



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 150-2011

**SOUTHWEST RAPID TRANSIT CORRIDOR – STAGE 1: STATION
CONSTRUCTION, WARSAW RECONSTRUCTION & ASSOCIATED WORKS**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

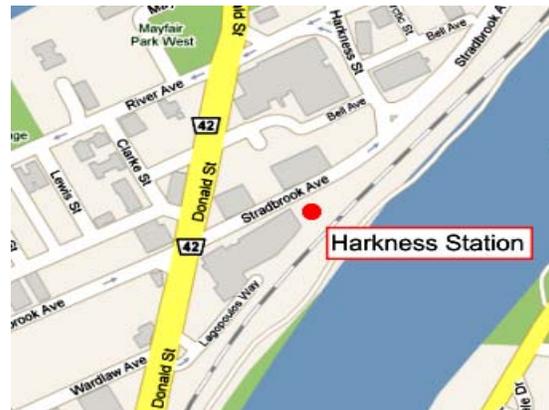
- B1.1 Southwest Rapid Transit Corridor – Stage 1: Station Construction, Warsaw Reconstruction & Associated Works

B2. SUBMISSION DEADLINE

- B2.1 The Submission Deadline is 12:00 noon Winnipeg time, May 17, 2011.
- 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. SITE INVESTIGATION

- B3.1 Further to C3.1, the Contract Administrator or an authorized representative will be available at the proposed Harkness Station (Stradbrook Avenue approximately 1 block east of Donald Avenue) at 10:00am on May 9, 2011 to provide bidders access to the Site.



- B3.2 The bidder shall not be entitled to rely on any information or interpretation received at the Site investigation unless that information or interpretation is the Bidders direct observation, or is provided by the Contract Administrator in writing.

B4. ENQUIRIES

- B4.1 All enquiries shall be directed to the Contract Administrator identified in D4.
- B4.2 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.
- B4.3 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.
- B4.4 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.
- B4.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B4 unless that response or interpretation is provided by the Contract Administrator in writing.

B5. ADDENDA

- B5.1 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.

- B5.2 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.
- B5.2.1 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>
- B5.2.2 The Bidder is responsible for ensuring that he has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B5.3 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.

B6. SUBSTITUTES

- B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 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.
- B6.4 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.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B6.6 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.
- B6.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he wishes to inform.
- B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.

- B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B15.
- B6.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.
- B6.10 Notwithstanding B6.2 to B6.9, in accordance with B7.6, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B15.1(a).

B7. BID COMPONENTS

- B7.1 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;
- B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.
- B7.3 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.
- B7.4 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.
- B7.4.1 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.
- B7.4.2 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.
- B7.5 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.
- B7.6 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 B15.1(a).
- B7.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B7.8 Bids shall be submitted to:
- The City of Winnipeg
Corporate Finance Department
Materials Management Division
185 King Street, Main Floor
Winnipeg MB R3B 1J1

B8. BID

- B8.1 The Bidder shall complete Form A: Bid, making all required entries.
- B8.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his own name, his name shall be inserted;
 - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
 - (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
 - (d) if the Bidder is carrying on business under a name other than his own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.
- B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.
- B8.3 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.
- B8.4 Paragraph 12 of Form A: Bid shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his own name, it shall be signed by the Bidder;
 - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
 - (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, shall be affixed;
 - (d) if the Bidder is carrying on business under a name other than his own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- B8.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.
- B8.5 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.

B9. PRICES

- B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B9.1.1 For the convenience of Bidders, and pursuant to B7.4.2 and B15.4.2, an electronic spreadsheet Form B: Prices in Microsoft Excel (.xls) format is available along with the Adobe PDF documents for this Bid Opportunity on the Bid Opportunities page at the Materials Management Division website at <http://www.winnipeg.ca/matmgt>
- B9.2 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.
- B9.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.
- B9.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B10. QUALIFICATION

B10.1 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.

B10.2 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>

B10.3 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);

B10.4 Further to B10.3(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>)

B10.5 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.

B10.6 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.

B11. BID SECURITY

B11.1 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.

- B11.1.1 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.
- B11.1.2 All signatures on bid securities shall be original.
- B11.1.3 The Bidder shall sign the Bid Bond.
- B11.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.
- B11.2 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.
- B11.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B11.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.
- B11.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.
- B11.3 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.

B12. OPENING OF BIDS AND RELEASE OF INFORMATION

- B12.1 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.
 - B12.1.1 Bidders or their representatives may attend.
 - B12.1.2 Bids determined by the Manager of Materials, or his designate, to not include the bid security specified in B11 will not be read out.
- B12.2 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>
- B12.3 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>
- B12.4 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.

B13. IRREVOCABLE BID

- B13.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.

B13.2 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.

B14. WITHDRAWAL OF BIDS

B14.1 A Bidder may withdraw his Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

B14.1.1 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.

B14.1.2 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.

B14.1.3 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 B14.1.3(b), declare the Bid withdrawn.

B14.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B13.2 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.

B15. EVALUATION OF BIDS

B15.1 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 B10 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B6.

B15.2 Further to B15.1(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.

B15.3 Further to B15.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his Bid or in other information required to be submitted, that he is responsible and qualified.

B15.4 Further to B15.1(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.

B15.4.1 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.

- B15.4.2 Further to B15.1(a), in the event that a unit price is not provided on Form B: Prices, the City will determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.
- B15.4.3 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.

B16. AWARD OF CONTRACT

- B16.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B16.2 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.
- B16.2.1 Without limiting the generality of B16.2, 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.
- B16.3 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 B15.

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) Station Construction
 - (i) Harkness Station
 - (ii) Fort Rouge Station
 - (iii) Osborne Station
- (b) Warsaw Avenue Reconstruction
 - (i) Pembina Highway to backlane approximately 160m to the east, STA: 0+185 to STA: 0+365
 - (ii) On-street geometric improvements at intersection of Warsaw Avenue and Pembina Highway
- (c) Backlane Resurfacing
 - (i) Warsaw Avenue to Jessie Street

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

- (a) Station Construction
 - (i) Supply and Installation of decorative wall treatments
 - (ii) Supply and Installation of Shelters and Canopies
 - (iii) Supply and Installation of fence
 - (iv) Supply and Installation of Site furniture
 - (v) Supply and Installation of signage
 - (vi) Electrical works as required
- (b) Warsaw Avenue Reconstruction
 - (i) Excavate/Fill as required
 - (ii) Compaction of existing sub-grade
 - (iii) Installation of catchbasins and connection pipe
 - (iv) Installation of subdrains
 - (v) Installation of geotextile
 - (vi) Placement of sub-base and base course
 - (vii) Construct 230mm concrete pavement (plain-dowelled)
 - (viii) Construction of new concrete curbs and sidewalks
 - (ix) Boulevard Restoration
 - (x) Guardrail installation
- (c) Backlane Resurfacing
 - (i) Excavate/Fill as required
 - (ii) Compaction of existing sub-grade
 - (iii) Installation of catchbasins and connection pipe
 - (iv) Installation of geotextile
 - (v) Placement of sub-base and base course

- (vi) Placement of Asphalt Overlay
- (vii) Boulevard Restoration

D3. DEFINITIONS

D3.1 When used in this Bid Opportunity:

- (a) "**Contract #1**" means the Southwest Rapid Transit Corridor – Stage 1: Land Drainage Construction & Associated Works;
- (b) "**Contract #2**" means the Southwest Rapid Transit Corridor – Stage 1: Land Drainage Pumping Station & Associated Works;
- (c) "**Contract #3**" means the Southwest Rapid Transit Corridor – Stage 1: Transitway Construction, Donald/Harkness Reconstruction & Associated Works;
- (d) "**Contract #4**" means the Southwest Rapid Transit Corridor – Stage 1: Transitway Tunnel at CN Rivers Subdivision Mileage 1.38 & Associated Works;
- (e) "**Contract #5**" means the Southwest Rapid Transit Corridor – Stage 1: Osborne Station & Associated Works;
- (f) "**Contract #6**" means the Southwest Rapid Transit Corridor – Stage 1: Transitway Construction, Landscaping & Associated Works;
- (g) "**Contract #7**" means the Southwest Rapid Transit Corridor – Stage 1: Station Construction, Warsaw Reconstruction and Associated Works;
- (h) "**Southwest Rapid Transit Corridor – Stage 1**" means the overall project of the Southwest Rapid Transitway Corridor from Queen Elizabeth Way to Jubilee Avenue;
- (i) "**Track Relocation Contract**" means the track relocation detour construction for the Transitway Tunnel at CN Rivers Subdivision. Contract Administrator

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is Dillon Consulting Limited, represented by:

Taran J. Peters, P.Eng.
Contract Administrator
Suite 200-895 Waverley Street
Winnipeg, Manitoba R3T 4J5
Telephone No. (204) 453-2301
Facsimile No. (204) 452-4412

D4.2 At the pre-construction meeting, Taran J. Peters, P.Eng. will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

D5. CONTRACTOR'S SUPERVISOR

D5.1 At the pre-construction meeting, the Contractor shall identify his designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

D5.2 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 D5.1 or an alternate can be contacted twenty-four (24) hours a day to respond to an emergency.

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, D6.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D3.1(a).1.
- D6.3 Notwithstanding C21., all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following facsimile number:
- The City of Winnipeg
Chief Financial Officer
Facsimile No.: (204) 949-1174
- D6.4 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following address or facsimile number:
- The City of Winnipeg
Legal Services Department
Attn: Director of Legal Services
185 King Street, 3rd Floor
Winnipeg MB R3B 1J1
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 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 City shall provide and maintain the following Project Insurance Coverages:

- (a) Builder's Risk Insurance in the amount of one hundred percent (100%) of the total project cost.
- (b) Wrap-Up Liability Insurance in an amount of no less than 10 million dollars (\$10,000,000.00).

D10.2 Further to D10.1(a) and D10.1(b), the following shall apply:

- (i) The Contractor shall be responsible for deductibles up to \$50,000.00 maximum of any one loss.
- (ii) The City of Winnipeg will carry such insurance to cover all parties engaged in the Work in this Contract. Provision of this insurance by the City of Winnipeg is not intended in any way to relieve the Contractor from his obligations under the terms of the Contract. Specifically, losses relating to deductibles for insurance, as well as losses in excess of limits of coverage and any risk of loss that is not covered under the terms of the insurance provided by the City of Winnipeg remains with the Contractor;
- (iii) Wrap-Up Liability insurance shall be maintained from the date of commencement of the Work until one year from the date of Substantial Performance of the Work, after which, if Total Performance has not been met, the responsibility for payment of further insurance premiums shall transfer to the Contractor. The City may reduce any payment to the Contractor by the amount of such further insurance premiums;
- (iv) Liability coverage shall be provided for completed operations hazards from the date of Substantial Performance of the Work, as set out in the certificate of Substantial Performance of the Work, on an ongoing basis for a period of six (6) years following Substantial Performance of the Work.

D10.3 Responsibilities of the Contractor:

- (a) The Contractor shall provide and maintain automobile liability insurance for owned and non-owned automobiles used for or in connection with the Work in the amount of at least two million dollars (\$2,000,000.00);
- (b) The Contractor is responsible for insuring equipment and tools used on the Project that may be owned, rented, leased or borrowed.

D10.4 Further to D10.3(a) and D10.3(b), the following shall apply:

- (a) Premiums and deductibles shall be borne by the Contractor;
- (b) Policies shall be taken out with insurers licensed to and carrying on business in the Province of Manitoba;
- (c) The Contractor shall not cancel, or cause any such policy or policies to lapse without a minimum thirty (30) days prior written notice to the City;
- (d) The Contractor shall provide written notice to the City of Winnipeg of any material changes to their policies within thirty (30) days of the change taking effect;
- (e) The Contractor shall provide the Contract Administrator with evidence of insurance at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than seven (7) Calendar Days from notification of the award of Contract and said insurance shall be in the form of a Certificate of Insurance and shall be in a form satisfactory to the City Solicitor.

D10.5 Responsibilities of Others, including payment of premiums and deductibles:

- (a) All sub-contractors, consultants and sub-consultants engaged for the Project are responsible to provide and maintain Automobile liability insurance for owned and non-owned automobiles used for or in connection with the Work in the amount of at least two million dollars (\$2,000,000.00);

- (b) All sub-contractors, consultants and sub-consultants engaged for the Project are responsible for insuring equipment and tools used on the Project that may be owned, rented, leased or borrowed.

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 Bid was not a certified cheque or draft pursuant to B11.1(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 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 be provided in Gantt chart format and shall include all major tasks and milestones specified for the Work acceptable to the Contract Administrator.

D14.3 An update to the Detailed Work Schedule to reflect actual progress and monitor scheduled progress may be required as often as every one (1) month if the Contract Administrator deems it necessary.

- D14.4 Within the Detailed Work Schedule discussed above, the following information needs to be brought to the attention of the Contractor in order to provide an accurate schedule:
- (a) The Substantial and Total Performance of Contract #4: Southwest Rapid Transit Corridor – Stage 1: Transitway Tunnel at CN Rivers Subdivision Mileage 1.38 & Associated Works is listed as September 15, 2011 and September 30, 2011 respectfully. It is the intention that this work will be completed by these dates listed within its Bid Opportunity.
 - (b) The Substantial Performance of Contract #5: Southwest Rapid Transit Corridor – Stage 1: Osborne Station & Associated Works is listed as October 28, 2011. The Total Performance of Contract #5: Southwest Rapid Transit Corridor – Stage 1: Osborne Station & Associated Works is currently under review. It is the intention that this work will be substantially completed by the date listed above.
 - (c) The Substantial and Total Performance of Contract #6: Southwest Rapid Transit Corridor – Stage 1: Transitway Construction, Landscaping & Associated Works is listed as October 15, 2011 and October 29, 2011 respectfully. It is the intention that this work will be completed by these dates listed within its Bid Opportunity.
 - (d) Critical Stage date for Contract #6: Southwest Rapid Transit Corridor – Stage 1: Transitway Construction, Landscaping & Associated Works is listed as July 15, 2011 for completion of Fort Rouge Station Concrete Work, including; pavement, platforms and sidewalks. It should be noted that due to the potential addition of the Harkness concrete pavement, platforms and sidewalks, and the structural foundations in the Fort Rouge and Harkness Stations, this date may be pushed back in the year by a two (2) weeks to August 1, 2011.
 - (e) It is expected, but not required by the Contractor of Contract #5, that the construction of the ramp on the west side of Osborne Street as part the work of Contract #5 be completed by July 15, 2011.
 - (f) The Substantial and Total Performance of Bid Opportunity #214-2011: 2011 Watermain Renewal Contract 15 is listed as July 15, 2011 and July 22, 2011 respectfully. It is the intention that this work will be completed by these dates listed within its Bid Opportunity.
- D14.5 Further to D14.4, 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.

D15. ENVIRONMENTAL PROTECTION PLAN

- D15.1 Prior to commencing construction activities or delivery of materials to Site, submit an Environmental Protection Plan for review and approval by Contract Administrator. The Environmental Protection Plan shall present a comprehensive plan to address known or potential environmental issues which may be present during construction. Where applicable, the Environmental Protection Plan shall include sub-contractor activities. The submission of the Environmental Protection Plan to the Contract Administrator shall in no way relieve the Contractor of full responsibility for the success or failure of all environmental management practices and procedures.
- D15.2 The Environmental Protection Plan shall address the following:
- (a) Name[s] of person[s] responsible for ensuring adherence to Environmental Protection Plan.
 - (b) Name[s] and qualifications of person[s] responsible for manifesting hazardous waste to be removed from Site.
 - (c) Name[s] and qualifications of person[s] responsible for training Site personnel.
 - (d) Erosion and sediment control plan which identifies type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, Federal, Provincial, and Municipal laws and regulations.
 - (e) Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use. Plan to include measures for marking limits of use areas including

methods for protection of features including vegetation to be preserved within authorized Work areas.

- (f) Environmental Emergency Response: including procedures, instructions, and reporting in the event of unforeseen spill of regulated substance.
- (g) Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
- (h) Hazardous materials and waste management plan outlining storage, transportation and disposal.
- (i) Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, do not become air borne and travel off project Site.
- (j) Contaminant prevention plan that: identifies potentially hazardous substances to be used on job site; identifies intended actions to prevent introduction of such materials into air, water, or ground; and details provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
- (k) Waste water management plan that identifies methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete wash or curing water, clean-up water, dewatering of ground water, hydrostatic test water, and water used in flushing of lines.
- (l) Monitor and report to ensure implementation of environmental protection measures.

D15.3 Fires

D15.3.1 Fires and burning rubbish or waste materials on Site is not permitted.

D15.4 Disposal of Waste

D15.4.1 Dispose all waste at licensed facilities or with licensed haulers.

D15.4.2 The top 1.0 m of Site overburden is not to be removed from Site and is to be stockpiled along the Transitway roadway, East Boulevard, South of Brandon Avenue.

D15.4.3 All waste disposal grounds receiving debris and construction waste from this project must be operated under the authority of a valid permit issued pursuant to MR 150 (latest edition) Waste Disposal Grounds Regulation under the Environment Act.

D15.4.4 Dispose of all sewage and seepage from the on Site sanitary facilities in accordance with the Onsite Wastewater Management Systems Regulation MR 83/2003.

D15.4.5 Do not bury waste materials on Site.

D15.4.6 Do not dispose of solid or liquid wastes in drains or waterways.

D15.5 Hazardous Waste

D15.5.1 Definitions

- (a) Dangerous Goods: product, substance, or organism that is specifically listed or meets hazard criteria established in the Dangerous Goods Handling and Transportation Act or regulations including hazardous materials and wastes.
- (b) Hazardous Material: product, substance, or organism that is used for its original purpose; and that is either dangerous goods or a material that may cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.
- (c) Hazardous Waste: any hazardous material that is no longer used for its original purpose and that is intended for recycling, treatment or disposal.
- (d) Workplace Hazardous Materials Information System (WHMIS): a Canada-wide system designed to give employers and workers information about hazardous materials used in workplace. Under WHMIS, information on hazardous materials is provided on container labels, material safety data sheets (MSDS), and worker

education programs. WHMIS is put into effect by combination of federal and provincial laws.

D15.5.2 Materials Management

- (a) Only bring on Site quantity of hazardous materials required to perform Work.
- (b) Maintain MSDSs in proximity to where materials are being used. Communicate this location to personnel who may have contact with hazardous materials.
- (c) Ensure personnel have been trained in accordance with Workplace Hazardous Materials Information System (WHMIS) requirements.

D15.5.3 Storage and Handling

- (a) Store and handle hazardous materials and wastes in accordance with applicable federal and provincial laws, regulations, codes, and guidelines.
 - (i) Sign storage areas.
 - (ii) Store and handle flammable and combustible materials in accordance with current Manitoba and National Fire Code of Canada requirements.
 - (iii) Do not transfer of flammable and combustible liquids in vicinity of open flames or heat-producing devices.
 - (iv) Do not use flammable liquids having flash point below 38 degrees C, such as naphtha or gasoline as solvents or cleaning agents.
 - (v) Store flammable and combustible waste liquids for disposal in approved containers located in safe, ventilated area. Keep quantities to minimum.
 - (vi) Observe smoking regulations, smoking is prohibited in areas where hazardous materials are stored, used, or handled.
- (b) Keep no more than 100 litres of flammable and combustible liquids such as gasoline, kerosene and naphtha for ready use.
 - (i) Store flammable and combustible liquids in approved safety cans bearing the Underwriters' Laboratory of Canada or Factory Mutual seal of approval.
 - (ii) Storage of quantities of flammable and combustible liquids exceeding 100 litres for Work purposes requires the written approval of the Contract Administrator
 - (iii) Fuel storage exceeding 100L shall be a minimum distance of 100 metres from any water body and in compliance with the requirements of the Storage and Handling of Petroleum Products and Allied Products Manitoba Regulation 188/2001 of the Dangerous Goods Handling and Transportation Act.
- (c) Storage requirements for quantities of hazardous materials and wastes in excess of 5 kg for solids, and 5 litres for liquids:
 - (i) Store hazardous materials and wastes in closed and sealed containers.
 - (ii) Label containers of hazardous materials and wastes in accordance with WHMIS.
 - (iii) Store hazardous materials and wastes in containers compatible with that material or waste.
 - (iv) Segregate incompatible materials and wastes. Ensure that different hazardous materials or hazardous wastes are not mixed.
 - (v) Store hazardous materials and wastes in secure storage area with controlled access.
 - (vi) Maintain clear egress from storage area.
 - (vii) Store hazardous materials and wastes in location that will prevent them from spilling into environment.
 - (viii) Store products on spill trays or berms with 110% capacity.
 - (ix) Do not store within 30 metres of a waterway or drain
 - (x) Have appropriate emergency spill response equipment available near storage area, including personal protective equipment.

- (xi) Maintain inventory of hazardous materials and wastes, including product name, quantity, and date when storage began and disposal occurred. Maintain tipping and other disposal receipts.
- (d) Report spills or accidents immediately:
 - (i) to the Contract Administrator.
 - (ii) to Manitoba Conservation Accident Reporting Line at 204-944-4888 in accordance with Manitoba Regulation 439/87 of the Dangerous Goods and Transportation Act.
 - (iii) Submit a written spill report to the Contract Administrator outlining cause and proposed corrective action and Manitoba Conservation as required. Provide copies of reports submitted to Manitoba Conservation to the Contract Administrator.

D15.5.4 Transportation

- (a) Transport hazardous materials and wastes in accordance with the Manitoba Dangerous Goods Handling and Transportation Act.
 - (i) Ensure that trained personnel handle, offer for transport, or transport dangerous goods.
 - (ii) Use licensed carrier authorized by provincial authorities to accept subject material.
 - (iii) Label container[s] with legible, visible safety marks as prescribed by federal and provincial regulations.
 - (iv) Provide photocopy of shipping documents and waste manifests to the Contract Administrator.
 - (v) Track receipt of completed manifest from consignee after shipping dangerous goods. Provide a photocopy of completed manifest to the Contract Administrator.
 - (vi) Report discharge, emission, or escape of hazardous materials immediately to the Contract Administrator and appropriate provincial authority. Take measures to control release.

D15.5.5 Disposal

- (a) Dispose of hazardous waste materials in accordance with applicable federal and provincial acts, regulations, and guidelines.
 - (i) Recycle hazardous wastes for which there is approved, cost effective recycling process available.
 - (ii) Send hazardous wastes to authorized hazardous waste disposal or treatment facilities.
 - (iii) Burning, diluting, or mixing hazardous wastes for purpose of disposal is prohibited.
 - (iv) Disposal of hazardous materials in waterways, storm or sanitary sewers, or in municipal solid waste landfills is prohibited.

D15.5.6 Erosion and Sediment Control

- (a) Develop an erosion control plan to control negative impacts on water and air quality; plan should meet these objectives:
 - (i) Prevent loss of soil during construction by storm water run-off and wind erosion.
 - (ii) Protect against erosion from stockpiled topsoil aggregates.
 - (iii) Prevent sedimentation of the land drainage system and receiving streams with dust, particulate matter or eroded sediment.
- (b) Supply, install, maintain and remove (as applicable and when no longer required) effective sediment control barriers and erosion control before starting Work that may result in the deposit of sediment into a ditch or water body to avoid potential impacts to fish and fish habitat.

- (i) Erosion and sediment control measures and installations include, as required, silt socks around storm drains, silt fence barriers, erosion control blanket, straw wattles, and geotextile fabric as appropriate.
- (ii) Routinely inspect all erosion and sediment control measures and installations and immediately repair any deficiencies.

D15.5.7 Work to Adjacent Waterways

- (a) Do not operate construction equipment in waterways and, where possible, avoid operating equipment within 30 metres of the waterway.
- (b) Do not use waterway beds for borrow material.
- (c) Do not dump excavated fill, waste material or debris in ditches or waterway.
- (d) Design and construct temporary crossings to minimize erosion to waterways.
- (e) Dispose of excavated materials above the high water mark and 30 metres way from a watercourse.

D15.5.8 Drainage

- (a) Provide temporary drainage and pumping as necessary to keep excavations and Site free from water.
- (b) Do not pump water containing suspended materials into waterways, sewer or drainage systems.
- (c) Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

D15.5.9 Reducing Site Disturbances

- (a) Do not disturb, in any way, the embankment slopes, roadway shoulders, and adjacent ground surfaces areas outside the limits of the construction areas including the approved lay down, staging and access unless written permission has been obtained from the Contract Administrator. Such written permission will be granted only if it can be shown that there is no alternative.
- (b) Minimize disturbance of any undeveloped areas on Site and maintain existing Site grading where indicated and where possible.
 - (i) Minimize stripping of topsoil and vegetation
 - (ii) Re-grade and plant vegetation on construction Site as soon as possible.
 - (iii) Avoid soil compaction where possible.

D15.5.10 Pollution Control

- (a) Maintain temporary erosion and pollution control features installed under this contract.
- (b) Maintain construction equipment in good working order. Control emissions from equipment.
- (c) Cover or wet down dry materials and stockpiled soils to prevent blowing dust and debris. Provide dust control for the construction Site, temporary and access roads.
- (d) Bring only clean fill, granular, rip rap and other similar construction materials to the project Site.

D15.5.11 Noise

- (a) Noise-generating activities shall be limited to the hours indicated in the City of Winnipeg Noise By-law, unless otherwise accepted in advance by the Contract Administrator.
- (b) The Contractor shall be responsible for scheduling Work to avoid potential noise problems and/or employ noise reduction measures to reduce noise to acceptable limits. The Contractor shall also demonstrate to the Contract Administrator that Works to be performed during the night-time period, on Sundays, and Holidays, should approval be given to work during these times, shall not exceed the approved limit.

D15.5.12 Dust and Particulate Control

- (a) Dust control practices implemented by the Contractor during construction shall include regular street cleaning and dampening of construction access roads and Work areas with water or approved chemicals at an adequate frequency to prevent the creation of dust.
- (b) Only water or chemicals approved by the Contract Administrator shall be used for dust control. The use of waste petroleum or petroleum by-products is not permitted.
- (c) The Contractor shall ensure that trucks which are used to haul excavated material and backfill material to and from the Site utilize tarpaulin covers during transport to prevent material from falling onto the street and creating dust.

SCHEDULE OF WORK

D16. COMMENCEMENT

- D16.1 The Contractor shall not commence any Work until he is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.
- D16.2 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 D5.2.
 - (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;
 - (ix) the detailed work schedule specified in D14;
 - (x) the environmental protection plan specified in D15.
 - (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.
 - (c) The Contractor has provided proof of CN Contractor Safety Training for each individual proposed to Work on the Site. Contractor to contact Christina Cusson at (204) 231-7805 for CN for Right of Entry and Safety Training requirements.
- D16.3 The Contractor shall commence the Work on the Site anytime after the letter of intent has been received. It should be noted that certain aspects of this project will require the completion of work by a contractor of another contract prior to the commencement of the work within this project. See D18 for Work by Others.
- D16.4 The City intends to award this Contract by June 6, 2011.

D17. RESTRICTED WORK HOURS

- D17.1 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.

D18. WORK BY OTHERS

D18.1 Work by others on or near the Site will include but not necessarily be limited to:

- (a) Manitoba Hydro:
 - (i) Street Lighting: Miscellaneous lighting pole removal and street light pole installation will be taking place throughout the limits of this contract.
 - (ii) Electric: Miscellaneous Hydro works will be taking place throughout the project such as adjustments of manholes or other appurtenances like pedestals, etc.
 - (iii) Gas: Gas lines may require lowering or rock wrapping depending on their location, depth, and size of pipe. This work should be coordinated prior to and immediately after excavation has taken place.
- (b) MTS:
 - (i) Miscellaneous adjustments of manholes and relocation of MTS boxes and other appurtenances may be required within this contract.
- (c) Contract #3 – Southwest Rapid Transit Corridor – Stage 1: Transitway Construction, Donald/Harkness Reconstruction & Associated Works:
 - (i) The Contractor for Contract #3, Nelson River Construction, will be completing miscellaneous outstanding items in the vicinity of Harkness Station. Access must be provided to them at all times and coordination of construction vehicles will need to take place to accommodate movement of equipment, or construction vehicles supplying material, should this be required.
- (d) Contract #4 – Southwest Rapid Transit Corridor – Stage 1: Transitway Tunnel at CN Rivers Subdivision Mileage 1.38 & Associated Works:
 - (i) The Contractor for Contract #4, Surespan, will be constructing the south half of the tunnel beginning in early winter of 2011 with completion in early fall 2011. During the construction of the south half of the tunnel, Surespan will be accessing their site via Brandon Avenue and traveling through the Contract #6 site north to the tunnel. It is not anticipated that a conflict in staging will occur, however access must be provided to them at all times and coordination of construction vehicles will need to take place to accommodate movement of equipment, or construction vehicles supplying material, should this be required.
- (e) Track Relocation Contract:
 - (i) As part of the Contract #4 works, the tracks for the CN Rail line will be required to be relocated at the completion of the south half of the tunnel. This work will take place in CN lands, but access may be required via Brandon Avenue and traveling through the Contract #6 site north to the tunnel. It is not anticipated that a conflict in staging will occur, however access must be provided to them at all times and coordination of construction vehicles will need to take place to accommodate movement of equipment, or construction vehicles supplying material, should this be required.
- (f) Contract #5 – Southwest Rapid Transit Corridor – Stage 1: Osborne Station & Associated Works:
 - (i) The Contractor for Contract #5, PCL Construction, is currently constructing a bridge structure across Osborne Street with completion in 2011. During construction, the contractor for Contract #5 will require access to their site via Warsaw Avenue. Access must be provided to them at all times and coordination of construction vehicles will need to take place to accommodate movement of equipment, or construction vehicles supplying material, should this be required.
- (g) Contract #6 – Southwest Rapid Transit Corridor – Stage 1: Transitway Construction, Landscaping and Associated Works:
 - (i) The Contractor for Contract #6, Bituminex Paving, is currently constructing a Transit Corridor within Fort Rouge Yards with completion in 2011. During construction, the contractor for Contract #6 will require access to their site via Warsaw Avenue and will travel adjacent to the Contract #6 north limit. Access must be provided to them at all times and coordination of construction vehicles will need to take place to

accommodate movement of equipment, or construction vehicles supplying material, should this be required. During the construction and placement of these items for Contract #6, the contractor for this Contract (#7) shall work together with the Contract #6 contractor to provide access and mobility to their site as best as possible.

- (h) CN Rail:
 - (i) CN may at times, require access to their utility via the transit corridor property. This access shall be accommodated.
- (i) 2011 Watermain Renewal: Contract 15:
 - (i) The Contractor for Contract 15, Darco Enterprises will be undertaking the watermain renewal on the south side of Warsaw Avenue from Pembina Highway to the backlane, and in the backlane along the Hydro Jessie Substation from Warsaw Avenue to Jessie Avenue as a separate contract and is expected to be completed by the end of July 2011. No restoration work will be undertaken due to the upcoming reconstruction of Warsaw Avenue.
- (j) Traffic Signals:
 - (i) New traffic signal poles and pedestrian crossing push buttons will be required for the Warsaw and Pembina intersection. In addition, detector loops may also be required.

D19. SEQUENCE OF WORK

D19.1 Further to C6.1, the sequence of work shall be as follows:

D19.1.1 Station Construction

- (a) Upon completion of the Contract #6 critical stage listed in D14.4(d), the Contractor will be permitted to commence the items of Work as specified in D2.2(a).

D19.1.2 Warsaw Reconstruction and Backlane Resurfacing

- (a) Construction activity on Warsaw Avenue shall not commence until Contracts #4, #5 and #6 have expressed that they do not require access to their respective project sites via Warsaw Avenue.
- (b) Construction activities on Warsaw Avenue shall not commence until the completion of the 2011 watermain renewal as listed in D14.4 (f).

D20. CRITICAL STAGES

D20.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:

- (a) Delivery of centre median fence prototype to Winnipeg Transit by June 15, 2011;
- (b) Delivery of samples for large canopy, low canopy, and shelters by July 1, 2011;
- (c) Delivery and installation of rock veneer panel prototype to Harkness Station by July 15, 2011;
- (d) Delivery of all sign prototypes to Winnipeg Transit by July 30, 2011
- (e) Delivery and installation of pylon sign prototype to Harkness Station by August 15, 2011;
- (f) Delivery and installation of information kiosk prototype to Harkness Station by August 15, 2011;
- (g) Delivery of all signs and structures by September 1, 2011.

D21. SUBSTANTIAL PERFORMANCE

D21.1 The Contractor shall achieve Substantial Performance by October 14, 2011.

D21.2 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.

D21.3 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.

D22. TOTAL PERFORMANCE

D22.1 The Contractor shall achieve Total Performance by October 28, 2011.

D22.2 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.

D22.3 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.

D23. LIQUIDATED DAMAGES

D23.1 If the Contractor fails to achieve Critical Stages, 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) Delivery of centre median fence prototype to Winnipeg Transit by June 15, 2011- five hundred dollars (\$500.00);
- (b) Delivery of samples for large canopy, low canopy, and shelters by July 1, 2011- five hundred dollars (\$500.00);
- (c) Delivery and installation of rock veneer panel prototype to Harkness Station by July 15, 2011- five hundred dollars (\$500.00);
- (d) Delivery of all sign prototypes to Winnipeg Transit by July 30, 2011– one thousand dollars (\$1000.00);
- (e) Delivery and installation of pylon sign prototype to Harkness Station by August 15, 2011– one thousand dollars (\$1000.00);
- (f) Delivery and installation of information kiosk prototype to Harkness Station by August 15, 2011– one thousand dollars (\$1000.00);
- (g) Delivery of all signs and structures by September 1, 2011– one thousand dollars (\$1000.00);
- (h) Total Performance – ten thousand dollars (\$10,000);

D23.2 The amounts specified for liquidated damages in D23.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve critical stages or Total Performance by the days fixed herein for same.

D23.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D24. SCHEDULED MAINTENANCE

- D24.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:
- (a) Reflective Crack Maintenance (during warranty period) as specified in CW 3250;
 - (b) Sodding (maintenance period) as specified in CW 3510.
- D24.2 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

D25. JOB MEETINGS

- D25.1 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.
- D25.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

D26. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

- D26.1 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

D27. PAYMENT

- D27.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D28. WARRANTY

- D28.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire two (2) years thereafter for Station Works including shelters, canopies, signage, Site furniture and wall facades, and two (2) years after the Grand Opening of the Southwest Rapid Transit Corridor Stage 1 for pavement reconstruction works, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

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. 150-2011

Southwest Rapid Transit Corridor – Stage 1: Station Construction, Warsaw Reconstruction & Associated Works

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

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

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

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

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

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

_____ day of _____, 20____ .

SIGNED AND SEALED
in the presence of:

(Witness as to Principal if no seal)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

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

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

(Date)

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

RE: PERFORMANCE SECURITY – BID OPPORTUNITY NO. 150-2011

Southwest Rapid Transit Corridor – Stage 1: Station Construction, Warsaw Reconstruction & Associated Works

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

(Name of Contractor)

(Address of Contractor)

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

_____ Canadian dollars.

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

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

Partial drawings are permitted.

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

(Address)

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

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

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

(Date)

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

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

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

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

FORM J: SUBCONTRACTOR LIST
(See D12)

Southwest Rapid Transit Corridor – Stage 1: Station Construction, Warsaw Reconstruction & Associated Works

<u>Portion of the Work</u>	<u>Name</u>	<u>Address</u>
STATION CONSTRUCTION		
<i>Supply of Materials:</i>		
Electrical		
Veneer Stone		
Natural Stone		
Brick Facing		
Shelters and Canopies		
<i>Installation and Placement:</i>		
Electrical		
Masonry		
Shelters and Canopies		
PAVEMENT RECONSTRUCTION & RESURFACING		
<i>Supply of Materials:</i>		
Concrete		
Asphalt		
Base Course and Sub-base		
Underground Works		
Other		
<i>Installation and Placement:</i>		
Concrete		
Asphalt		
Base Course and Sub-base		
Underground Works		
Other		

FORM K: EQUIPMENT
(See D13)

Southwest Rapid Transit Corridor – Stage 1: Station Construction, Warsaw Reconstruction & Associated Works

<p>1. Category/type:</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:</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:</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)

Southwest Rapid Transit Corridor – Stage 1: Station Construction, Warsaw Reconstruction & Associated Works

4. Category/type:

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

5. Category/type:

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

6. Category/type:

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

Make/Model/Year: _____ Serial No.: _____

Registered owner: _____

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-3325-01	Cover Sheet	A1
P-3325-02	Drawing List	A1
P-3325-03	Legend	A1
P-3325-04	General Arrangement	A1
P-3325-05	Horizontal Geometry	A1
P-3325-06	Paving & Grading – Pembina Highway	A1
P-3325-07	Paving & Grading – Warsaw Avenue	A1
P-3325-08	Paving & Grading – Warsaw-Jessie Back Lane	A1
P-3325-09	Sections & Details	A1
P-3325-10	Guardrail Details	A1
P-3325-11	Harkness Station Site Layout	A1
P-3325-12	Harkness Station Site Furniture and Structure Layout	A1
P-3325-13	Fort Rouge Station Site Layout	A1
P-3325-14	Fort Rouge Station Site Furniture and Structure Layout	A1
P-3325-15	Osborne Station Canopy and Signage Layout	A1
P-3325-16	Canopy On Sheet Pile Wall	A1
P-3325-17	Osborne Station West Side Ramp Canopy	A1
P-3325-18	Heated Shelter & Large Canopy Details	A1
P-3325-19	Low Canopies	A1
P-3325-20	Self Supporting Signage	A1
P-3325-21	Canopy Mounted Signage	A1
P-3325-22	Details (1 of 3)	A1
P-3325-23	Details (2 of 3)	A1
P-3325-24	Details (3 of 3)	A1
P-3325-25	Canopy Post Attachments – Wall Cap and Stone – Veneer Support Details	A1
P-3325-26	Cap and Stone – Veneer Support Details	A1
P-3325-27	Harkness Station Electrical Layout	A1
P-3325-28	Fort Rouge Station Electrical Layout	A1

E2. GEOTECHNICAL REPORT

- E2.1 Further to C3.1, the geotechnical report is provided to aid the Contractor's evaluation of the existing soil conditions. The geotechnical report is contained in Appendix 'A'.

E3. PROTECTION OF EXISTING TREES

- E3.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing boulevard trees within the limits of the construction area:
- (a) The Contractor shall not stockpile materials and soil or park vehicles and equipment on boulevards within 2m of trees.
 - (b) Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 100 x 2400mm wood planks, or suitably protected as approved by the Contract Administrator.
 - (c) Excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of 1.5 times the diameter (measured in inches), with the outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation.
 - (d) Operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.
 - (e) Work on Site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.
- E3.2 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his designate.
- E3.3 No separate measurement or payment will be made for the protection of trees.
- E3.4 Except as required in clause E3.1(c) and E3.1(e), Elm trees shall not be pruned at any time between April 1 and July 31.

E4. TRAFFIC CONTROL

- E4.1 Further to clauses 3.6 and 3.7 of CW 1130:
- (a) Where directed, the Contractor shall construct and maintain temporary asphalt ramps to alleviate vertical pavement obstructions such as manholes and planing drop-offs to the satisfaction of the Contract Administrator. Payment shall be in accordance with CW3410.
 - (b) In accordance with the Manual of Temporary Traffic Control in Work Areas on City Streets, the Contractor ("Agency" in the manual) shall make arrangements with the Traffic Services Branch of the City of Winnipeg to place all temporary regulatory signs. The Contractor shall bear all costs associated with the placement of temporary traffic control devices by the Traffic Services Branch of the City of Winnipeg in connection with the works undertaken by the Contractor.

E5. TRAFFIC MANAGEMENT

- E5.1 Further to clause 3.7 of CW 1130:
- E5.1.1 The Contractor shall take note of the following rules when accessing the construction Site;
- (a) Access to the Harkness Station site will be permitted from Stradbrook Avenue.
 - (b) Access to the Fort Rouge Station site will be permitted from Osborne Street via Brandon Avenue.
 - (c) The routes listed above will be the same for leaving the site.
- E5.1.2 Warsaw Avenue will be closed to all traffic. The Contractor shall sign the street "Road Closed" in accordance with the Manual of Temporary Traffic Control.

- E5.1.3 The Contractor shall maintain access at all times to the VIA Rail Yards from Brandon Avenue.
- E5.1.4 The Contractor shall maintain Site access for CN Rail traffic at all times.
- E5.1.5 The Contractor shall maintain access at all times to the Contract #4 tunnel construction site from Brandon Avenue.
- E5.1.6 The Contractor shall maintain access at all times to the Contract #5 Osborne Overpass construction site from Warsaw Avenue.
- E5.1.7 Pedestrian and ambulance/emergency vehicle access must be maintained at all times.

E6. WATER OBTAINED FROM THE CITY

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

E7. SURFACE RESTORATIONS

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

E8. SALT TOLERANT GRASS SEEDING

DESCRIPTION

- E8.1 Further to CW 3520 and CW3540, this specification shall cover sub-grade preparation and the supply and placement of Salt Tolerant Grass Seed.

MATERIALS

- E8.2 Salt Tolerant Grass Seed
 - E8.2.1 Salt Tolerant Grass Seed for regional and collector boulevards, medians and interchange areas shall be a mixture composed of:
 - (a) Seventy percent (70%) Fults or Nuttals Alkaligrass (*Puccinellia* spp.), twenty percent (20%) Audubon or Aberdeen Creeping Red Fescue and ten percent (10%) Perennial Ryegrass.

EQUIPMENT

- E8.3 Scarification equipment shall be suitable for the area being scarified, shall be capable of scarifying the sub-grade to the specified depth and shall be accepted by the Contract Administrator. For confined areas a toothed bucket may be acceptable. For larger areas tilling equipment may be required.

CONSTRUCTION METHODS

- E8.4 Preparation of Existing Grade
 - E8.4.1 Prior to placing topsoil, in areas to be seeded greater in width than 600mm, prepare the existing sub-grade by scarifying to a minimum depth of 75mm and to a maximum depth of 100mm to the satisfaction of the Contract Administrator.
 - E8.4.2 Scarification shall consist of breaking up and loosening the sub-grade. No scarification shall occur within the edge of a tree canopy (or drip line).

E8.5 Salt Tolerant Grass Seeding

E8.5.1 Salt Tolerant Grass Seed shall be sown at a rate of 2.2 kilograms per 100 square metres.

MEASUREMENT AND PAYMENT

E8.6 Supply, placement and maintenance of Salt Tolerant Grass Seed will be paid for at the Contract Unit Price per square metre for "Salt Tolerant Grass Seeding", measured as specified herein, which price shall be payment in full for supplying all materials and for completing all operations herein described and all other items incidental to the work included in this Specification. Payment for Salt Tolerant Grass Seeding shall be in accordance with the following:

- (a) Sixty five (65%) percent of quantity following supply and placement.
- (b) Remaining thirty five (35%) percent of quantity following termination of the Maintenance Period.

E9. SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES

DESCRIPTION

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

SPECIFICATIONS AND DRAWINGS

E9.2 Referenced Standard Construction Specifications and Standard Details

- (a) CW 3235 – Renewal of Existing Miscellaneous Concrete Slabs
- (b) CW 3240 – Renewal of Existing Curbs
- (c) CW 3310 – Portland Cement Concrete Pavement Works
- (d) CW 3325 – Portland Cement Concrete Sidewalk
- (e) SD-229C – Curb Ramp for Concrete Pavement
- (f) SD-229D – Curb Ramp for Asphalt Overlay

E9.3 Attached; SDE Drawings and Installation Manual

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

MATERIALS

E9.4 Acceptable Detectable Warning Surface Tile product is:

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

Available from:

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

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

or

Alsip's Building Products
1 Cole Avenue
Winnipeg, Manitoba

Attention: Jason Alsip
Ph. 204-667-3330

- E9.4.1 Detectable warning surface tiles shall be Federal Yellow (USA); or Safety Yellow (Canada).
- E9.4.2 Detectable warning surface tiles shall be cast in place type.
- E9.4.3 Truncated domes on detectable warning surface tiles shall be in accordance with ADA Accessibility Guidelines (ADAAG).

CONSTRUCTION METHODS

- E9.5 Selection of Layout Options
 - E9.5.1 Select the appropriate design layout for detectable warning surface tiles according to the following prioritized order:
 - E9.5.2 Layout Option One – Install detectable warning surface tiles in accordance with SDE-229A and SDE-229AA.
 - E9.5.3 If two 610 x 1220mm tiles would physically overlap each other, or would be within 150mm of each other, or if one tile would lie within the circulation path towards the other tile, then install the detectable warning surface tiles according to the following order, Layout Option Two(2) or Three(3).
 - E9.5.4 Layout Option Two – Separate the tiles by moving either one or both tiles along the curb line in opposite directions, in accordance with this Specification, and keeping the ramp and pedestrian road crossing as perpendicular to the road as is possible, as directed by the Contact Administrator.
 - E9.5.5 Layout Option Three – Install detectable warning surface tiles in accordance with SDE-229AC and SDE-229AD.
- E9.6 General
 - E9.6.1 Construct curb ramps, sidewalk ramps and multi-use paths in accordance with the referenced Standard Construction Specifications, Standard Details, and SDE drawings.
 - E9.6.2 Detectable warning surface tile shall not be placed at private approaches or alleys.
 - E9.6.3 All curb ramps opposite each other shall have the same width.
 - E9.6.4 Construct the lip of the depressed curb in accordance with SDE – 229E.
 - E9.6.5 Construct ramp slopes in accordance with SD-229C and SD-229D. Use a ramp slope with preference for a slope as close to 5% maximum as possible.
 - E9.6.6 Construct flare and curb taper slopes according to the following:

- a) If the curb taper is within a grassed area, construct the curb taper 900mm in length.
 - b) When the flare and curb taper are in a full width sidewalk and the sidewalk area at the top of the ramp is <1500mm in width, construct the flare and curb taper at 5% slope to allow safe passage for wheelchairs in this area.
 - c) When the flare and curb taper are in a full width sidewalk and the sidewalk area at the top of the ramp is ≥ 1500 mm in width, construct the flare and curb taper at 10% slope.
- E9.6.7 Install the detectable warning surface tile in accordance with the attached Installation Instructions. Drill additional 6mm air vent holes in the ribs under the tile as required, and use vibration to help seat the tile, to facilitate the installation process.
- E9.6.8 Trim the corner of the tile at curb radii in accordance with SDE-229AA and SDE-229AD.
- E9.6.9 Install the detectable warning surface tiles as shown on the referenced Drawings or as directed by the Contract Administrator.
- E9.6.10 Orient the detectable warning surface tiles perpendicular to the crossing direction.
- E9.6.11 Locate gratings, access covers and other appurtenances outside of the sidewalk ramps, depressed curbs, rest areas, and gutters in front of the depressed curbs, as directed by the Contact Administrator.
- E9.7 Medians and Refuge Islands
- E9.7.1 Where the distance from back of curb to back of curb is 1.32m or greater, install one detectable warning surface tile 50mm from the back of each curb.
- E9.7.2 Where the distance from back of curb to back of curb is less than 1.32m, place the tiles 50mm from the back of curb and cut the tile(s) to fill the remaining area between the curbs.
- E9.8 2.0m Wide Depressed Curb for Multi-use Paths
- E9.8.1 Construct a curb ramp with a 2.0m depressed curb at high volume collector and regional street intersections in accordance with SDE-229E, in accordance with Public Works Department guidelines and as directed by the Contract Administrator.
- E9.8.2 Construct the concrete ramp 2.0m wide and a minimum of 1.50m deep from back of curb.
- E9.8.3 Construct the curb ramp in accordance with SD-229C and SD229D.
- E9.8.4 Install one 610mm x 1220mm tile centered to the 2.0m wide depressed curb. The part of the tile nearest the curb must be 50mm from the back of curb similar to tile placement in SDE-229AA.
- E9.9 3.5m Wide Depressed Curb for Multi-use Paths
- E9.9.1 Construct a curb ramp with a 3.5m depressed curb at low volume collector and residential street intersections in accordance with SDE-229E, in accordance with Public Works Department guidelines and as directed by the Contact Administrator.
- E9.9.2 Construct the concrete ramp 3.5m wide and a minimum of 1.50m deep from back of curb.
- E9.9.3 Construct the curb ramp in accordance with SD-229C and SD229D.
- E9.9.4 Install two (2) tiles in each concrete ramp, one (1) on each side for each direction. Place the short edge of each tile 150mm from the edge of the concrete ramp, with both tiles in line with each other transversely across the concrete ramp. The tile(s) nearest the curb must be 50mm from back of curb similar to tile placement in SDE-229AA.
- E9.9.5 Saw cut the middle of the concrete slab, perpendicular to the curb and to a depth of D/4. Cut additional sawcuts as directed by the Contract Administrator.

MEASUREMENT AND PAYMENT

E9.10 610 x 1220mm Detectable Warning Surface Tiles

E9.10.1 Supply and installation of detectable warning surface tiles will be measured on a unit basis and paid for at the Contract Unit Price for "610 x 1220mm Detectable Warning Surface Tiles". The number of units to be paid for will be the total number of full or trimmed tiles supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

E9.11 300 x 300mm Detectable Warning Surface Tiles

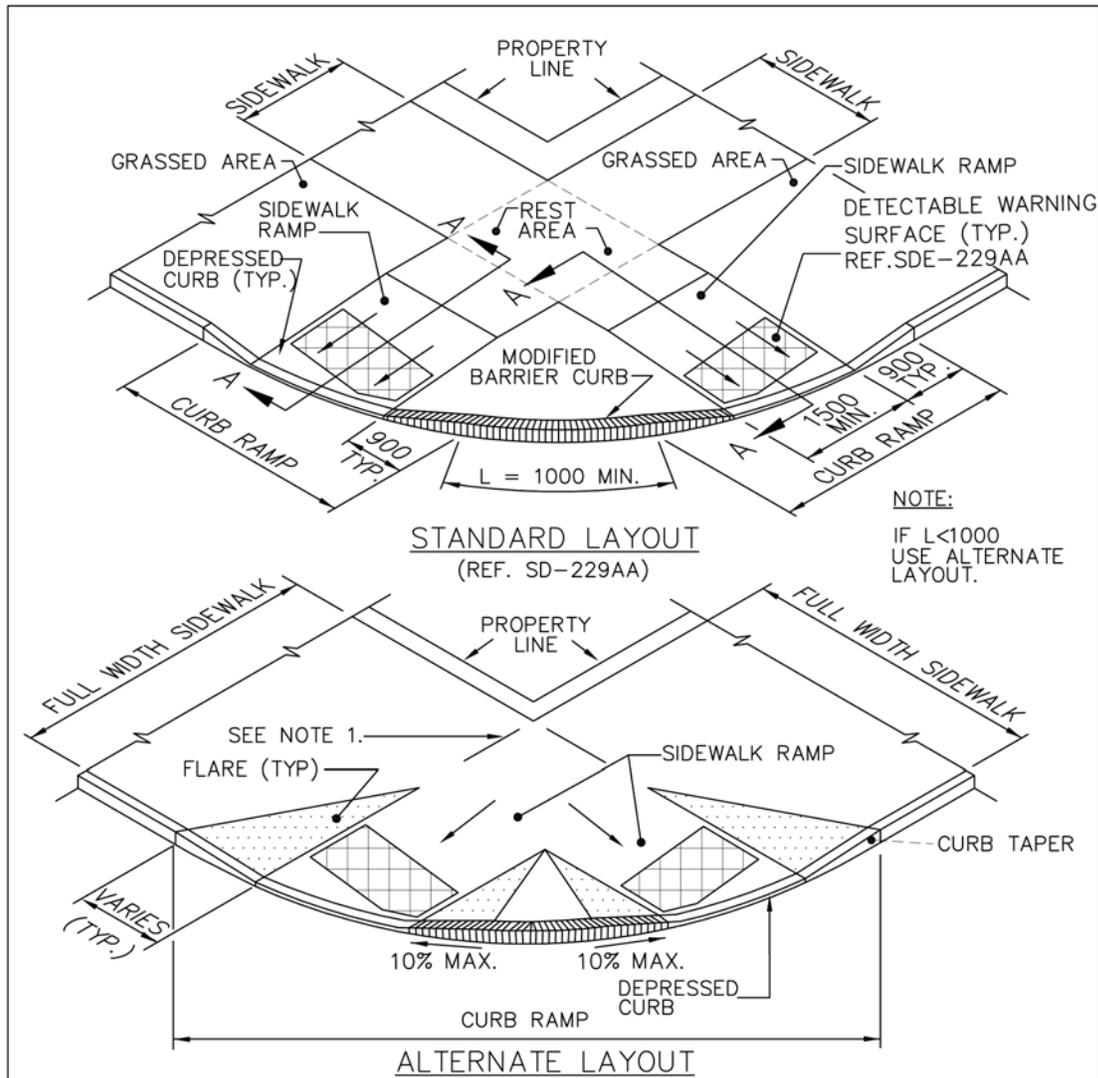
E9.11.1 Supply and installation of detectable warning surface tiles will be measured on a unit basis and paid for at the Contract Unit Price for "300 x 300mm Detectable Warning Surface Tiles". The number of units to be paid for will be the total number of full or trimmed tiles supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

E9.11.2 The area under the detectable warning surface tile is part of the concrete sidewalk ramp and will be paid in accordance with CW 3235 or CW 3325.

E9.11.3 The concrete sidewalk ramp and the concrete ramp for multi-use paths will be paid as 100mm sidewalk in accordance with CW 3235 or CW 3325.

E9.11.4 Curb ramp will be paid in accordance with CW 3240 or CW 3310.

DRAWINGS AND INSTALLATION MANUAL



NOTE:
 IF L < 1000
 USE ALTERNATE
 LAYOUT.

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

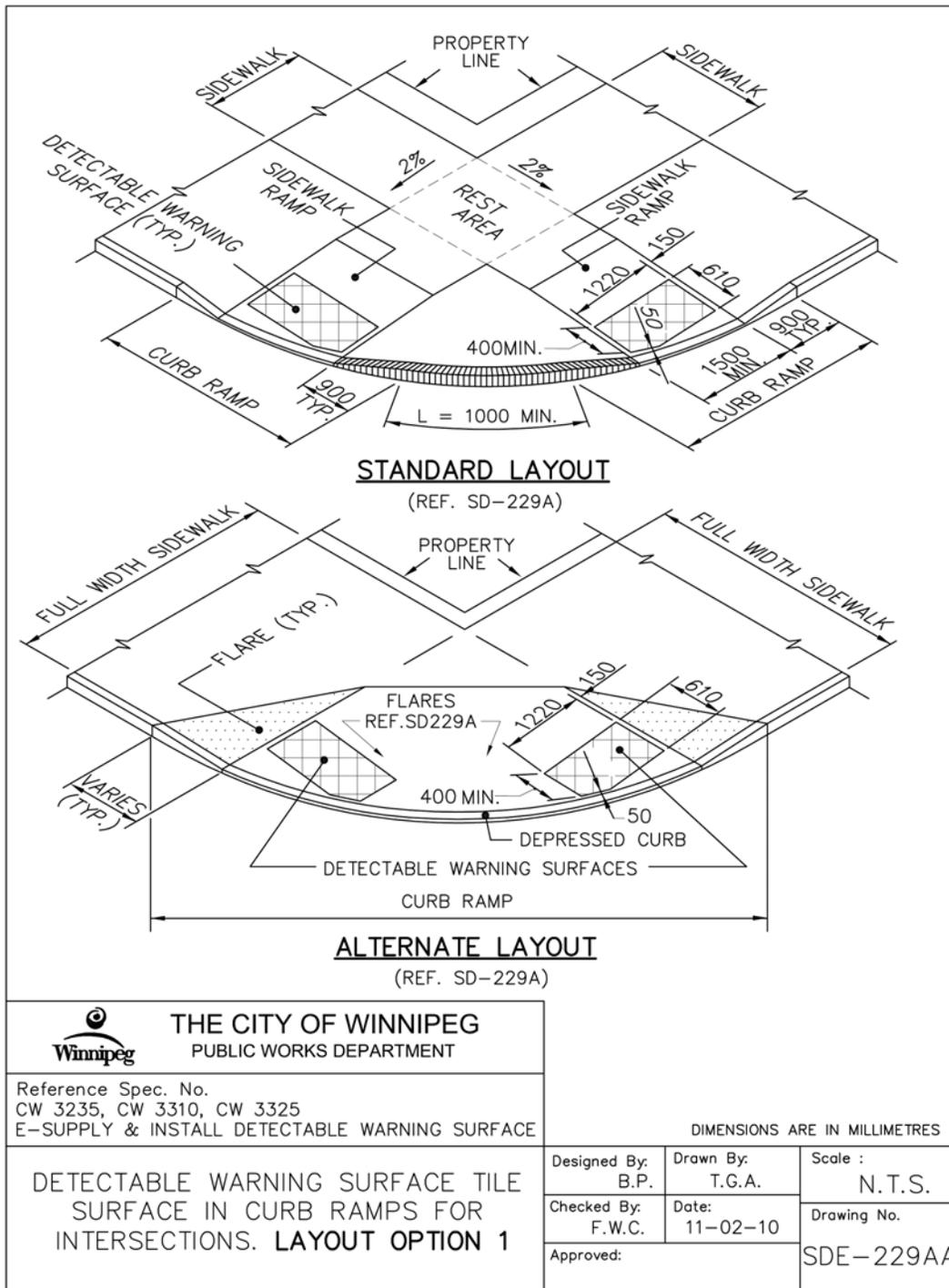
DIMENSIONS ARE IN MILLIMETRES

 **THE CITY OF WINNIPEG**
 PUBLIC WORKS DEPARTMENT

Reference Spec. No.
 E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE

CURB RAMP LAYOUT FOR INTERSECTIONS

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



 **THE CITY OF WINNIPEG**
 PUBLIC WORKS DEPARTMENT

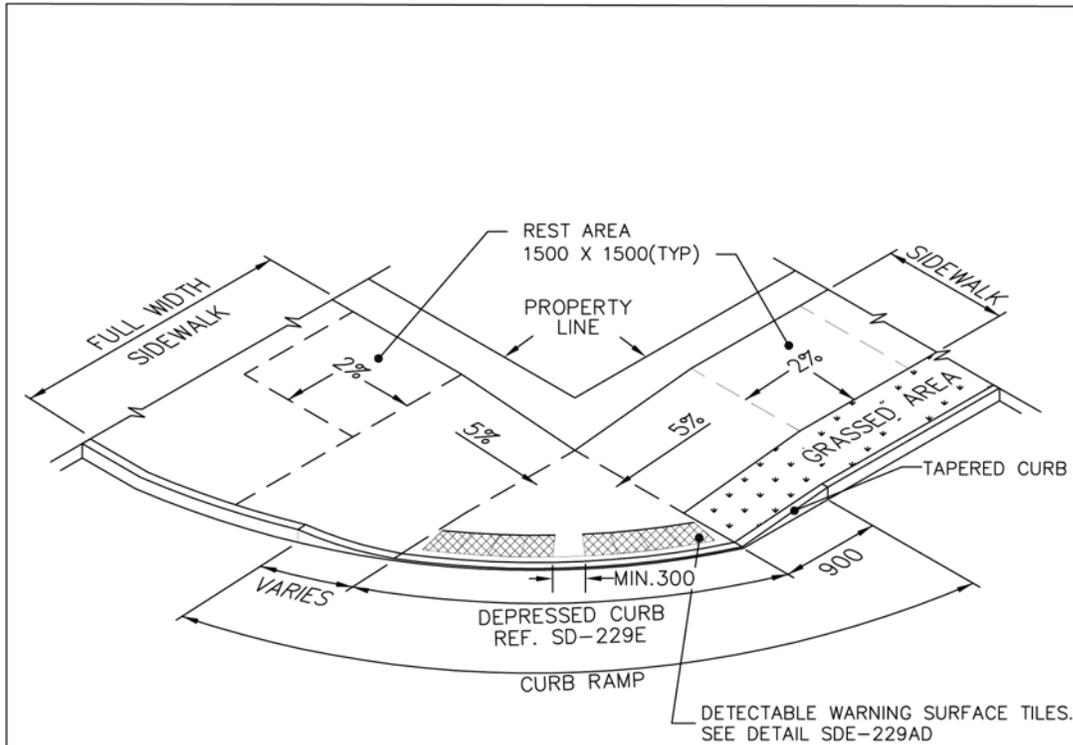
Reference Spec. No.
 CW 3235, CW 3310, CW 3325
 E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE

DIMENSIONS ARE IN MILLIMETRES

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-229AA

**DETECTABLE WARNING SURFACE TILE
 SURFACE IN CURB RAMPS FOR
 INTERSECTIONS. LAYOUT OPTION 1**

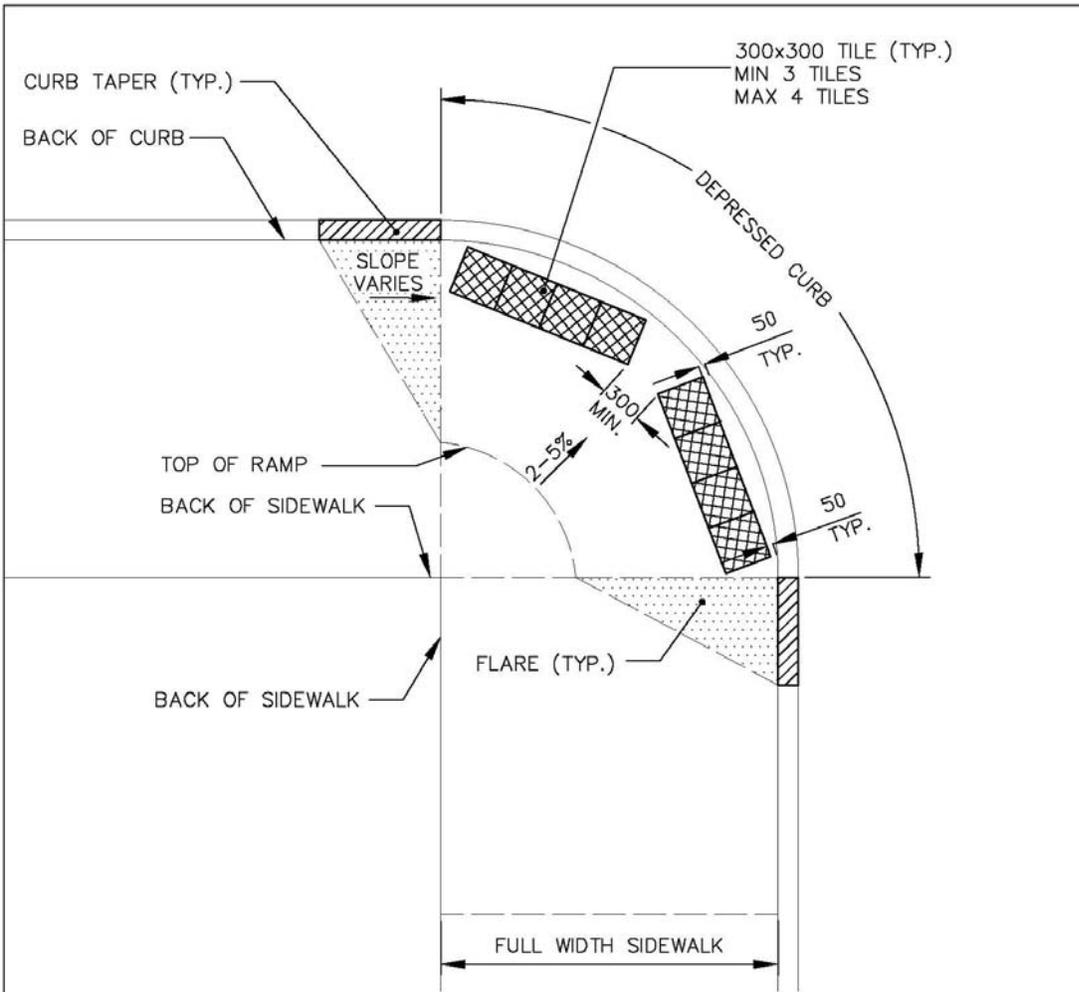
SDE-229AA



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	Reference Spec. No. E-SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES		
	300 X 300 mm DETECTABLE WARNING SURFACE TILE LAYOUT OPTION 3		

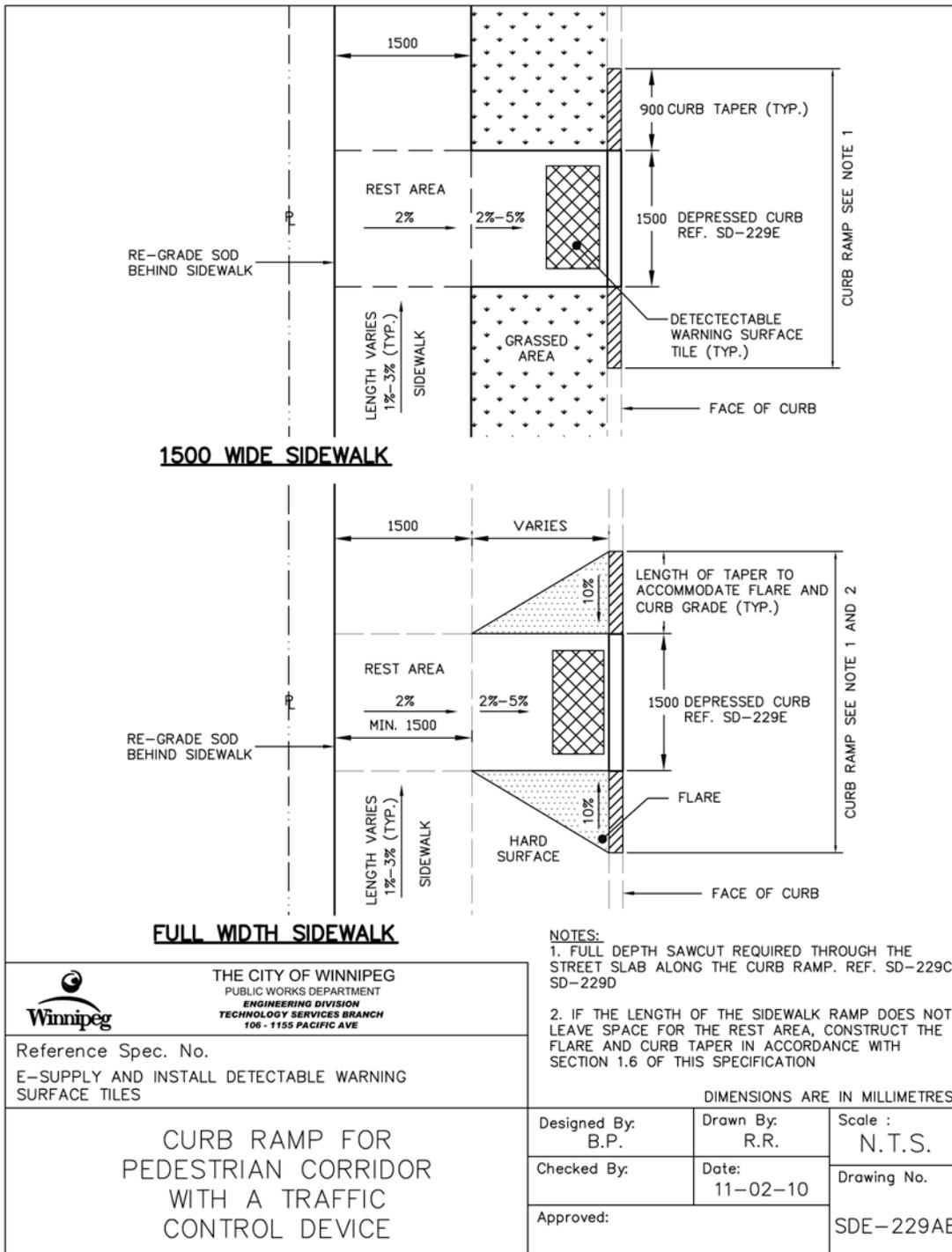
DIMENSIONS ARE IN MILLIMETRES		
Designed By: B.P.	Drawn By: R.R.	Scale : N.T.S.
Checked By:	Date: 11-02-10	Drawing No.
Approved:	SDE-229AC	



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 - 1195 PACIFIC AVE</p>	Reference Spec. No. E-SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES		
	<p>300x300mm DETECTABLE WARNING SURFACE TILE LAYOUT OPTION 3 DETAIL</p>		

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

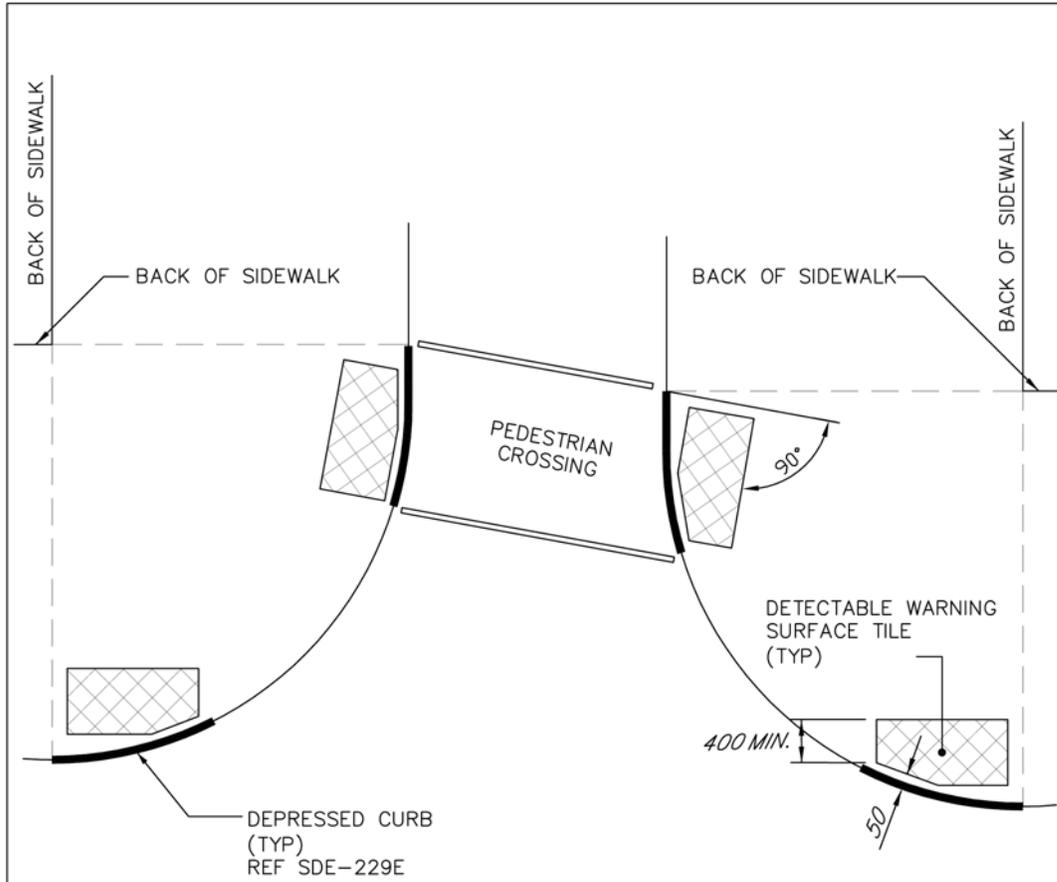


 THE CITY OF WINNIPEG
 PUBLIC WORKS DEPARTMENT
 ENGINEERING DIVISION
 TECHNOLOGY SERVICES BRANCH
 106 - 1155 PACIFIC AVE

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

CURB RAMP FOR PEDESTRIAN CORRIDOR WITH A TRAFFIC CONTROL DEVICE

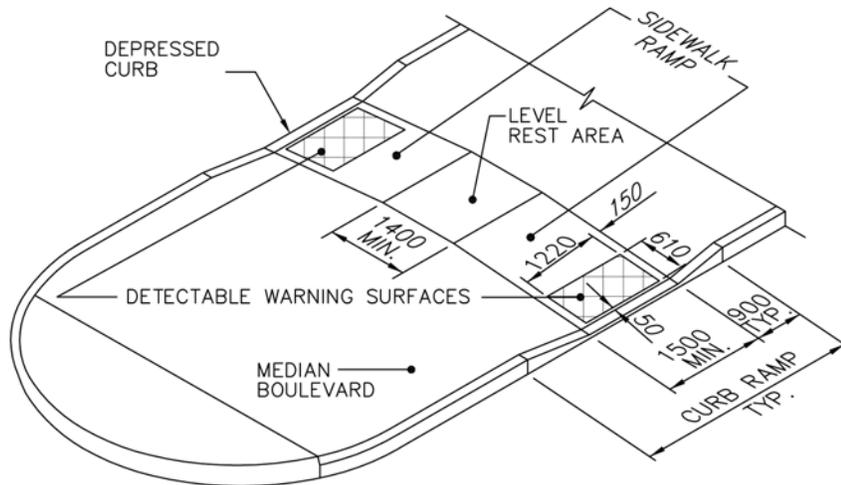
Designed By: B.P.	Drawn By: R.R.	Scale : N.T.S.
Checked By:	Date: 11-02-10	Drawing No.
Approved:	SDE-229AE	



NOTES:

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

 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.
	Approved:		SDE-229AF

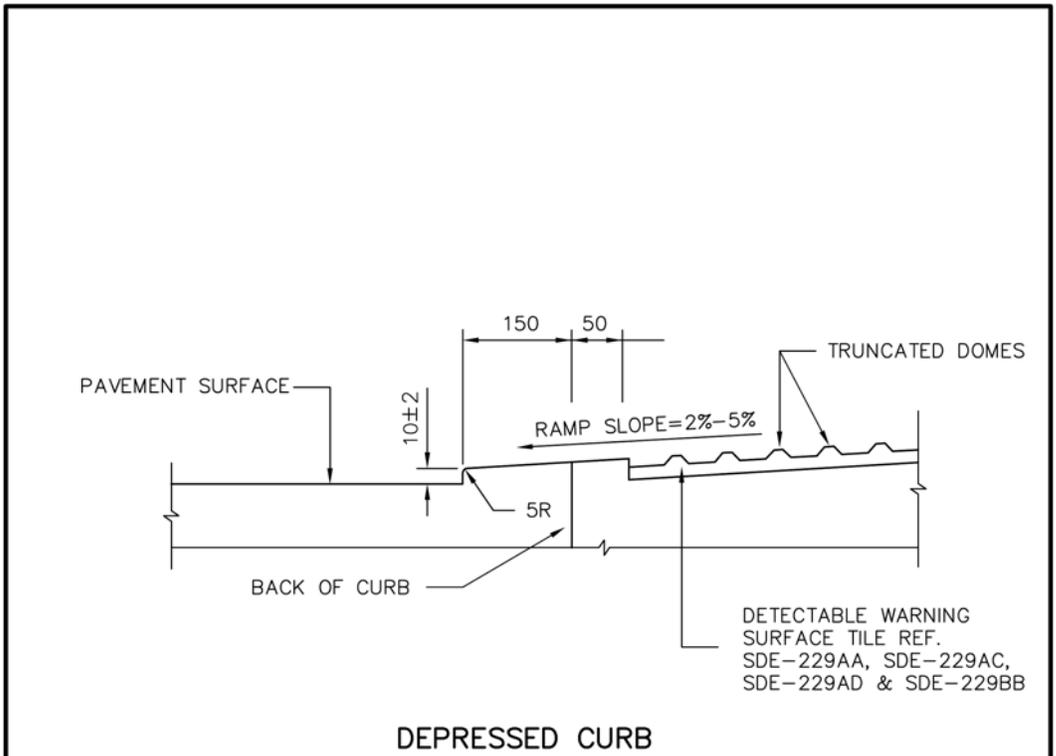


MEDIAN SIDEWALK CROSSING
 (REF. SD-229B)

NOTE:

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

 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



NOTES:

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

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

INSTALLATION INSTRUCTIONS FOR CAST IN PLACE INLINE DOME DETECTABLE/TACTILE WARNING SURFACE TILE

- (a) During Cast In Place Detectable/Tactile Warning Surface Tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.
- (b) The specifications of the structural embedment flange system and related materials shall be in strict accordance with the Contract Documents and the guidelines set by their respective manufacturers. Do not set Cast In Place tiles in asphaltic concrete.
- (c) The physical characteristics of the concrete shall be consistent with the contract specifications. An overly wet mix will cause the tile to float. Under these conditions, suitable weights such as 2 concrete blocks or sandbags (12 kg) shall be placed on each tile.
- (d) Prior to placement of the Cast In Place Detectable/Tactile Warning Surface Tile system, the Contract Drawings shall be reviewed.
- (e) The concrete pouring and finishing operations require typical mason's tools, however, a 4' long level with electronic slope readout, 12 kg weights, and a large non-marring rubber mallet are specific to the installation of the Cast In Place Detectable/Tactile Warning Surface Tile system. A vibrating mechanism can be employed, if desired. The vibrating unit should be fixed to a soft base such as wood, at least 0.3m square.
- (f) The factory-installed plastic sheeting must remain in place during the entire installation process to prevent the splashing of concrete onto the finished surface of the tile.
- (g) When preparing to set the tile, it is important that NO concrete be removed in the area to accept the tile. It is imperative that the installation technique eliminates any air voids under the tile. Holes in the tile perimeter allow air to escape during the installation process. Concrete will flow through the large holes in each embedment flange on the underside of the tile. This will lock the tile solidly into the cured concrete.
- (h) The concrete shall be poured and finished true and smooth to the required dimensions and slope prior to the tile placement. The tile shall be placed in accordance with the Contract Drawings.
- (i) The Cast In Place Detectable/Tactile Warning Surface Tiles shall be tamped (or vibrated) into the fresh concrete to ensure that the surface of the truncated domes are flush to the adjacent concrete surface. Embedment of the tile so the top of the truncated domes are flush with the adjacent concrete will reduce the possibility of damage due to snow clearing operations. The embedment process should not be accomplished by stepping on the tile as this may cause uneven setting which can result in air voids under the tile surface.
- (j) While concrete is workable, a 3/8" radius edging tool shall be used to create a finished edge of concrete, a steel trowel shall then be used to finish the concrete around the tile's perimeter.
- (k) During and after the tile installation and the concrete curing stage, it is imperative that there is no walking, leaning or external force placed on the tile that may rock the tile causing a void between the underside of tile and concrete.
- (l) Following tile placement, review installation tolerances to Contract Drawings and adjust tile before the concrete sets. Two suitable weights of 12kg each shall be placed on each tile as necessary to ensure solid contact of the underside of tile to concrete.
- (m) Following the concrete curing stage, protective plastic wrap is to be removed from the tile surface by cutting the plastic with a sharp knife, tight to the concrete/tile interface. If concrete bled under the plastic, a soft brass wire brush will clean the residue without damage to the tile surface.
- (n) If required, individual tiles can be bolted together using 1/4 inch or equivalent hardware. This can help to ensure that adjacent tiles are flush to each other during the installation process. Tape or caulking can be placed on the underside of the bolted butt joint to ensure that

concrete does not rise up between the tiles during installation. Any protective plastic wrap which was peeled back to facilitate bolting or cutting, should be replaced and taped to ensure that the tile surface remains free of concrete during the installation process.

- (o) Tiles can be cut using a continuous rim diamond blade in a circular saw or mini-grinder. Use of a straightedge to guide the cut is advisable where appropriate.

E10. COORDINATION OF CONSTRUCTION WITH CN RAIL

E10.1 General Requirements

- E10.1.1 The Contractor shall be responsible to meet all Canadian National (CN), constraints, requirements, and safety measures.
- E10.1.2 The Contractor shall not enter into CN property at any time unless he has obtained permission from CN and adheres to CN safety measures.
- E10.1.3 CN Safety Requirements are included in Appendix C.

E11. SIGN SUPPORT CLAMPS

- E11.1 The Contractor shall install all new sign support clamps at the locations shown on the Drawings or as directed by the Contract Administrator. The City shall supply all sign support clamps and parking meter poles.
- E11.2 There shall be no measurement or payment for the installation of sign support clamps in accordance with this specification.

E12. BASE COURSE AND SUB-BASE MATERIAL

DESCRIPTION

E12.1 General

- E12.1.1 This specification shall supplement the specification for Base Course and Sub-Base material found in CW 3110.

MATERIALS

E12.2 Base Course and Sub-Base Material

- E12.2.1 All material shall be Crushed Limestone supplied and installed in accordance with CW 3110.
- E12.2.2 Use of Recycled Concrete Pavement will not be permitted.

CONSTRUCTION METHODS

- E12.3 As per CW 3110.

MEASUREMENT AND PAYMENT

- E12.4 As per CW 3110.

E13. TREE REMOVALS

DESCRIPTION

E13.1 General

- E13.1.1 This Special Provision shall amend the City of Winnipeg Standard Construction specification CW 3010 "Clearing and Grubbing", and shall cover the removal of trees as

specified on the Contract Drawings. The City of Winnipeg, Forestry Branch must be contacted prior to removing any trees.

CONSTRUCTION METHODS

E13.2 Tree Removals

- E13.2.1 Remove only trees marked and confirmed for removal in the field by the Contract Administrator.
- E13.2.2 Remove trees in accordance with CW 3010.
- E13.2.3 The Contractor shall arrange for any Elmwood to be disposed of by the City of Winnipeg.

MEASUREMENT AND PAYMENT

- E13.3 Removal of trees will be measured on a unit basis and paid for at the Contract Unit Price per unit item of "Tree Removal". The number to be paid for will be the total number of trees removed in accordance with this specification and accepted by the Contract Administrator

E14. CONSTRUCTION OF TINTED CONCRETE

DESCRIPTION

E14.1 General

- E14.1.1 This specification covers the construction of "red" tinted concrete pavement, intended to delineate Transit only lanes at various locations in this project. The tinted concrete is finished at grade and is the width of the travel lane. Care must be taken with consistency in water/cement ratio and finishing as the color can be affected load to load.
- E14.1.2 Red tinted concrete is to be used at the Fort Rouge Station, and the Warsaw transitway entrance as directed by the Contract Administrator.
- E14.1.3 Referenced Standard Construction Specifications
 - (a) CW 3310 – Portland Cement Concrete Pavement Works

MATERIALS AND EQUIPMENT

E14.2 Concrete Materials

- E14.2.1 The Contractor shall base the tinted concrete mix on a mix design that has been approved for the 2009 construction season by the City of Winnipeg Research and Standards Department.
- E14.2.2 The base mix design shall conform to Section 6 of CW 3310 with the following alterations:
 - (a) Type 1 mix as per Section 6.2 of CW 3310
 - (b) Slump for hand placement shall be 80 mm +/- 20 mm prior to adding superplasticizers (if needed) to facilitate finishing without adding water to the surface.
- E14.2.3 Alterations to the base mix design will be considered by the Contract Administrator if necessary to account for the concrete tint material and finishing operations.

E14.3 Concrete Tint

- E14.3.1 "Red" coloured metal oxide pigment used to permanently color ready-mix concrete.
- E14.3.2 Approved Product List
 - (a) Lafarge Red (Premium) supplied through L.M. Scofield Company
 - (b) SG160-2 Sunrise Red supplied through L.M. Scofield Company
- E14.3.3 Contractor to cast one coloured concrete sample minimum 200 mm X 200 mm in area using base concrete mix for approval by Contract Administrator.

E14.3.4 Tinted concrete shall not be placed until sample color has been accepted by the Contract Administrator. The Contractor shall demonstrate that the sample will achieve the approximate color advertised by the pigment supplier using local concrete mix materials.

E14.4 Superplasticizers

E14.4.1 Superplasticizers shall conform to the requirements of CSA CAN3-A266.5 and CAN3-A266.6, but must be compatible with the air-entraining agent. The agent shall be free of chlorides and shall not affect the air-entraining agent's ability to produce a satisfactory air void system.

E14.5 Liquid Membrane-Forming Curing Compound

E14.5.1 Curing Compound shall be clear (no pigment), and water based conforming to the requirements of ASTM C309.

E14.6 Other Materials

E14.6.1 All other materials as per CW 3310

E14.7 Floating and Finishing Equipment

E14.7.1 Use only wood or magnesium floats. Bull floats used for initial finishing shall be constructed of wood only.

E14.8 Other Equipment

E14.8.1 All other equipment as per CW 3310

CONSTRUCTION METHODS

E14.9 General

E14.9.1 Concrete formwork, steel reinforcement, placement, curing, and joint sealing as per CW 3310 except as modified in the following clauses.

E14.9.2 As shown on the Drawings, construct formed 50 mm headers to define the lane edge and transverse termination of at-grade coloured concrete where the adjacent pavement is to be asphalt overlaid.

E14.9.3 Clean finishing tools and equipment and let dry prior to finishing. Wet tools will fade the colouring. Wetting of tools during finishing operation is not permitted.

E14.9.4 Place concrete at a consistent slump. No water shall be added on Site. Superplasticizer may be added at a rate suggested by the concrete supplier if additional workability is needed.

E14.9.5 No localized water spray or fogging is permitted to assist in finishing as this will locally fade the colour.

E14.9.6 Clear curing compound only shall be used. The use of water curing or plastic film is not allowed. Plastic film for insulation in cold weather must be approved by the Contract Administrator.

MEASUREMENT AND PAYMENT

E14.10 Construction of Tinted Concrete

E14.10.1 Construction of Tinted Concrete will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Construction of 230 mm Concrete Pavement (Plain-Dowelled, Tinted)" listed below. The area to be paid for will be the total number of square metres of tinted concrete supplied and placed at grade, or below an asphalt overlay in accordance with this specification and accepted by the Contract Administrator.

E15. DESIGN AND SHOP DRAWINGS

DESCRIPTION

- E15.1 This Specification provides instructions for the preparation and submission of design and Shop Drawings.
- E15.1.1 The term 'Design Drawings' means full colour dimensioned Drawings which are to be provided by the Contractor to illustrate the sign face, proportion, and scale of elements.
- E15.1.2 The term 'Shop Drawings' means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, including Site erection drawings which are to be provided by the Contractor to illustrate details of a portion of the Work.
- E15.1.3 The Contractor shall submit specified design and Shop Drawings to the Contract Administrator for review. All submissions must be in metric units. Where data is in imperial units, the correct metric equivalent shall also be show on all submissions for Contract Administrator review.
- E15.1.4 The Contractor shall submit Station drawings, sealed by a Professional Engineer in the Province of Manitoba, for all elements within two (2) Working Days of Contract Award and prior to commencement of work. The drawings shall show all details of construction, fastenings, materials and colours.
- E15.1.5 The Contractor shall submit dimensioned, detailed Design Drawings, sealed by a Professional Engineer in the Province of Manitoba, within two (2) Working Days of Contract Award and prior to commencement of work. The drawings shall show all details of construction, fastenings, materials and colours.
- E15.1.6 The Contractor shall submit drawings, sealed by a Professional Engineer in the Province of Manitoba, for review and approval within two (2) 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 steel elements. Drawings to include anchor requirements.
- E15.2 Design Drawings are to be provided as noted in the specifications and as shown on the Drawings.
- E15.3 Shop Drawings
- E15.3.1 Original drawings are to be prepared by Contractor, Subcontractor, supplier, distributor, or manufacturer, which illustrate appropriate portion of Work; showing fabrication, layout, setting or erection details as specified in appropriate sections.
- E15.3.2 Shop drawings for the following structural components shall be sealed by a Professional Engineer in the Province of Manitoba:
- (a) Metal Fabrications
 - (b) Shoring
- E15.4 Contractor's Responsibilities
- E15.4.1 Review Shop Drawings, product data and samples prior to submission and stamp and sign drawings indicating conformance to the Contract requirements.
- E15.4.2 Verify:
- (a) Field Measurements
 - (b) Field Construction Criteria
 - (c) Catalogue numbers and similar data

- E15.4.3 Coordinate each submission with requirements of Work and Contract Documents. Individual Shop Drawings will not be reviewed until all related drawings are available.
- E15.4.4 Notify Contract Administrator, in writing at time of submission, of deviations from requirements of Contract Documents.
- E15.4.5 Responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator's review of submission, unless Contract Administrator gives written acceptance of specified deviations.
- E15.4.6 Responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.
- E15.4.7 The Contractor shall make any corrections required by the Contract Administrator and shall resubmit the required number of corrected copies of Shop Drawings. The Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections requested by the Contract Administrator on previous submission.
- E15.4.8 After Contract Administrator's review and return of copies, distribute copies to subtrades as appropriate.
- E15.4.9 Maintain one (1) complete set of reviewed Shop Drawings, filed by Specification Section Number, at the Site of the Work for use and reference of the Contract Administrator and Subcontractors.
- E15.5 Submission Requirements
- E15.5.1 Schedule submissions at least fourteen (14) Calendar Days before the reviewed submissions will be needed, and allow for a fourteen (14) Calendar Day period for review by the Contract Administrator of each individual submission and re-submission, unless noted otherwise in the Contract Documents.
- E15.5.2 Submit two (2) paper prints of Shop Drawings. The Contractor is advised that the Contract Administrator will retain one (1) copy of all submittals and return one (1) copy to the Contractor.
- E15.5.3 Accompany submissions with transmittal letter, containing:
- (a) Date
 - (b) Project title and Bid Opportunity number
 - (c) Contractor's name and address
 - (d) Number of each shop drawing, product data and sample submitted
 - (e) Specification Section, Title, Number and Clause
 - (f) Drawing Number and Detail/Section Number
 - (g) Other pertinent data
- E15.5.4 Submissions shall include:
- (a) Date and revision dates.
 - (b) Project title and Bid Opportunity number.
 - (c) Name of:
 - (i) Contractor
 - (ii) Subcontractor
 - (iii) Supplier
 - (iv) Manufacturer
 - (v) Separate detailer when pertinent
 - (d) Identification of product of material.
 - (e) Relation to adjacent structure or materials.

- (f) Field dimensions, clearly identified as such.
- (g) Specification section name, number and clause number or drawing number and detail/section number.
- (h) Applicable standards, such as CSA or CGSB numbers.
- (i) Contractor's stamp, initialed or signed, certifying review of submission, verification of field measurements and compliance with Contract Documents.

E15.5.5 Other Considerations:

- (a) Fabrication, erection, installation or commissioning may require modifications to equipment or systems to conform to the design intent. Revise pertinent Shop Drawings and resubmit.
- (b) Material and equipment delivered to the Site of the Works will not be paid for at least until pertinent Shop Drawings have been submitted and reviewed.
- (c) Incomplete shop drawing information will be considered as stipulated deductions for the purposes of progress payment certificates.
- (d) No delay or cost claims will be allowed that arise because of delays in submissions, re-submissions and review of Shop Drawings.

E16. HYDRO EXCAVATION

DESCRIPTION

E16.1 General

- E16.1.1 This specification shall cover the removal of earthen material immediately adjacent to underground utilities infrastructure by means of high pressure water spray, and the recovery of evacuated material by vacuum type means or equivalent method as approved by the Contract Administrator.

EQUIPMENT

- E16.2 Hydro Excavation unit shall be capable of maintaining a minimum working pressure of 10,000 psi, at a rate of flow of 10 to 12 gallons per minute. Unit should be adjustable, so as to provide adequate pressure to remove earthen material identified by the Contract Administrator.
- E16.3 Spray head shall be equipped with a rotating type nozzle, in order to provide a wider path of cut.

CONSTRUCTION METHODS

E16.4 Hydro-removal of earthen material

- E16.4.1 Earthen material adjacent to utility entity shall be sprayed with high pressure water so as to remove all such material identified by the Contract Administrator.

E16.5 Recovery of excavated material

- E16.5.1 The recovery of excavated material shall be done using vacuum type method, or other type method as approved by the Contract Administrator.
- E16.5.2 The recovery of material shall follow immediately behind the excavation, to avoid excavated areas from filling with excavated material.
- E16.5.3 The use of mechanical sweepers will not be allowed.
- E16.5.4 Dispose of material in accordance with Section 3.4 of CW 1130.

E16.6 Back fill of hydro excavated hole

- E16.6.1 The Contractor shall be responsible for the backfill of the hydro excavated hole upon the completion of the Work described herein, to the approval of the Contract Administrator.

MEASUREMENT AND PAYMENT

E16.7 Hydro Excavation

- E16.7.1 Hydro Excavation of earthen material will be measured on an hourly basis and paid for at the Contract Unit Price per hour for "Hydro Excavation". The hours to be paid for will be the total number of hours of Hydro Excavation in accordance with this specification, accepted and measured by the Contract Administrator. Travel to and from the Site will not be accounted for in the payment of this item.

E17. TREE PRUNING

DESCRIPTION

- E17.1 This Specification shall cover:
- E17.1.1 pruning of existing trees
- E17.2 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.

CONSTRUCTION METHODS

- E17.3 The Contractor shall restrict his activities strictly to within the limits of the Works, unless receiving prior written approval from the Contract Administrator.
- E17.4 Pruning of existing trees:
- (a) Existing trees to be pruned to City of Winnipeg Forestry standards to ensure bottom branches are above head height for cyclists (approx 3.0m).
 - (b) Contractor to mark out branches to be removed prior to pruning for approval by City Forester.
 - (c) Trees to be pruned include street trees, trees on Winnipeg Transit property and existing trees to remain near the proposed Fort Rouge Station, Harkness Station and along Warsaw Avenue.
- E17.5 The Contractor shall ensure that upon completion of pruning operations, the Site shall be left free of any hazards and in a neat condition.

MEASUREMENT AND PAYMENT

- E17.6 Pruning of existing trees will be measured and paid for at the lump sum price for "Pruning of Existing Trees", 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. The number of each item to be paid for will be the total number supplied and placed in accordance with this Specification and accepted by the Contract Administrator, as measured by the Contract Administrator.

E18. ILLUMINATED PYLON SIGNS

DESCRIPTION

- E18.1 The Work of this specification comprises the furnishing of all labour, equipment and materials required to complete the supply, fabrication and erection of the illuminated pylon signs and related Work as shown on the Drawings and as hereinafter specified, including, but not necessarily confined to the following:
- (a) Supply, fabrication and installation structures as per Design Drawings.
 - (b) Supply, fabrication and installation of two-sided illuminated station identification displays as per Design Drawings.

- (c) Supply, fabrication and installation of two-sided cabinet displays as per Design Drawings.
- (d) Supply of anchor bolts and bolt template.
- (e) Electrical connection of sign.

DESIGN / SHOP DRAWINGS

- E18.2 The Contractor shall submit stamped drawings, sealed by a Professional Engineer in the Province of Manitoba, for review and approval within two (2) Business Days of Contract Award. Structural Engineer's drawings shall show all details of construction and fastenings for erections and shall be as specified or approved in accordance with B6.
- E18.3 The Contractor shall submit full colour Design Drawings of sign faces and sign boxes from the supplier including materials, lighting components, connections and fastenings for review and approval within two (2) Business Days of Contract Award for review and approval by Winnipeg Transit prior to start of manufacture.
- E18.4 The Contractor shall submit all loadings for the illuminated pylon signs for verification and use in the foundation design within two (2) Business Days of Contract Award for review by Contract Administrator.

PRODUCTS

- E18.5 Illuminated pylon signs as supplied by Enseicom, contact Con Moussis 1-800-663-0673, to meet the following criteria.
- E18.5.1 Equals or alternatives must be preapproved in accordance with B6: Substitutes.

MATERIALS

- E18.6 Structures to be built of galvanized steel core with aluminum cover. Steel to be treated to ensure galvanic corrosion does not occur.
- E18.7 Aluminium to be 6061-T6 structural tubing with architectural 6063-T5 cast aluminium forms.
- E18.8 Exterior form of poles to be rounded triangle as per the Drawings.
- E18.9 All fastenings and hardware to be stainless steel 304 or better non-rusting in winter corrosive environment, tamper-proof and flush to exposed surface.
- E18.10 All plates to be aluminum 6061-T6. All anchor bolts and base assemblies to be galvanized steel. Galvanizing to be a zinc coating with sufficient thickness to prevent galvanic corrosion between steel and aluminium.
- E18.11 All paint to be powder paint. Silver colour to be PM211S11 (sparkle silver) by Protech. Blue colour to be 5005 38/40010 by Tiger Drylac.
- E18.12 Provide a detailed parts list to Winnipeg Transit including product number, product description, colour and options for all components of the signs and structures.
- E18.13 Illuminated sign boxes:
 - (a) Materials shall be free from defects impairing strength, durability or appearance, and be of best commercial quality for use intended.
 - (b) Materials and methods used to assemble Work of this Section shall be of such properties and construction to safely sustain the loads normally imposed thereon, as would be required of this type of installation.
 - (c) All exposed fastenings shall be of the same material, colour and finish as the metals to which these are supplied, unless otherwise specified or called for on the Drawings.
 - (d) All metal shall be free from scale, buckles, pits and other defects.

- (e) Sign components and construction shall be as shown on the Drawings and as approved by the Contract Administrator.
- (f) Identification signs to be constructed of 20 ga. sheet metal with 12.5 mm F-Section vinyl retainers. Cabinet to be painted to match sign structure. Paint – PM211S11 (sparkle silver) by Protech.
- (g) Lamps to be white LED strips. Contractor to provide lighting schematic including ballast on Shop Drawings. Lamps and ballasts to be high output. Light levels to meet or exceed existing illuminated sign structures on Graham Avenue.
- (h) Acrylic to be SG (sign grade).
- (i) Polycarbonate face to be 4.6 mm (3/16") clear Lexan.
- (j) Background to be blue to match Tiger Drylac 5005 38/40010 paint colour.
- (k) Copy to be 600 mm high Frutiger Bold as per the Design Drawings.
- (l) All graphics to be screen printed on 3M day/night film.
- (m) All Work, materials and final sign box to be CSA compliant.

E18.14 Cabinet display:

- (a) Materials shall be free from defects impairing strength, durability or appearance, and be of best commercial quality for use intended.
- (b) Materials and methods used to assemble Work of this Section shall be of such properties and construction to safely sustain the loads normally imposed thereon, as would be required of this type of installation.
- (c) All exposed fastenings shall be of the same material, colour and finish as the metals to which these are supplied, unless otherwise specified or called for on the Drawings.
- (d) All metal shall be free from scale, buckles, pits and other defects.
- (e) Components and construction shall be as shown on the Drawings and as approved by the Contract Administrator.
- (f) Cabinet to be constructed of 304 or better stainless steel with mounting bracket, tempered glass door, painted Protech PM211S11 (sparkle silver).
- (g) Hinge to be continuous along door.
- (h) Door closure to have lock-in-place mechanism.
- (i) Holders for posters to be stainless steel compression clips.
- (j) Locks to be tamper resistant key locks. Two locks per door.

WORKMANSHIP

- E18.15 Proportion items to meet the National Building Code and Manitoba Building Code. Items shall support loads recommended by the Code and local standards for wind and snow loading unless specific loads are indicated on the Drawings.
- E18.16 Fabricate work to shape and size with sharp lines, even curves and smooth surfaces. Connections shall be securely welded, bolted or riveted. Bolted and riveted connections are not permitted in exposed areas of the sign. Welds shall be dressed smooth on exposed surfaces. Welds/joins shall not be visible upon completion of painting operations. Rabbits, lugs and brackets shall be provided so that the Work can be assembled in a neat substantial manner. Thickness of metal and design of assembly and support shall give ample strength and stiffness.
- E18.17 Exposed ends and edges of metal shall be smooth. Joints exposed to the weather shall be formed to exclude water or to drain.
- E18.18 Fit and shop assemble structure as one piece and deliver to the Site. Sign boxes can be delivered separately for installation on Site.

- E18.19 Prior to proceeding with shop fabrication, take all necessary field measurements to verify dimensions or calculations from Drawings.
- E18.20 Fabricate Work in strict accordance with Shop Drawings, and in general to details, sizes, materials shown on Drawings and specified herein.
- E18.21 Assembly: Material intended for use in the various assemblies shall be straight, clean, sharply defined profiles, assembled in such a way that no disfigurements will show in the finished work, or impair the strength.
- E18.22 Welding: All welding shall conform to the requirements of the current CSA Standard W.59 and the fabricator shall be fully approved by the Canadian Welding Bureau, in conformance with the requirements of the current CSA Standard W.47. Welding shall be done by currently licensed welders only and certified to design welds.
- E18.23 Manufacturer shall be a member of the Canadian Welding Bureau, or governing body where manufacture is in another country, and certified to design welds.
- E18.24 Welding splatter and other fabrication burrs where exposed shall be ground or filed smooth and left ready for subsequent operations.
- E18.25 Finish: Fabricated material Work shall be delivered with e-coating, shop coat primer and paint, or other finish as specified.
- E18.26 Following installation, apply a touch up coat of shop primer and powder paint to match finish to all surfaces where finish has been removed and to installation devices such as bolts, screws, welds and the like. Application of touch up primer and paint must follow approved method of field repair acceptable to Contract Administrator.

QUALITY CONTROL

- E18.27 All workmanship and all material furnished and supplied under this Section 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 which are not in accordance with the requirements of this Section.

FABRICATION

- E18.28 Fabrication shall be carried out in accordance with these Specifications and Drawings which form a part of this Contract.
- E18.29 All joints in aluminium structure are to be filled and sanded prior to cleaning for paint preparation.
- E18.30 Vinyl graphics to be applied to second surface of Lexan background.
- E18.31 The workmanship shall meet established practice in modern shops.
- E18.32 If damage occurs during fabrication, the Contract Administrator shall be notified to facilitate the implementation of remedial measures. Remedial repair measures will be subject to the approval of the Contract Administrator. Their cost will be paid by the Contractor.
- E18.33 Dimensions and fabrication which control the field matching of parts shall receive careful attention in order to avoid field adjustments.
- E18.34 The material shall be clean, free from rust, mill scale, and other foreign matter before being worked in the shop.

E18.35 All portions of the Work shall be neatly finished. Shearing, cutting, chipping and machining shall be done neatly and accurately. Finished members shall be true to line, free from twists, bends open joints, sharp corners and edges.

PAINTING

E18.36 Clean all metal thoroughly and apply recommended primer.

E18.37 All aluminium to be sanded prior to powder painting.

E18.38 Apply all materials under adequate illumination, spread evenly and flow on smoothly without runs or sags.

E18.39 All coats must be thoroughly dry before applying succeeding coats.

E18.40 All Work where a coat of material has been applied must be inspected and approved by the Contract Administrator before the application of the succeeding specified coat, otherwise no credit for the coat applied will be given, and the Contractor shall then assume the responsibility and recoat the Work in question. Report each coat applied to the Contract Administrator when completed for inspection and approved to comply with the above. Where manufacture is not in Winnipeg the Contractor is to supply digital photos via email of each step for review and approval prior to proceeding to next step.

SAMPLES / PROTOTYPES

E18.41 A prototype is to be manufactured and installed for the sign structure and sign box by the date noted in Critical Stages. The prototype is to be installed for review and approval at Harkness Station prior to manufacture of signs. Cost of prototype is to be incidental to the unit prices bid on this project. The prototype shall be the minimum acceptable standard for all materials, workmanship and finishes. If prototype is approved it may be used as a unit to fulfil the Contract quantities.

E18.42 A full colour sample of the sign face including 'rt' logo graphic is to be supplied for review and approval prior to manufacture of sign faces.

INSTALLATION AND CO-ORDINATION WITH OTHERS

E18.43 The Contractor is advised of the following:

- (a) All signs to be installed on concrete pile and pile cap. Contractor to supply base assembly, anchor bolts and template to Site works Contractor.
- (b) Contractor to ensure final electrical connections can be made by electrical Contractor to electrical source at sign base. All electrical work to be done by a certified journeyman electrician.
- (c) Any damage to the illuminated structure or signs, incurred during fabrication, delivery, installation etc., is to be repaired to the satisfaction of the Contract Administrator within three (3) working days of installation.
- (d) Contractor to supply a field repair kit including primer, paint, custom fastenings and hardware for each sign to Winnipeg Transit at time of installation.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

E18.44 Illuminated pylon signs shall be measured and paid on a per unit basis for "Pylon Sign". The number to be paid shall be the total number of Pylon Signs installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

E19. ILLUMINATED SIGNS

DESCRIPTION

- E19.1 The Work of this specification comprises the furnishing of all labour, equipment and materials required to complete the supply, fabrication and erection of the illuminated signs and related Work as shown on the Drawings and as hereinafter specified, including, but not necessarily confined to the following:
- (a) Supply and installation of two-sided illuminated station identification displays as per Design Drawings.
 - (b) Supply and installation of one-sided illuminated station identification displays as per Design Drawings.
 - (c) Supply, fabrication and installation of two-sided illuminated stop identification displays between canopy columns as per Design Drawings.
 - (d) Coordination with electrical work to connect signs.
 - (e) Coordination with BusWatch sign manufacturer.

DESIGN / SHOP DRAWINGS

- E19.2 The Contractor shall submit drawings sealed by a Professional Engineer in the Province of Manitoba, as supplied by manufacturer for review and approval within two (2) Business Days of Contract Award. Structural engineer's Drawings shall show all details of construction and fastenings for erections and shall be as specified or approved in accordance with B6.
- E19.3 The Contractor shall submit full colour Design Drawings of sign faces and sign boxes including materials, lighting components, connections and fastenings as supplied by manufacturer for review and approval within two (2) Business Days of Contract Award for review and approval by Winnipeg Transit prior to start of manufacture.

PRODUCTS

- E19.4 Illuminated signs as supplied by Enseicom, contact Con Moussis 1-800-663-0673, to meet the following criteria.
- E19.4.1 Equals or alternatives must be preapproved in accordance with B6: Substitutes.

MATERIALS

- E19.5 All fastenings and hardware to be stainless steel 304 or better non-rusting in winter corrosive environment, tamper-proof and flush to exposed surface.
- E19.6 All paint to be powder paint. Silver colour to be PM211S11 (sparkle silver) by Protech. Blue colour to be 5005 38/40010 by Tiger Drylac.
- E19.7 Provide a detailed parts list to Winnipeg Transit including product number, product description, colour and options for all components of the signs and structures.
- E19.8 Illuminated sign boxes:
- (a) Materials shall be free from defects impairing strength, durability or appearance, and be of best commercial quality for use intended.
 - (b) Materials and methods used to assemble Work of this Section shall be of such properties and construction to safely sustain the loads normally imposed thereon, as would be required of this type of installation.
 - (c) All exposed fastenings shall be of the same material, colour and finish as the metals to which these are supplied, unless otherwise specified or called for on the Drawings.
 - (d) All metal shall be free from scale, buckles, pits and other defects.

- (e) Sign components and construction shall be as shown on the Drawings and as approved by the Contract Administrator.
- (f) Identification signs to be constructed of 20 ga. sheet metal with 12.5 mm F-Section vinyl retainers. Cabinet to be painted to match sign structure. Paint – PM211S11 (sparkle silver) by Protech.
- (g) Lamps to be white LED strips. Contractor to provide lighting schematic including ballast on Shop Drawings. Lamps and ballasts to be high output. Light levels to meet or exceed existing illuminated structures on Graham Avenue.
- (h) Acrylic to be SG (sign grade).
- (i) Polycarbonate face to be 4.6 mm (3/16") clear Lexan.
- (j) Background to be blue to match Tiger Drylac 5005 38/40010 paint colour.
- (k) Copy to be Frutiger Bold, heights vary with sign type, as per the Design Drawings.
- (l) All graphics to be screen printed on 3M day/night film.
- (m) All Work, materials and final sign box to be CSA compliant.

WORKMANSHIP

- E19.9 Proportion items to meet the National Building Code and Manitoba Building Code. Items shall support loads recommended by the Code and local standards for wind and snow loading unless specific loads are indicated on the Drawings.
- E19.10 Fabricate work to shape and size with sharp lines, even curves and smooth surfaces. Connections shall be securely welded, bolted or riveted. Bolted and riveted connections are not permitted in exposed areas of the sign. Welds shall be dressed smooth on exposed surfaces. Welds/joins shall not be visible upon completion of painting operations. Rabbets, lugs and brackets shall be provided so that the Work can be assembled in a neat substantial manner. Thickness of metal and design of assembly and support shall give ample strength and stiffness.
- E19.11 Exposed ends and edges of metal shall be smooth. Joints exposed to the weather shall be formed to exclude water or to drain.
- E19.12 Fit and shop assemble structure as one piece and deliver to the Site. Sign boxes can be delivered separately for installation on Site.
- E19.13 Prior to proceeding with shop fabrication, take all necessary field measurements to verify dimensions or calculations from Drawings.
- E19.14 Fabricate Work in strict accordance with Shop Drawings, and in general to details, sizes, materials shown on Drawings and specified herein.
- E19.15 Assembly: Material intended for use in the various assemblies shall be straight, clean, sharply defined profiles, assembled in such a way that no disfigurements will show in the finished work, or impair the strength.
- E19.16 Welding: All welding shall conform to the requirements of the current CSA Standard W.59 and the fabricator shall be fully approved by the Canadian Welding Bureau, in conformance with the requirements of the current CSA Standard W.47. Welding shall be done by currently licensed welders only and certified to design welds.
- E19.17 Manufacturer shall be a member of the Canadian Welding Bureau, or governing body where manufacture is in another country, and certified to design welds
- E19.18 Welding splatter and other fabrication burrs where exposed shall be ground or filed smooth and left ready for subsequent operations.
- E19.19 Finish: Fabricated material Work shall be delivered with e-coating, shop coat primer and paint, or other finish as specified.

E19.20 Following installation, apply a touch up coat of shop primer and powder paint to match finish to all surfaces where finish has been removed and to installation devices such as bolts, screws, welds and the like. Application of touch up primer and paint must follow approved method of field repair acceptable to Contract Administrator.

QUALITY CONTROL

E19.21 All workmanship and all material furnished and supplied under this section 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 which are not in accordance with the requirements of this Section.

FABRICATION

E19.22 Fabrication shall be carried out in accordance with these Specifications and Drawings which form a part of this Contract.

E19.23 All joints in structure are to be filled and sanded prior to cleaning for paint preparation.

E19.24 Vinyl graphics to be applied to second surface of Lexan background.

E19.25 The workmanship shall meet established practice in modern shops.

E19.26 If damage occurs during fabrication, the Contract Administrator shall be notified to facilitate the implementation of remedial measures. Remedial repair measures will be subject to the approval of the Contract Administrator. Their cost will be paid by the Contractor.

E19.27 Dimensions and fabrication which control the field matching of parts shall receive careful attention in order to avoid field adjustments.

E19.28 The material shall be clean, free from rust, mill scale, and other foreign matter before being worked in the shop.

E19.29 All portions of the Work shall be neatly finished. Shearing, cutting, chipping and machining shall be done neatly and accurately. Finished members shall be true to line, free from twists, bends open joints, sharp corners and edges.

PAINTING

E19.30 Clean all metal thoroughly and apply recommended primer.

E19.31 All aluminium to be sanded prior to powder painting.

E19.32 Apply all materials under adequate illumination, spread evenly and flow on smoothly without runs or sags.

E19.33 All coats must be thoroughly dry before applying succeeding coats.

E19.34 All Work where a coat of material has been applied must be inspected and approved by the Contract Administrator before the application of the succeeding specified coat, otherwise no credit for the coat applied will be given, and the Contractor shall then assume the responsibility and recoat the Work in question. Report each coat applied to the Contract Administrator when completed for inspection and approved to comply with the above. Where manufacture is not in Winnipeg the Contractor is to supply digital photos via email of each step for review and approval prior to proceeding to next step.

SAMPLES / PROTOTYPES

E19.35 A prototype of each sign type is to be manufactured and delivered to Winnipeg Transit by the date noted in Critical Stages. The prototypes are to be fully light for review and approval at prior to manufacture of signs. Cost of prototypes are to be incidental to the unit prices bid on this project. The prototype shall be the minimum acceptable standard for all materials, workmanship and finishes. If prototype is approved it may be used as a unit to fulfil the Contract quantities.

INSTALLATION AND CO-ORDINATION WITH OTHERS

E19.36 The Contractor is advised of the following:

- (a) All signs to be installed with tamperproof stainless steel fasteners. Fasteners are not to be visible where practicable.
- (b) Contractor to ensure final electrical connections can be made by electrical Contractor to electrical source at sign base. All electrical work to be done by a certified journeyman electrician.
- (c) Any damage to the illuminated structure or signs, incurred during fabrication, delivery, installation etc., is to be repaired to the satisfaction of the Contract Administrator within three (3) working days of installation.
- (d) Contractor to supply a field repair kit including primer, paint, custom fastenings and hardware for each sign to Winnipeg Transit at time of installation.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

E19.37 Illuminated signs shall be measured and paid on a per unit basis for each type as listed below. The number to be paid shall be the total number of Illuminated Signs installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

- (a) Illuminated Sign on Overhead Canopy Roof
- (b) Illuminated Sign Between Overhead Canopy Columns
- (c) Illuminated Sign on Low Canopy
- (d) Illuminated Sign at Osborne Station

E20. INFORMATION KIOSK

DESCRIPTION

E20.1 The Work of this specification comprises the furnishing of all labour, equipment and materials required to complete the supply, fabrication and erection of the illuminated information kiosks and related Work as shown on the Drawings and as hereinafter specified, including, but not necessarily confined to the following:

- (f) Supply, fabrication and installation structures as per Design Drawings.
- (g) Supply, fabrication and installation of illuminated kiosks as per Design Drawings.
- (h) Supply, fabrication and installation of two-sided cabinet displays as per Design Drawings.
- (i) Supply of anchor bolts and bolt template.
- (j) Electrical connection of sign.

DESIGN / SHOP DRAWINGS

E20.2 The Contractor shall submit stamped structural engineer's Drawings from the manufacturer for review and approval within two (2) Business Days of Contract Award. Structural engineer's Drawings shall show all details of construction and fastenings for erections and shall be as specified or approved in accordance with B6.

E20.3 The Contractor shall submit full colour Design Drawings of sign faces and sign boxes from the manufacturer including materials, lighting components, connections and fastenings for review and approval within two (2) Business Days of Contract Award for review and approval by Winnipeg Transit prior to start of manufacture.

PRODUCTS

E20.4 Illuminated information kiosks as supplied by Enseicom, contact Con Moussis 1-800-663-0673, to meet the following criteria.

- (a) Equals or alternatives must be preapproved in accordance with B6: Substitutes.

MATERIALS

E20.5 Structures to be built of plate aluminum internal structure and acrylic exterior with blue vinyl graphic on interior face.

E20.6 All fastenings and hardware to be stainless steel 304 or better non-rusting in winter corrosive environment, tamper-proof and flush to exposed surface

E20.7 All plates to be aluminum 6061-T6. All anchor bolts and base assemblies to be galvanized steel. Galvanizing to be a zinc coating with sufficient thickness to prevent galvanic corrosion between steel and aluminium.

E20.8 All paint to be powder paint. Silver colour to be PM211S11 (sparkle silver) by Protech. Blue colour to be 5005 38/40010 by Tiger Drylac.

E20.9 Provide a detailed parts list to Winnipeg Transit including product number, product description, colour and options for all components of the signs and structures.

E20.10 Illuminated sign boxes:

- (a) Materials shall be free from defects impairing strength, durability or appearance, and be of best commercial quality for use intended.
- (b) Materials and methods used to assemble Work of this Section shall be of such properties and construction to safely sustain the loads normally imposed thereon, as would be required of this type of installation.
- (c) All exposed fastenings shall be of the same material, colour and finish as the metals to which these are supplied, unless otherwise specified or called for on the Drawings.
- (d) All metal shall be free from scale, buckles, pits and other defects.
- (e) Sign components and construction shall be as shown on the Drawings and as approved by the Contract Administrator.
- (f) Lamps to be white LED strips. Contractor to provide lighting schematic including ballast on Shop Drawings. Lamps and ballasts to be high output. Light levels to meet or exceed existing illuminated sign structures on Graham Avenue.
- (g) Acrylic to be SG (sign grade).
- (h) Background to be blue to match Tiger Drylac 5005 38/40010 paint colour.
- (i) Copy to be information symbol as per the Design Drawings.
- (j) All Work, materials and final sign box to be CSA compliant.

E20.11 Cabinet display:

- (a) Materials shall be free from defects impairing strength, durability or appearance, and be of best commercial quality for use intended.
- (b) Materials and methods used to assemble Work of this Section shall be of such properties and construction to safely sustain the loads normally imposed thereon, as would be required of this type of installation.

- (c) All exposed fastenings shall be of the same material, colour and finish as the metals to which these are supplied, unless otherwise specified or called for on the Drawings.
- (d) All metal shall be free from scale, buckles, pits and other defects.
- (e) Components and construction shall be as shown on the Drawings and as approved by the Contract Administrator.
- (f) Cabinet to be constructed of 304 or better stainless steel with mounting bracket, tempered glass door, painted Protech PM211S11 (sparkle silver).
- (g) Hinge to be continuous along door.
- (h) Door closure to have lock-in-place mechanism.
- (i) Holders for posters to be stainless steel compression clips.
- (j) Locks to be tamper resistant key locks. Two locks per door.

WORKMANSHIP

- E20.12 Proportion items to meet the National Building Code and Manitoba Building Code. Items shall support loads recommended by the Code and local standards for wind and snow loading unless specific loads are indicated on the Drawings.
- E20.13 Fabricate work to shape and size with sharp lines, even curves and smooth surfaces. Connections shall be securely welded, bolted or riveted. Bolted and riveted connections are not permitted in exposed areas of the sign. Welds shall be dressed smooth on exposed surfaces. Welds/joins shall not be visible upon completion of painting operations. Rabbits, lugs and brackets shall be provided so that the Work can be assembled in a neat substantial manner. Thickness of metal and design of assembly and support shall give ample strength and stiffness.
- E20.14 Exposed ends and edges of metal shall be smooth. Joints exposed to the weather shall be formed to exclude water or to drain.
- E20.15 Fit and shop assemble structure as one piece and deliver to the Site. Sign boxes can be delivered separately for installation on Site.
- E20.16 Prior to proceeding with shop fabrication, take all necessary field measurements to verify dimensions or calculations from Drawings.
- E20.17 Fabricate Work in strict accordance with Shop Drawings, and in general to details, sizes, materials shown on Drawings and specified herein.
- E20.18 Assembly: Material intended for use in the various assemblies shall be straight, clean, sharply defined profiles, assembled in such a way that no disfigurements will show in the finished work, or impair the strength.
- E20.19 Welding: All welding shall conform to the requirements of the current CSA Standard W.59 and the fabricator shall be fully approved by the Canadian Welding Bureau, in conformance with the requirements of the current CSA Standard W.47. Welding shall be done by currently licensed welders only and certified to design welds.
- E20.20 Manufacturer shall be a member of the Canadian Welding Bureau, or governing body where manufacture is in another country, and certified to design welds.
- E20.21 Welding splatter and other fabrication burrs where exposed shall be ground or filed smooth and left ready for subsequent operations.
- E20.22 Finish: Fabricated material Work shall be delivered with e-coating, shop coat primer and paint, or other finish as specified.
- E20.23 Acrylic corners on kiosk to be flush, smooth and sealed. No sharp edges to be visible.

E20.24 Following installation, apply a touch up coat of shop primer and powder paint to match finish to all surfaces where finish has been removed and to installation devices such as bolts, screws, welds and the like. Application of touch up primer and paint must follow approved method of field repair acceptable to Contract Administrator.

QUALITY CONTROL

E20.25 All workmanship and all material furnished and supplied under this Section 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 which are not in accordance with the requirements of this Section.

FABRICATION

E20.26 Fabrication shall be carried out in accordance with these Specifications and Drawings which form a part of this Contract.

E20.27 All joints in aluminium structure are to be filled and sanded prior to cleaning for paint preparation.

E20.28 Vinyl graphics to be applied to second surface of Lexan background.

E20.29 The workmanship shall meet established practice in modern shops.

E20.30 If damage occurs during fabrication, the Contract Administrator shall be notified to facilitate the implementation of remedial measures. Remedial repair measures will be subject to the approval of the Contract Administrator. Their cost will be paid by the Contractor.

E20.31 Dimensions and fabrication which control the field matching of parts shall receive careful attention in order to avoid field adjustments.

E20.32 The material shall be clean, free from rust, mill scale, and other foreign matter before being worked in the shop.

E20.33 All portions of the Work shall be neatly finished. Shearing, cutting, chipping and machining shall be done neatly and accurately. Finished members shall be true to line, free from twists, bends open joints, sharp corners and edges.

PAINTING

E20.34 Clean all metal thoroughly and apply recommended primer.

E20.35 All aluminium to be sanded prior to powder painting.

E20.36 Apply all materials under adequate illumination, spread evenly and flow on smoothly without runs or sags.

E20.37 All coats must be thoroughly dry before applying succeeding coats.

E20.38 All Work where a coat of material has been applied must be inspected and approved by the Contract Administrator before the application of the succeeding specified coat, otherwise no credit for the coat applied will be given, and the Contractor shall then assume the responsibility and recoat the Work in question. Report each coat applied to the Contract Administrator when completed for inspection and approved to comply with the above. Where manufacture is not in Winnipeg the Contractor is to supply digital photos via email of each step for review and approval prior to proceeding to next step.

SAMPLES / PROTOTYPES

E20.39 A prototype is to be manufactured and installed for the sign structure and sign box by the date noted in Critical Stages. The prototype is to be installed for review and approval at Harkness Station prior to manufacture of signs. Cost of prototype is to be incidental to the unit prices bid on this project. The prototype shall be the minimum acceptable standard for all materials, workmanship and finishes. If prototype is approved it may be used as a unit to fulfil the Contract quantities.

INSTALLATION AND CO-ORDINATION WITH OTHERS

E20.40 The Contractor is advised of the following:

- (a) Kiosks to be installed on concrete base or wall as per the Drawings. Contractor to supply base assembly, anchor bolts and template to Site works Contractor.
- (b) Contractor to ensure final electrical connections can be made by electrical Contractor to electrical source at sign base. All electrical work to be done by a certified journeyman electrician.
- (c) Any damage to the illuminated structure or signs, incurred during fabrication, delivery, installation etc., is to be repaired to the satisfaction of the Contract Administrator within three (3) working days of installation.
- (d) Contractor to supply a field repair kit including primer, paint, custom fastenings and hardware for each sign to Winnipeg Transit at time of installation.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

E20.41 Illuminated kiosks shall be measured and paid on a per unit basis for "Illuminated Kiosk". The number to be paid shall be the total number of Illuminated Kiosks installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

E21. SHELTERS AND LOW CANOPIES

DESCRIPTION

E21.1 The Work of this specification comprises the furnishing of all labour, equipment and materials required to complete the supply, fabrication and erection of the transit passenger shelters and related Work as shown on the Drawings and as hereinafter specified, including, but not necessarily confined to the following:

- (a) Supply, fabrication and installation of heated shelters as per Design Drawings.
- (b) Supply, fabrication and installation of unheated canopies as per Design Drawings.
- (c) Supply, fabrication and installation of unheated 5x11 shelters.

GENERAL

E21.2 The fabrication and installation of shelters as specified in this Section shall include the following:

- (a) Shelters to be installed on raised concrete wall. Contractor to drill concrete wall and install all columns, glazing, doors, roof structures, benches, heaters and lighting units; and
- (b) Provide electrical wiring, diagrams for wiring and access for lighting and heaters to electrical Contractor. All wiring runs must be hidden from view within the shelter structure and must be vandalism proof.
- (c) Provide a detailed parts list to Winnipeg Transit from the manufacturer including product number, product description, colour and options for all components of the shelters.

E21.3 Prior to proceeding with shop fabrication, take all necessary field measurements to verify dimensions or calculations from Drawings.

DESIGN / SHOP DRAWINGS

- E21.4 The Contractor shall submit stamped engineer's Drawings as supplied by manufacturer by date indicated in the Critical Stages. Engineer's Drawings shall show all details of construction and fastenings for erections and shall be as specified or approved.
- E21.5 The Contractor must provide a manufacturer's complete set of shelter assembly instructions for each shelter with a Section in English within two (2) Business Days when called by the Contract Administrator.
- E21.6 The Contractor shall submit all loadings for the shelters and low canopies for verification and use in the foundation design within two (2) Business Days of Contract Award for review by Contract Administrator.

PRODUCTS

- E21.7 Heated shelters, low canopies and 5x11 shelters as supplied by Enseicom, contact Con Moussis 1-800-663-0673, to meet the following criteria.
- E21.7.1 Equals or alternatives must be preapproved in accordance with B6: Substitutes.

MATERIALS

- E21.8 The shelters must include fully transparent walls using glazing panels with a minimum of structure between glazing panels as shown on the Drawings.
- E21.9 Glazing is to be tempered glass, minimum 3/8" (in) thickness, designed for outdoor glazing use. A full width horizontal blue safety line at approximately the middle of the glazing, minimum 1" (inch) in height, must be included on all sheets. "**No Smoking**" logo should be incorporated into the glazing on all walls of shelters. Glazing for canopies to incorporate graphics as shown on the Drawings.
- E21.10 Aluminium framed panels above glazing on canopies to have 6mm blue tint polycarbonate. Provide sample for approval prior to manufacture.
- E21.11 Perforated panels for canopy on sheet pile wall to be 6mm thick aluminium with stainless steel fasteners and spacers.
- E21.12 The shelters are to be equipped with translucent barrel vaulted roofs of 1/4" (in) gray tint polycarbonate.
- E21.13 The shelters structural components must be aluminium, with columns to be 6mm thick aluminium 6061-T6 structural tubing, cut sheet plates to be aluminium 6061-T6, and torsion bars to be aluminium 6360-T6. Diameter of posts and torsion bars as per shelter size.
- E21.14 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 in accordance with B6.
- E21.15 The shelter legs must include a base plate with adjustable stainless steel bolts and rods for levelling to accommodate installations on poured concrete pads with imperfections or the slope of the pad surface. Adjustment capabilities must be a minimum of 6" (in). Shelter mounting to the concrete base must meet all applicable codes and regulations governing structures in the public right-of-way
- E21.16 Convection heaters are to be DBS Sloped Aluminum Draft Barrier 2.4m long DBS24202CA–2000 watt, 240 volt clear anodized Stelpro with DBST12 anti-vandal thermostat and all required relays for linking heaters together. 5 heaters per shelters.
- E21.17 Heated shelters must have aluminium skirting between the glass and the concrete wall to prevent the entry of wind around the perimeter. The skirting must allow for easy removal with simple hand tools to allow the quick replacement of glass panels.

- E21.18 Lighting fixtures; white LED strip lighting continuous along roof fins, housed inside a light channel with a polycarbonate diffuser panel that follows the curvature of the roof line. All lighting materials and fixtures shall be CSA compliant and installed in a manner that meets all Canadian electrical codes.
- E21.19 Benches for heated shelters are to be stainless steel 304 or better with mounting brackets for heaters as per the Drawings. 5 benches per shelter. Contractor to provide Shop Drawings for all components.
- E21.20 Benches for unheated 5x11 shelters are to be 48" long x 16" wide x 18" high stainless steel frames with grey recycled plastic seat slats as per the Drawings. Contractor to provide Shop Drawings for all components.
- E21.21 Door closures shall be LCN 4040 Super Smoothie Series (certified under ANSI Standard A156.4, grade one, UL and ULC listed) with all weather hydraulic fluid tested from -130 F to 130 F manufactured by LCN Closures PO Box 100 121 W. Railroad Ave. Princeton, Illinois 61356-0100. Contact Noble Locksmith Limited at (204) 942-3703 for more information.
- E21.22 Door openers to be LCN 9530 series operator in anodized aluminum with two activators for each door. External activator to be LCN 8310-853 square 4 3/4" flush mount integrated into pillar of large canopy. Internal activator to be LCN 8310-856 round 4 1/2" with electrical box integrated into shelter post.
- E21.23 Heated shelters:
- (a) The Contractor shall provide all 6" diameter columns, glazing, roof structures (including torsion bars and connecting fins), fasteners and supplies necessary for the installation of shelter on Site on concrete bases.
 - (b) Minimum headroom within shelter and at entrances must be 84 inches.
 - (c) The shelters must be equipped with four (4) doors, glazing with aluminium trims on top and bottom only, pivots and door handles. Door handles are to be jug handle type on inside to allow for pulling the door open and flat plate type on outside to allow for pushing the door open. Door configuration for each location to be as specified on the Drawings or as directed by the Contract Administrator. Doors may be on any wall, shelter design is to be flexible in adjusting for Site conditions. Doors to be hinged, on pivot type hinges, to open inwards, with door closures end doors to have door openers. Safety stops are to be provided at the top and bottom of the door attached to the shelter frame and / or mounted to the concrete base to prevent damage to walls during opening and closing. Doors are to be equipped with door fibre brush sweeps on bottom. Doors to be 36 ³/₈" wide x minimum 82 ⁷/₈" tall.
- E21.24 Low Canopies:
- (a) The Contractor shall provide all 6" diameter columns, glazing, roof structures (including torsion bars and fins), fasteners and supplies necessary for the installation of canopies on Site.
 - (b) LED lighting to be included on all roof fins.
 - (c) Roof to have a minimum of joints. All joints to be at a roof support and be integrated into the design to ensure no water penetration.
 - (d) Conduit to be provided for all signage, camera and loudspeaker systems as noted on the Drawings.
- E21.25 5' x 11' passenger shelters:
- (a) The Contractor shall provide all 4" diameter columns, glazing, roof structures (including torsion bars and fins), fasteners and supplies necessary for the installation of shelters on Site on concrete bases.

- (b) The 5' x 11' dimensions are nominal outside dimensions the actual length and width dimensions may vary by ± 2 inches. Minimum headroom within shelters and at entrances must be 80 inches.
- (c) The shelters must include a 30" (in) to 40" (in) wide doorway opening on one 11' (ft) side. Doors are **NOT** to be included. The passenger shelter design must allow for simple conversion from a left side door opening to a right side door opening.
- (d) The 5' x 11' shelters are **NOT** required to have electric lighting fixtures.
- (e) Shelters to have 1 bench installed per shelter located along the back wall with surface mount tamper proof fastenings into the concrete base.

CLEAN MATERIAL

- E21.26 All aluminium and steel components shall be free of oil, mill scale, rust, pits and other surface defects. All weld splatter and burrs must be ground smooth.

WORKMANSHIP

- E21.27 Proportion items to meet the National Building Code, the Manitoba Building Code and local conditions specifically relating to wind and snow loading. Items shall support loads recommended by the Code unless specific loads are indicated on the Drawings.
- E21.28 Fabricate all Work to shape and size with sharp lines, angles and smooth surfaces as defined in the Drawings. Connections shall be securely welded, bolted or riveted. Welds shall be dressed smooth on exposed surfaces. Rabbits, lugs and brackets shall be provided so that the Work can be assembled in a neat substantial manner. Thickness of metal and design of assembly and support shall give ample strength and stiffness.
- E21.29 All portions of the Work shall be neatly finished. Exposed ends and edges of metal shall be smooth. The shelters wall, roof and joints exposed to the weather shall be formed to exclude water or to drain.
- E21.30 Insofar as possible, the Work is to be fitted and assembled in the Contractor's shop and delivered to the Site in largest practical sections.
- E21.31 Fabricate Work in strict accordance with Shop Drawings. Shop Drawings are to be based on details, sizes, materials shown on Drawings and specified herein.
- E21.32 Welding: All welding shall conform to the requirements of the current CSA Standard W.59 and the fabricator shall be fully approved by the Canadian Welding Bureau, in conformance with the requirements of the current CSA Standard W.47. Welding shall be done by currently licensed welders only and certified to design welds.
- E21.33 Manufacturer shall be a member of the Canadian Welding Bureau, or governing body where manufacture is in another country, and certified to design welds.
- E21.34 Welding splatter and other fabrication burrs where exposed shall be ground or filed smooth and left ready for subsequent operations.
- E21.35 Assembly: Material intended for use in the various assemblies shall be straight, clean, sharply defined profiles, assembled in such a way that no disfigurements will show in the finished work, or impair the strength.
- E21.36 Finish: Fabricated material Work shall be delivered with shop coat primer paint or epoxy coated and other paint finish as specified. Following installation, apply a touch up coat of shop primer or galvanizing and paint to match finish to all surfaces where finish has been removed and to installation devices such as bolts, screws, welds and the like.

QUALITY CONTROL

E21.37 All workmanship and all material furnished and supplied under this Section 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 which are not in accordance with the requirements of this Section.

FABRICATION

E21.38 Fabrication shall be carried out in accordance with these Specifications and Drawings which form a part of this Contract.

E21.39 The shelters must be designed to stand without any glazing.

E21.40 The shelter must be constructed to resist damage from vandalism and must be simple to maintain and clean.

E21.41 The shelters must be designed for easy assembly and must not require any drilling, thread tapping, welding, or painting of structural members or glazing support fixtures.

E21.42 Fasteners used in accessible locations must be of tamper proof design.

E21.43 Connection plates between shelter roof and columns must be easily accessible and not enclosed.

E21.44 The shelter end caps of the roof are to be aluminium big fin assemblies.

E21.45 Roofs must be shipped to Site fully assembled and sealed.

PAINTING

E21.46 Shelters and components, except for glazing and polycarbonate, must be powder painted as all units will be installed in a corrosive environment., Colour to be PM211S11 (sparkle silver) by Protech.

E21.47 Clean all metal thoroughly and apply recommended primer.

E21.48 All aluminium shall be sanded prior to powder painting.

E21.49 Apply all materials under adequate illumination, spread evenly and flow on smoothly without runs or sags.

E21.50 All coats must be thoroughly dry before applying succeeding coats.

E21.51 All Work where a coat of material has been applied must be inspected and approved by the Contract Administrator before the application of the succeeding specified coat, otherwise no credit for the coat applied will be given, and the Contractor shall then assume the responsibility and recoat the Work in question. Report each coat applied to the Contract Administrator when completed for inspection and approved to comply with the above. Where manufacture is not in Winnipeg the Contractor is to supply digital photos via email of each step for review and approval prior to proceeding to next step.

SAMPLES / PROTOTYPES

E21.52 Samples of all materials and assemblies to be provided to Winnipeg Transit by the date stated in Critical Stages. Cost of samples is to be incidental to the unit prices bid on this project. The samples shall be the minimum acceptable standard for all materials, workmanship and finishes. Samples to include:

- (a) Post to roof assembly;
- (b) Wall connection assembly;
- (c) Roof materials;
- (d) Glass sample.

INSTALLATION AND CO-ORDINATION WITH OTHERS

E21.53 The Contractor is advised of the following:

- (a) Contractor to coordinate electrical connection for heaters, including all necessary, conduit, wiring, and backfill and surface repair as per the Drawings.
- (b) Any damage to the shelters, incurred during fabrication, delivery, installation etc., is to be repaired to the satisfaction of the Contract Administrator within three (3) working days of installation at the Contractor's cost.
- (c) Contractor to supply a field repair kit including primer, paint, custom fastenings, and hardware to Winnipeg Transit for each shelter installed.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

E21.54 Heated shelters shall be measured and paid on a per unit basis for "Heated Shelter". The number to be paid shall be the total number of signs installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

E21.55 5x11 shelter shall be measured and paid on a per unit basis for "5x11 Shelter". The number to be paid shall be the total number of signs installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

E21.56 Low Canopies shall be measured and paid on a per unit basis for each type of "Low Canopy" as listed below. The number to be paid shall be the total number of Low Canopies installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

- (a) Wall Mounted 3 Post Canopy.
- (b) Wall mounted 4 Post Canopy.
- (c) Sheet Pile Mounted 33 Post Canopy.
- (d) Surface Mounted 2 Post Canopy.
- (e) Surface Mounted 3 post Canopy.
- (f) Surface Mounted 4 Post Canopy.
- (g) Ramp Mounted Canopy.

E22. OVERHEAD CANOPIES

DESCRIPTION

E22.1 The Work of this specification comprises the furnishing of all labour, equipment and materials required to complete the supply, fabrication and erection of the overhead canopies and related Work as shown on the Drawings and as hereinafter specified.

GENERAL

E22.2 The fabrication and installation of the overhead canopies as specified in this Section shall include the following:

- (d) Shelters to be installed on concrete bases as per the Drawings; and
- (e) Provide electrical wiring, diagrams for wiring and access for lighting, signage, cameras, and loud speakers to electrical Contractor. All wiring runs must be hidden from view within the structure and must be vandalism proof.

- (f) Provide a detailed parts list to Winnipeg Transit from the manufacturer including product number, product description, colour and options for all components of the shelters.

E22.3 Prior to proceeding with shop fabrication, take all necessary field measurements to verify dimensions or calculations from Drawings.

DESIGN / SHOP DRAWINGS

E22.4 The Contractor shall submit stamped engineer's Drawings as supplied by manufacturer by date indicated in the Critical Stages. Engineer's Drawings shall show all details of construction and fastenings for erections and shall be as specified or approved.

E22.5 The Contractor must provide a manufacturer's complete set of shelter assembly instructions for each shelter with a Section in English within two (2) Business Days when called by the Contract Administrator.

E22.6 The Contractor shall submit all loadings for the overhead canopies for verification and use in the foundation design within two (2) Business Days of Contract Award for review by Contract Administrator.

PRODUCTS

E22.7 Overhead canopies as supplied by Enseicom, contact Con Moussis 1-800-663-0673, to meet the following criteria.

- (a) Equals or alternatives must be preapproved in accordance with B6: Substitutes.

MATERIALS

E22.8 Galvanized steel structure columns to be prepared for surface facing of stone, brick, precast concrete, and/or aluminum panels.

E22.9 All exposed steel to be faced with aluminum covers.

E22.10 The canopies are to be equipped with translucent barrel vaulted roofs of 47mm cold formed greenish E XL-10 Lexan.

E22.11 All structural aluminum for roof construction to be minimum 6mm thick aluminium 6061-T6 for structural tubing, cut sheet plates to be aluminium 6061-T6. Size of longitudinal beams to be maximum 150x200mm. Longitudinal beams to arc from reducing in size from 300x200 to 200x200mm as per the Drawings.

E22.12 All fasteners and all mounting hardware use to fasten the canopy to the concrete base at ground or below level must be stainless steel or approved equal in accordance with B6.

E22.13 Base assemblies for columns to be below grade and grouted in place.

E22.14 Signage mounting brackets to be incorporated into canopy design for sign mounted to roof and between columns.

E22.15 Lighting fixtures; white LED strip lighting continuous along roof fins, housed inside a light channel with a polycarbonate diffuser panel that follows the curvature of the roof line. All lighting materials and fixtures shall be CSA compliant and installed in a manner that meets all Canadian electrical codes.

CLEAN MATERIAL

E22.16 All aluminum and steel components shall be free of oil, mill scale, rust, pits and other surface defects. All weld splatter and burrs must be ground smooth.

WORKMANSHIP

- E22.17 Proportion items to meet the National Building Code, the Manitoba Building Code and local conditions specifically relating to wind and snow loading. Items shall support loads recommended by the Code unless specific loads are indicated on the Drawings.
- E22.18 Fabricate all Work to shape and size with sharp lines, angles and smooth surfaces as defined in the Drawings. Connections shall be securely welded, bolted or riveted. Welds shall be dressed smooth on exposed surfaces. Rabbets, lugs and brackets shall be provided so that the Work can be assembled in a neat substantial manner. Thickness of metal and design of assembly and support shall give ample strength and stiffness.
- E22.19 All portions of the Work shall be neatly finished. Exposed ends and edges of metal shall be smooth. The shelters wall, roof and joints exposed to the weather shall be formed to exclude water or to drain.
- E22.20 Insofar as possible, the Work is to be fitted and assembled in the Contractor's shop and delivered to the Site in largest practical sections.
- E22.21 Fabricate Work in strict accordance with Shop Drawings. Shop Drawings are to be based on details, sizes, materials shown on Drawings and specified herein.
- E22.22 Welding: All welding shall conform to the requirements of the current CSA Standard W.59 and the fabricator shall be fully approved by the Canadian Welding Bureau, in conformance with the requirements of the current CSA Standard W.47. Welding shall be done by currently licensed welders only and certified to design welds.
- E22.23 Manufacturer shall be a member of the Canadian Welding Bureau, or governing body where manufacture is in another country, and certified to design welds
- E22.24 Welding splatter and other fabrication burrs where exposed shall be ground or filed smooth and left ready for subsequent operations.
- E22.25 Assembly: Material intended for use in the various assemblies shall be straight, clean, sharply defined profiles, assembled in such a way that no disfigurements will show in the finished work, or impair the strength.
- E22.26 Finish: Fabricated material Work shall be delivered with shop coat primer paint or E coated and other paint finish as specified. Following installation, apply a touch up coat of shop primer or galvanizing and paint to match finish to all surfaces where finish has been removed and to installation devices such as bolts, screws, welds and the like.

QUALITY CONTROL

- E22.27 All workmanship and all material furnished and supplied under this Section 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 which are not in accordance with the requirements of this Section.

FABRICATION

- E22.28 Fabrication shall be carried out in accordance with these Specifications and Drawings which form a part of this Contract.
- E22.29 The canopy must be constructed to resist damage from vandalism and must be simple to maintain and clean.
- E22.30 Fasteners used in accessible locations must be of tamper proof design.

PAINTING

- E22.31 Exposed structure and components, except for glazing and polycarbonate, must be powder painted as all units will be installed in a corrosive environment., Colour to be PM211S11 (sparkle silver) by Protech.
- E22.32 Clean all metal thoroughly and apply recommended primer.
- E22.33 All aluminium shall be sanded prior to powder painting.
- E22.34 Apply all materials under adequate illumination, spread evenly and flow on smoothly without runs or sags.
- E22.35 All coats must be thoroughly dry before applying succeeding coats.
- E22.36 All Work where a coat of material has been applied must be inspected and approved by the Contract Administrator before the application of the succeeding specified coat, otherwise no credit for the coat applied will be given, and the Contractor shall then assume the responsibility and recoat the Work in question. Report each coat applied to the Contract Administrator when completed for inspection and approved to comply with the above. Where manufacture is not in Winnipeg the Contractor is to supply digital photos via email of each step for review and approval prior to proceeding to next step.

SAMPLES / PROTOTYPES

- E22.37 Samples of all materials and assemblies to be provided to Winnipeg Transit by the date stated in Critical Stages. Cost of samples is to be incidental to the unit prices bid on this project. The samples shall be the minimum acceptable standard for all materials, workmanship and finishes. Samples to include:
- (a) Post to roof assembly;
 - (b) Roof materials;
 - (c) LED sample.

INSTALLATION AND CO-ORDINATION WITH OTHERS

- E22.38 The Contractor is advised of the following:
- (a) Any damage to the canopies, incurred during fabrication, delivery, installation etc., is to be repaired to the satisfaction of the Contract Administrator within three (3) working days of installation at the Contractors cost.
 - (b) Contractor to supply a field repair kit including primer, paint, custom fastenings, and hardware to Winnipeg Transit for each canopy installed.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- E22.39 Overhead canopies shall be measured and paid on a per unit basis for "Overhead Canopy". The number to be paid shall be the total number of Overhead Canopies installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

E23. DELIVERY AND STORAGE LOCATION

- E23.1 The Contractor shall be responsible for the storage of all illuminated structures and boxes and heated and unheated shelters in a protected site immediately upon arrival in Winnipeg. The location of this protective storage site is to be determined by and is the responsibility of the Contractor. The Transit Base and Yard will **NOT** be available for storage.
- E23.2 Contractor to store existing shelters that have been removed and salvaged for reinstallation in same location as new shelters.

- E23.3 The Contractor shall remove any units which have been damaged during transportation and replace them.
- E23.4 Delivery and storage by the Contractor is incidental to the unit prices bid and no separate measurement or payment will be made.

E24. BUS STOP FLAGS

DESCRIPTION

- E24.1 This specification covers the supply and installation of bus stop flags for individual poles, flag pairs and totems.

DESIGN / SHOP DRAWINGS

- E24.2 The Contractor shall submit dimensioned detailed Design Drawings within two (2) working days when contacted by the Contract Administrator. The Drawings shall show all details of construction, fastenings, materials and colours.
- E24.3 The Contractor shall submit full colour Design Drawings of sign faces including materials, connections and fastenings for review and approval within two (2) working days of Contract Award.
- E24.4 Drawings are to include all route tiles and stop names and numbers for individual stops to be approved by Winnipeg Transit prior to manufacture.

DELIVERY AND STORAGE

- E24.5 Store units in a protected location, immediately upon arrival on the Site.
- E24.6 Remove from Site any units which have been damaged during transportation and replace.

PRODUCTS

- E24.7 Bus stop flags for individual stops to be stainless steel painted enclosed forms with route markers as required as supplied by:

Trueform Engineering
sales@trueform.co.uk
T 020 8561 4959

- E24.8 Flag pairs for illuminated signs to be two piece stainless steel painted forms with route markers as required as supplied by:

Trueform Engineering
sales@trueform.co.uk
T 020 8561 4959

- E24.9 Flags for bus stop totem to be stainless steel painted enclosed forms with route markers as required as supplied by:

Trueform Engineering
sales@trueform.co.uk
T 020 8561 4959

SAMPLES / PROTOTYPES

- E24.10 A full colour sample of each sign graphic is to be produced and delivered to Winnipeg Transit at 421 Osborne Street for review and approval prior to manufacture of bus stop flags. Cost of sample is to be incidental to the unit prices bid on this project. The sample shall be the minimum acceptable standard for all materials, workmanship and finishes.

INSTALLATION

- E24.11 Install bus stop flag on Elite posts as per E25 and as per manufacturer's direction including adjustment of infill strip and installation of top cap. Infill strip and top cap are incidental to the unit prices bid.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- E24.12 Bus stop flags shall be measured and paid on a per unit basis for "Bus Stop Flag". The number to be paid shall be the total number of Bus Stop Flags installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.
- E24.13 Flag pairs for illuminated signs shall be measured and paid on a per unit basis for "Flag Pairs". The number to be paid shall be the total number of Flags Pairs installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.
- E24.14 Flags for bus stop totem shall be measured and paid on a per unit basis for "Totem flag". The number to be paid shall be the total number of flags installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

E25. ELITE POST

DESCRIPTION

- E25.1 This specification covers the supply and installation of elite poles for bus stop flags and supply of elite poles for totem signs and transit information poster kiosks.

DELIVERY AND STORAGE

- E25.2 Store units in a protected location, immediately upon arrival on the Site.
- E25.3 Remove from Site any units which have been damaged during transportation and replace.

PRODUCTS

- E25.4 Elite posts to be large elite post system in satin silver anodized finish including galvanized base plate and anchor bolts, blue infill strip, top cap, three piece bumper foot and set locking screw as supplied by:

Trueform Engineering
sales@trueform.co.uk
T 020 8561 4959

- E25.5 Contractor to confirm height of poles prior to installation.

INSTALLATION

- E25.6 A template of the galvanized base plate is to be used to install anchor bolts in concrete base.
- E25.7 Install base plate on anchor bolts with required nuts and washers to ensure base is plumb. Base plate to be set below grade as per Drawings.
- E25.8 Install Elite posts for bus stop flags as per manufacturer's direction including bumper foot.
- E25.9 Install flag on post and complete with infill strip. Infill strip to be one continuous piece for length of post.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- E25.10 Elite post is incidental to the unit price bid for bus stop flags. No separate measurement or payment will be made.

E26. SITE FURNITURE

DESCRIPTION

- E26.1 This specification covers the supply and installation of benches, lean rails and waste receptacles.
- E26.2 Store units in a protected location, immediately upon arrival on the Site.
- E26.3 Remove from Site any units which have been damaged during transportation and replace.

PRODUCTS

- E26.4 Benches with backs to be cast aluminium bench with concrete seats product number CTRA-BB as supplied by:

Urban Park,
49 Life Sciences Parkway
Steinbach, Manitoba, R5G 2G7
Ph: 1.800.775.0018
Attn. Myron Krentz
- E26.5 Benches without backs to be cast aluminium bench with concrete seats product number CTRA-BLB as supplied by:

Urban Park,
49 Life Sciences Parkway
Steinbach, Manitoba, R5G 2G7
Ph: 1.800.775.0018
Attn. Myron Krentz
- E26.6 Benches without backs attached to wall to be cast aluminium bench with concrete seats product number CTRA-BLB-W as supplied by:

Urban Park,
49 Life Sciences Parkway
Steinbach, Manitoba, R5G 2G7
Ph: 1.800.775.0018
Attn. Myron Krentz
- E26.7 Bicycle loops to be U aluminium bicycle rack painted sparkle silver as supplied by:

Urban Park,
49 Life Sciences Parkway
Steinbach, Manitoba, R5G 2G7
Ph: 1.800.775.0018
Attn. Myron Krentz
- E26.8 Recycling/waste container to be stainless steel three bin containers as per the Drawings. Bins to match existing City of Winnipeg on street systems. Contractor to provide product information for approval prior to purchase.
- E26.9 Lean rails to be rolled stainless steel 50mm tubing with end caps, connectors and mounting hardware as per the Drawings. Railing to match top rail of centre median fence.

DETAILED DESIGN AND SHOP DRAWINGS

- E26.1 The Contractor shall submit dimensioned, detailed Design Drawings within two (2) working days when contacted by the Contract Administrator for recycling/waste container and lean rail. The Drawings shall show all details of construction, fastenings, materials and colours.

- E26.2 The Contractor shall submit Drawings, sealed by a Professional Engineer in the Province of Manitoba, of lean rail and bench connection to sheet pile wall for review and approval within two (2) Working Days of Contract Award and prior to commencement of work. Drawings shall show all details of construction and fastenings for erections and shall be as specified or approved. Engineer shall be a structural engineer with extensive experience in the design and manufacturing of aluminium and stainless Site furniture. Drawings to include anchor requirements.
- E26.3 Autocad files of the Drawings are available to be emailed upon written request to the Contract Administrator identified in D4.1.

INSTALLATION

- E26.4 Install surface mount benches on concrete paving as shown on the Drawings.
- E26.5 Where benches are to be located in unit paver the Contractor is to supply and install extensions on the legs to meet the depth of the pavers and provide a solid base for mounting. Cost of extensions is incidental to the unit price for benches.
- E26.6 Drill holes and install stainless steel threaded insert to fit bolts. Epoxy in place.
- E26.7 Set benches level and plumb. Dry fit bench with bolts.
- E26.8 Fill under bench legs with non-shrinking grout where legs do not fit flush to sidewalk, maximum 15mm depth. Finish exposed edges with smooth trowel finish with consistent slope to sidewalk surface. Install grout as per manufacturer's specifications. Notify Contract Administrator of grout requirements prior to placing bench.
- E26.9 Fasten benches with stainless steel, tamper proof bolts. Surface of bolt head to be flush or slightly recessed from base plate of legs.
- E26.10 Benches attached to wall to have stainless steel threaded rods, washers and nuts to connect to sheet pile wall.
- E26.11 All other Site furniture to be installed as per manufacturers details.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- E26.12 Bus stop flags shall be measured and paid on a per unit basis for each type as listed below. The number to be paid shall be the total number of signs installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.
- (a) Bicycle Racks
 - (b) Waste / Receptacle Recycling Centre
 - (c) Benches with Backs
 - (d) Backless Benches
 - (e) Backless Benches Mounted to Wall

E27. PEDESTRIAN GUARDRAIL

DESCRIPTION

- E27.1 This specification shall cover the supply and installation of custom guardrails.

MATERIALS

- E27.2 Guardrails to be aluminum square posts with perforated aluminum panels as per the Drawings.
- E27.3 Tubular and plate aluminium shall be 6061-T6.

- E27.4 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.
- E27.5 All paint to be powder paint. Silver colour to be PM211S11 (sparkle silver) by Protech. Blue colour to be 5005 38/40010 by Tiger Drylac.
- E27.6 All fasteners and all mounting hardware use to fasten the posts to the concrete base at ground level must be stainless steel or approved equal in accordance with B6.
- E27.7 The post legs must include a galvanized base plate with adjustable stainless steel machine bolts and rods for levelling to accommodate installations on poured concrete with imperfections or the slope of the surface. Adjustment capabilities must be a minimum of 1" (in). Design of plates and internal post to allow for slope of sidewalk. Manufacturer to site measure all areas to confirm dimensions.

DETAILED DESIGN AND SHOP DRAWINGS

- E27.8 The Contractor shall submit dimensioned, detailed Design Drawings within two (2) working days when contacted by the Contract Administrator. The Drawings shall show all details of construction, fastenings, materials and colours.
- E27.9 The Contractor shall submit Drawings, sealed by a Professional Engineer in the Province of Manitoba, for review and approval within two (2) 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 with extensive experience in the design and manufacturing of aluminium and stainless railings. Drawings to include anchor requirements.
- E27.10 Autocad files of the Drawings are available to be emailed upon written request to the Contract Administrator identified in D4.1.

WORKMANSHIP

- E27.11 Proportion items to meet the National Building Code, the Manitoba Building Code and local conditions specifically relating to wind and snow loading. Items shall support loads recommended by the Code unless specific loads are indicated on the Drawings.
- E27.12 Fabricate all Work to shape and size with sharp lines, angles and smooth surfaces as defined in the Drawings. Connections shall be securely welded, bolted or riveted. Welds shall be dressed smooth on exposed surfaces. Rabbets, lugs and brackets shall be provided so that the Work can be assembled in a neat substantial manner. Thickness of metal and design of assembly and support shall give ample strength and stiffness.
- E27.13 All portions of the Work shall be neatly finished. Exposed ends and edges of metal shall be smooth. The shelters wall, roof and joints exposed to the weather shall be formed to exclude water or to drain.
- E27.14 Insofar as possible, the Work is to be fitted and assembled in the Contractor's shop and delivered to the Site in largest practical sections.
- E27.15 Fabricate Work in strict accordance with Shop Drawings. Shop Drawings are to be based on details, sizes, materials shown on Drawings and specified herein.
- E27.16 Welding: All welding shall conform to the requirements of the current CSA Standard W.59 and the fabricator shall be fully approved by the Canadian Welding Bureau, in conformance with the requirements of the current CSA Standard W.47. Welding shall be done by currently licensed welders only and certified to design welds.
- E27.17 Manufacturer shall be a member of the Canadian Welding Bureau, or governing body where manufacture is in another country, and certified to design welds

- E27.18 Welding splatter and other fabrication burrs where exposed shall be ground or filed smooth and left ready for subsequent operations.
- E27.19 Assembly: Material intended for use in the various assemblies shall be straight, clean, sharply defined profiles, assembled in such a way that no disfigurements will show in the finished work, or impair the strength.
- E27.20 Finish: Fabricated material Work shall be delivered with shop coat primer paint or E coated and other paint finish as specified. Following installation, apply a touch up coat of shop primer or galvanizing and paint to match finish to all surfaces where finish has been removed and to installation devices such as bolts, screws, welds and the like.

QUALITY CONTROL

- E27.21 All workmanship and all material furnished and supplied under this Section 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 which are not in accordance with the requirements of this Section.

FABRICATION

- E27.22 Fabrication shall be carried out in accordance with these Specifications and Drawings which form a part of this Contract.
- E27.23 The guardrail posts must be designed to stand without any connecting panels.
- E27.24 The panels must be constructed to resist damage from vandalism and must be simple to maintain and clean.
- E27.25 The posts must be designed for easy assembly and must not require any drilling, thread tapping, welding, or painting of structural members or glazing support fixtures.
- E27.26 Fasteners used in accessible locations must be of tamper proof design.

PAINTING

- E27.27 Clean all metal thoroughly and apply recommended primer.
- E27.28 All aluminium shall be sanded prior to powder painting.
- E27.29 Apply all materials under adequate illumination, spread evenly and flow on smoothly without runs or sags.
- E27.30 All coats must be thoroughly dry before applying succeeding coats.
- E27.31 All Work where a coat of material has been applied must be inspected and approved by the Contract Administrator before the application of the succeeding specified coat, otherwise no credit for the coat applied will be given, and the Contractor shall then assume the responsibility and recoat the Work in question. Report each coat applied to the Contract Administrator when completed for inspection and approved to comply with the above. Where manufacturer is not in Winnipeg the Contractor is to supply digital photos via email of each step for review and approval prior to proceeding to next step.

SAMPLES / PROTOTYPES

- E27.32 A prototype panel and post is to be manufactured and delivered by May 30, 2011. The prototypes are to be set up for review and approval at Winnipeg Transit yards, 421 Osborne, prior to manufacture of all posts. Cost of prototype is to be incidental to the prices bid on this

project. The prototype shall be the minimum acceptable standard for all materials, workmanship and finishes. If prototype is approved it may be used as a unit to fulfil the Contract quantities.

INSTALLATION

E27.33 Freestanding guardrail to be mounted to concrete sidewalk with base plates. All fasteners to be stainless steel.

E27.34 Mark out location of railing for review and approval prior to installation.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

E27.35 Guardrails shall be measured and paid on a linear metre basis for "Pedestrian Guardrail". The number to be paid shall be the total number of lineal metres constructed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

E28. CENTRE MEDIAN FENCING

DESCRIPTION

E28.1 This specification shall cover the supply and installation of custom centre median fencing.

MATERIALS

E28.2 Panels to be formed with stamped stainless steel in custom RT design with stainless steel frame.

E28.3 All stainless steel components and fastenings shall be 304 or better.

E28.4 Posts and rails to be composed of 50mm diameter stainless steel tube.

E28.5 Base plate to be 150x150x13mm plate with predrilled holes for mounting.

E28.6 Flange and frame for panel to be 25x6mm stainless steel plate.

E28.7 All fasteners on fence to be flush, stainless steel security machine screws / bolts.

E28.8 All fasteners and all mounting hardware used to fasten the fence to the concrete base at ground level must be stainless steel or approved equal in accordance with B6.

E28.9 Contractor to provide 4 additional panels complete with fasteners for maintenance to Winnipeg Transit. Deliver units to 421 Osborne. Contact Brian Newton 986-5812 to coordinate delivery. All costs for additional panels are incidental to the unit price bid on this project.

DETAILED DESIGN AND SHOP DRAWINGS

E28.10 The Contractor shall submit drawings, sealed by a Professional Engineer in the Province of Manitoba, for review and approval within two (2) 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 have extensive experience in the design and manufacturing of aluminium and stainless steel fencing. Drawings to include anchor requirements.

E28.11 Autocad files of the drawings are available to be emailed upon written request to the Contract Administrator.

E28.12 Workmanship

E28.13 Proportion items to meet the National Building Code, the Manitoba Building Code and local conditions specifically relating to wind and snow loading. Items shall support loads recommended by the Code unless specific loads are indicated on the Drawings.

- E28.14 Fabricate all Work to shape and size with sharp lines, angles and smooth surfaces as defined in the Drawings. Connections shall be securely welded, bolted or riveted. Welds shall be dressed smooth on exposed surfaces. Rabbets, lugs and brackets shall be provided so that the Work can be assembled in a neat substantial manner. Thickness of metal and design of assembly and support shall give ample strength and stiffness.
- E28.15 All portions of the Work shall be neatly finished. Exposed ends and edges of metal shall be smooth. The shelters wall, roof and joints exposed to the weather shall be formed to exclude water or to drain.
- E28.16 Insofar as possible, the Work is to be fitted and assembled in the Contractor's shop and delivered to the Site in largest practical sections.
- E28.17 Fabricate Work in strict accordance with shop drawings. Shop Drawings are to be based on details, sizes, materials shown on Drawings and specified herein.
- E28.18 Welding: All welding shall conform to the requirements of the current CSA Standard W.59 and the fabricator shall be fully approved by the Canadian Welding Bureau, in conformance with the requirements of the current CSA Standard W.47. Welding shall be done by currently licensed welders only and certified to design welds.
- E28.19 Manufacturer shall be a member of the Canadian Welding Bureau, or governing body where manufacture is in another country, and certified to design welds
- E28.20 Welding splatter and other fabrication burrs where exposed shall be ground or filed smooth and left ready for subsequent operations.
- E28.21 Assembly: Material intended for use in the various assemblies shall be straight, clean, sharply defined profiles, assembled in such a way that no disfigurements will show in the finished work, or impair the strength.
- E28.22 Finish: Fabricated material Work shall be delivered with shop coat primer paint or E coated and other paint finish as specified. Following installation, apply a touch up coat of shop primer or galvanizing and paint to match finish to all surfaces where finish has been removed and to installation devices such as bolts, screws, welds and the like.

QUALITY CONTROL

- E28.23 All workmanship and all material furnished and supplied under this Section 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 which are not in accordance with the requirements of this Section.

FABRICATION

- E28.24 Fabrication shall be carried out in accordance with these Specifications and Drawings which form a part of this Contract.
- E28.25 The stamped panels must be constructed to resist damage from vandalism and must be simple to maintain and clean.
- E28.26 Fasteners used in accessible locations must be of tamper proof design.

SAMPLES / PROTOTYPES

- E28.27 A prototype is to be manufactured and installed for two sections of fencing by July 15, 2011. The prototype is to be installed for review and approval at Winnipeg Transit yards, 421 Osborne, prior to manufacture of all posts. Cost of prototype is to be incidental to the prices bid

on this project. The prototype shall be the minimum acceptable standard for all materials, workmanship and finishes. If prototype is approved it may be used as a unit to fulfil the Contract quantities.

INSTALLATION

- E28.28 Contractor to layout fencing on site for review and approval prior to installation.
- E28.29 Posts to be anchored to concrete median as per the drawings. Spacing to be checked with dry fit of all materials prior to final anchoring.
- E28.30 Contractor to ensure posts are secure prior to installation of panels and railing.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- E28.31 Centre median fence shall be measured and paid on a linear metre basis for "Centre Median Fence". The number to be paid shall be the total number of lineal metres constructed in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E29. BRICK AND STONE VENEER

DESCRIPTION

- E29.1 This specification shall cover the supply and installation of brick, stone, precast concrete panels and wall caps and veneer stone facing for all surfaces including all required substrates, finishing and fastenings.

MATERIALS

- E29.2 Brick facing to be Hebron Brick Lite as supplied by IXL, contact Murray Alston ph.771-9921, in the following colour mix:
 - (a) 60% of brick to be Brandywine.
 - (b) 40% of brick to be Dakota Common.
- E29.3 Stone to be quarried local granite and white limestone. Stones to be irregular shaped with average diameters from 200-350mm and a thickness of 40-55mm. Samples of stone to be submitted for approval prior to purchase. Stone to comprise 15% of overall wall coverage on for sheet pile wall.
- E29.4 Veneer Stone to be Eldorado Stone as supplied by IXL, contact Murray Alston ph.771-9921, in the following colour mix
 - (a) 50% of stone to be Shadow Rock in Crescent Peak.
 - (b) 40% of stone to be Bluffstone in Olive Grove.
 - (c) 10% of stone to be River Rock in Colorado.
- E29.5 Precast concrete wall caps to be custom shapes as per the Drawings as supplied by Barkman Concrete, contact Cal Schellenberg 1-800-461-2278. Sample of cap profile and colour to be submitted for approval prior to manufacture.
- E29.6 Precast concrete panels to be custom GFRC panels as per the Drawings as supplied by Barkman Concrete, contact Cal Schellenberg 1-800-461-2278. A sample panel to be submitted for approval prior to manufacture.
- E29.7 Graffiti Coating as supplied by

Alsip's Industrial Products Ltd.
1 Cole Ave
Winnipeg, MB R2L 1J3
Phone: (204) 667-3330
Fax: (204) 668-7581
Contact: Jason Alsip

- E29.8 Mortar for stone veneer walls to be type S or type N mortar specified "Veneer Mortar" and "Joint Grout". Colour to be selected to match veneer stone colour.
- E29.9 Lath to be 3.4 lb self-furred corrosion resistant lath or 18 gauge woven wire mesh.
- E29.10 Water resistive barrier to be Tyvek or approved equivalent.
- E29.11 Plywood to be 1/2" marine grade plywood.
- E29.12 Fasteners to be stainless steel minimum 10mm into metal framing. Fasteners for lath on metal columns to be self tapping minimum 10mm into column. All fasteners to be complete with heads or washers large enough to not pull through lath.
- E29.13 Support angles to be galvanized steel 50x90x10mm continuous angle c/w fasteners to connect to wood and concrete substrate.
- E29.14 Metal furring for sheet pile wall to be Phillips 25 gauge 7/8" Weath-Ex DWG Hat Furring Channel or approved equal.

SAMPLES / PROTOTYPES

- E29.15 A prototype of the stone facade for the sheet pile wall is to be prepared by July 15, 2011. The prototype board is to be constructed of all materials required for installation on sheet pile wall and is to be 1.2x 2.4m in size. Contractor to bring completed prototype to Site for review and approval prior to installation of veneer stone. Cost of prototype is to be incidental to the prices bid on this project. The prototype shall be the minimum acceptable standard for all materials, workmanship and finishes.
- E29.16 All required samples to be delivered to McGowan Russell Group 200-120 Fort Street, Winnipeg, attention Jackie Wilkie.

CONSTRUCTION METHODS

- E29.17 Application over masonry and concrete:
 - (a) The veneer stones to be adhered directly to the clean, unpainted concrete with a nominal 12 – 19mm thick bed of mortar.
 - (b) Painted or waterproofed surfaces should be prepared by sandblasting and cleaning.
 - (c) Install support angle as per the Drawings.
 - (d) Apply mortar as per veneer stone or brick manufacturer's specifications.
 - (e) Before the mortar begins to harden, use a notched trowel to "scratch" the mortar surface.
 - (f) Coat the back of each unit with sufficient mortar and press it firmly into place until the excess material spreads from the sides of the unit.
 - (g) Once all the units are in place, fill a grout bag with joint grout and fill each joint by extruding the grout from the bag. The joints can then be tooled, brushed, or raked.
- E29.18 Application over sheet pile wall:
 - (a) Install furring channels horizontally across face of sheet pile wall. Adjust furring to ensure final surface is plumb and true. Maximum spacing to be 400mm.
 - (b) Fasten plywood to furring channels. Ensure fastener type and spacing is sufficient to support final weight of wall finish.

- (c) Apply Water resistive barrier to manufacturer's specifications
 - (d) Install lath.
 - (e) Apply mortar as per veneer stone or brick manufactures specifications for plywood substrate.
 - (f) Before the mortar begins to harden, use a notched trowel to "scratch" the mortar surface.
 - (g) Coat the back of each unit with sufficient mortar and press it firmly into place until the excess material spreads from the sides of the unit.
 - (h) Once all the units are in place, fill a grout bag with joint grout and fill each joint by extruding the grout from the bag. The joints can then be tooled, brushed, or raked.
- E29.19 Application over metal columns:
- (a) Install lath over column with self tapping fasteners. Overlap lath around column corners 400mm.
 - (b) Apply mortar as per veneer stone or brick manufacturer's specifications for metal substrate.
 - (c) Before the mortar begins to harden, use a notched trowel to "scratch" the mortar surface.
 - (d) Coat the back of each unit with sufficient mortar and press it firmly into place until the excess material spreads from the sides of the unit.
 - (e) Install precast concrete corner and base panels prior to infill.
- E29.20 Once all the units are in place, fill a grout bag with joint grout and fill each joint by extruding the grout from the bag. The joints can then be tooled, brushed, or raked.
- E29.21 Do not install in freezing temperatures. Cover and protect if temperatures drop to near freezing.
- E29.22 Install corner units first. Corner units will be used for corners. The proper mix of these units to produce the desired affect must be confirmed on Site with Contract Administrator and manufacturer prior to construction to determine acceptable exemplar.
- E29.23 Placement of stone veneer must be staggered to avoid joints lining up and forming an unbroken line, and to avoid forming a plus (+) sign where four units might otherwise meet at the same point. Random appearance for stone is desired.
- E29.24 Brick to be placed in standard running bond pattern.
- E29.25 While installing veneer select subsequent individual units from multiple pallets in order to get well-blended appearance.
- E29.26 Veneer stones should be trimmed to allow for best fit. Trim in such a way that trimmed edge is located where grout fill will cover the cut or trim line.
- E29.27 Joint widths should be 6mm.
- E29.28 Grout technique on the vertical will be a standard indented grout finish. Approximately 6mm below stone's face.
- E29.29 Grout lines on the top of the wall must be worked to slope down to the sides so that there will be no standing water on horizontal surfaces.
- E29.30 Wall caps to be mortared in place. All grout lines to be maximum 6mm. Cut wall cap on Site to fit around vertical elements. All exposed ends to be factory finished.
- E29.31 Apply graffiti coating as per Professional® Water Sealant & Anti-Graffiti manufacturer's specifications. Contractor to apply graffiti coating to a small area for review and approval by the Contract Administrator. Graffiti coating is incidental to the unit price bid for each item under this specification.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

E29.32 Wall facing shall be measured and paid on a square metre basis for each type of "Wall facing" listed below. The number to be paid shall be the total number of lineal metres constructed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

- (a) Brick facing on concrete wall.
- (b) Brick facing on columns.
- (c) Stone facing on concrete wall.
- (d) Stone facing on columns.
- (e) Stone facing on sheet pile wall.

E29.33 Precast concrete panels shall be measured and paid on a linear metre basis for each type of "Precast concrete panel" listed below. The number to be paid shall be the total number of lineal metres constructed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

- (a) Column corners.
- (b) Column bases.

E29.34 Precast concrete wall caps shall be measured and paid on a linear metre basis for each type of "Precast concrete cap" listed below. The number to be paid shall be the total number of lineal metres constructed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

- (a) On shelter wall.
- (b) On planter wall.
- (c) On sheet pile wall.

E30. ELECTRICAL

DESCRIPTION

E30.1 This specification covers the supply and installation of electrical works as shown on the Drawings and as described in Appendix B.

PRODUCTS

E30.2 All products as shown on the Drawings and as described in Appendix B.

INSTALLATION

E30.3 Contractor to ensure work meets the required codes and is inspected and approved by Governing bodies as noted in Appendix B.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

E30.4 Electrical works shall be measured and paid on a lump sum basis for the items listed below, 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 in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

- (a) CSTE and Connection to Hydro Service Point
- (b) Electrical Work for Southbound Platform
- (c) Electrical Work for Northbound Platform
- (d) Site Lighting

E31. REMOVAL OF CHAIN LINK FENCE

DESCRIPTION

E31.1 General

E31.2 This specification shall cover the removal of the existing chain link fence at 471 Osborne.

EXECUTION

E31.3 Remove all objects designated by the Contract Administrator for removal, including any concrete bases visible or not. Fill and re-grade any holes created from the removal of the concrete bases using an acceptable fill as approved by the Contract Administrator.

E31.4 The limits shall be the limits outlined on the Drawings and as directed by the Contract Administrator.

E31.5 All debris is to be removed from the Site and disposed of or salvaged by the Contractor.

MEASUREMENT AND PAYMENT

E31.6 The Removal of the existing chain link fence will be measured on a length basis and paid for at the Contract Unit Price per lineal metre for "Removal of Chain Link Fence". The length to be paid for will be the total number of lineal metres of chain link fence removed in accordance with this specification, accepted and measured by the Contract Administrator.

E32. RELOCATION OF CHAIN LINK FENCE

DESCRIPTION

E32.1 General

E32.2 This specification shall cover the relocation of the existing chain link fence on the west side of the backlane between Warsaw and Jessie.

EXECUTION

E32.3 Remove all objects designated by the Contract Administrator for removal, including any concrete bases visible or not. Fill and re-grade any holes created from the removal of the concrete bases using an acceptable fill as approved by the Contract Administrator.

E32.4 Relocate all poles, chain link fencing to the approval of the Contract Administrator.

E32.5 The limits shall be the limits outlined on the Drawings and as directed by the Contract Administrator.

E32.6 All debris is to be removed from the Site and disposed of or salvaged by the Contractor.

MEASUREMENT AND PAYMENT

E32.7 The Relocation of the existing chain link fence will be measured on a length basis and paid for at the Contract Unit Price per lineal metre for "Relocation of Chain Link Fence". The length to be paid for will be the total number of lineal metres of chain link fence relocated in accordance with this specification, accepted and measured by the Contract Administrator.

E33. BUS STOP TOTEM

DESCRIPTION

E33.1 The Work of this specification comprises the furnishing of all labour, equipment and materials required to complete the supply and install bus stop totems and related Work as shown on the Drawings and as hereinafter specified.

DESIGN / SHOP DRAWINGS

E33.2 The Contractor shall submit dimensioned detailed Design Drawings within five (5) working days when contacted by the Contract Administrator. The Drawings shall show all details of construction, fastenings, materials and colours.

E33.3 The Contractor shall submit full colour Design Drawings of sign faces and sign boxes including materials, connections and fastenings for review and approval within five (5) working days of Contract Award.

DELIVERY AND STORAGE

E33.4 Store units in a protected location, immediately upon arrival on the Site.

E33.5 Remove from Site any units which have been damaged during transportation and replace.

MATERIALS

E33.6 Bus stop totems to be complete unit standard to Winnipeg Transit Signage System complete with illuminated sign box, large elite posts system, cabinet for route information posters, shroud for disconnect, metal base, stainless steel anchor bolts and all wiring and lighting as supplied by:

Trueform Engineering
sales@trueform.co.uk
T 020 8561 4959

E33.7 Bus stop flags as per E24.

SAMPLES / PROTOTYPES

E33.8 A full colour sample of each sign graphic is to be produced and delivered to Winnipeg Transit at 421 Osborne Street for review and approval prior to manufacture of illuminated sign faces. Cost of sample is to be incidental to the unit prices bid on this project. The sample shall be the minimum acceptable standard for all materials, workmanship and finishes.

INSTALLATION AND CO-ORDINATION WITH OTHERS

E33.9 The Contractor is advised of the following:

- (a) All signs to be installed on bases as constructed under separate contract. Confirm dimensions of sign and base prior to construction.
- (b) Install bus stop flags prior to installation of sign top.
- (c) Contractor to make final electrical connection to electrical source at base of sign. Run wiring to power pedestal in existing conduits as required.
- (d) The Contract Administrator will notify Winnipeg Transit of installation date with a minimum of three (3) working days.
- (e) Any damage to the structure or signs, incurred during fabrication, delivery, installation etc., is to be repaired to the satisfaction of the Contract Administrator within three (3) working days of installation at Contractors cost.
- (f) Provide a detailed parts list to Winnipeg Transit including product number, product description, colour and options for all components of the bus stop totems.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

E33.10 Bus stop totem shall be measured and paid on a per unit basis for "Bus Stop Totem". The number to be paid shall be the total number of totems installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

E34. TRANSIT INFORMATION POSTER KIOSK

DESCRIPTION

E34.1 The Work of this specification comprises the furnishing of all labour, equipment and materials required to complete the supply and install transit information poster (TIP) Kiosks and related Work as shown on the Drawings and as hereinafter specified.

DESIGN / SHOP DRAWINGS

E34.2 The Contractor shall submit dimensioned detailed Design Drawings within five (5) working days when contacted by the Contract Administrator. The Drawings shall show all details of construction, fastenings, materials and colours.

DELIVERY AND STORAGE

E34.3 Store units in a protected location, immediately upon arrival on the Site.

E34.4 Remove from Site any units which have been damaged during transportation and replace.

MATERIALS

E34.5 TIP kiosks to be complete unit standard to Winnipeg Transit Signage System complete with sign topper, large elite posts system, cabinet for route information posters, metal base, and stainless steel anchor bolts as supplied by:

Trueform Engineering
sales@trueform.co.uk
T 020 8561 4959

SAMPLES / PROTOTYPES

E34.6 A full colour sample of the sign graphic is to be produced and delivered to Winnipeg Transit at 421 Osborne Street for review and approval prior to manufacture of sign faces. Cost of sample is to be incidental to the unit prices bid on this project. The sample shall be the minimum acceptable standard for all materials, workmanship and finishes.

INSTALLATION AND CO-ORDINATION WITH OTHERS

E34.7 The Contractor is advised of the following:

- (a) All signs to be installed on bases as constructed under separate contract. Confirm dimensions of sign and base prior to construction.
- (b) The Contract Administrator will notify Winnipeg Transit of installation date with a minimum of three (3) working days notice prior to installation.
- (c) Any damage to the structure or signs, incurred during fabrication, delivery, installation etc., is to be repaired to the satisfaction of the Contract Administrator within three (3) working days of installation at Contractors cost.
- (d) Provide a detailed parts list to Winnipeg Transit including product number, product description, colour and options for all components of the transit information poster kiosks.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- E34.8 Transit information poster kiosks shall be measured and paid on a per unit basis for "TIP Kiosk". The number to be paid shall be the total number of kiosks installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.

E35. TIMETABLE DISPLAY

DESCRIPTION

- E35.1 This specification covers the supply and installation of timetable displays on elite posts.

DELIVERY AND STORAGE

- E35.2 Store units in a protected location, immediately upon arrival on the Site.
- E35.3 Remove from Site any units which have been damaged during transportation and replace.

PRODUCTS

- E35.4 Timetable displays to be silver finish Winnipeg Transit Signage System timetable displays complete with mounting brackets for multiple display as supplied by:

Trueform Engineering
sales@trueform.co.uk
T 020 8561 4959

INSTALLATION

- E35.5 Install on bus stop flag poles in single, double or triple configuration with mounting brackets included with displays at stops indicated. Mounting brackets and installation are incidental to the unit prices bid.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- E35.6 Transit table displays shall be measured and paid on a per unit basis for "Time Table Display". The number to be paid shall be the total number of displays installed in accordance with the Drawings and Specifications and as measured and accepted by the Contract Administrator.