

SCHEDULE OF WORK

D15. COMMENCEMENT

D15.1 The Contractor shall not commence any Work until he/she is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.

D15.2 The Contractor shall not commence any Work on the Site until:

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

- (vii) the subcontractor list specified in D12;
 - (viii) the equipment list specified in D13; and
 - (ix) the detailed work schedule specified in D14.
- (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.

D15.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.

D15.4 The City intends to award this Contract by August 1, 2012

D15.4.1 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D16. RESTRICTED WORK HOURS

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

D16.2 The following work hour restrictions shall also apply:

- (a) September 17, 2012 to October 2, 2012 maintain clear access to Manitoba Museum loading dock.

D17. WORK BY OTHERS

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

- (a) Manitoba Hydro – Street Lighting. The Contractor is expected to cooperate with Manitoba Hydro to facilitate construction;
- (b) Manitoba Hydro – Manhole Adjustments. The Contractor is expected to cooperate with Manitoba Hydro to facilitate construction;
- (c) Shaw Cable. The Contractor is expected to cooperate with Shaw Cable to facilitate construction;
- (d) MTS. The Contractor is expected to cooperate with MTS to facilitate construction;
- (e) CPR. The Contractor is expected to cooperate with CPR to facilitate construction;
- (f) City of Winnipeg Traffic Services. The Contractor is expected to cooperate with City of Winnipeg Traffic Services to facilitate construction;
- (g) Winnipeg Transit. The Contractor is expected to cooperate with Winnipeg Transit to facilitate construction;
- (h) Manitoba Museum – Loading an exhibit September 17, 2012 to October 2, 2012 will require clear access to loading dock. The Contractor is expected to cooperate with Manitoba Museum to facilitate construction

D18. CRITICAL STAGES

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

- (a) Watermain Renewal shall be complete by September 6, 2012

D19. SUBSTANTIAL PERFORMANCE

- D19.1 The Contractor shall achieve Substantial Performance by October 26, 2012.
- D19.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.
- D19.3 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

D20. TOTAL PERFORMANCE

- D20.1 The Contractor shall achieve Total Performance by November 2, 2012.
- D20.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.
- D20.3 The date on which the Work has been certified by the Contract Administrator as being totally performed to the requirements of the Contract through the issue of a certificate of Total Performance is the date on which Total Performance has been achieved.

D21. LIQUIDATED DAMAGES

- D21.1 If the Contractor fails to achieve the Critical Stage, Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Calendar Day for each and every Calendar Day following the days fixed herein for same during which such failure continues:
- (a) Critical Stage – Two Thousand dollars (\$2,000.00);
 - (b) Substantial Performance – Three Thousand dollars (\$3,000.00);
 - (c) Total Performance – One Thousand Five Hundred dollars (\$1,500.00).
- D21.2 The amounts specified for liquidated damages in D21.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve critical stages, Substantial Performance or Total Performance by the days fixed herein for same.
- D21.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D22. SCHEDULED MAINTENANCE

- D22.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:
- (a) Reflective Crack Maintenance as specified in CW 3250 – Joint and Crack Maintenance of the City of Winnipeg Standard Construction Specifications.
 - (b) Two (2) year tree and shrub maintenance as specified in E32 – Extended Maintenance of this Bid Opportunity.
- D22.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be

completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

CONTROL OF WORK

D23. JOB MEETINGS

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

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

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

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

MEASUREMENT AND PAYMENT

D25. PAYMENT

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

WARRANTY

D26. WARRANTY

D26.1 Notwithstanding C13.2, the warranty period shall begin on the date of Substantial Performance and shall expire two (2) years thereafter unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D26.2 Notwithstanding C13.2 or D26.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Substantial Performance if:

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

D26.2.1 In such case the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

FORM H1: PERFORMANCE BOND
(See D11)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

_____ dollars (\$_____)

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

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

BID OPPORTUNITY NO. 531-2012

Reconstruction of Market Avenue – From Main Street to Rorie Street
which is by reference made part hereof and is hereinafter referred to as the "Contract".

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

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

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

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

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

_____ day of _____, 20____.

SIGNED AND SEALED
in the presence of:

(Witness as to Principal if no seal)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

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

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

(Date)

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

RE: PERFORMANCE SECURITY – BID OPPORTUNITY NO. 531-2012
Reconstruction of Market Avenue – From Main Street to Rorie Street

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

(Name of Contractor)

(Address of Contractor)

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

_____ Canadian dollars.

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

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

Partial drawings are permitted.

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

(Address)

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

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

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

(Date)

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

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

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

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

FORM J: SUBCONTRACTOR LIST
(See D12)

Reconstruction of Market Avenue – From Main Street to Rorie Street

<u>Portion of the Work</u>	<u>Name</u>	<u>Address</u>
<u>SURFACE WORKS</u>		
<u>Supply of Materials</u>		
Concrete		
Asphalt		
Base Course & Sub-Base		
Geotextile Materials		
Trees/Shrubs/Ground Cover		
Top Soil/Sod/Seed		
<u>Installation/Placement:</u>		
Concrete		
Asphalt		
Base Course & Sub-Base		
Geotextile Materials		
Landscaping		
<u>UNDERGROUND WORKS:</u>		
<u>Watermain:</u>		
Valves		
Hydrants		
Fittings		
Water Service		
<u>Supply of Materials:</u>		
Pipes		
Subdrains		
Pre-cast Concrete Catch Basins/Manholes/Ring Section		
Catch Basins/Manholes Frames, Covers and Boxes		
Connecting and Sewer Service Pipe		

FORM J: SUBCONTRACTOR LIST
(See D12)

Reconstruction of Market Avenue – From Main Street to Rorie Street

<u>Portion of the Work</u>	<u>Name</u>	<u>Address</u>
<u>Installation/Placement:</u>		
Pipes		
Subdrains		
Pre-cast Concrete Catch Basins/Manholes/Ring Section		
Catch Basins/Manholes Frames, Covers and Boxes		
Connecting and Sewer Service Pipe		
<u>OTHERS:</u>		
<u>Excavation:</u>		
<u>Landscaping</u>		

FORM K: EQUIPMENT
(See D13)

Reconstruction of Market Avenue – From Main Street to Rorie Street

<p>1. Category/type: Watermain Renewal Works</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>2. Category/type: Excavation</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>3. Category/type: Compaction</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>

FORM K: EQUIPMENT
(See D13)

Reconstruction of Market Avenue – From Main Street to Rorie Street

<p>4. Category/type: Concrete Curb and Concrete Curb & Gutter (Slip Form)</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>5. Category/type: Asphalt Paving</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>6. Category/type: Miscellaneous</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>

FORM L: DETAILED WORK SCHEDULE
 (See D14)

Reconstruction of Market Avenue – From Main Street to Rorie Street

For each item of Work, indicate the proposed date that each cumulative percentage to be completed will be achieved.					
Items of Work	Percentage of Work Completed				
	Start	25%	50%	75%	100%
Watermain Renewal					September 6, 2012
Road Works					October 26, 2012
Streetscape					October 26, 2012

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

E1.1 These Specifications shall apply to the Work.

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

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

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

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

E1.3 The following are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
P-3336-00	Cover Sheet and Drawing List	A1
D-13018	Main Street to 75.0m E of Main Street	A1
D-13019	75.0m E of Main Street to Rorie Street	A1
D-13020	Rorie Street to 65.0m E of Rorie Street	A1
P-3336-01	Main Street to Rorie Street Sta. 0+090 to Sta. 0+175 Road Reconstruction	A1
P-3336-02	Main Street to Rorie Street Sta. 0+175 to Sta. 0+275 Road Reconstruction	A1
P-3336-03	Main Street and Lily Intersection Sidewalk Detail Road Reconstruction	A1
P-3336-04	Main Street to Rorie Street Streetscape Layout Plan	A1
P-3336-05	Main Street to Rorie Street Streetscape Details 1 of 3	A1
P-3336-06	Main Street to Rorie Street Streetscape Details 2 of 3	A1
P-3336-07	Main Street to Rorie Street Streetscape Details 3 of 3	A1
P-3336-08	Main Street to Rorie Street Streetscape Electrical Layout	A1

E2. OFFICE FACILITIES

E2.1 The Contractor shall supply office facilities meeting the following requirements:

- (a) The field office shall be for the exclusive use of the Contract Administrator.
- (b) The building shall be conveniently located near the site of the Work.
- (c) The building shall have a minimum floor area of 20 square metres, 2.4 with two windows for cross ventilation and a door entrance with a suitable lock.
- (d) The building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between either 16-18°C or 24-25°C.
- (e) The building shall be adequately lighted with fluorescent fixtures and have a minimum of three wall outlets.
- (f) The building shall be furnished with one desk, one table 3m X 1.2m, and 8 chairs.

- (g) A portable toilet shall be located near the field office building. The toilet shall have a locking door and be for the exclusive use of the Contract Administrator and other personnel from the City.
- (h) The field office building and the portable toilet shall be cleaned on a weekly basis immediately prior to each site meeting. The Contract Administrator may request additional cleaning when he/she deems it necessary.

- E2.2 The Contractor shall be responsible for all installation and removal costs, all operating costs, and the general maintenance of the office facilities.
- E2.3 The office facilities will be provided from the date of the commencement of the Work to the date of Substantial Performance is completed.
- E2.4 On a one time basis, where directed by the Contract Administrator, the Contractor shall relocate the office facilities to a location more convenient for the remaining Work.

E3. PROTECTION OF EXISTING TREES

- E3.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities.
- E3.2 All trees will have a protective zone at the dripline of the crown, which will remain free of digging, trenching, grade changes, stock piling of materials and soil compaction, throughout the duration of the Contract. Protective snow fencing around these areas is required.
- E3.3 Trees within and immediately adjacent to proposed construction areas and those identified to be at risk by the Contract Administrator, will require 25 x 100 x 2400mm wood planks strapped to the tree trunk to completely protect the tree trunk from impact damage during the entire construction period or as agreed upon by the Contract Administrator. (Smaller trees will be similarly protected using proportionally sized wood planks.)
- E3.4 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 3m 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 by an arborist certified to practice in the Province of Manitoba. They must be properly trimmed with sharp tools to prevent crushing or being pulled up by construction equipment. No paint is required. All exposed roots must be mulched until the excavated area is filled with clean earth to avoid exposure to sunlight and desiccation.
- E3.5 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.
- E3.6 Work on-Site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.
- E3.7 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.
- E3.8 No separate measurement or payment will be made for the protection of trees.
- E3.9 Auguring under existing trees will be the only acceptable method of underground installations. Any other excavations must be approved by the Forestry Branch.

E4. TRAFFIC CONTROL

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

- (a) Where directed, the Contractor shall construct and maintain temporary asphalt ramps to alleviate vertical pavement obstructions such as manholes and planing drop-offs to the satisfaction of the Contract Administrator. Payment shall be in accordance with CW3410.
- (b) In accordance with the Manual of Temporary Traffic Control in Work Areas on City Streets, the Contractor ("Agency" in the manual) shall make arrangements with the Traffic Services Branch of the City of Winnipeg to place all temporary regulatory signs. The Contractor shall bear all costs associated with the placement of temporary traffic control devices by the Traffic Services Branch of the City of Winnipeg in connection with the works undertaken by the Contractor.

E5. TRAFFIC MANAGEMENT

E5.1 Further to clause 3.7 of CW 1130:

- E5.1.1 Maintain a minimum of one lane of traffic westbound for Winnipeg Transit Loops during construction.
- E5.1.2 Intersecting street and private approach access shall be maintained at all times.
- E5.1.3 Maintain access to the Centennial Concert Hall at 555 Main Street.
- E5.1.4 Provide a temporary access to the John Hirsch Parking Lot along the south side.
- E5.1.5 Should the Contractor be unable to maintain pedestrian or vehicular access to a residence or business, he/she shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.
- E5.1.6 Pedestrian and ambulance/emergency vehicle access must be maintained at all times.

E6. PEDESTRIAN SAFETY

E6.1 During the project, on Market Avenue, a temporary snow fence shall be installed where open excavation for underground and road works is not monitored by the Contractor after working hours. 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.

E7. WATER OBTAINED FROM THE CITY

E7.1 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.

E8. SURFACE RESTORATIONS

E8.1 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.

E9. INFRASTRUCTURE SIGNS

E9.1 The Contractor shall obtain infrastructure signs from the Traffic Services Sign Shop at 421 Osborne Street. The Contractor shall mount each sign securely to a rigid backing material

approved by the Contract Administrator. The Contractor shall fasten each sign to a suitable support and erect and maintain one sign at each street as directed by the Contract Administrator. When the Contract Administrator considers the Work on the street complete, the Contractor shall remove and dispose of the signs and supports. No measurement for payment will be made for performing all operations herein described and all other items incidental to the work described

E10. PATCHING OF EXISTING PAVEMENT

DESCRIPTION

E10.1 General

E10.1.1 This specification covers patching of existing concrete pavement in preparation for an asphalt overlay.

E10.1.2 Referenced Standard Construction Specifications

- (a) CW 3110 – Sub-Grade, Sub-Base and Base Course Construction.
- (b) CW 3130 – Supply and Installation of Geotextile Fabrics.
- (c) CW 3410 – Asphaltic Concrete Pavement Works.

MATERIALS

E10.2 Crushed Sub-Base Material

E10.2.1 Crushed Sub-base material will have a maximum aggregate size of 50 millimetres and be supplied in accordance with Section 2.1 of CW 3110.

E10.3 Geotextile Fabric

E10.3.1 Geotextile fabric will be supplied in accordance with Section 2 of CW 3130.

E10.4 Asphalt Material

E10.4.1 Asphalt material will be Type 1A and will be supplied in accordance with Sections 5 and 6 of CW 3410.

CONSTRUCTION METHODS

E10.5 General

E10.5.1 Remove existing concrete pavement to a minimum width of 1.5 metres at locations as shown on the Drawings or as directed by the Contract Administrator in accordance with Section 3.1 of Specification CW 3110.

E10.5.2 Excavate to a depth of 350 millimetres below the top of the existing pavement.

E10.5.3 Compact existing sub-grade to a minimum of 95% Standard Proctor Density.

E10.5.4 Place separation/reinforcement geotextile fabric in accordance with Specification CW 3130.

E10.5.5 Place and compact crushed sub-base material in accordance with CW 3110 to a 300 millimetres compacted depth. Compact to a minimum of 100% Standard Proctor Density.

E10.5.6 Place and compact asphalt material to a 50 millimetres compacted depth matching the top of the existing concrete pavement. Compact to an average of 95% percent of the 75 Blow Marshall Density of the paving mixture with no individual test being less than 90% percent.

E10.5.7 Each layer must be levelled and accepted by the Contract Administrator before the succeeding layer may be placed.

- E10.5.8 Additional excavation and placement of sub-base material beyond the identified pavement structure will be completed in accordance with CW 3110 as directed by the Contract Administrator.

MEASUREMENT AND PAYMENT

E10.6 Pavement Patching

- E10.6.1 Pavement patching will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Pavement Patching". The area to be paid for will be the total number of square metres of pavement patched in accordance with this specification, accepted and measured by the Contract Administrator.

E11. SUPPLY AND INSTALLATION OF PAVEMENT REPAIR FABRIC

DESCRIPTION

E11.1 General

- E11.1.1 This specification covers the supply and installation of pavement repair fabric.
E11.1.2 Referenced Standard Construction
(a) CW 3130 – Supply and Installation of Geotextile Fabrics.

MATERIALS

E11.2 Storage and Handling

- E11.2.1 Store and handle material in accordance with Section 2 of CW 3130.

E11.3 Pavement Repair Fabric

- E11.3.1 Pavement repair fabric will be Glas Grid Road Reinforcement Mesh - Style 8501 or approved equal.

CONSTRUCTION METHODS

E11.4 General

- E11.4.1 Install pavement repair fabric at random locations as directed by the Contract Administrator.
E11.4.2 The extent of the placement limits and quantities required will be determined by the Contract Administrator and provided 48 hours prior to the placement of asphalt.
E11.4.3 Proceed with installation upon completion and acceptance of the asphalt levelling course.
E11.4.4 Install fabric in accordance with the manufacturer's specifications and recommendations.
E11.4.5 Only construction equipment required to place the final asphalt surface course will be allowed to travel on the exposed fabric.
E11.4.6 Replace damaged or improperly placed fabric.
E11.4.7 Ensure temperature of the asphalt material does not exceed the melting point of the fabric.

MEASUREMENT AND PAYMENT

E11.5 Pavement Repair Fabric

- E11.5.1 The supply and installation of the pavement repair fabric will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Pavement Repair Fabric". The area to be paid for will be the total number of square metres of pavement repair fabric supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

E12. SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES

E12.1 Description

E12.1.1 This specification covers the supply and installation of detectable warning surface tiles in sidewalk ramps and multi-use path ramps.

E12.2 Specifications and Drawings

E12.2.1 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

E12.2.2 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.

E12.3 Materials

E12.3.1 Acceptable Detectable Warning Surface Tile product is 2'x 4' (610 x 1220mm) Armor-Tile Cast in Place (yellow) available from:

- (a) Engineered Plastics Inc. 1400 Cornwall Road Unit 6, Oakville, Ontario L6J 7W5, Attention: Manny Burgio. Ph: 800-682-2525, Fax: 800-769-4463
or
- (b) Alsip's Building Products; 1 Cole Avenue, Winnipeg, Manitoba, Attention: Jason Alsip, Ph. 204-667-3330

E12.3.2 Detectable warning surface tiles shall be Highway Yellow (USA) or Safety Yellow (Canada).

E12.3.3 Detectable warning surface tiles shall be cast in place type.

E12.3.4 Truncated domes on detectable warning surface tiles shall be in accordance with ADA Accessibility Guidelines (ADAAG).

E12.4 Construction Methods

E12.4.1 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. 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 Administrator.

E12.4.2 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.

E12.4.3 Concrete Sidewalk

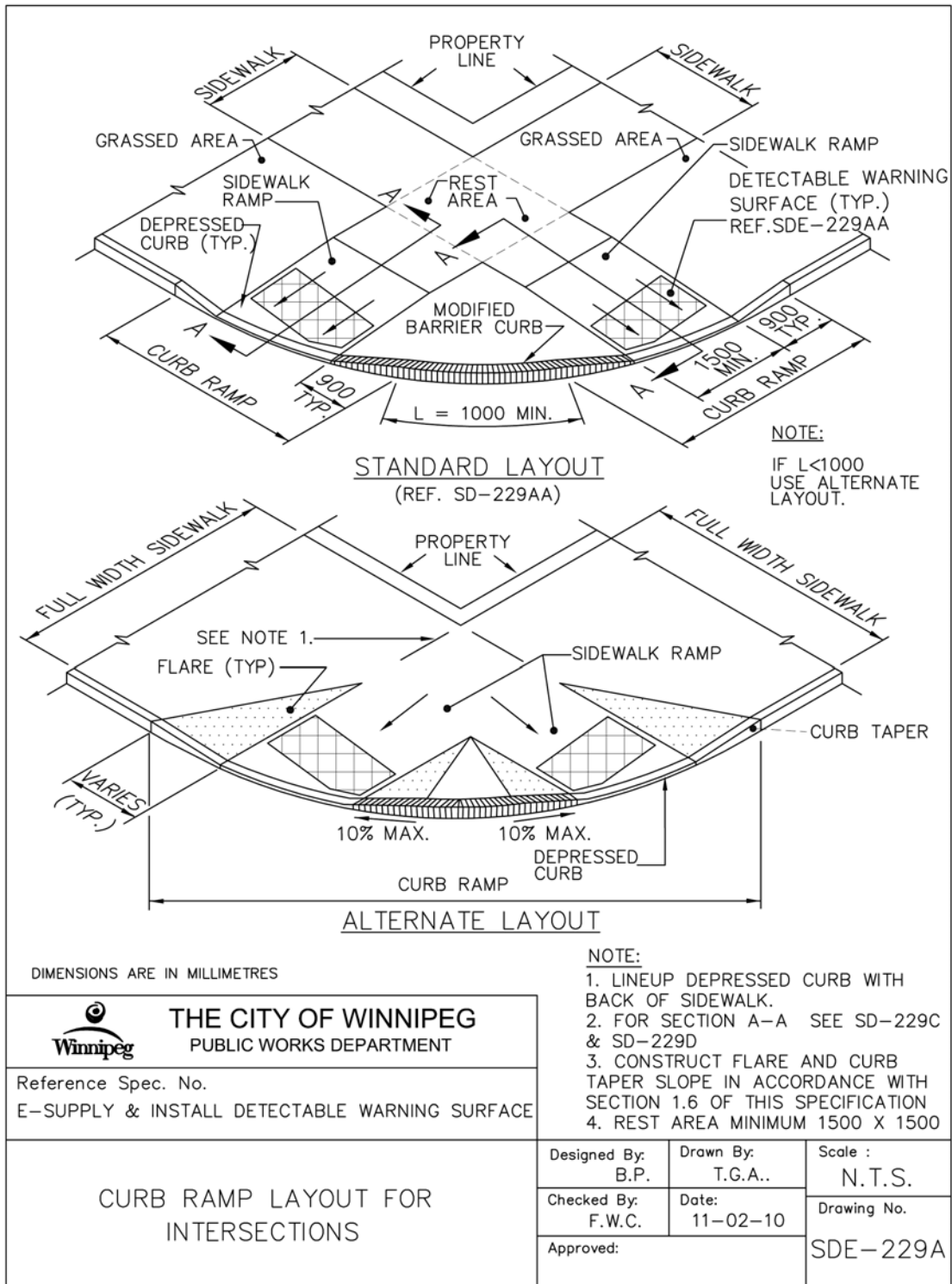
- (a) Construct a curb ramp with a depressed curb to the full width of the multi-use path in accordance with SDE-229E.
- (b) Construct a concrete ramp the width of the multi-use path and a minimum of 1.50m deep from back of curb in accordance with SD-229C and SD-229D.
- (c) Install two (2) tiles in each 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.

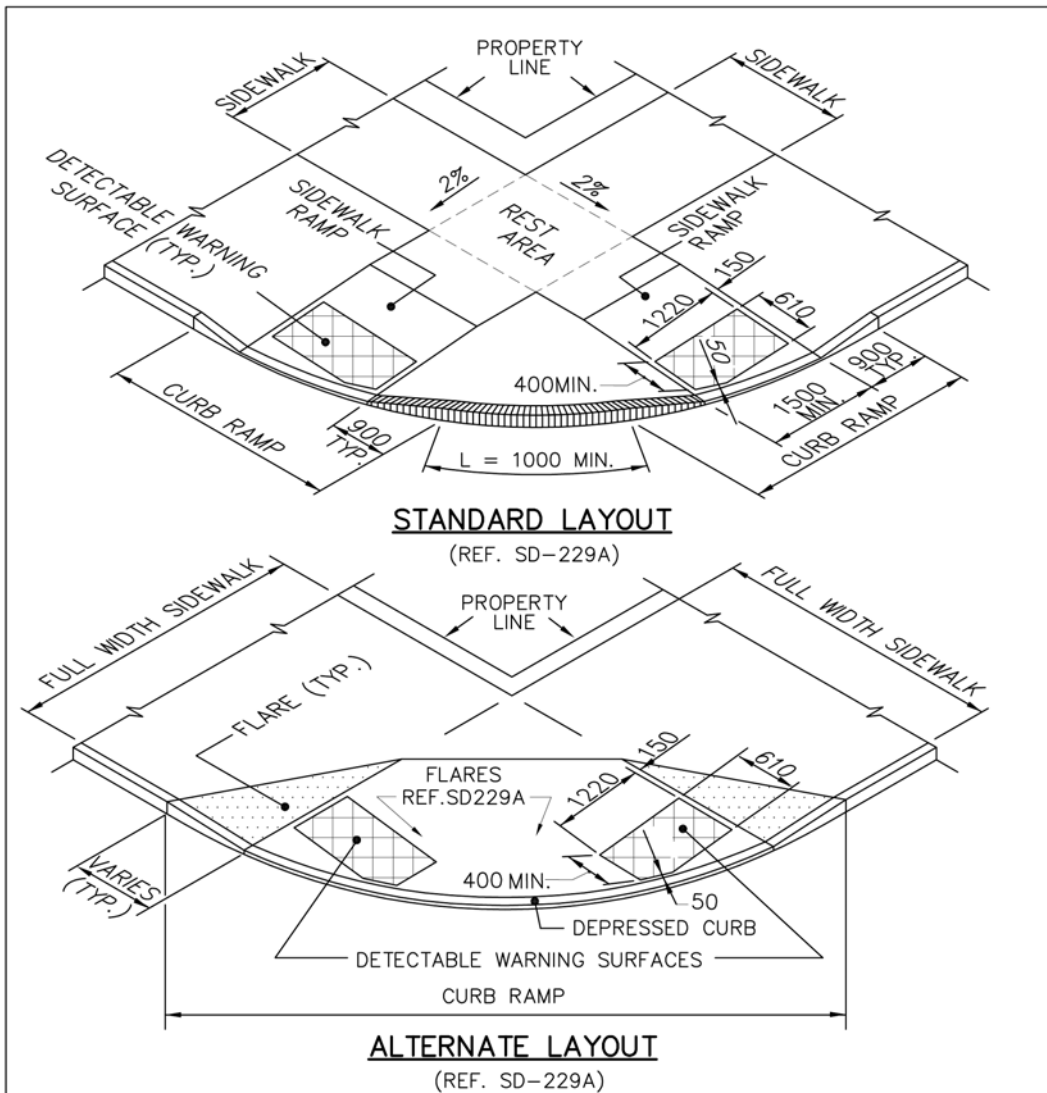
E12.5 Measurement and Payment


E12.5.1 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 Hazard Panel approx. 1500mm x 600mm". 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.

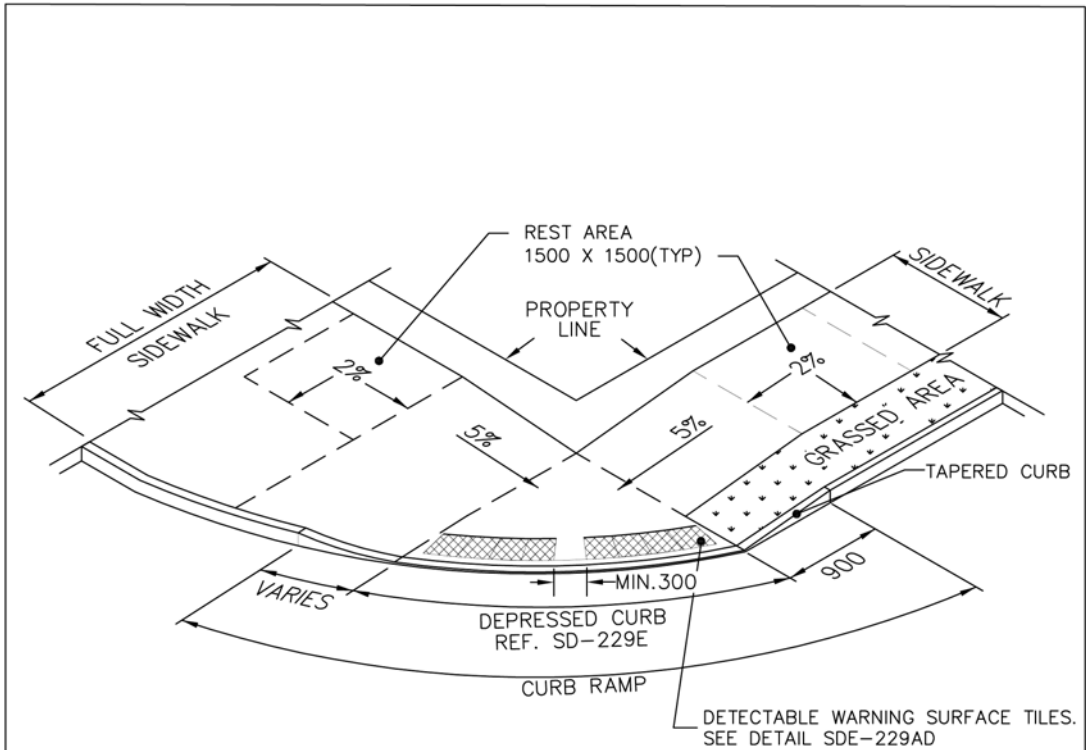
- (a) The area under the detectable warning surface tile is part of the concrete sidewalk ramp and will be paid in accordance with CW 3235 and CW 3325.
- (b) The concrete sidewalk ramp will be paid as 100mm sidewalk in accordance with CW 3235 or CW 3325.
- (c) Curb ramp will be paid in accordance with CW 3240 or CW 3310.

DRAWINGS






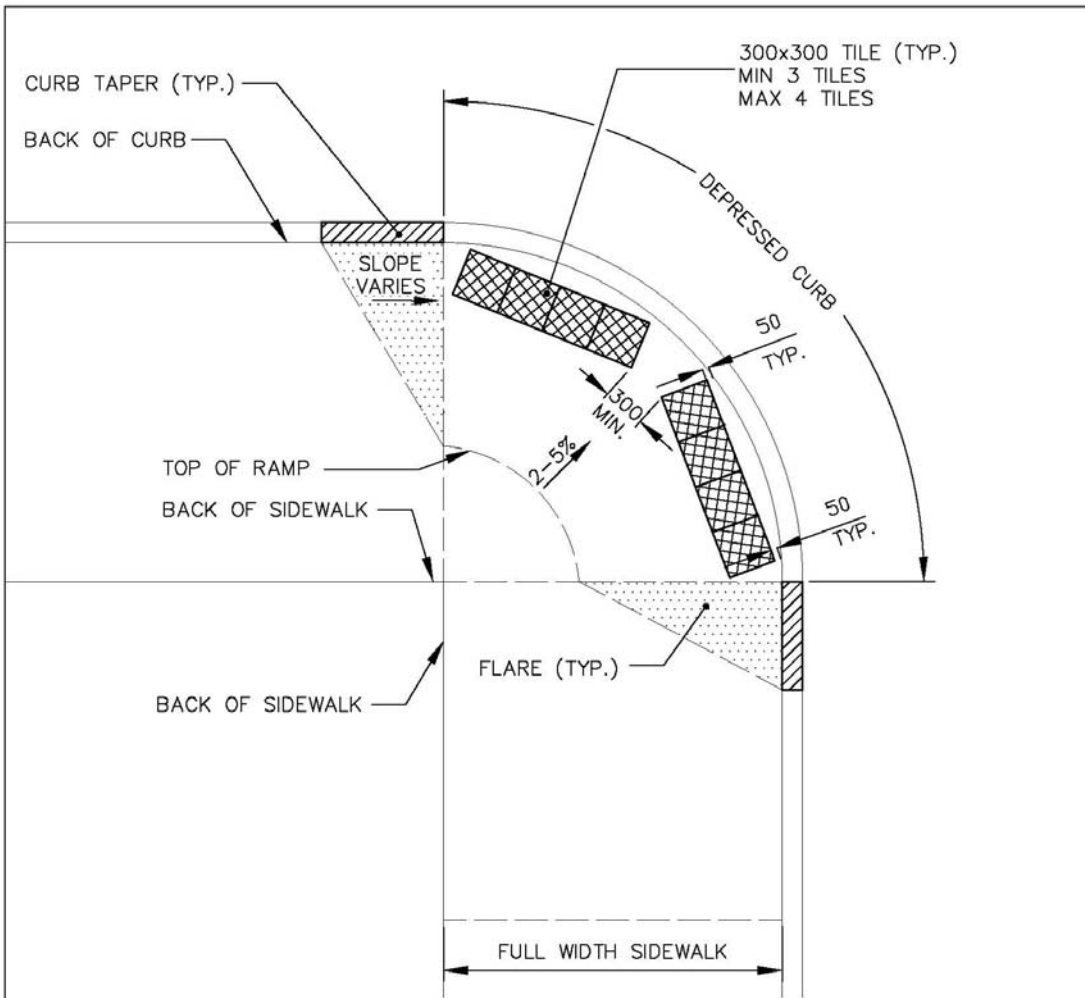
 THE CITY OF WINNIPEG PUBLIC WORKS DEPARTMENT		
Reference Spec. No. CW 3235, CW 3310, CW 3325 E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE		
DIMENSIONS ARE IN MILLIMETRES		
DETECTABLE WARNING SURFACE TILE SURFACE IN CURB RAMPS FOR INTERSECTIONS. LAYOUT OPTION 1	Designed By: B.P.	Drawn By: T.G.A.
	Checked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



NOTES:

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

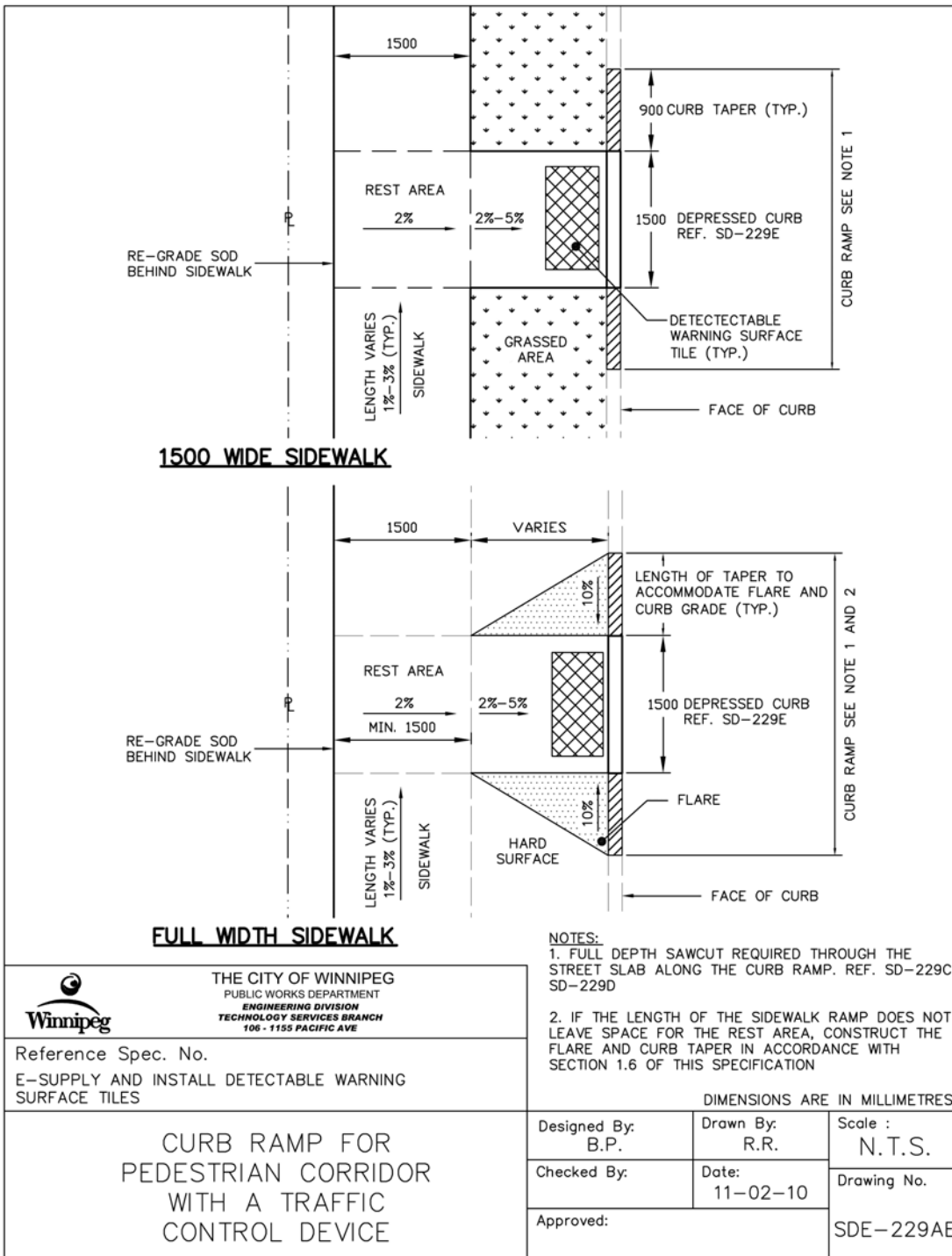
 THE CITY OF WINNIPEG PUBLIC WORKS DEPARTMENT		DIMENSIONS ARE IN MILLIMETRES	
Reference Spec. No. E-SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES		Designed By: B.P.	Drawn By: R.R.
300 X 300 mm DETECTABLE WARNING SURFACE TILE LAYOUT OPTION 3		Checked By:	Date: 11-02-10
		Approved:	Scale : N.T.S.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




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

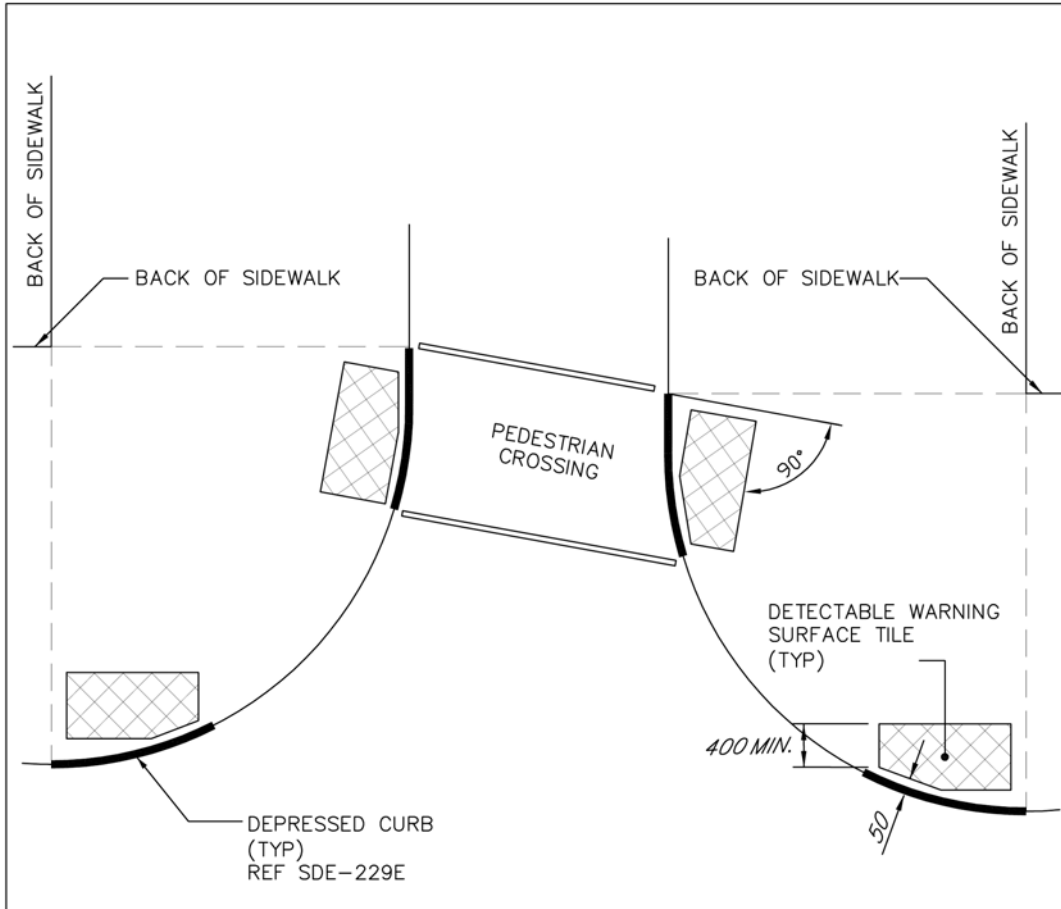
 <p>THE CITY OF WINNIPEG PUBLIC WORKS DEPARTMENT ENGINEERING DIVISION TECHNOLOGY SERVICES BRANCH 106 - 1185 PACIFIC AVE</p>	Reference Spec. No.	
	E-SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES	
<p>300x300mm DETECTABLE WARNING SURFACE TILE LAYOUT OPTION 3 DETAIL</p>		

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




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

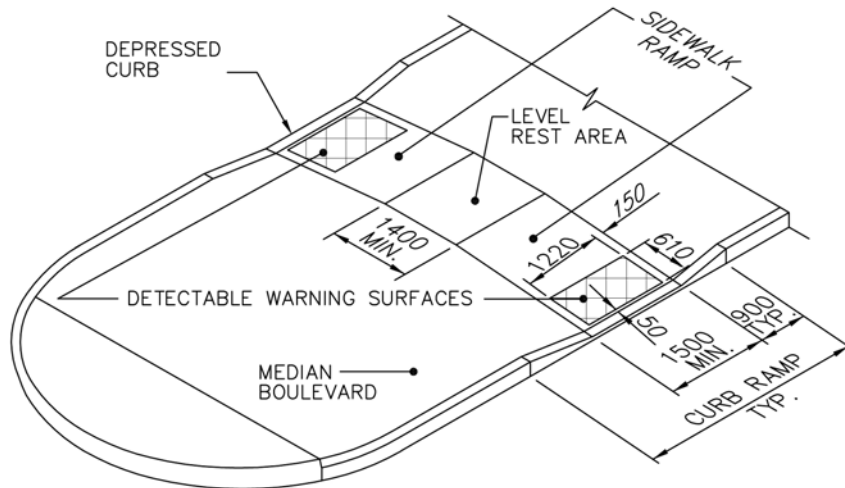
Reference Spec. No.
 E-SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES



NOTES:

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


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

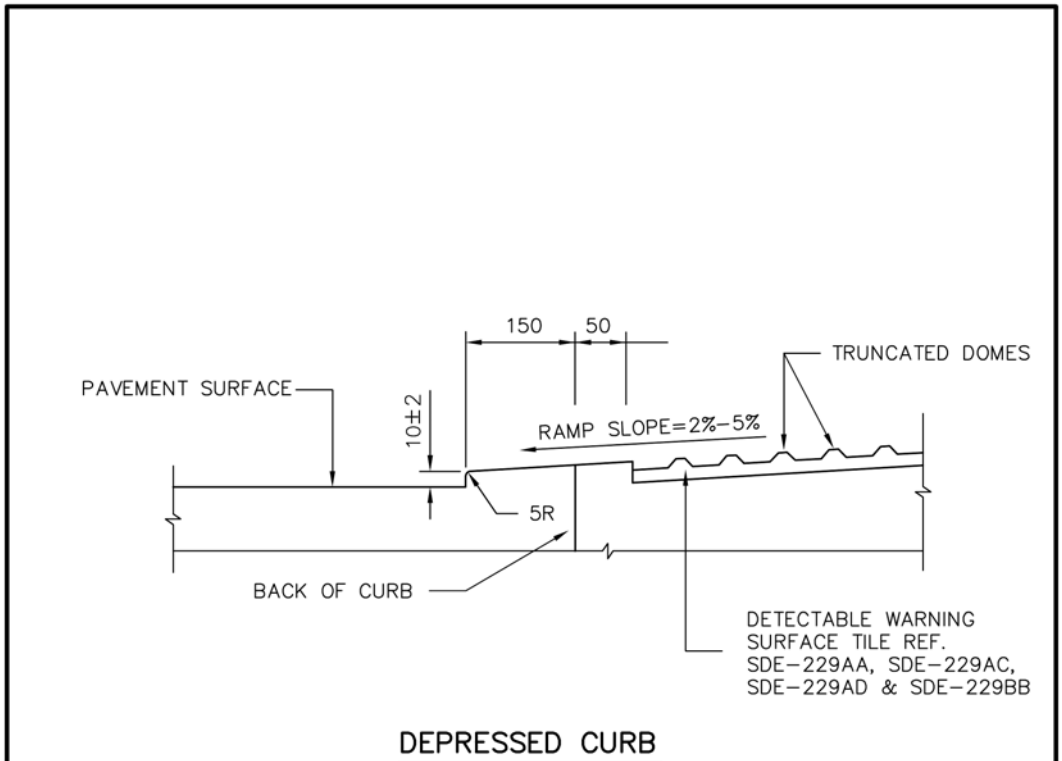


MEDIAN SIDEWALK CROSSING
 (REF. SD-229B)

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.


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



DEPRESSED CURB

NOTES:

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

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

E13. STREET LIGHT CABLE

E13.1 Construction Methods

- E13.1.1 At locations where street lighting cable is to be replaced as directed by the Contract Administrator, the Contractor shall, after completion of backfilling and grading of watermain trenches, construct a trench suitable for the placement of street lighting cable or install a 50 mm HDPE conduit by coring methods. The HDPE conduit will be supplied by the street lighting utility at no cost to the Contractor.
- E13.1.2 The trench or cored pipe shall be constructed on the same alignment as the street light bases or as directed by the Contract Administrator. The bottom of the trench shall be between 600 mm and 750 mm below the top of the curb and shall be no more than 150 mm in width. The invert of cored pipe shall be 600 mm to 750 mm below the top of the curb.
- E13.1.3 The Contractor shall provide 48 hours notice to the Contract Administrator prior to the commencement of trenching or coring operations in order to allow coordination of the cable installation by the street lighting utility.
- E13.1.4 Upon completion of cable installations by the street lighting utility the Contractor shall backfill, compact and grade the boulevard sections disturbed. Backfill shall be Class 4 Backfill in accordance with CW 2030.
- E13.1.5 Boulevards restoration disturbed during street light cable installation will be incidental to the Work.

E13.2 Method of Measurement and Payment

- (a) The installation of street lighting cable shall be measured on a linear meter basis based on measurements taken by the Contract Administrator. Payment shall be made at the Contract Unit Price for "Street Light Cable – Trenching", measured as specified herein which price shall be payment in full for performing all operations and supply all materials and all other items incidental to the Work included in this specification. Coring and installation of HDPE conduit shall be measured on a linear metre basis from shaft face to shaft face based on measurements taken by the Contract Administrator. Payment shall be made at the Contract Unit Price for "Street Light Cable – Coring of HDPE Conduit", measured as a specified herein which price shall be payment in full for performing all operations and supplying all materials and all other items incidental to the Work included in this specification.

E14. ASBESTOS CEMENT PIPE

- E14.1 Remove existing asbestos cement (AC) pipe in accordance with the following at each location where the new connects to an existing AC watermain.
- E14.2 Cut the ends of the AC pipe sample as square as possible to the axis of the pipe.
- E14.3 When cutting AC pipe follow "Work Practises for Asbestos-Cement Pipe", published by the American Water Works Association, "Recommended Work Practises for AC Pipe", published by the AC Pipe producers Association and all applicable Workplace, Safety and Health regulations.

E15. WATER SERVICE INTERRUPTIONS TO BUSINESSES AND APARTMENT BUILDINGS

- E15.1 The Contractor shall be required to work evenings, nights and weekends where required to minimize water service interruptions on this project.
- E15.2 The Contractor shall work closely with the Contract Administrator and the City to coordinate service connections and tie-ins to minimize the disruption of water service to all properties in the area.

E15.3 Contractor shall be required to submit a work plan to the Contract Administrator one week prior to any construction activities to illustrate how the work will be performed to minimize or water shut downs for this project. The plan will be reviewed by Contract Administrator and revised by the Contractor as required.

E15.4 No additional payment shall be made for measures taken to minimize water service disruptions.

E16. CONNECTING TO EXISTING WATER SERVICES

E16.1 This specification shall amend clause 4.22 of CW 2110.

E16.2 Connecting to existing lead water services will be measured and paid for in accordance with Clause 4.13 of CW 2110, "Connecting Existing Copper Water Services to New Watermain" for each connection made, regardless of the material of the existing water service being connected to. Connecting to existing lead water services will not be included in the installation of a curb stop.

E17. CONCRETE CURB RENEWALS

E17.1 Construct concrete curb renewal in accordance with CW 3240. Concrete curb renewal shall be measured on a length basis and paid for at the Contract Unit Price per metre for "Concrete Curb Renewal" in Form B of the Bid Submission.

E18. PROVISIONAL ITEMS

E18.1 The Provisional Items listed in the Schedule of Prices are a part of the Contract.

E18.2 The Contractor shall not perform Work included in the Provisional Items without prior authorization from the Contract Administrator. All Work included in the Provisional Items will be carried out within the construction areas shown on the Drawings.

E18.3 Notwithstanding GC:7, the City reserves the right to diminish all or any portion of the Items of Work listed in the Provisional Items and no claim shall be made for damages on grounds of loss of anticipated profit or for any other reason

E19. REMOVALS

E19.1 Further to Specification CW 3110 and due to the extent and nature of underground services in the street right-of-way, the Contractor shall be permitted to use only backhoe type equipment when excavating sub-grade material.

E19.2 Further to Specifications CW 3230 and CW 3235, the Contractor shall sawcut and remove existing concrete sidewalk paving as shown on the Drawings and as directed by the Contract Administrator. The removal shall include all existing concrete and base course where applicable.

E19.3 Description

E19.3.1 This Specification shall cover the removal and/or relocation of existing:

- (a) Concrete sidewalk;
- (b) Bumper Guard Fence including foundations;
- (c) Removal of existing waste receptacle and bike loop and delivery to Public Works;
- (d) Removal and dispose of landscape islands and bollards. Replace with asphalt at Pacific Avenue approach.

E19.3.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E19.4 Equipment

E19.4.1 All equipment shall be of a type approved by the Contract Administrator and shall be kept in good working order.

E19.5 Construction Methods

E19.5.1 The Contractor shall restrict his activities strictly to within the limits of the Works, unless receiving prior written approval from the Contract Administrator.

E19.5.2 The Contractor shall sawcut and remove existing concrete sidewalk paving. Sawcuts shall be straight and clean to be used as new edge of construction.

E19.5.3 Remove and dispose of bumper guard fence and foundations as shown on the drawings. Fill holes from posts and foundations with clean granular base course and compact to 98% SPD. The Contractor shall disconnect all electrical as required for fence removal.

E19.5.4 The Contractor shall remove existing waste receptacles, bike loop as shown on the drawings. Site furniture is to be delivered to City of Winnipeg storage facilities.

E19.5.5 The Contractor shall remove and dispose of landscape islands and bollards as shown on the Drawings or as directed by the Contract Administrator. The Contractor shall fill all holes from bollards and signs and replace with clean granular base course and compact to 98% SPD. The Contractor shall install asphalt as per CW3410 in all areas where landscaped island are removed as shown on the Drawings or as directed by the Contract Administrator.

E19.5.6 The Contractor shall ensure that upon completion of the removal operations, the Site shall be left free of any hazardous depressions and in a neat condition.

E19.5.7 If required and at locations directed by the Contract Administrator, the Contractor shall excavate and remove unsuitable subgrade material and replace it with compacted granular material in accordance with Specification CW3110.

E19.6 Measurement and Payment

E19.6.1 Removal of concrete sidewalk paving will be measured and paid for at the contract square metre price for "Removal of Concrete Sidewalk", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.

E19.6.2 Removal and disposal of bumper guard fence including foundations will be measured and paid for at the contract lump sum price for "Remove and Dispose of Existing Bumper Guard Fence Including Foundations", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.

E19.6.3 Removal of existing waste receptacle and bike loop and delivery to Public Works will be measured and paid for at the contract lump sum price for "Removal of Existing Waste Receptacle and Bike Loop and Delivery to Public Works", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.

E19.6.4 Removal and disposal of landscape islands and bollards, replacing with asphalt at Pacific Avenue approach will be measured and paid for at the contract lump sum price for "Removal and Dispose of Landscape Islands and Bollards. Replace with Asphalt at Pacific Avenue Approach", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.

E20. TREE REMOVAL

E20.1 The Contractor is to note that the tree removal is to include the removal of all the individual trees as shown on the drawings, as well as all the root masses associated with these trees.

E20.2 Construction Methods - as per CW 3010

E20.3 Method of Measurement

E20.3.1 Tree removal will be measured on a per unit basis. The payment shall be the total number of units removed in accordance with this Specification and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.

E20.4 Basis of Payment

E20.4.1 Tree removal will be paid for at the Contract Unit Price per unit for 'Removal of Existing Trees Including Root Mass', measured as specified herein, which price shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.

E21. REMOVAL OF EXISTING UNIT PAVING STONE AND BRICK PAVER

E21.1 Description

E21.1.1 This Specification shall supplement Standard Construction Specification CW 3330 and shall cover all operations related to the removal and stockpiling of existing Pavers

E21.2 Construction Methods

E21.2.1 Removal of existing pre-cast concrete unit paving stone and brick pavers for reinstallation shall include removal of paving stones and base courses as required, disposal of unusable paving stone and base course material and stockpiling of paving stones in approved area for future reinstallation.

E21.2.2 Removal of interlock paving stone for delivery shall include the removal of paving stones and base courses as required, disposal of unusable paving stone and base course material and stockpiling of paving stones on wood pallets and delivery of paving stone to a Site determined by City of Winnipeg Public Works.

E21.2.3 Any existing lean mix concrete base found is to be removed and disposed to City of Winnipeg Standards.

E21.2.4 Any existing lean mix concrete base at the limits of the designated area shall be sawcut for the full depth of the pavement prior to the demolition and removal operations. All costs in connection with sawcutting are incidental and shall be included in the unit price bid for "Removal and Stockpile of Unit Pavers for Reinstallation".

E21.2.5 The Contractor shall exercise due caution during the Interlock paving stone removal Works so as to limit vibration. The Contractor shall take all necessary precautions when Working in the vicinity of any existing duct lines, trees, hedges, etc.

E21.3 Method of Measurement and Basis of Payment

E21.3.1 Removal and stockpiling of unit pavers for reinstallation will be measured on an area basis and will be paid for at the Contract Unit Price per square metre as follows:

(a) Removal and stockpile of Unit Pavers for reinstallation:

- (i) Endicott Brick Paver
- (ii) Pre-cast concrete unit pavers

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.

Removal and stockpiling of existing unit pavers and delivery to Public Works reinstallation will be measured on an area basis and will be paid for at the Contract Unit Price per square metre for "Removal and stockpiling of existing unit pavers and delivery to Public Works" 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.

E22. CAST-IN-PLACE CONCRETE FOUNDATIONS

E22.1 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.

E22.2 Materials

E22.2.1 General

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

E22.2.2 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.

E22.2.3 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.

E22.2.4 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.

E22.2.5 Cement

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

E22.2.6 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 E22.2.5.
- (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.

E22.2.7

Aggregate

- (a) The Contractor shall be responsible for testing the fine and coarse aggregates to establish conformance to these specifications, and the results of these tests shall be provided to the Contract Administrator if requested. All aggregates shall comply with CSA A23.1.
- (b) Coarse Aggregate
 - (i) The maximum nominal size of coarse aggregate shall be sized to suit the Contractor's mix design. Gradation shall be in accordance with CSA A23.1, Table 11, Group 1. The coarse aggregate shall satisfy the Standard Requirements specified in CSA A23.1, Table 12, "Concrete Exposed to Freezing and Thawing".
 - (ii) Coarse aggregate shall consist of crushed stone or gravel or a combination thereof, having hard, strong, durable particles free from elongation, dust, shale, earth, vegetable matter or other injurious substances. Coarse aggregate shall be clean and free from alkali, organic or other deleterious matter; and shall have an absorption not exceeding 2.25%.
 - (iii) The aggregate retained on the 5 mm sieve shall consist of clean, hard, tough, durable, angular particles with a rough surface texture, and shall be free from organic material, adherent coatings of clay, clay balls, and excess of thin particles or any other extraneous material.
 - (iv) Coarse aggregate when tested for abrasion in accordance with ASTM C131 shall not have a loss greater than 30%.
 - (v) Tests of the coarse aggregate shall not exceed the limits for standard for requirements prescribed in CSA A23.1, Table 12, for concrete exposed to freezing and thawing.
- (c) Fine Aggregate
 - (i) Fine aggregate shall meet the grading requirements of CSA A23.1, Table 10, Gradation FA1.
 - (ii) Fine aggregate shall consist of sand, stone, screenings, other inert materials with similar characteristics or a combination thereof, having clean, hard, strong, durable, uncoated grains free from injurious amounts of dust, lumps, shale, alkali, organic matter, loam, or other deleterious substances.
 - (iii) Tests of the fine aggregate shall not exceed the limits for standard requirements prescribed in CSA A23.1, Table 12.

E22.2.8 Cementing Materials

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

E22.2.9 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.

E22.2.10 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.

E22.2.11 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.

E22.2.12 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/m². Reinforcing steel supply and installation will be incidental to construction of concrete foundation and no separate payment will be made.

E22.2.13 Anchor Bolts, Nuts, and Washers

- (a) Anchor bolt, nuts and washers to meet sign manufacturer's specifications. Supply and installation will be incidental to construction of concrete foundation and no separate payment will be made.

E22.2.14 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.

E22.2.15 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.

E22.2.16 Waterproofing Membrane

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

E22.2.17 Miscellaneous Materials

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

E22.3 Construction Methods

E22.3.1 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.

E22.3.2 Buried Utilities

- (a) The Contractor shall exercise extreme caution when constructing the foundations in the vicinity of existing buried utilities and buildings. The Drawings show the approximate locations of existing buried utilities. The Contractor shall be responsible for obtaining the exact location of the buried utilities from the appropriate Utility Authorities prior to installing the foundations.
- (b) The proposed locations of the foundations may be changed by the Contract Administrator if they interfere with the buried utilities.
- (c) The Contractor shall be responsible for all costs that may be incurred for repair/rectification of any damage caused to the existing buried utilities as a result of the Contractor's operations in constructing cast-in-place concrete foundations, as determined by the Contract Administrator.

E22.3.3 Excavation

- (a) The Contractor is responsible for determining the excavation method at each foundation location.
- (b) Excavations for foundations shall be made with equipment designed to remove a core of the diameter shown on the Drawings, or hydro-jet excavation to a depth to bypass and/or expose adjacent utilities.
- (c) Upon reaching the required elevation, the bottom of the excavation shall be cleaned as directed by the Contract Administrator in the field.
- (d) All excavated material from the foundations shall be promptly hauled away from the Site to an approved disposal area as located by the Contractor.

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

E22.3.4 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.

E22.3.5 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.

E22.3.6 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.

E22.3.7 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.

E22.3.8 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.

E22.3.9 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.

E22.3.10 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.

E22.3.11 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.

E22.3.12 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.

E22.3.13 Curing Concrete

- (a) The top of the freshly finished concrete foundations shall be covered and kept moist by means of wet polyester blankets immediately following finishing operations and shall be maintained at above 10°C for at least seven (7) consecutive days thereafter.
- (b) After the finishing is completed, the surface shall be promptly covered with a minimum of a single layer of clean, damp polyester blanket.
- (c) Concrete shall be protected from the harmful effects of sunshine, drying winds, surface dripping or running water, vibration, and mechanical shock. Concrete shall be protected from freezing until at least twenty-four hours after the end of the curing period.
- (d) Changes in temperature of the concrete shall be uniform and gradual and shall not exceed 3° in one hour or 20° in twenty-four hours.

E22.3.14 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.

E22.3.15 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.

E22.3.16 Cold Weather Concreting

- (a) Protection of concrete shall be considered incidental to its placement. The temperature of the concrete shall be maintained at or above 10°C for a minimum of three (3) days or till the concrete has reached a minimum compressive strength of 20 MPa, by whatever means are necessary. Concrete damaged as a result of inadequate protection against weather conditions shall be removed and replaced by

the Contractor at his own expense. Also, concrete allowed to freeze prior to the three (3) days will not be accepted for payment.

E22.3.17 Anti-Graffiti Coating

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

E22.3.18 Waterproofing

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

E22.3.19 Quality Control

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

E22.4 Measurement and Payment

E22.4.1 Construction of Cast-in-Place Concrete Foundations

- (a) Construction of cast-in-place concrete foundations will be measured on a unit basis and will be paid for at the Contract Price per unit for the "Items of Work" listed here below for Cast-in-Place Concrete Foundations constructed in accordance with this Specification and accepted by the Contract Administrator.
 - (i) Items of Work:
 - (a) Supply and Install CIP Reinforced Concrete Pile for Pedestrian Light (including excavation, anchor bolts and conduit for electrical)
 - (b) Supply and Install CIP Reinforced Concrete Pile for Tree Vault Grade Beam (including excavation)
 - (c) Parking Screen Foundation: Supply and Install CIP Reinforced Concrete Grade Beam (including excavation, and weld plates)
 - (d) Parking Screen Foundation: Supply and Install CIP Reinforced Concrete Grade Beam and Piles (including excavation, conduit for electrical and weld plates)

E23. SIDEWALK CONSTRUCTION

E23.1 Description

E23.1.1 This specification will cover this installation of concrete sidewalk as identified on the drawings, including areas under paving patterns and fields.

E23.2 Materials

E23.2.1 Concrete mix design shall comply with Clause 6.2a) of CW 3310

E23.2.2 All other materials as per Clause 5 of CW 3310.

E23.3 Construction Methods

E23.3.1 Construction as per Contract Drawings and as per CW 3310 and CW3325.

E23.3.2 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.

E23.3.3 Thickened edge of sidewalk will be incidental to the unit price Bid for the concrete sidewalk.

E23.4 Measurement and Payment

E23.4.1 Supply and Installation of concrete sidewalk will be measured on an area basis and paid for at the Contract Unit Price for "Supply and Install 100 mm Concrete 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.

E24. UNIT PAVING

E24.1 Description

E24.1.1 General

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

- (i) supply and installation of brick pavers;
- (ii) installation of stockpiled brick pavers;
- (iii) supply and installation of heavy duty Holland stone pavers;
- (iv) supply and installation of sand setting bed;
- (v) 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.

E24.1.2 Referenced Standard Construction Specifications

- (a) CW 3330 – Installation of Interlocking Paving Stones
- (b) CW 3335 – Installation of Interlocking Paving Stones on a Lean Concrete Base

E24.2 Materials

E24.2.1 Brick Pavers shall be Endicott Brick Pavers, supplied by Alsip's Building Products and Services (Contact Jason Alsip 667-3330) as shown on the Construction Drawings and as follows:

- (a) Dark Ironspot Endicott Brick Paver 93 (3 5/8") x 194 (7 5/8") x 57 (2 1/4") mm

E24.2.2 Concrete interlocking paving stones (unit pavers) shall be Holland and Munic/Tri-hex Pre-cast Concrete Pavers, supplied by Barkman, (contact Wayne Wiebe, phone 667-3310), as shown on the Drawings and as follows:

- (a) Mahogany Holland Square Paver 80x210x210mm;

E24.2.3 Sand:

- (a) Clean brick sand as joint filler;
- (b) Clean brick sand as minimum 13mm depth setting bed.

E24.2.4 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 Substitutes, 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.

E24.3 Construction Methods

E24.3.1

Contractor to verify the exact dimensions of pavers prior to construction of block outs in concrete sidewalk. Curves for paving bands to be formed in continuous arc and bulkheads provided for daily pours across curves. Curves are not to be used as joints for concrete sidewalk.

- (a) Install concrete sidewalk and blockouts as specified on Drawings. Interlocking paving stones shall be installed in block out in concrete sidewalk as per the Drawings;
- (b) Install sand bed to minimum 13 mm depth as specified on Drawings;
- (c) Do not compact setting bed prior to installation of pavers;
- (d) Spread only sufficient area which can be covered with pavers same day;
- (e) Lay pavers on sand bed hand tight;
- (f) In areas where pavers are to be grouted in place clean existing concrete, install grout bed and then place pavers on grout;
- (g) Grout between pavers as required ensuring stability;
- (h) Remove adjacent pavers in bands as required to ensure that bricks do not require cutting to fit existing paving pattern;
- (i) Where paving pattern is interrupted by vertical structural elements pavers must be sawcut and fit true and hand tight;
- (j) Commence installation of pavers against edge to obtain straightest possible course for installation;
- (k) Pavers shall be cut with a saw only, to obtain true even undamaged edges. Chipped pavers are unacceptable;
- (l) Crews shall Work on installed pavers, not on sand layer;
- (m) 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;
- (n) 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;
- (o) Sweep remaining sand over all paving areas and remove from Site;
- (p) Replace at no extra cost all whole or cut stones marked as unacceptable;
- (q) Remove cracked, chipped, broken or otherwise damaged paving materials from Site immediately;

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

E24.3.2 If cutting of existing concrete sidewalk is required, this shall be incidental to the pay item described in this specification.

E24.4 Measurement and Payment

E24.4.1 Supply and installation of brick pavers will be measured on an area basis and will be paid for at the Contract Unit Price per square metre as follows:

(a) Supply and Install Endicott Brick Pavers- Dark Ironspot

(b) Supply and Install Heavy Duty Mahogany Holland Stone (80 mm) Unit Paving

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.

E24.4.2 Reinstallation of brick pavers will be measured on an area basis and will be paid for at the Contract Unit Price per square metre as follows:

(a) Reinstall Stockpiled Endicott Brick Pavers (including sand leveling course):

(i) Endicott Brick

(ii) Pre-cast Concrete Unit Pavers

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.

E25. TEMPORARY PAVING ISOLATIONS

E25.1 The Contractor shall construct temporary isolations at existing and new street light locations as shown on the Drawings or as directed by the Contract Administrator.

E25.2 Measurement and Payment

E25.2.1 Supply and installation of temporary paving isolations will be measured and paid for at the contract unit price for " Supply and Install Temporary Paving Isolations at Existing and Proposed Street Light Locations (600 mm x 600 mm)", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.

E26. TREE VAULTS

E26.1 Description

E26.1.1 This Specification covers the installation of cast-in-place concrete tree vaults with pre-cast concrete tree covers, sidewalk panels and related excavation, tree vault sub drainage, geotextile, planting medium and mulch.

E26.2 Materials

E26.2.1 Granular drainage material in accordance with Specification CW 3120 - Installation of Sub Drains.

E26.2.2 To Specification CW 3120 - Installation of Sub Drains.

E26.2.3 Geotextile in accordance with CW 3120.

E26.2.4 C.I.P. concrete in accordance with Concrete Foundations.

E26.2.5 Tree cover to be two-piece pre-cast concrete tree cover with 600mm octagon opening in centre as per detail.

- E26.2.6 Sidewalk panel to be min. 150mm thick reinforced pre-cast concrete panel to accommodate AASHTO HS-20 loading. Manufacturer to supply shop drawings stamped by a structural engineer.
- E26.2.7 Pre-cast concrete tree covers and sidewalk panels supplied by Barkman Concrete Ltd., 909 Gateway Road, Winnipeg, MB, Phone: 667-3310, or approved equal.
- E26.2.8 Planting Medium to be in accordance with Planter Preparation.
- E26.3 Submittals
- E26.3.1 Prior to installation, submit to the Contract Administrator samples of the following materials:
- (a) Geotextile: 1 sq.m
 - (b) Root barrier: 1 panel
- E26.3.2 Prior to installation, arrange for inspection and approval of the following materials:
- (a) Tree cover: 1 panel
 - (b) Sidewalk panel: 1 panel
- E26.4 Construction Methods
- E26.4.1 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.
- E26.4.2 Excavate the tree vault to the dimensions and depth shown on the Drawings. Soft dig/ 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).
- E26.4.3 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.
- E26.4.4 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.
- E26.4.5 All excavated material shall be disposed of off site.
- E26.4.6 Backfill between roadway base gravel and tree vault edge with compacted granular where required.
- E26.4.7 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.
- E26.4.8 Construct cast-in-place concrete tree well in accordance with Concrete Foundations and the Drawings.
- E26.4.9 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.
- E26.4.10 Remove and dispose of all construction related debris from tree vault prior to placing planting medium.
- E26.4.11 Backfill with street tree planting medium compacting sufficiently to provide good soil consistency for tree planting and to minimize settlement.
- E26.4.12 Plant trees in locations as per the Drawings. Ensure tree trunk is centred on opening of tree covers.
- E26.4.13 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.
- E26.4.14 Install sidewalk panels and tree covers ensuring edges are supported by tree well.

- E26.4.15 Where indicated on the Drawings, install tree guard.
- E26.4.16 Supply and install tree guard on tree cover as per manufacturer's specifications.

E26.5 Measurement and Payment

E26.5.1 Tree vault construction will be measured and paid on an area basis at the Contract unit price per unit for 'Supply and Install CIP Concrete Tree Well (Including Tree Pit Excavation, Drainage Course, Filter Fabric, Root Barrier, Planting Soil, Compacted Granular as Required) as Monolithic Pour with Sidewalk' 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.

(a) Items of Work:

- (i) 1520 mm x 13000 mm
- (ii) 1520 mm x 7290 mm

E26.5.2 No separate measurement or payment will be made for drainage course, drain lines, geotextile and soil. All work is incidental to tree vault construction.

E26.5.3 Tree well will be measured and paid under concrete foundations.

E26.5.4 Tree covers will be measured and paid on a per unit basis at the Contract unit price per item for 'Supply and Install Pre-cast Concrete 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.

E26.5.5 Sidewalk panels will be measured and paid on a per unit basis at the Contract unit price per item for 'Supply and Install Pre-Cast concrete 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.

E27. PRE-CAST CONCRETE

DESCRIPTION

- E27.1 This specification covers the supply and installation of the following pre-cast concrete products:
- (a) parking screen wall - light sandblasted with inset weld plates
 - (b) planter - light sandblasted concrete finish
 - (c) pre-cast concrete sidewalk panel – plain concrete finish to match concrete sidewalk finish and with inset galvanized hardware to facilitate lifting. Hardware to be covered with flush durable cover coloured to match concrete or approved equal.
 - (d) two piece pre-cast concrete tree cover – plain concrete finish to match sidewalk finish. Two pieces with inset galvanized hardware to attach collar and to facilitate lifting. Hardware to be covered with flush durable cover coloured to match concrete or approved equal.
- E27.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary or/and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

GENERAL

DELIVERY AND STORAGE

- E27.3 Store units in a protected location, immediately upon arrival on the Site.
- E27.4 Remove from Site any units which have been damaged during transportation and replace.

PRODUCTS

- E27.5 Pre-cast concrete parking screen wall to be supplied by:
Barkman Concrete Ltd.
909 Gateway Road
Winnipeg, Manitoba, R3K 3L1
Contact: August Weins
T (204) 667-3310
- E27.6 Custom pre-cast concrete planter to be supplied by:
Barkman Concrete Ltd.
909 Gateway Road
Winnipeg, Manitoba, R3K 3L1
Contact: August Weins
T (204) 667-3310
- E27.7 Pre-cast concrete sidewalk panel to be supplied by:
Barkman Concrete Ltd.
909 Gateway Road
Winnipeg, Manitoba, R3K 3L1
Contact: August Weins
T (204) 667-3310
- E27.8 Two piece pre-cast concrete tree cover to be supplied by:
Barkman Concrete Ltd.
909 Gateway Road
Winnipeg, Manitoba, R3K 3L1
Contact: August Weins
T (204) 667-3310

MATERIALS

- E27.9 Welding for the installation of parking screen fence shall be incidental to the unit prices bid.
- E27.10 All installation hardware, welding, and adhesives shall be incidental to the unit prices bid.

INSTALLATION

- E27.11 Weld pre-cast parking screen wall to concrete foundations for installation as per manufacturer's specifications.
- E27.12 Pre-cast concrete planter shall be installed by the contractor with in locations and indicated on the Contract drawings.
- E27.13 Pre-cast Concrete Sidewalk Panel shall be installed by the contractor in locations and indicated on the Contract drawings.
- E27.14 Two piece pre-cast concrete tree cover shall be installed by the contractor in locations and indicated on the Contract drawings.

METHOD OF MEASUREMENT

- E27.15 Supply and Installation of Pre-cast Concrete Parking Screen Wall as specified in the Schedule of Prices and as shown on the Drawings will be measured on a unit basis. The number of each

item to be paid for will be the total number placed in accordance with this Specification and accepted by the Contract Administrator, as computed by the Contract Administrator.

- E27.16 Supply and Installation of Pre-cast Concrete Planter as specified in the Schedule of Prices and as shown on the Drawings will be measured on a unit basis. The number of each item to be paid for will be the total number placed in accordance with this Specification and accepted by the Contract Administrator, as computed by the Contract Administrator.
- E27.17 Supply and Installation of Pre-cast Concrete Sidewalk Panel as specified in the Schedule of Prices and as shown on the Drawings will be measured on a unit basis. The number of each item to be paid for will be the total number placed in accordance with this Specification and accepted by the Contract Administrator, as computed by the Contract Administrator.
- E27.18 Supply and Installation of Pre-cast Concrete Tree Covers as specified in the Schedule of Prices and as shown on the Drawings will be measured on a unit basis. The number of each item to be paid for will be the total number placed in accordance with this Specification and accepted by the Contract Administrator, as computed by the Contract Administrator.
- E27.19 No measurement shall be made for installation hardware, welding, concrete bases, adhesives and mortar. Installation hardware, welding, concrete bases, adhesives and mortar shall be considered incidental to the contract.

BASIS OF PAYMENT

- E27.20 Supply and Installation of Pre-cast Concrete Parking Screen Wall shall be at the per unit bid for "Supply and Install Pre-cast Concrete Parking Screen Wall" measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.
- E27.21 Supply and Installation of Pre-cast Concrete Planter shall be at the per unit bid for "Supply and Install Pre-cast Concrete Planter" measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.
- E27.22 Supply and Installation of Pre-cast Concrete Sidewalk Panel shall be at the per unit bid for "Supply and Install Pre-cast Concrete Sidewalk Panel" measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.
- E27.23 Supply and Installation of Pre-cast Concrete Tree Covers shall be at the per unit bid for "Supply and Install Pre-cast Concrete Tree Cover" measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification.
- E27.24 No payment shall be made for installation hardware, welding, and adhesives. Include installation hardware, welding, and adhesives costs in those items for which installation hardware, welding and adhesives are required.

E28. SITE FURNITURE

DESCRIPTION

- E28.1 This specification covers the supply and installation of tree guards, waste receptacles, benches, bicycle loops, illuminated poster boards,
- E28.2 Store units in a protected location, immediately upon arrival on the Site.
- E28.3 Remove from Site any units which have been damaged during transportation and replace.

PRODUCTS

- E28.4 Tree guards to be stainless steel triangular tree guard as supplied by:

Urban Park,
49 Life Sciences Parkway
Steinbach, Manitoba, R5G 2G7
Ph: 1-800-775-0018
Attn. Myron Krentz

- E28.5 Waste receptacles to be Carpo Series CP440 24 Gallon with matte silver finish and mounting kit as supplied by:

Hess America,
P.O. Box 28
Gaffney, South Carolina, 29342-0028 USA
Ph: 864-487-3555

- E28.6 Benches to be Austin series 1.8m long 4 leg surface mount bench with aluminium frame (silver finish) and armrests, ipe wood slats as supplied by:

Landscape Forms, Inc.
431 Lawndale Ave.
Kalamazoo, MI 49048 USA
Ph: 416-968-6655
Attn. Lee Day

- E28.7 Bicycle Loops to be Emerson series aluminium direct bury bicycle loop silver finish as supplied by:

Landscape Forms, Inc.
431 Lawndale Ave.
Kalamazoo, MI 49048 USA
Ph: 416-968-6655
Attn. Lee Day

- E28.8 Illuminated poster boards to be constructed of aluminium.

E28.8.1 Aluminum frame, tubular and plate aluminium shall be 6061-T6.

E28.8.2 All stainless steel components and fastenings shall be 304 or better. Provide plastic spacers and inserts as required to ensure galvanic corrosion does not occur with aluminium components.

E28.8.3 All paint to be powder paint. Colour as per drawings.

E28.8.4 All fasteners and all mounting hardware use to fasten the shelter to the concrete base at ground level must be stainless steel or approved equal.

DETAILED DESIGN AND SHOP DRAWINGS

E28.1 The Contractor shall submit dimensioned, detailed design drawings within five (5) working days when contacted by the Contract Administrator for the illuminated poster boards. The drawings shall show all details of construction, fastenings, materials and colours.

E28.2 The Contractor shall submit stamped Engineer's drawings of illuminated poster board's connection to pre-cast concrete parking screen wall for review and approval within five (5) Working Days of Contract Award and prior to commencement of work. Engineer's drawings shall show all details of construction and fastenings for erections and shall be as specified or approved. Engineer shall be a Structural Engineer licensed to practice in Manitoba with extensive experience in the design and manufacturing of aluminium and stainless site furniture. Drawings to include anchor requirements.

E28.3 AutoCAD files of the drawings are available to be emailed upon written request to the Contract Administrator.

INSTALLATION

E28.4 Install tree guards on concrete tree vault grade beam as shown on the Drawings and as per manufacturer's specifications.

E28.5 Waste receptacles to be mounted to pedestrian light pole as per manufacturer's specifications.

E28.6 Install surface mount bench on concrete paving as shown on the Drawings and as per manufacturer's specifications.

E28.7 Install bicycle loops on concrete sidewalk as shown on the Drawings and as per manufacturer's specifications.

E28.8 All installation hardware shall be incidental to the unit prices bid.

MEASUREMENT AND PAYMENT

E28.9 Tree guards shall be measured and paid on a per unit basis for "Supply and Install Tree Guard". The number to be paid shall be the total number of units installed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E28.10 Waste receptacles shall be measured and paid on a per unit basis for "Supply and Install Waste Receptacle". The number to be paid shall be the total number of units installed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E28.11 Benches shall be measured and paid on a per unit basis for "Supply and Install Benches". The number to be paid shall be the total number of units installed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E28.12 Bicycle loops shall be measured and paid on a per unit basis for "Supply and Install Bicycle Loop". The number to be paid shall be the total number of units installed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E28.13 Illuminated poster board screen shall be measured and paid on a per unit basis for "Supply and Install Illuminated Poster Board Screen (Including Mounting to Pre-cast Concrete Parking Screen Wall, Electrical Connection)". The number to be paid shall be the total number of units installed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E29. PLANT MATERIAL

E29.1 Description

E29.1.1 General

- (a) The following list generally describes the scope of this section:
 - (i) Supply and planting of trees;
 - (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.

E29.1.2 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.

E29.2 Materials

E29.2.1 Water should be potable and free of minerals, which may be detrimental to plant growth.

E29.2.2 Stakes to be galvanized t-rails with rubber hose and wire ties as per the Drawings.

E29.2.3 Anti-desiccant should be wax-like emulsion to provide film over plant surface reducing evaporation but permeable enough to permit transpiration.

E29.2.4 Wound dressing should be horticulturally accepted non-toxic, non-hardening emulsion.

E29.2.5 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.

E29.2.6 Approval required for plant material, which has been held in cold storage.

E29.2.7 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.

E29.2.8 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.

E29.3 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.

E29.3.2 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.

E29.3.3 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.

E29.3.4 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.

E29.3.5 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.

E29.3.6 Stake and guy trees as required in planters as per the Drawings.

E29.3.7 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.

E29.3.8 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.

E29.3.9 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.

E29.3.10 Spraying

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

E29.3.11 Insects and Diseases

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

E29.4 Measurement and Payment

E29.4.1 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.

- (a) Items of Work:
 - Supply and Install
 - (i) American Elm
 - (ii) Dropmore Linden

E30. TOPSOIL AND FINISH GRADING

E30.1 All work to be to City of Winnipeg specification CW3540

E30.2 Method of Measurement and Basis of Payment

E30.2.1 There shall be no separate measurement for the Work associated with this Specification. Payment for Work specified under this Specification is incidental to the unit price for Sodding.

E31. SODDING

E31.1 All Work to be to CW 3510.

E31.2 Method of Measurement

E31.2.1 Sodding will be measured on an area basis. The area to be paid for shall be the total number of square metres sodded and maintained in accordance with this Specification and accepted by the Contract Administrator, as computed from measurements made by the Contract Administrator.

E31.3 Basis of Payment

E31.3.1 Sodding will be paid for at the Contract Unit Price per square metre for 'Supply and Install Topsoil and Sod', measured as specified herein, which price shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.

E32. EXTENDED MAINTENANCE

E32.1 Description

E32.1.1 This Specification shall deal with the maintenance of the trees and shrubs for two (2) calendar years after the date of the Total Performance.

E32.2 Materials

E32.2.1 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.

E32.2.2 The Contractor shall provide all necessary personnel for the ongoing maintenance operations.

E32.3 Construction Methods

E32.3.1 The following areas shall be part of the maintenance jurisdiction:

- (a) The trees and vines as indicated on the Drawings;
- (b) Mulch in planters as indicated on the Drawings.

E32.3.2 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.

E32.3.3 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.

E32.3.4 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.

E32.3.5 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.

E32.3.6 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.

E32.3.7 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.

E32.4 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 "Maintenance of Trees for Two (2) Years", in accordance with this Specification and accepted by the Contract Administrator.

E33. ELECTRICAL WORKS

E33.1 General Provisions

E33.1.1 Refer also to Drawings.

- E33.1.2 Furnish all labour, materials, 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 the Contract Administrator
- E33.1.3 Supply and install conduit as shown on the Drawings and as directed by the Contract Administrator. Ensure sufficient conduit is left coiled on site for access to remote areas of each element.
- E33.1.4 Supply and install electrical wiring as shown on the Drawings and as directed by the Contract Administrator. Ensure sufficient conduit is left coiled on site for access to remote areas of each element.
- E33.1.5 Supply and install CSTE and electrical panel as shown on the Drawings and as directed by the Contract Administrator.
- E33.1.6 Supply and install outdoor rated CAT 6 ethernet cable as shown on the Drawings and as directed by the Contract Administrator. Ensure sufficient conduit is left coiled on site for access to remote areas of each element.
- E33.1.7 Lights to be Iguzzini Maxiwoody i.5659-120-15 with 5953 circular louvre with 150w t6 mh lamp (two per pole) and g12 base. Reflector to be Iguzzini Nuvola i.4172-120-15 (two per pole). Lights, lamps and reflectors are incidental to the unit prices bid for pedestrian lights.
- E33.1.8 Poles to be 125mm diam. aluminium with custom aluminium shroud, safety base, base plates and anchor bolts with washers and nuts. Poles are incidental to the unit prices bid for pedestrian lights.
- E33.1.9 Pole manufacturer to supply anchor bolts and template to Contractor for installation in concrete bases.
- E33.1.10 The concrete base for the pedestrian lights will be provided under concrete foundations. Contractor to co-ordinate location of sleeves.
- E33.1.11 Conform with all Codes and pay all permits and Fees. Upon completion, present a "Certificate of Approval" for electrical Work from the Inspection Department.
- E33.1.12 Examine the Site and local conditions affecting the Work under this contract.
- E33.1.13 Refer to associated drawings and specifications for electrical Work in connection therewith.
- E33.1.14 Install all Work promptly and in advance of concrete pouring and/or construction.
- E33.1.15 The Contractor shall be responsible to make good all "Cutting and Patching" required by his section of the Contract. Include all trenching, backfilling and surface repair. Contractor to push wires where possible at all locations.
- E33.1.16 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.
- E33.1.17 Provide corrected "as-built" drawings on completion of the project. All underground services shall be indicated on as-builts and dimensioned.
- E33.1.18 Identify circuits/equipment with lamacoid nameplates.
- E33.1.19 All electrical apparatus shall be properly grounded according to the latest edition of the "Canadian Electrical Code"
- E33.1.20 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.
- E33.1.21 Obtain all permits and inspections. Provide copies of all paperwork to the Contract Administrator prior to completion of the Work.

- E33.1.22 Co-ordinate installation with Manitoba Hydro. Installation to conform with all utility requirements.
- E33.1.23 Provide ground rod and grounding connections to suit Manitoba Hydro and City of Winnipeg Inspection Department.
- E33.1.24 The Contractor shall carefully examine all drawings relating to the Work, to be certain that the Work under this Contract can be carried out and, prior to the submission of his/her Bid in accordance with B4, report at once to the Contract Administrator any defect, discrepancy, omission or interference affecting the work of this section or the guarantee of same.
- E33.1.25 The Contractor shall be responsible for any damage caused the City or their Contractors by improperly carrying out this contract.
- E33.1.26 The Contractor shall guarantee the satisfactory operation of all work and apparatus included and installed under this section for a period of twelve (12) calendar months after the final acceptance of the project.
- E33.2 Measurement and Payment
- E33.2.1 Supply and installation of pedestrian lights will be measured and paid for at the contract unit price for " Supply and Install Pedestrian Light Including Pole, Luminaires, Shroud, Base Plate, Fasteners, Electrical Connection, etc.", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.
- E33.2.2 Supply and Install CSTE including Panel 'A', Manitoba Hydro Power Supply Connection Costs will be measured and paid for at the contract unit price for " Supply and Install CSTE Including Panel 'A', Manitoba Hydro Power Supply Connection Costs", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.
- E33.2.3 Supply and Install conduit and wiring including trenching, electrical marking tape, backfilling, and surface repair as required will be measured and paid for at the contract price per meter for " Supply and Install Conduit and Wiring (Including Trenching, Electrical Marking Tape, Backfilling, and Surface Repair as Required)", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification and as measured on site by the Contract Administrator.
- E33.2.4 Supply and Install conduit and wiring including trenching, electrical marking tape, backfilling, and surface repair as required will be measured and paid for at the contract price per meter 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 and as measured on site by the Contract Administrator.
- (a) Items of Work:
- Supply and Install conduit and wiring including trenching, electrical marking tape, backfilling, and surface repair as required
 - (i) conduit and electrical wiring for pedestrian lights
 - (ii) 50mm conduit and outdoor rated CAT 6 ethernet cable
 - (iii) 50mm conduit and electrical wiring
- E33.2.5 Supply and Install 50mm conduit including trenching, backfilling, and surface repair as required will be measured and paid for at the contract price per meter for "Supply and Install 50 mm Conduit (Including Trenching, Backfilling, and Surface Repair as Required)", 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 and as measured on site by the Contract Administrator.

E34. SOFT EXCAVATION TO EXPOSE UNDERGROUND UTILITIES

E34.1 Description

E34.1.1 This specification covers the soft excavation to expose underground utilities to determine the depth of the underground utility and whether it will interfere with the installation of proposed Works on site.

E34.1.2 These underground utilities include, **but are not limited to**, Manitoba Hydro cables, MTS cables, CPR, existing sewers, and existing watermains.

E34.2 Materials

E34.2.1 Backfill Material

(a) Backfill material for backfill of shafts after hydro-excavation has been completed shall consist of sand as per City of Winnipeg Standard Construction Specification CW 2030.

E34.3 Construction Methods

E34.3.1 Prior to commencement of any construction works adjacent to underground utilities, the Contractor shall use soft digging or hand excavation to expose the underground utilities.

E34.3.2 Once the elevation of the top of the pipe or duct has been determined the resulting excavation shall be backfilled with bedding sand to the elevation of the existing ground.

E34.4 Measurement and Payment

E34.4.1 Soft excavation to expose underground utilities will be considered incidental to the Work. No measurement and payment will be made within this section.

E35. SAWCUTTING PAVEMENT

E35.1 At the limits of excavation as directed by the Contract Administrator, the Contractor shall saw cut the existing pavement to produce a clean straight edge when excavated. The edge must be clean and straight prior to pouring new concrete pavement.

E35.2 Measurement and Payment

E35.2.1 Sawcutting pavement and disposal of surplus material will be considered incidental to Clause 4.1 of CW 3110 "Pavement Removal." No measurement and payment will be made within this section.

