THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 432-2011

BISON DRIVE AND PEMBINA HIGHWAY INTERSECTION IMPROVEMENTS

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 BISON DRIVE AND PEMBINA HIGHWAY INTERSECTION IMPROVEMENTS

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, July 7, 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. ENQUIRIES

B3.1 All enquiries shall be directed to the Contract Administrator identified in D4.1.

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

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

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

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

B4. ADDENDA

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

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

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

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

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

B5. SUBSTITUTES

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

B5.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.

B5.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.

B5.4 The Bidder shall ensure that any and all requests for approval of a substitute:

(a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;

(b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;

(c) identify any anticipated cost or time savings that may be associated with the substitute;

(d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;

(e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.

B5.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.

B5.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.

B5.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he wishes to inform.

B5.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.

B5.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B14.

B5.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

B5.10 Notwithstanding B5.2 to B5.9, in accordance with B6.6, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B14.1(a).

B6. BID COMPONENTS

B6.1 The Bid shall consist of the following components:

(a) Form A: Bid;

(b) Form B: Prices, hard copy;

(c) Bid Security;

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

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

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

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

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

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

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

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

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

B6.8 Bids shall be submitted to:

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

B7. BID

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

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

(a) if the Bidder is a sole proprietor carrying on business in his own name, his name shall be inserted;

(b) if the Bidder is a partnership, the full name of the partnership shall be inserted;

(c) if the Bidder is a corporation, the full name of the corporation shall be inserted;

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

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

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

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

(a) if the Bidder is a sole proprietor carrying on business in his own name, it shall be signed by the Bidder;

(b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;

(c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, shall be affixed;

(d) if the Bidder is carrying on business under a name other than his own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.

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

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

B8. PRICES

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

B8.1.1 For the convenience of Bidders, and pursuant to B6.4.2 and B14.4.3, an electronic spreadsheet Form B: Prices in Microsoft Excel (.xls) format is available along with the Adobe PDF documents for this Bid Opportunity on the Bid Opportunities page at the Materials Management Division website at http://www.winnipeg.ca/matmgt

B8.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.

B8.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B8.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B9. QUALIFICATION

B9.1 The Bidder shall:

(a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba; and

(b) be financially capable of carrying out the terms of the Contract; and

(c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.

B9.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

(a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/debar.stm

B9.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

(a) have successfully carried out work similar in nature, scope and value to the Work; and

(b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and

(c) have a written workplace safety and health program if required pursuant to The Workplace Safety and Health Act (Manitoba);

(d) Ensure all individuals working within the CN Letellier Right-Of-Way must familiarize themselves within CN's Contractor Safety Package, complete a Contractor Orientation Course and must be registered on the Contractor Completion Database which can be found at the following website: http://www.ContractorOrientation.com

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

(a) a valid COR certification number under the Certificate of Recognition (COR) Program administered by the Manitoba Construction Safety Association or by the Manitoba Heavy Construction Association's Safety, Health and Environment Program; or

(b) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt)

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

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

B10. BID SECURITY

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

(a) a bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in the form included in the Bid Submission (Form G1: Bid Bond and Agreement to Bond); or

(b) an irrevocable standby letter of credit, in the amount of at least ten percent (10%) of the Total Bid Price, and undertaking issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form included in the Bid Submission (Form G2: Irrevocable Standby Letter of Credit and Undertaking); or

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

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

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

B10.1.3 The Bidder shall sign the Bid Bond.

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

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

B10.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B10.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.

B10.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.

B10.3 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Bid Opportunity.

B11. OPENING OF BIDS AND RELEASE OF INFORMATION

B11.1 Bids will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Division, or in such other office as may be designated by the Manager of Materials.

B11.1.1 Bidders or their representatives may attend.

B11.1.2 Bids determined by the Manager of Materials, or his designate, to not include the bid security specified in B10 will not be read out.

B11.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt

B11.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt

B11.4 The Bidder is advised that any information contained in any Bid may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

B12. IRREVOCABLE BID

B12.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.

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

B13. WITHDRAWAL OF BIDS

B13.1 A Bidder may withdraw his Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

B13.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.

B13.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid, and only such person, has authority to give notice of withdrawal.

B13.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:

(a) retain the Bid until after the Submission Deadline has elapsed;

(b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid; and

(c) if the notice has been given by any one of the persons specified in B13.1.3(b), declare the Bid withdrawn.

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

B14. EVALUATION OF BIDS

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

(a) compliance by the Bidder with the requirements of the Bid Opportunity, or acceptable deviation therefrom (pass/fail);

(b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B9 (pass/fail);

(c) Total Bid Price;

(d) economic analysis of any approved alternative pursuant to B5.

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

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

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

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

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

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

B15. AWARD OF CONTRACT

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

B15.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.

B15.2.1 Without limiting the generality of B15.2, the City will have no obligation to award a Contract where:

(a) the prices exceed the available City funds for the Work;

(b) the prices are materially in excess of the prices received for similar work in the past;

(c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;

(d) only one Bid is received; or

(e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.

B15.3 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B14.

B15.3.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

C0.1 The *General Conditions for Construction* (Revision 2006 12 15) are applicable to the Work of the Contract.

C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm

C0.2 A reference in the Bid Opportunity to a section, clause or subclause with the prefix "**C**" designates a section, clause or subclause in the *General Conditions for Construction*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

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

(a) Lane Widening
  (i) Northbound curb lane and right turn deceleration lane on Pembina Highway south of Chancellor Matheson Road.
  (ii) Westbound curb lane and right turn deceleration lane on Chancellor Matheson Road East of Pembina Highway.
  (iii) Eastbound right turn lane from Real Canadian Superstore to right-turn cut-off island at Bison Drive and Pembina Highway.

(b) Right-Turn Cut-Off Lane and Island Realignment and Reconstruction
  (i) Northbound right-turn cut-off lane and island at Chancellor Matheson Road and Pembina Highway.
  (ii) Eastbound right-turn cut-off lane and island at Chancellor Matheson Road and Pembina Highway.
  (iii) Southbound right-turn cut-off lane and island at Bison Drive and Pembina Highway.
  (iv) Westbound right-turn cut-off lane and island at Bison Drive and Pembina Highway.

(c) Centre Median Lane and Median Island Realignment and Reconstruction
  (i) First median island south of the intersection of Bison Drive and Pembina Highway.
  (ii) Second median island south of the intersection of Bison Drive and Pembina Highway.
  (iii) Third median island south of the intersection of Bison Drive and Pembina Highway.
  (iv) First median island east of the intersection of Chancellor Matheson Road and Pembina Highway.
  (v) First median island north of the intersection of Bison Drive and Pembina Highway.
  (vi) First median island west of the intersection of Chancellor Matheson Road and Pembina Highway.

(d) Left Turn Slot Lane and Divisional Island Construction
  (i) Eastbound left turn slot island at the intersection of Bison Drive and Pembina Highway.

(e) Overhead Sign Support Structures
  (i) First median island north of the intersection of Bison Drive and Pembina Highway.
  (ii) First median island east of the intersection of Bison Drive and Pembina Highway.

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

(a) Lane Widening
  (i) Planing of asphalt
  (ii) Removal of existing curb
  (iii) Installation of catchbasins and connection pipe
  (iv) Adjustment of drainage inlets, water valves and manholes
  (v) Excavation of existing ground

(vi) Compaction of sub grade
(vii) Placement of suitable site fill material
(viii) Placement of geotextile
(ix) Construction of 230mm plain dowelled concrete roadway with full granular structure
(x) Placement of new curb
(xi) Renewal of existing miscellaneous concrete slabs
(xii) Placement of asphalt overlay (approximate average thickness – 100mm)
(xiii) Realignment of sidewalk and construction of multiuse pathway
(xiv) Boulevard restoration and Landscaping

(b) Right Turn Cut Off Lane Reconstruction
(i) Planing of asphalt (approximate average thickness – 50mm)
(ii) Removal of existing curb
(iii) Removal of concrete roadway
(iv) Installation of catchbasins and connection pipe
(v) Adjustment of drainage inlets, water valves and manholes
(vi) Excavation of existing ground
(vii) Compaction of sub grade
(viii) Placement of geotextile
(ix) Construction of 230mm plain dowelled concrete roadway with full granular structure
(x) Placement of new curb
(xi) Renewal of existing miscellaneous concrete slabs
(xii) Placement of asphalt overlay (approximate average thickness – 100mm)
(xiii) Realignment of sidewalk
(xiv) Boulevard restoration

(c) Center Median Lane Realignment and Median Reconstruction
(i) Planing of asphalt (approximate average thickness – 50mm)
(ii) Plane or saw cut and remove asphalt adjacent to curb (approximate average thickness – 100mm)
(iii) Removal of existing curb or splash strip
(iv) Adjustment of drainage inlets, water valves and manholes
(v) Excavation of existing ground as required
(vi) Compaction of sub grade
(vii) Placement of geotextile
(viii) Construction of 230 plain dowelled concrete roadway with full granular structure
(ix) Remove existing concrete structure behind new curb (only in locations where new curb alignment is within old roadway)
(x) Construct new curb, splash strip, monolithic median and safety median as required.
(xi) Renewal of existing miscellaneous concrete slabs
(xii) Placement of asphalt patching
(xiii) Placement of asphalt overlay (approximate average thickness – 100mm)
(xiv) Boulevard restoration

(d) Left Turn Slot Island Construction
(i) Planing of asphalt (approximate average thickness – 50mm)
(ii) Plane or saw cut and remove asphalt adjacent to curb (approximate average thickness – 100mm)
(iii) Removal of existing curb or splash strip
(iv) Adjustment of drainage inlets, water valves and manholes

(v) Excavation of existing ground as required
(vi) Compaction of sub grade
(vii) Placement of geotextile
(viii) Construction of 230 plain dowelled concrete roadway with full granular structure
(ix) Remove existing concrete structure behind new curb (only in locations where new curb alignment is within old roadway)
(x) Construct new curb, splash strip, monolithic median and safety median as required.
(xi) Renewal of existing miscellaneous concrete slabs
(xii) Place asphalt patching
(xiii) Placement of asphalt overlay (approximate average thickness – 100mm)
(xiv) Boulevard restoration

(e) Overhead Sign Support Structures
(i) Excavate hole for pile foundation using hydraulic soft dig equipment
(ii) Supply and install steel reinforcement
(iii) Placement of high strength concrete
(iv) Supply and installation of overhead sign support structure

D3. DEFINITIONS

D3.1 When used in this Bid Opportunity:

(a) "**Right-Turn Cut-Off**" means the section of roadway generally between a curbed island that provides direction for vehicles to turn right and the adjacent boulevard ;

(b) "**The Intersection**" refers to the intersection of Bison Drive and Pembina Highway;

(c) "**Multi-Use Pathway**" refers to an asphalt pathway typically 3.5m in width.

D4. CONTRACT ADMINISTRATOR

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

Jeff Crang, P.Eng., PTOE
Project Manager
200 – 895 Waverley Street
Winnipeg MB R3T 5P4

Telephone No. (204) 453-2301
Facsimile No. (204) 452-4412

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

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 D4.1.

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 Contractor shall provide and maintain the following insurance coverage:

(a) commercial general liability insurance, in the amount of at least two million dollars ($2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability, broad form property damage cover and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;

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

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

D10.2 Deductibles shall be borne by the Contractor.

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

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

D11. PERFORMANCE SECURITY

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

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

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

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

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

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

D12. SUBCONTRACTOR LIST

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

D13. DETAILED WORK SCHEDULE

D13.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the General Conditions for the return of the executed Contract.

D13.2 The detailed work schedule shall consist of the following:

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

D13.3 Further to D13.2(a), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

SCHEDULE OF WORK

D14. COMMENCEMENT

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

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

(a) the Contract Administrator has confirmed receipt and approval of:
  (i) evidence of authority to carry on business specified in D8;
  (ii) evidence of the workers compensation coverage specified in C6.15;
  (iii) the twenty-four (24) hour emergency response phone number specified in 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 detailed work schedule specified in D13; and

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

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

D14.4 The City intends to award this Contract by July 22, 2011.

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

D15. WORKING DAYS

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

D15.1.1 The Contract Administrator will determine daily if a Working Day has elapsed and will record his assessment. On a weekly basis the Contract Administrator will provide the Contractor with a record of the Working Days assessed for the preceding week. The Contractor shall sign each report signifying that he agrees with the Contract Administrator's determination of the Working Days assessed for the report period.

D15.1.2 Work done to restore the Site to a condition suitable for Work, shall not be considered "work" as defined in the definition of a Working Day.

D15.1.3 When the Work includes two or more major types of Work that can be performed under different atmospheric conditions, the Contract Administrator shall consider all major types

of Work in determining whether the Contractor was able to work in assessing Working Days.

D16. RESTRICTED WORK HOURS

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

D16.2 In accordance with the Manual of Temporary Traffic Control, Sections 2.03, 2.04, 2.05 and 2.06, should the Traffic Management Branch of the Public Works Department require that work on Regional Streets be carried out at night or on Sundays or on public holidays, where permitted by the City of Winnipeg Police Department, or that work be restricted or suspended during peak traffic hours, no additional compensation will be considered to meet these requirements.

D17. WORK BY OTHERS

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

(a) MTS

(i) Miscellaneous adjustments of manholes and relocation of MTS boxes and other appurtenances may be required within this Contract.

(b) 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.

(c) City of Winnipeg Traffic Signals Branch

(i) Traffic Signal Poles: All traffic signal poles and associated infrastructure will be renewed by City of Winnipeg Traffic Signals department. Work in the vicinity of the pole relocations must be coordinated with Traffic Signals.

(d) Shaw Communications Inc

(i) Fibre Optic Cable: Depending on the buried elevation of the existing fibre optic cable it may need to be buried deeper by Shaw technicians.

(e) Watermain Renewal (Beaver Sewer & Water Services Ltd.)

(i) The watermain parallel with Pembina Highway from Bison Drive to Dalhousie Drive is being reconstructed and is anticipated to start construction in early July. The completion of the watermain renewal contract is not expected to overlap with this Contract; however, unforeseen events may cause an overlap of the contracts.

(f) Pembina Trails School Division

(i) Fibre Optic Cable: Depending on the buried elevation of the existing fibre optic cable it may need to be buried deeper by Shaw technicians.

(g) CN

(i) Railway Crossing: CN will be removing and reinstalling the warning signals for eastbound Bison Drive to accommodate the additional lanes. They will also be widening the eastbound crossing and supplying and installing the crossing for the multi-use pathway, located on the north side of Bison Drive. Construction works timing related to the crossing on Bison Drive is undetermined at this time.

(h) City of Winnipeg Water and Waste

(i) Feedermain Assessment and Inspection - Potential site visits and repair to the various feedermains and the valve chamber on Bison Drive.

(i) CBS Outdoor

(i) Bus Stop Shelter (North West Island): Removal and relocation of bus stop shelter. Contractor to coordinate the electrical conduit installation prior to concrete slab placement.

(j) City of Winnipeg - Transit Department

(i) Bus Shelters: Removal and replacement of Bus Shelters

(k) City of Winnipeg - Geomatics Branch

(i) Survey Monuments: Miscellaneous works on survey monuments.

(l) City of Winnipeg - Traffic Services Branch

(i) Traffic Signage and Line Painting - Miscellaneous works relating to sign removal and replacement.

D17.2 The Contract Administrator will attempt to arrange and coordinate Work to be performed by others so that such Work does not interfere with the Work and Schedule of the Contractor. Where Work by others interferes, as determined by the Contract Administrator, with the Contractor's Planned Work, the Contractor shall modify his plans and do other work. Unless the Contract Administrator determines that there was no opportunity for the Contractor to do a similar amount of Work, no consideration will be made to extending the Contract time.

D18. SEQUENCE OF WORK

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

D18.1.1 The Work shall be divided into two (2) phases . Each Phase shall be subdivided into Stages.

D18.1.2 All construction work (excluding topsoil, seed, sidewalk, multi-use path, paving stones and final asphalt placement) in Phase I shall be completed before commencing Phase II. The Contractor may request special permission to commence one or more stages from Phase II prior to completion of Phase I, where the special request does not conflict with the restrictions in E6.

D18.1.3 Within each Phase the Contractor may commence work on each Stage in the order of their preference. The Contractor may work on multiple Stages within one Phase simultaneously.

D18.1.4 **Phase I** – Lane Widening, Right Turn Cut Off Lane Realignment and Reconstruction

(a) **Stage I** – Northbound Curb Lane, Northbound Right Turn Deceleration Lane and Northbound Right Turn Cut Off Lane

(b) **Stage II** – Eastbound Curb Lane from Real Canadian Superstore to Right Turn Cut Off Island and Eastbound Right Turn Cut Off Lane

(c) **Stage III** – Southbound Curb Lane and Southbound Right Turn Cut Off Lane

(d) **Stage IV** – Westbound Curb Lane and Westbound Right Turn Cut Off Lane

(e) **Stage V** – Right Turn Divisional Islands

D18.1.5 **Phase II** – Center Median Realignment and Reconstruction

(a) **Stage I** – First, Second and Third Median South Of The Intersection

(b) **Stage II** – First Median Island East of the Intersection

(c) **Stage III** – First Median Island North of the Intersection

(d) **Stage IV** – First Median Island West of the Intersection

(e) **Stage V** – Left Turn Slot Lane Divisional Island West of the Intersection

D18.1.6 The Contractor shall delay placing the final lift of asphalt on the curb lanes and right turn lanes of the roadway, so that the final lift of all lanes is placed in one operation.

D19. CRITICAL STAGES

D19.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:

(a) Critical Stage A: Substantial performance of the work described in D2.1(b)(i) through D2.1(b)(iv)) (the realignment and reconstruction of each of the four right turn cut off lanes and associated islands) must be achieved within ten (10) working days of the closure of that right turn cut off lane.

(i) This does not include lean mix, paving stone or top soil and seed work.

(b) Critical Stage B: Substantial performance of the work described in D2.1(b)(i) through D2.1(b)(iv) (the realignment and reconstruction of all of the four right turn cut off lanes and associated islands) must be achieved by September 2, 2011.

(i) This does not include lean mix, paving stone or top soil and seed work.

(c) Critical Stage C: Substantial performance of the work described in D2.1(a)(iii) (the construction of the eastbound right turn lane from the Real Canadian Superstore entrance to the eastbound right turn cut off) must be achieved by September 2, 2011.

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

D19.3 If the completion of Critical Stage A, B and/or C are delayed due to interference with utilities the Date of completion or the length specified in the Critical Stage will be extended by the number of days that the delay was incurred. The number of days of delay will be calculated by the Contract Administrator and will be final.

D19.4 The date on which each Critical Stage has been accepted by the Contract Administrator as being completed to the requirements of the Contract is the date on which completion of each Critical Stage has been achieved.

D19.5 If the Contractor fails to complete the Critical Stage A Works on or before 10 Working Days after the commencement of those works, the Contractor shall pay the City one thousand dollars ($1,000) per Working Day for each and every Working Day following that date during which such failure continues.

D19.6 If the Contractor fails to complete the Critical Stage B Works on or before September 2, 2011, the Contractor shall pay the City one thousand dollars ($1,000) per Working Day for each and every Working Day following that date during which such failure continues.

D19.7 If the Contractor fails to complete the Critical Stage C Works on or before September 2, 2011, the Contractor shall pay the City one thousand dollars ($1,000) per Working Day for each and every Working Day following that date during which such failure continues.

D20. SUBSTANTIAL PERFORMANCE

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

D20.2 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.

D20.3 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.

D21. TOTAL PERFORMANCE

D21.1 The Contractor shall achieve Total Performance within seventy (70) consecutive Working Days of the commencement of the Work as specified in D14.

D21.2 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.

D21.3 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.

D22. LIQUIDATED DAMAGES

D22.1 If the Contractor fails to achieve Substantial Performance in accordance with the Contract by the day fixed herein for Substantial Performance, the Contractor shall pay the City three thousand dollars ($3,000) per Working Day for each and every Working following the day fixed herein for Substantial Performance during which such failure continues.

D22.2 The amount specified for liquidated damages in D22.1 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Substantial Performance by the day fixed herein for same.

D22.3 If the Contractor fails to achieve Total Performance in accordance with the Contract by the day fixed herein for Total Performance, the Contractor shall pay the City one thousand dollars ($1,000) per Working Day for each and every Working following the day fixed herein for Total Performance during which such failure continues.

D22.4 If Total Performance is not completed by the date of Total Performance, the assessment of Liquidated Damages in D22.3 will be made in addition to the Liquidated Damages in D22.1.

D22.5 The amount specified for liquidated damages in D22.3 is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Total Performance by the day fixed herein for same.

D22.6 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D23. SCHEDULED MAINTENANCE

D23.1 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) Seeding (maintenance period) as specified in CW 3520.

D23.2 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

D24. JOB MEETINGS

D24.1 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.

D24.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

D25. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

D25.1 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

D26. PAYMENT

D26.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D27. WARRANTY

D27.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) year thereafter unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D27.2 Notwithstanding C13.2 or D27.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if:

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

(b) Substantial Performance has been achieved.

D27.2.1 In such case the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

FORM H1: PERFORMANCE BOND
(See D11)

KNOW ALL MEN BY THESE PRESENTS THAT

_____
(hereinafter called the "Principal"), and

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

_____

_____ dollars ($_____.____)

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

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

BID OPPORTUNITY NO. 432-2011

BISON DRIVE AND PEMBINA HIGHWAY INTERSECTION IMPROVEMENTS

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. 432-2011

BISON DRIVE AND PEMBINA HIGHWAY INTERSECTION IMPROVEMENTS

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)

BISON DRIVE AND PEMBINA HIGHWAY INTERSECTION IMPROVEMENTS

Portion of the Work	Name	Address
Supply of Materials:		
Concrete		
Asphalt		
Base Course and Sub-Base		
Landscaping		
Fencing		
Underground Works		
Other		
Excavation/Placement:		
Concrete		
Asphalt		
Base Course and Sub-Base		
Landscaping/Plant Material		
Fencing		
Underground Works		
Reflective Crack Maintenance		
Other		

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

E1.1 These Specifications shall apply to the Work.

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

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

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

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

E1.3 The following are applicable to the Work:

Drawing No.	Drawing Name/Title	Drawing (Original) Sheet Size
P-3327-0	Cover Sheet	A-1
P-3327-1	General Arrangement	A-1
P-3327-2	Control Line Geometry – Pembina Highway	A-1
P-3327-3	Control Line Geometry – Bison Dr. & Chancellor Matheson Rd	A-1
P-3327-4	Paving and Grading – Sta. 1+065 to 1+150	A-1
P-3327-5	Paving and Grading – Sta. 1+150 to 1+320	A-1
P-3327-6	Paving and Grading – Sta. 1+320 to 1+490	A-1
P-3327-7	Paving and Grading – Sta. 1+490 to 1+665	A-1
P-3327-8	Paving and Grading – Sta. 1+665 to 1+840	A-1
P-3327-9	Paving and Grading – Sta. 1+840 to 2+000	A-1
P-3327-10	Paving and Grading – Sta. 0+170 to 0+340	A-1
P-3327-11	Paving and Grading – Sta. 0+340 to 0+505 – Eastbound Control Line	A-1
P-3327-12	Paving and Grading – Sta. 0+340 to 0+505 – Westbound Control Line	A-1
P-3327-13	Paving and Grading – Sta. 0+505 to 0+685	A-1
P-3327-14	Paving and Grading – Sta. 0+685 to 0+860	A-1
P-3327-15	Paving and Grading – Sta. 0+860 to 0+950	A-1
P-3327-16	Paving and Grading – Multi-Use Path and Chain Link Fence Plan	A-1
P-3327-17	Cross Sections A, B and C	A-1
P-3327-18	Cross Sections C, D, E, F and G	A-1
P-3327-19	Details 1, 2, 3, 4 and 5	A-1
P-3327-20	Details 6, 7, 8 and 9	A-1
P-3327-21	Sign Structure – S753 Pembina Hwy S.B. – North of Bison Dr.	A-1
P-3327-22	Sign Structure – Structural No. S753 – Fabrication Details	A-1
P-3327-23	Sign Structure – S752 Chancellor Matheson Rd. W.B. – East of Pembina Hwy	A-1
P-3327-24	Sign Structure – Structural No. S752 – Fabrication Details	A-1

E2. GEOTECHNICAL REPORT

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

E3. OFFICE FACILITIES

E3.1 The Contractor shall supply office facilities meeting the following requirements:

(a) The field office shall be for the exclusive use of the Contract Administrator.

(b) The building shall be conveniently located near the site of the Work.

(c) The building shall have a minimum floor area of 30 square metres, with two windows and a door entrance with a suitable lock.

(d) The building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between either 16-18^{o}C or 24-25^{o}C.

(e) The building shall be adequately lighted with fluorescent fixtures and have a minimum of three wall outlets.

(f) The building shall be furnished with one desk, one drafting table, table 3 m x 1.2 m, once stool, one four drawer legal size filing cabinet and a minimum of 12 chairs.

(g) A portable toilet shall be located near the field office building. The toilet shall have a locking door and be for the exclusive use of the Contract Administrator and other personnel from the City.

(h) The field office building and the portable toilet shall be cleaned on a weekly basis immediately prior to each site meeting. The Contract Administrator may request additional cleaning when he deems it necessary.

E3.2 The Contractor shall be responsible for all installation and removal costs, all operating costs, and the general maintenance of the office facilities.

E3.3 The office facilities will be provided from the date of the commencement of the Work to the date of Total Performance.

E4. PROTECTION OF EXISTING TREES

E4.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing boulevard trees within the limits of the construction area:

(a) The Contractor shall not stockpile materials and soil or park vehicles and equipment on boulevards within 2 metres of trees.

(b) Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 100 x 2400mm wood planks, or suitably protected as approved by the Contract Administrator.

(c) Excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of 1.5 times the diameter (measured in inches), with the outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation.

(d) Operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.

(e) Work on-site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.

E4.2 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.

E4.3 No separate measurement or payment will be made for the protection of trees.

E4.4 Except as required in clause E4.1(c) and E4.1(e), Elm trees shall not be pruned at any time between April 1 and July 31.

E5. TRAFFIC CONTROL

E5.1 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. No Measurement or Payment will be made for this Work.

(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.

E6. TRAFFIC MANAGEMENT

E6.1 Further to clause 3.7 of CW 1130:

(a) Maintain a minimum of one lane of traffic eastbound and one lane of traffic westbound during their respective construction times.

(b) Maintain a minimum of two lanes of traffic northbound and two lanes of traffic southbound during their respective construction times.

(c) Where left turn lanes exist, an additional lane to accommodate the left turn movement shall be maintained at all times.

(d) North/South traffic at Bison Drive and Pembina Highway intersection must be maintained during construction to allow for two lanes of traffic in each direction to go straight through and another lane in each direction to turn left. When no work is being performed in the intersection and providing it is safe for vehicles, north and south lane closures in the intersection will not be permitted.

(e) East/West traffic at Bison Drive and Pembina Highway intersection must be maintained during construction to allow for one lane of traffic in each direction to go straight through and another lane in each direction to turn left. When no work is being performed in the intersection and providing it is safe for vehicles, east and west lane closures in the intersection will not be permitted.

(f) Intersecting street and private approach access shall be maintained at all times.

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

(h) Pedestrian and ambulance/emergency vehicle access must be maintained at all times.

(i) Pedestrian routes for pedestrians travelling north and south along Pembina Highway must be maintained on either the east or the west side, or a combination of either side to allow a continuous route of travel.

(j) Pedestrian crossings at the intersection of Bison Drive and Pembina Highway must be maintained on one of two crosswalks crossing Pembina Highway and one of two

crosswalks crossing Bison Drive at all times. When a pedestrian crossing must be closed it shall be signed with a barricade and a sign displaying “Sidewalk Closed - Use Other Side”.

E7. PEDESTRIAN SAFETY

E7.1 During the project, a temporary snow fence shall be installed where necessary if there is a steep drop-off adjacent to a sidewalk. The Contractor shall be responsible for maintaining the snow fence in a proper working condition. No measurement for payment shall be made for this work.

E8. WATER OBTAINED FROM THE CITY

E8.1 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.

E9. SURFACE RESTORATIONS

E9.1 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.

E10. INFRASTRUCTURE SIGNS

E10.1 The Contractor shall obtain infrastructure signs from the Traffic Services Sign Shop at 421 Osborne Street. The Contractor shall mount each sign securely to a rigid backing material approved by the Contract Administrator. The Contractor shall fasten each sign to a suitable support and erect and maintain one sign at each street as directed by the Contract Administrator. When the Contract Administrator considers the Work on the street complete, the Contractor shall remove and dispose of the signs and supports. No measurement for payment will be made for performing all operations herein described and all other items incidental to the Work described.

E11. SALT TOLERANT GRASS SEEDING

DESCRIPTION

E11.1 Further to CW 3520 and CW3540, this specification shall cover sub-grade preparation and the supply and placement of Salt Tolerant Grass Seed.

MATERIALS

E11.2 Salt Tolerant Grass Seed

E11.2.1 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

E11.3 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

E11.4 Preparation of Existing Grade

E11.4.1 Prior to placing topsoil, in areas to be seeded greater in width than 600 mm, prepare the existing sub-grade by scarifying to a minimum depth of 75 mm and to a maximum depth of 100 mm to the satisfaction of the Contract Administrator.

E11.4.2 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).

E11.5 Salt Tolerant Grass Seeding

E11.5.1 Salt Tolerant Grass Seed shall be sown at a rate of 2.2 kilograms per 100 square meters.

MEASUREMENT AND PAYMENT

E11.6 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.

E12. SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES

E12.1 This specification covers the supply and installation of detectable warning surface tiles in sidewalk ramps and multi-use path ramps.

SPECIFICATIONS AND DRAWINGS

E12.2 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

E12.3 SDE Drawings

(a) SDE-229A - Curb Ramp Layout for Intersections

(b) SDE-229AA - Detectable Warning Surface Tile in Curb Ramps for Intersections, Layout Option 1

(c) SDE-229AC – 300x300 Detectable Warning Surface Tile, Layout Option 3

(d) SDE-229AD – 300x300 Detectable Warning Surface Tile, Layout Option 3 DETAIL

(e) SDE-229AE – Curb Ramp for Pedestrian Corridor with a Traffic Control Device

(f) SDE-229AF – Detectable Warning Surface Tile Orientation for Offset Intersections

(g) SDE-229BB – Detectable Warning Surface Tile in Curb Ramps for Medians

(h) SDE-229E - Curb Ramp Depressed Curb

MATERIALS

E12.4 Acceptable Detectable Warning Surface Tile product is:

(a) 610 x 1220mm (2'x 4') Cast in Place (Federal Yellow).

(b) 300 x 300mm (1'x1') Cast in Place (Federal Yellow).

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

Attention: Bernie Giesbrecht
Ph: 204-479-8089

or

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

Attention: Jason Alsip
Ph. 204-667-3330

E12.4.1 Detectable warning surface tiles shall be Federal Yellow (USA); or Safety Yellow (Canada).

E12.4.2 Detectable warning surface tiles shall be cast in place type with ribs. (Anchored type is not allowed)

E12.4.3 Truncated domes on detectable warning surface tiles shall be in accordance with ADA Accessibility Guidelines (ADAAG).

CONSTRUCTION METHODS

E12.5 Selection of Layout Options

E12.5.1 Select the appropriate design layout for detectable warning surface tiles according to the following prioritized order:

E12.5.2 Layout Option One – Install detectable warning surface tiles in accordance with SDE-229A and SDE-229AA.

E12.5.3 If two 610mm x 1220mm tiles would physically overlap each other, or would be within 150mm of each other, or if one tile would lie within the circulation path towards the other tile, then install the detectable warning surface tiles according to the following order, Layout Option Two(2) or Three(3).

E12.5.4 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.

E12.5.5 Layout Option Three – Install detectable warning surface tiles in accordance with SDE-229AC and SDE-229AD.

E12.6 General

E12.6.1 Construct curb ramps, sidewalk ramps and multi-use paths in accordance with the referenced Standard Construction Specifications, Standard Details, and SDE drawings.

E12.6.2 Detectable warning surface tile shall not be placed at private approaches or alleys.

E12.6.3 All curb ramps opposite each other shall have the same width.

E12.6.4 Construct the lip of the depressed curb in accordance with SDE – 229E.

E12.6.5 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.

E12.6.6 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 ≥ 1500mm in width, construct the flare and curb taper at 10% slope.

E12.6.7 Install the detectable warning surface tile in accordance with E12.10.

E12.6.8 Trim the corner of the tile at curb radii in accordance with SDE-229AA and SDE-229AD.

E12.6.9 Install the detectable warning surface tiles as shown on the referenced drawings or as directed by the Contract Administrator.

E12.6.10 Orient the detectable warning surface tiles perpendicular to the crossing direction.

E12.6.11 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.

E12.7 Medians and Refuge Islands

E12.7.1 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.

E12.7.2 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.

E12.8 2.0m Wide Depressed Curb for Multi-use Paths

E12.8.1 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.

E12.8.2 Construct the concrete ramp 2.0m wide and a minimum of 1.50m deep from back of curb.

E12.8.3 Construct the curb ramp in accordance with SD-229C and SD229D.

E12.8.4 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 form the back of curb similar to tile placement in SDE-229AA.

E12.9 3.5m Wide Depressed Curb for Multi-use Paths

E12.9.1 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.

E12.9.2 Construct the concrete ramp 3.5m wide and a minimum of 1.50m deep from back of curb.

E12.9.3 Construct the curb ramp in accordance with SD-229C and SD229D.

E12.9.4 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.

E12.9.5 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.

INSTALLATION INSTRUCTIONS

E12.10 Installation Instructions for Cast In Place Inline Dome Detectable/Tactile Warning Surface Tile

(a) During Cast In Place Detectable/Tactile Warning Surface Tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.

(b) The specifications of the structural embedment flange system and related materials shall be in strict accordance with the contract documents and the guidelines set by their respective manufacturers. Do not set Cast In Place tiles in asphaltic concrete.

(c) The physical characteristics of the concrete shall be consistent with the contract specifications. An overly wet mix will cause the tile to float. Under these conditions, suitable weights such as 2 concrete blocks or sandbags (12 kg) shall be placed on each tile.

(d) Prior to placement of the Cast In Place Detectable/Tactile Warning Surface Tile system, the contract drawings shall be reviewed.

(e) Pour and finish the concrete using typical mason's tools, however, 12 kg weights, and a large non-marring rubber mallet are specific to the installation of the Cast In Place Detectable/Tactile Warning Surface Tile system. A vibrating mechanism can be employed, if desired. The vibrating unit should be fixed to a soft base such as wood, at least 300mm square.

(f) The factory-installed plastic sheeting must remain in place during the entire installation process to prevent the splashing of concrete onto the finished surface of the tile. Remove the plastic sheeting after the concrete has set.

(g) When preparing to set the tile, it is important that NO concrete be removed in the area to accept the tile. It is imperative that the installation technique eliminates any air voids under the tile. Holes in the tile perimeter allow air to escape during the installation process. Concrete will flow through the large holes in each embedment flange on the underside of the tile. This will lock the tile solidly into the cured concrete.

(h) Drill additional 6mm vent holes in the ribs under the tile as required to help seat the tile in the concrete.

(i) The concrete shall be poured and finished true and smooth to the required dimensions and slope prior to the tile placement. The tile shall be placed in accordance with the contract drawings.

(j) The Cast In Place Detectable/Tactile Warning Surface Tiles shall be tamped (or vibrated) into the fresh concrete to ensure that the surface of the truncated domes are flush to the adjacent concrete surface. Embedment of the tile so the top of the truncated domes are flush with the adjacent concrete will reduce the possibility of damage due to snow clearing operations. The embedment process should not be accomplished by stepping on the tile as this may cause uneven setting which can result in air voids under the tile surface.

(k) While concrete is workable, a 3/8" radius edging tool shall be used to create a finished edge of concrete, a steel trowel shall then be used to finish the concrete around the tile's perimeter.

(l) During and after the tile installation and the concrete curing stage, it is imperative that there is no walking, leaning or external force placed on the tile that may rock the tile causing a void between the underside of tile and concrete.

(m) Following tile placement, review installation tolerances to contract drawings and adjust tile before the concrete sets. Two suitable weights of 12kg each shall be placed on each tile as necessary to ensure solid contact of the underside of tile to concrete.

(n) If required, individual tiles can be bolted together using ¼ inch or equivalent hardware. This can help to ensure that adjacent tiles are flush to each other during the installation process. Tape or caulking can be placed on the underside of the bolted butt joint to ensure that

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

(o) Following the concrete curing stage, protective plastic wrap is to be removed from the tile surface by cutting the plastic with a sharp knife, tight to the concrete/tile interface. If concrete bled under the plastic, a soft brass wire brush will clean the residue without damage to the tile surface.

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

(q) Bolt 300mm x 300mm tiles together prior to placing in plastic concrete. This ensures that the surface of the tiles are flush with each other.

MEASUREMENT AND PAYMENT

E12.11 Detectable Warning Surface Tiles shall be measured on a unit basis and paid for at the Contract Unit Price per unit for the “Items of Work” listed here below. The number of units to be paid for shall be the total number of detectable warning surface tiles supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

Detectable Warning Surface Tiles:

i) 300mm x 300mm tiles

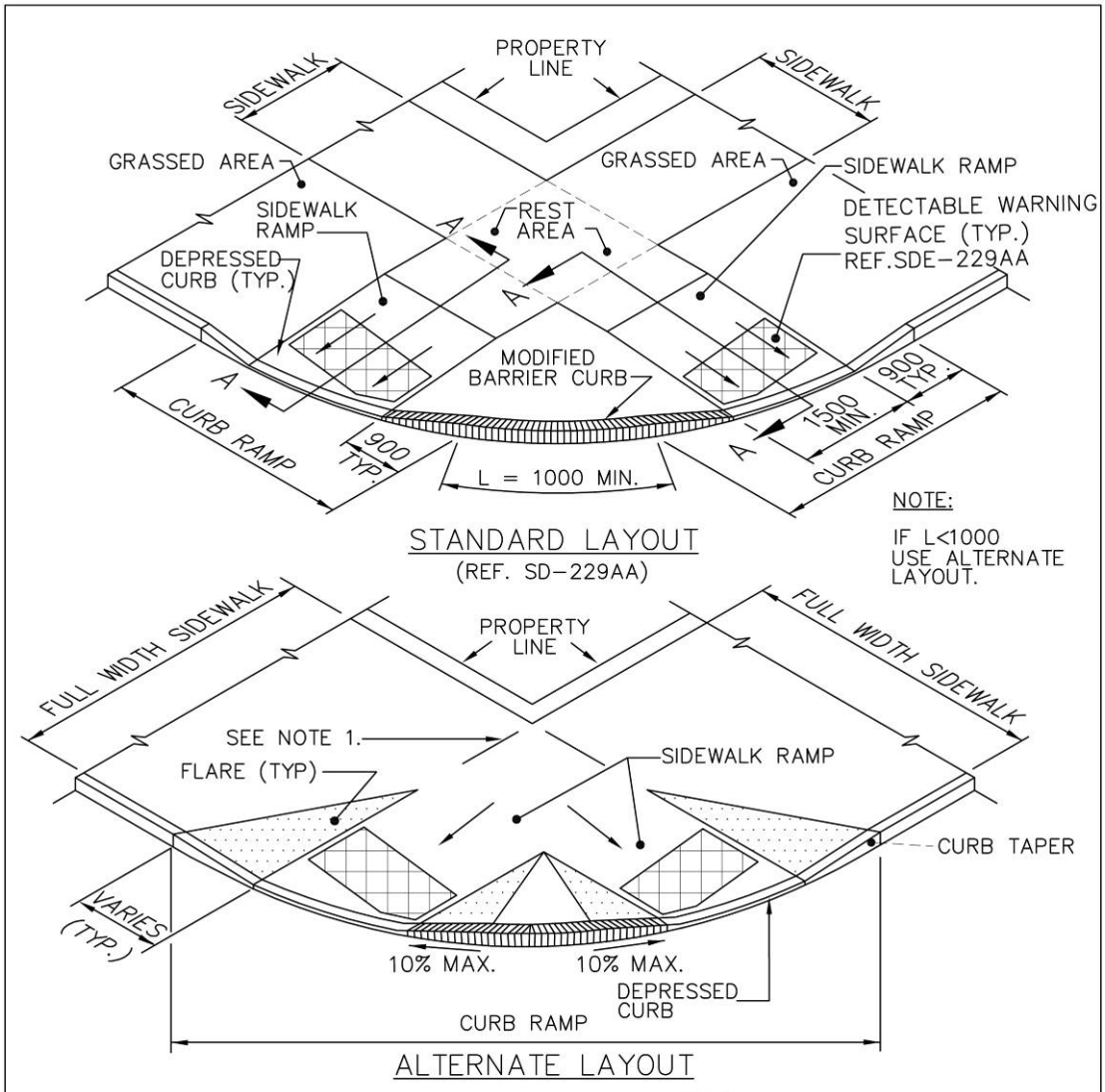
ii) 610mm x 1220mm tiles

E12.12 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.

E12.13 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.

E12.14 Curb ramp will be paid in accordance with CW 3240 or CW 3310.

DRAWINGS



DIMENSIONS ARE IN MILLIMETRES

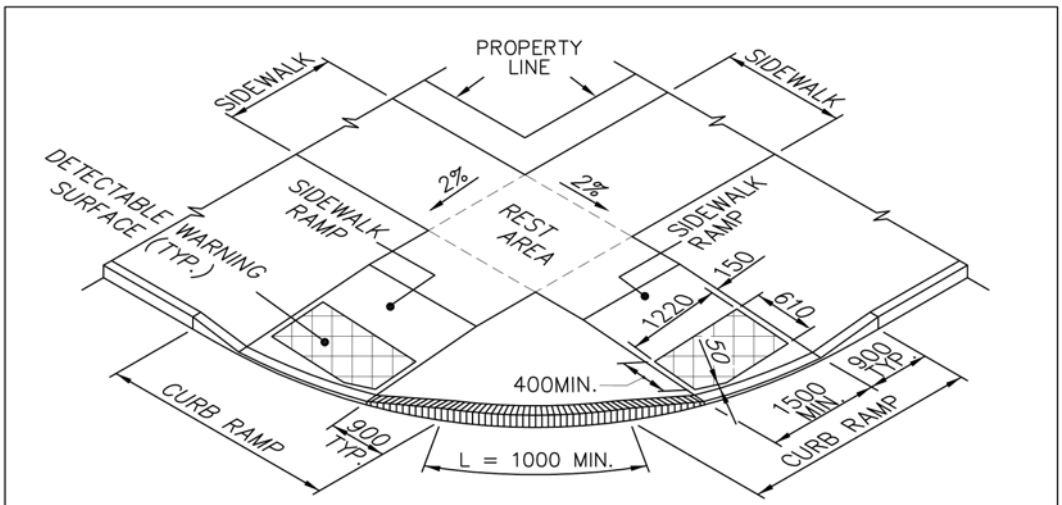
NOTE:
1. LINEUP DEPRESSED CURB WITH BACK OF SIDEWALK.
2. FOR SECTION A–A SEE SD-229C & SD-229D
3. CONSTRUCT FLARE AND CURB TAPER SLOPE IN ACCORDANCE WITH SECTION 1.6 OF THIS SPECIFICATION
4. REST AREA MINIMUM 1500 X 1500

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

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

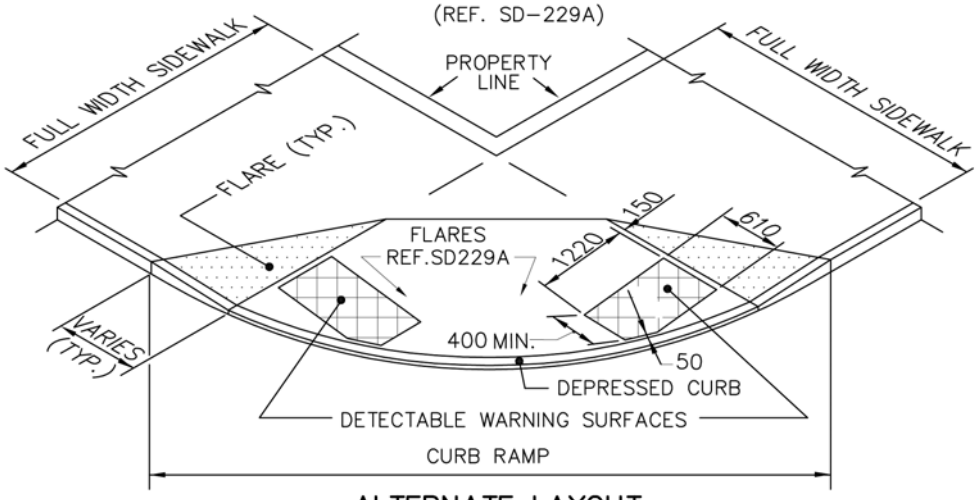
CURB RAMP LAYOUT FOR INTERSECTIONS

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



STANDARD LAYOUT

(REF. SD-229A)



ALTERNATE LAYOUT

(REF. SD-229A)

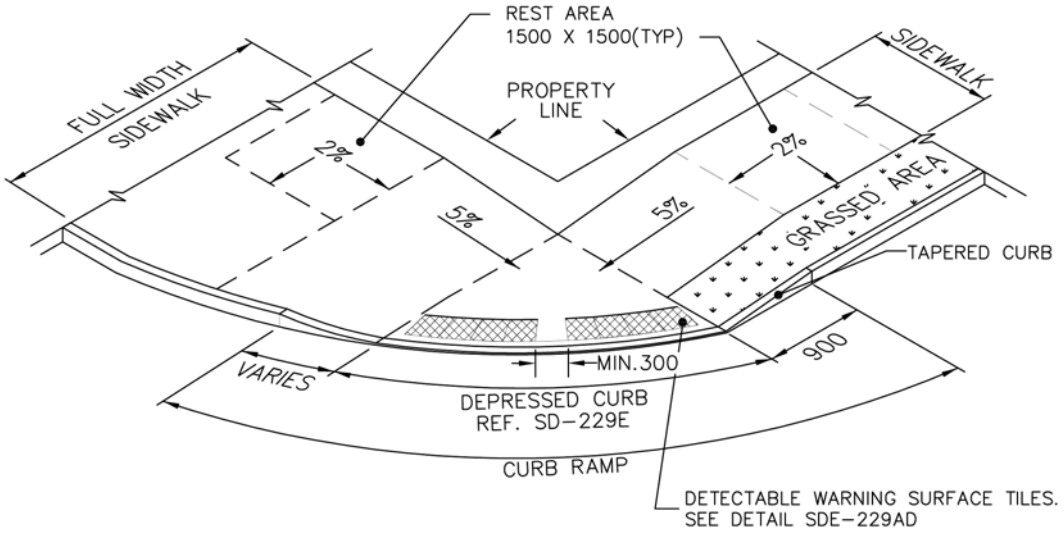
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

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

DIMENSIONS ARE IN MILLIMETRES

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

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



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

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

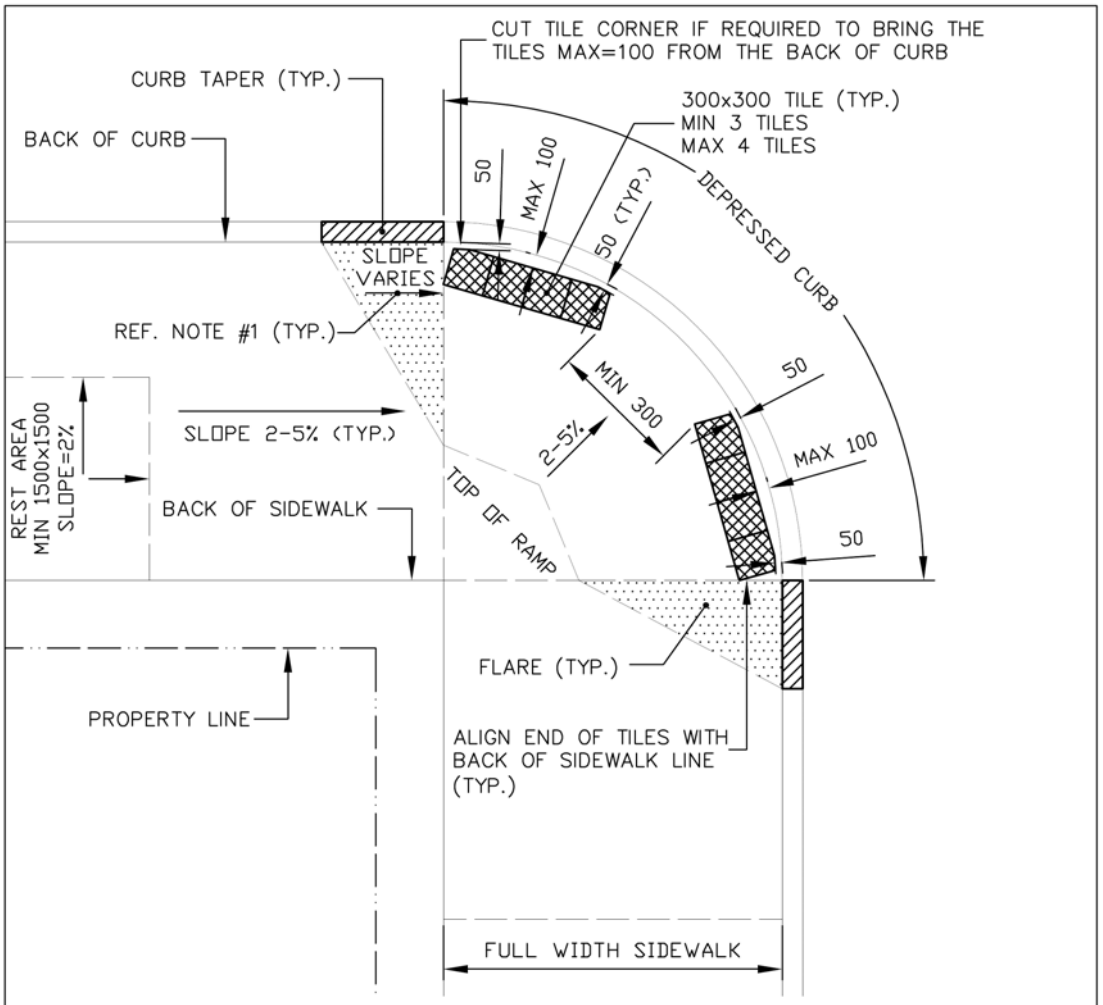
Reference Spec. No.
E-SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES

DIMENSIONS ARE IN MILLIMETRES

300 X 300 mm DETECTABLE WARNING SURFACE TILE
LAYOUT OPTION 3

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

Template Version: C420110321 - RW



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

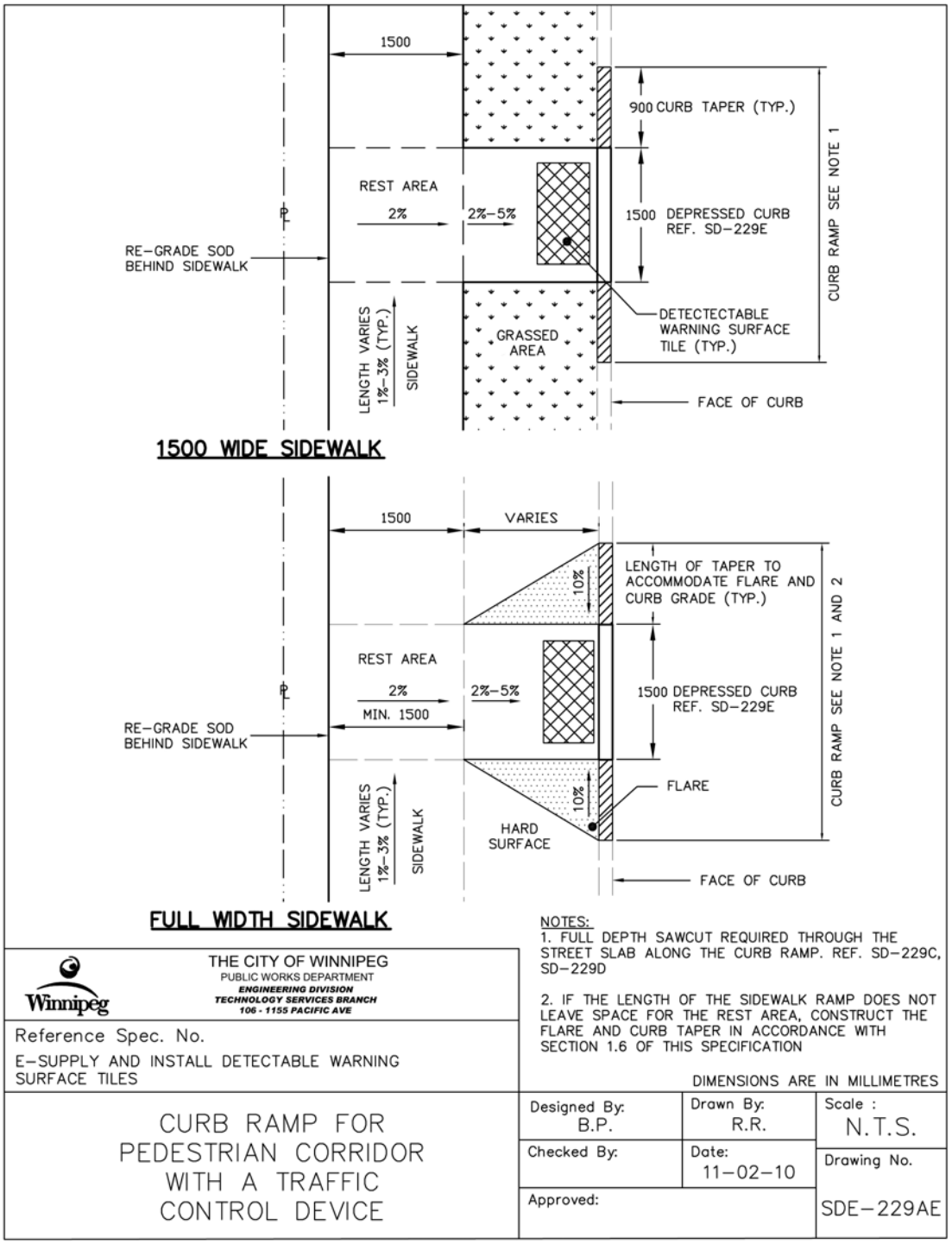
Reference Spec. No.
E–SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES

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

DIMENSIONS ARE IN MILLIMETRES

300x300mm DETECTABLE WARNING SURFACE TILE
LAYOUT OPTION 3 DETAIL

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



NOTES:
1. FULL DEPTH SAWCUT REQUIRED THROUGH THE STREET SLAB ALONG THE CURB RAMP. REF. SD–229C, SD–229D

2. IF THE LENGTH OF THE SIDEWALK RAMP DOES NOT LEAVE SPACE FOR THE REST AREA, CONSTRUCT THE FLARE AND CURB TAPER IN ACCORDANCE WITH SECTION 1.6 OF THIS SPECIFICATION

DIMENSIONS ARE IN MILLIMETRES

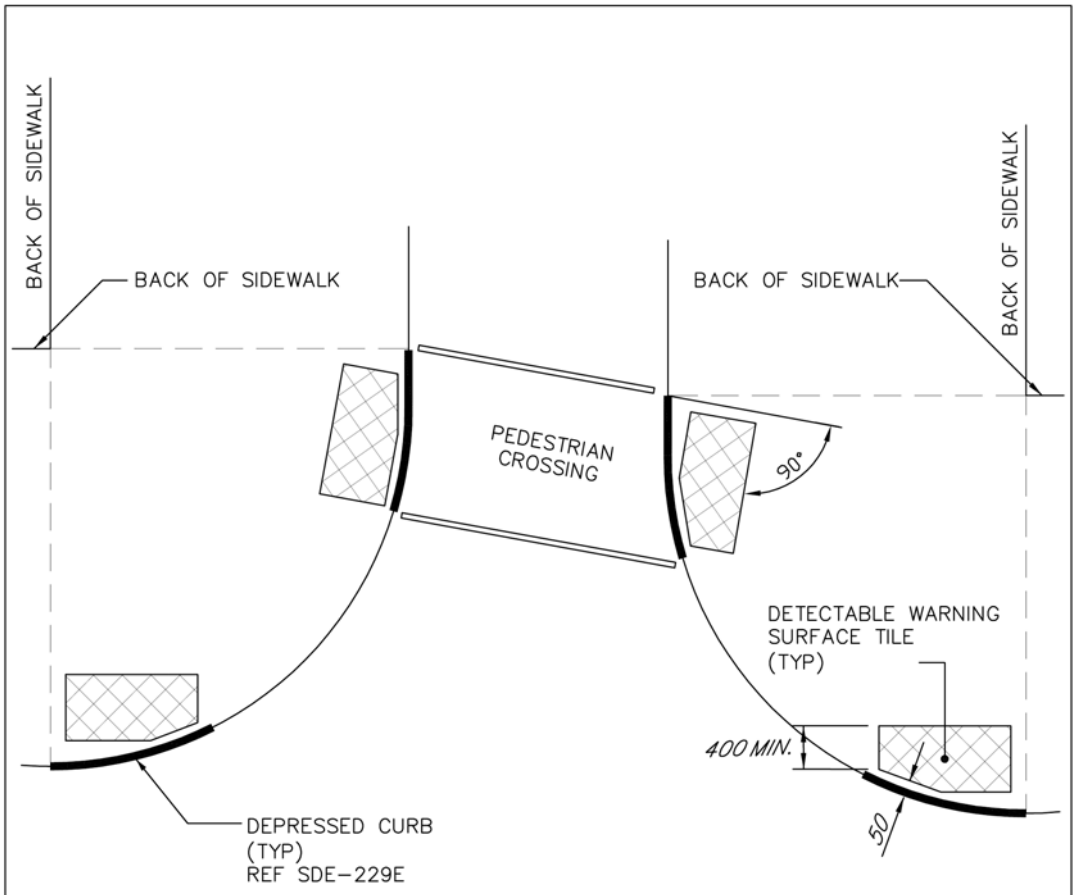
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT
ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE

Reference Spec. No.

E–SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES

CURB RAMP FOR PEDESTRIAN CORRIDOR WITH A TRAFFIC CONTROL DEVICE

Designed By:	Drawn By:	Scale :
B.P.	R.R.	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

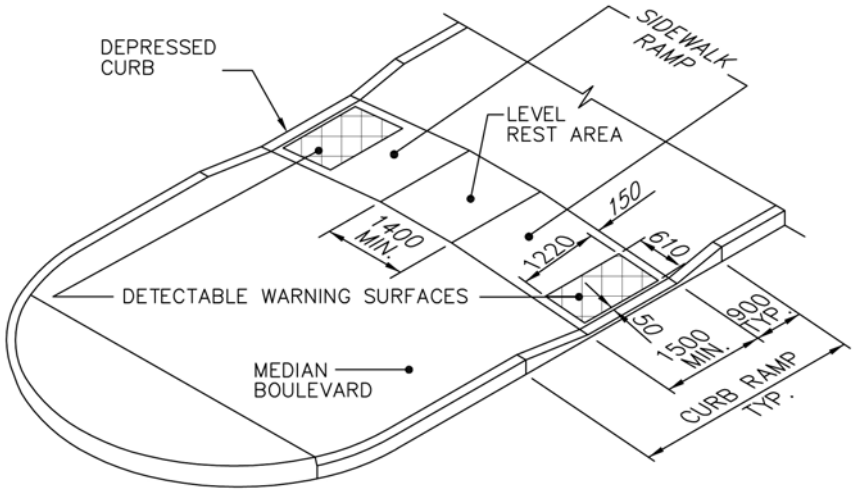
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

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. SDE-229AF
Approved:		



MEDIAN SIDEWALK CROSSING
(REF. SD-229B)

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

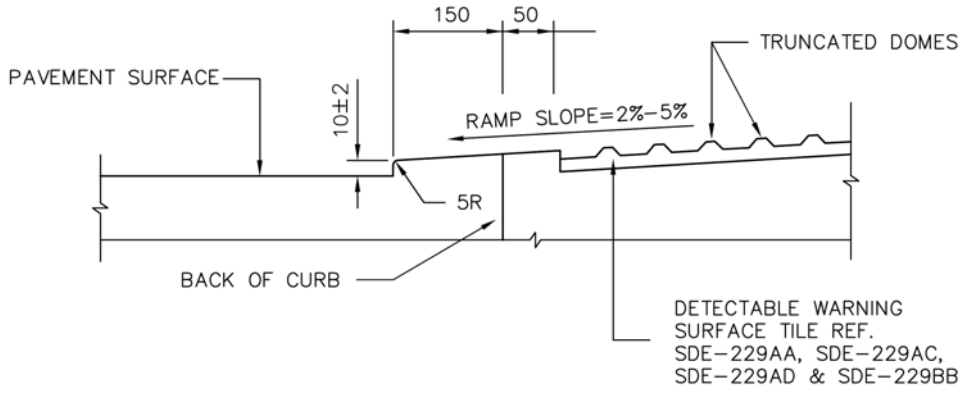
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

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

DIMENSIONS ARE IN MILLIMETRES

DETECTABLE WARNING SURFACE TILE IN CURB RAMPS FOR MEDIANS

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



DEPRESSED CURB

NOTES:

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

THE CITY OF WINNIPEG PUBLIC WORKS DEPARTMENT			
Reference Spec. No. CW 3235, CW 3310, CW 3325 E–SUPPLY & INSTALL DETECTABLE WARNING SURFACE	DIMENSIONS ARE IN MILLIMETRES		
CURB RAMP DEPRESSED CURB	Designed By: B.P.	Drawn By: T.G.A.	Scale : N.T.S.
	Checked By: F.W.C.	Date: 11–02–10	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 ¼ inch or equivalent hardware. This can help to ensure that adjacent tiles are flush to each other during the installation process. Tape or caulking can be placed on the underside of the bolted butt joint to ensure that concrete does not rise up between the tiles during installation. Any protective plastic wrap

which was peeled back to facilitate bolting or cutting, should be replaced and taped to ensure that the tile surface remains free of concrete during the installation process.

(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.

E13. COORDINATION OF CONSTRUCTION WITH CN RAIL

E13.1 Description

E13.1.1 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

E13.2 General Requirements

E13.2.1 The Contractor shall be responsible to meet all Canadian National (CN) constraints, requirements, and safety measures.

E13.2.2 The Contractor shall not enter into CN property at any time unless he has obtained an agreement from CN and adheres to CN safety measures. All employees must complete the contractor orientation course prior to working within the CN right-of-way.

E13.2.3 The Contractor shall arrange with CN to have CN supply a flag person for all activity on the CN right of way as required by CN.

E13.2.4 CN Guidelines and Sample Work Permit are included in Appendix B.

E13.2.5 The Contractor shall contact CN to commence the work permit and approvals process at:

Tim McCrindle
Tim.McCrindle@CN.CA
CN Utilities Coordinator
PH: (204) 231-7805

E13.3 Measurement and Payment

E13.3.1 Coordination of Construction With CN Rail

(a) Coordination of Construction With CN Rail will be measured on a unit basis and will be paid for at the Contract Lump Sum Price for "Coordination of Construction With CN Rail". Payment will be made upon completion of all construction work within the CN right of way and will be compensation for the costs of coordination efforts, flagging costs and all other costs associated with coordination and working within the CN right of way.

E14. NEW CAST-IN-PLACE CONCRETE PILE FOUNDATIONS

E14.1 Description

E14.1.1 The Work covered under this Item shall include all concreting operations related to construction of cast-in-place concrete pile foundations in accordance with this Specification and as shown on the Drawings.

E14.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

E14.2 Materials

E14.2.1 General

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

E14.2.2 Handling and Storage of Materials

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

E14.2.3 Testing and Approval

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

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

E14.2.4 Patching Mortar

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

E14.2.5 Cement

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

E14.2.6 Concrete

(a) General

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

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

(i) Class of Exposure: S-1

(ii) Compressive Strength @ 56 days = 35 MPa

(iii) Water / Cementing Materials Ratio = 0.4

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

(v) Cement – shall be as specified in A5.2.8.

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

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

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

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

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

E14.2.7 Aggregate

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

(b) Coarse Aggregate

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

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

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

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

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

(c) Fine Aggregate

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

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

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

E14.2.8 Cementing Materials

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

(b) Silica Fume

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

(c) Fly Ash

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

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

E14.2.9 Admixtures

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

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

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

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

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

E14.2.10 Water

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

E14.2.11 Concrete Supply

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

(b) Unless otherwise directed by the Contract Administrator, the discharge of ready mixed concrete shall be completed within 90 minutes after the introduction of the mixing water to the cementing materials and aggregates.

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

E14.2.12 Reinforcing Steel

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

(b) All reinforcing steel shall conform to the requirements of CSA Standard G30.18, Grade 400 W, Billet-Steel Bars for Concrete Reinforcement. All reinforcing steel shall be new deformed billet steel bars. All bars, including ties, shall be hot-dip galvanized in accordance with CSA Standard G164 for a minimum net retention of 610 g/m^2. Reinforcing steel supply and installation will be incidental to construction of concrete pile foundation and no separate payment will be made.

E14.2.13 Anchor Bolts, Nuts, and Washers

(a) Anchor bolts, nuts, and washers shall be in accordance with CSA Standard G40.21 Grade 300W, and shall be hot-dip galvanized full length in accordance with CSA G164 for a minimum net retention of 610 g/m^2, for the entire length of the anchor bolts. The threaded portion of the anchor bolts shall be 300 mm long. Anchor bolt supply and installation will be incidental to construction of concrete pile foundation and no separate payment will be made.

E14.2.14 Anchor Bolt Templates

(a) Anchor bolt templates shall be CSA G40.21 Grade 300W, minimum 10 mm thick, and will be incidental to construction of new concrete pile foundation and no separate payment will be made.

E14.2.15 Miscellaneous Materials

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

E14.3 Construction Methods

E14.3.1 Location and Alignment of Piles

(a) Pile construction shall not commence until the Contractor has obtained clearance from the appropriate Utility Authorities including but not limited to Manitoba Hydro, MTS and City of Winnipeg Water and Waste.

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

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

E14.3.2 Buried Utilities

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

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

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

E14.3.3 Excavation

(a) Hydro-jet excavation shall be used for pile excavation for the full depth of all piles.

(b) It may be necessary to hydro-jet excavate utilities adjacent to a pile location to adequately ascertain the location or provide enough “slack” in conduits to move them slightly to avoid interference with the pile locations. The Contract Administrator may elect to alter the location of a pile if hydro-jet excavation shows that utilities cannot be avoided. If the pile location must be altered, the Contractor will be paid for the abandonment of the pile due to utility interference.

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

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

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

(f) If any hole is condemned because of caving, it shall be filled with lean-mix concrete and a new hole excavated as near as possible to the location shown on the Drawings. In locations where underground utilities have been exposed, the underground utilities shall be covered with clean sand to 300 mm minimum cover around the utility. Payment will not be made for condemned piles.

E14.3.4 Sleeving

(a) Steel or corrugated metal pipe sleeving shall be used to temporarily line the excavation to prevent bulging or caving of the walls and to protect men at work in the excavation.

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

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

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

(e) The sleeving may remain cast in place if required to protect nearby utilities at the direction of the Contract Administrator. The top of sleeving shall be 300 mm below the finished grade adjacent to the pile.

E14.3.5 Inspection of Excavations

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

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

(c) Any improperly set sleeving or improperly prepared excavation shall be corrected to the satisfaction of the Contract Administrator.

E14.3.6 Placing Reinforcing Steel

(a) Reinforcement shall be:

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

(ii) rigidly fastened together, and

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

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

E14.3.7 Placing Anchor Bolts

(a) The anchor bolts shall be aligned with a steel template matching the bolt holes in the sign structure base plate. The setting template shall be held in place by the top and bottom nuts of the anchor bolts. The anchor bolts shall be plumb. Extreme care shall be used in this operation. Placement of anchor bolts without the steel template will not be permitted.

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

E14.3.8 Forms

(a) For “hydro-jet excavated” piles the top of the piles shall be formed with tubular forms (Sonotube) to a minimum depth of 1500 mm below final grade.

(b) In locations of caving, the tubular form (Sonotube) should extend a minimum of 500 mm below where the shaft becomes uniform. The minimum depth of the tubular forms (Sonotube) shall be as specified by E14.3.8 (a).

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

E14.3.9 Placing Concrete

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

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

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

(d) The shaft shall be free of water prior to placing of concrete. Concrete shall not be placed in or through water unless authorized by the Contract Administrator. In the event that tremie concrete is allowed by the Contract Administrator, the concrete shall be placed as specified herein.

E14.3.10 Tremie Concrete

(a) The shaft of the pile shall be pumped clear of water so that the bottom can be cleaned. Pumping shall then be stopped and water shall be allowed to come into the excavation until a state of equilibrium is reached. Concrete shall then be placed by means of a tremie pipe. The tremie pipe shall have a suitable gate in the bottom to prevent water from entering the pipe. The bottom of the pipe shall be maintained below the surface of the freshly placed concrete. The pipe shall be capable of being raised or lowered quickly in order to control the flow of concrete.

(b) Tremie concrete shall be poured up to a depth of 600 mm or as the Contract Administrator directs. Pumps shall then be lowered into the excavation and the excess water pumped out. The laitance that forms on top of the tremie shall then be removed and the remainder of the concrete shall be placed in the dry excavation.

E14.3.11 Protection of Newly Placed Concrete

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

E14.3.12 Curing Concrete

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

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

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

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

E14.3.13 Form Removal

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

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

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

E14.3.14 Patching of Formed Surfaces

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

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

(c) Minor surface defects caused by honeycomb, air pockets greater than 5 mm in diameter, and voids left by strutting, and tie holes shall be repaired by removing the

defective concrete to sound concrete, dampening the area to be patched and then applying patching mortar. A slurry grout consisting of water and cement shall be well-brushed onto the area to be patched. When the slurry grout begins to lose the water sheen, the patching mortar shall be applied. It shall be struck-off slightly higher than the surface and left for one hour before final finishing to permit initial shrinkage of the patching mortar and it shall be touched up until it is satisfactory to the Contract Administrator. The patch shall be cured as specified in this Specification, and the final colour shall match the surrounding concrete.

E14.3.15 Cold Weather Concreting

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

E14.4 Quality Control

E14.4.1 All workmanship and all materials furnished and supplied under this Specification are subject to close and systematic inspection and testing by the Contract Administrator, including all operations from the selection and production of materials, through to final acceptance of the Work. The Contractor shall be wholly responsible for the control of all operations incidental thereto notwithstanding any inspection or approval that may have been previously given. The Contract Administrator reserves the right to reject any materials or Works that are not in accordance with the requirements of this Specification.

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

E14.5 Measurement and Payment

E14.5.1 Construction of New Cast-in-Place Concrete Pile Foundations

E14.5.2 Construction of new cast-in-place concrete pile foundations including supply and installation of anchor bolts and steel template will not be measured and will be paid for at the Contract Lump Sum Price per pile per Site for the “Items of Work” listed here below for concrete piles constructed in accordance with this Specification and accepted by the Contract Administrator.

(a) Items of Work:
Cast-in-Place Concrete Pile Foundations
(a) Hydro-Jet Excavation WB Chancellor Matheson Rd. E. of Pembina Hwy.
(b) Hydro-Jet Excavation SB Pembina Hwy. N. of Bison Dr.

E14.5.3 Abandonment of piles due to utility interference will not be measured and will be paid for at the Contract Lump Sum Price per pile per Site for the “Items of Work” listed here below for abandoned piles in accordance with this Specification and accepted by the Contract Administrator.

(a) Items of Work:
Abandonment of Piles due to Utility Interference

E15. SUPPLY AND INSTALLATION OF STEEL OVERHEAD SIGN SUPPORT STRUCTURES

E15.1 Description

E15.1.1 The Work covered under this item shall include all operations related to the supply, fabrication, delivery, and erection of new steel overhead sign support structures.

E15.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of the Work as hereinafter specified.

E15.2 Materials

E15.2.1 General

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

(b) All materials used for fabrication of overhead sign support structures shall be new, previously unused material.

E15.2.2 Handling and Storage of Materials

(a) All materials shall be handled in a careful and workmanship-like manner, to the satisfaction of the Contract Administrator. Storage of materials shall be in accordance with the requirements of CSA Standard CAN3 A23.1.8-M77, Storage of Materials, except as otherwise specified herein.

E15.2.3 Structural Steel

(a) Structural steel for all components of the overhead sign support structures shall be in accordance with CSA Standard G40.21 M, Grade 350 W. For purposes of hot-dip galvanizing, the silicon content in the steel shall be controlled within 0 to 0.03%.

(b) The Contractor is advised that copies of mill test certificates showing the chemical and physical properties of all structural steel to be supplied under this Specification must be supplied to the Contract Administrator and be found acceptable prior to commencement of fabrication.

(c) Steel shall not be acceptable unless the mill test certificate states the grade to be 350 MPa (50 ksi) minimum yield for the items specified above. Lower grade steel shall not be acceptable (despite favourable published mill test results). Items fabricated without steel certification shall be rejected.

E15.2.4 Flange Bolts, Nuts, and Washers

(a) Flange bolts, nuts, and washers shall be in accordance with ASTM A325 hot-dip galvanized.

E15.2.5 Hardware for Handhole Covers

(a) Hardware for handhole covers shall be in accordance with ASTM A276 Type 316 stainless steel.

E15.2.6 Hot-Dip Galvanizing

(a) All hot-dip galvanizing shall be in accordance with CSA G164 for a minimum net retention of 610 g/m^2.

E15.2.7 Galvanizing Touch-up and Field-Applied Galvanizing

(a) Only approved products listed below shall be used for field-applied galvanizing, to touch-up damaged hot-dip galvanizing on-site and to galvanize field welds.

(b) Approved products for self-fluxing, low-temperature, zinc-based alloy rods in accordance with ASTM A780-80 for "Repair of Damaged Hot-Dip Galvanized Coatings" are as follows:

(i) Galvalloy as manufactured by Metalloy Products Company, P.O. Box No. 3093, Terminal Annex, Los Angeles, California, available from Welder Supplies Limited, 150 McPhillips Street, Winnipeg, and

(ii) Welco Gal-Viz Galvanizing Alloy, as manufactured by Thermocote Welco, Highway 161, York Road, Kings Mountain, North Carolina, available from Welder Supplies Limited, 25 McPhillips Street, Winnipeg.

(c) Approved cold-applied galvanic anti-corrosion system is as follows:

(i) ZINGA, as manufactured by ZINGAMETALL, Ghent, Belgium, available from Pacific Evergreen Industries Ltd. Vancouver, BC, Ph. (604) 926-5564, and Centennial Mine & Industrial Supply, Saskatoon, Sask., Ph. (306) 975-1944.

E15.2.8 Anchor Bolts and Setting Template

(a) Anchor bolts including nuts and washers, and setting template shall be in accordance with CSA G40.21 Grade 300 W, hot-dip galvanized. Anchor bolts, nuts, washers, and setting template shall be supplied and paid for under, "New Cast-in-Place Concrete Pile Foundations", specified herein.

E15.2.9 Non-Shrink Grout

(a) Grout as specified hereinafter shall be used for the construction of grout pads under sign structure base plates. Grout shall consist of a pre-mixed, non-metallic non-shrink grout. Approved products are:

(i) M-Bed Standard grout by Sternson Ltd.

(ii) CPD Non-shrink grout by Master Builders

(iii) Set Non-shrink grout by Master Builders

(iv) Sikadur VPC grout by Sika Canada Inc. for cold weather construction (0 C to -20 C)

(b) The grout shall be of a consistency suitable for the application intended, as approved by the Contract Administrator.

E15.2.10 Sign Plates

(a) Sign plates will be supplied and installed by the City of Winnipeg Traffic Services Branch.

E15.2.11 Welding Consumables

(a) Welding consumables for all processes shall be certified by the manufacturer to be complying with the requirements of CSA Standard W59-M1984 and the following Specifications:

(i) Manual shielded metal arc welding (SMAW): All electrodes shall be basic-type electrodes conforming to CSA W48.1-M1991 or W48.3-M1982, classification E480XX, or imperial equivalent.

(ii) Gas metal arc welding (GMAW): All electrodes shall conform to CSA W48.4-M1980, classification ER480S-X, or imperial equivalent.

(iii) Flux cored arc welding (FCAW): All electrodes shall conform to CSA W48.5-M1982, classification E480XT-X or imperial equivalent. Electrodes shall be controlled by hydrogen (CH) designation.

(iv) Submerged arc welding (SAW): All electrodes shall conform to CSA W48.6-M1980, classification F480X-EXXX or imperial equivalent.

(v) Shielding gas shall be welding grade carbon-dioxide with a guaranteed dew point of -46ºC.

(vi) All electrodes, wires, and fluxes used shall be of a classification requiring a minimum impact of 27 joules at -18ºC.

(b) The proposed welding procedures and welding consumable certificates shall be submitted to the Contract Administrator for his approval at least two (2) days prior to the scheduled commencement of any fabrication.

E15.2.12 Miscellaneous Materials

(a) Miscellaneous material incidental to this Work shall be as approved by the Contract Administrator.

E15.2.13 Equipment

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

E15.3 Construction Methods

E15.3.1 General Requirements

(a) Holes in the base plates shall be oversized by 6 mm, and provisions made for field erection must be accurate within plus or minus 13 mm between supports, without affecting final installation and load capacity.

(b) The base plates for the sign support structures shall be constructed to be fully compatible and mountable on the anchor bolts, provided in the foundations by the Contractor.

(c) Sufficient reinforced handholes and wiring holes shall be provided for lighting of the signs as shown on the Drawings. All wiring holes shall have threaded couplings. All unused coupling holes shall be capped with a threaded galvanized plug.

(d) The sign support structure shall be so fabricated that erection can be achieved by means of bolted connections.

(e) Each sign structure shall be provided with a "raised" structure identification number with a welding electrode in accordance with the details shown on the Drawings. The sign structure identification number shall be placed before hot-dip galvanizing.

(f) Adequate venting and drainage holes shall be provided in enclosed sections for hot-dip galvanizing. The galvanizing facilities shall be consulted regarding the size and location of these holes.

(g) Prior to fabrication, the dimensional limitations on the size and shape imposed by the galvanizing facilities shall be determined for hot-dip galvanizing the sign structures.

E15.3.2 Fabrication

(a) All fabrication shall be carried out in accordance with this Specification and the Contract Drawings, as well as AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals - 2001 - 4th Edition, plus all subsequent revisions.

(b) The punching of identification marks on the members will not be allowed, except for the structure identification number.

(c) Any damage to members during fabrication shall be drawn to the attention of the Contract Administrator in order that the Contract Administrator may approve remedial measures.

(d) Dimensions and fabrication details that control the field matching of parts shall receive very careful attention in order to avoid field adjustment.

(e) All portions of the Work shall be neatly finished. Shearing, cutting, clipping, and machining shall be done neatly and accurately. Finished members shall be true to line, free from twists, bends, sharp corners, and edges.

(f) Cut edges shall be true and smooth and free from excessive burrs or ragged breaks. Re-entrant cuts shall be avoided wherever possible. If used, they shall be filleted by drilling prior to cutting.

(g) All holes shall be provided by drilling not burning. All holes shall be free of burrs and rough edges.

E15.3.3 Welding

(a) Welding of steel structures shall be in accordance with CSA W59, "Welded Steel Construction."

(b) All seams shall be continuously welded and free from any slag and splatter. Longitudinal welds shall be a minimum of 60% penetration, except those within 200

mm of baseplates, flanges, and circumferential welds, which shall be 100% penetration. All circumferential groove welds shall be 100% penetration, and where circumferential welds are used at a butt joint, an internal backup strip shall be provided.

(c) Longitudinal seam welds in horizontal supports shall be located at the top of the horizontal members.

(d) All welds shall be ground smooth and flush with the adjacent surface prior to hot-dip galvanizing.

E15.3.4 Surface Preparation and Cleaning

(a) Surface preparation and cleaning of materials prior to hot-dip galvanizing shall be in accordance with CSA G164 and SSPC Specification SP:10, "Near White Metal Blast Cleaning," unless otherwise specified herein. The Contractor shall ensure that all exterior and interior surfaces of vertical support members of sign structures are blast cleaned prior to pickling to achieve the minimum zinc coating mass of 610 g/m^2. All welding and provision of holes is to be completed prior to surface preparation and cleaning, except where shown on the Drawings.

(b) The sandblasting and cleaning of sign structures shall be done in the shop.

(c) After the sign structures have been sandblasted and cleaned, all components shall be blown with compressed air to remove blast cleaning debris (e.g. sand). Special attention shall be made to remove debris trapped in cavities behind the gusset plates and base plates.

(d) After the sign structures have been sandblasted and cleaned, the Contract Administrator will carry out a visual inspection of the structures in the shop before they are shipped to the galvanizing plant.

E15.3.5 Hot-Dip Galvanizing

(a) The hot-dip galvanizing plant shall be a Regular Member of the American Galvanizers Association, Inc. and certified to CSA G164.

(b) All outside surfaces of the overhead sign support structures, as well as the interior surfaces of all vertical support members of the overhead sign support structures, shall be hot-dip galvanized in accordance with the requirements of this Specification.

(c) Adequate venting and drainage holes shall be provided in enclosed sections for hot-dip galvanizing. The galvanizing facility shall be consulted regarding the size and location of these holes. Holes shall be provided by drilling not burning.

(d) The galvanizing coating on outside surfaces of overhead sign support structures shall be generally smooth and free of blisters, lumpiness and runs. In particular, the outside surfaces of the bottom 2.5 m of the vertical support members shall have a smooth finish equal to the finish on hot-dipped galvanized handrails.

(e) In addition to the provision of corrosion protection by the galvanized coating, the aesthetic appearance of the structure after hot-dip galvanizing will also be a criteria in the acceptance or rejection of the galvanized coating. The galvanized coating on the entire structure shall have a uniform “silver” colour and lustre. Galvanizing with parts of the structure having dull grey coating or streaks or mottled appearance will not be acceptable. If the galvanizing is rejected for aesthetic reasons, the Contractor shall rectify the appearance by applying spray-on molten zinc metallizing with 85/15 zinc/aluminum alloy. The metallizing shall be carried out in the shop before the structure is installed.

(f) Minor defects in the galvanizing coating shall be repaired as specified here below for “Field-Applied Touch-Up Galvanizing”. The Contract Administrator shall be consulted before repairs are made. Use of cold applied spray-on galvanizing will not be permitted and will be cause for rejection.

(g) Other defects and contaminants in the galvanizing coating, such as heavy dross protrusions, flux inclusions and ash inclusions shall be grounds for rejection of the galvanizing coating system.

(h) The Contractor shall verify the thickness of galvanized coatings as part of their own quality control testing and make their results available to the Contract Administrator.

(i) All threaded couplings shall be rethreaded after the sign structures have been hot-dip galvanized.

(j) The sign structures shall be stored on timber blocking after hot-dip galvanizing.

E15.3.6 Delivery and Erection

(a) The Contractor shall notify the Contract Administrator at least two (2) Working Days in advance of the anticipated delivery to the Site and erection of the overhead sign support structures.

(b) The sign structures shall be lifted and secured with nylon ropes or other approved methods. Use of steel chains and steel hooks against hot-dip galvanized or powder coated surfaces will not be permitted. The structure components (shaft and arm etc.) shall be placed on timber blocking and secured with nylon ropes during their transportation to the Site.

(c) Each anchor bolt shall be provided with two galvanized nuts--one nut below the base plate for levelling the structure, and one nut above the base plate for anchoring the structure. The anchor bolts shall have a minimum projection of 25 mm above the anchoring nuts. There shall be provision for maximum 50 mm thick grout pad under the base plate.

(d) The Contractor shall ensure that the anchoring nuts of the anchor bolts are tightened according to the "turn-of-nut" method of the AASHTO Code.

E15.3.7 Installation of Sign Plates

(a) The City of Winnipeg will be responsible for installation of sign plates.

E15.3.8 Grout Pads

(a) New grout pads shall be constructed under sign structure bases after erection has been completed to the satisfaction of the Contract Administrator incidental to the Work of this item.

E15.3.9 Field-Applied Touch-up Galvanizing

(a) Any areas of damaged galvanizing on the sign structures shall receive field-applied touch-up galvanizing.

(b) Surfaces to receive touch-up galvanizing shall be cleaned using a wire brush, a light grinding action, or mild blasting to remove loose scale, rust, paint, grease, dirt, or other contaminants.

(c) For self fluxing, low temperature, zinc based alloy rods, preheat the surface to 315ºC and wire brush the surface during preheating. Rub the cleaned preheated area with the repair stick to deposit an evenly distributed layer of zinc alloy. Spread the alloy with a wire brush, spatula, or similar tool. Field-applied galvanizing shall be blended into existing galvanizing of surrounding surfaces and shall be buffed and polished if required to match the surrounding surfaces. Care shall be taken to not overheat surfaces beyond 400ºC and to not apply direct flame to the alloy rods.

(d) For pure zinc paint or spray on systems, the approved product Zinga shall be applied by either a brush or roller. The Zinga shall be applied in 3 coats, with each coat having a dry film thickness of 60 µm (2.36 mils). Each coat shall be left to dry for a minimum of one (1) hour before the application of the next coat.

E15.4 Quality Control

E15.4.1 General

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

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

E15.4.2 Welding Qualifications

(a) The Contractor shall produce evidence that the plant has recently been fully approved by the C.W.B. to the requirements of CSA W47.1 Division 2.1 for welding of steel structures.

(b) Approved welding procedures shall be submitted to the Contract Administrator prior to fabrication of any steel items.

E15.4.3 Testing

(a) In addition to the Contractor's own quality control testing of all materials, welding procedures and steel fabrication including hot-dip galvanizing will be inspected and tested by the Contract Administrator to ascertain compliance with the Specifications and Drawings.

(b) The Contract Administrator will hire a testing agency certified by the Canadian Welding Bureau to carry out shop fabrication inspection and testing before the overhead sign support structures are approved ready for installation of coating system. The inspector shall have access to all of the fabricator’s normal quality control records for this Contract, specified herein. Inspection and testing will include:

(i) Visual inspection of 100 percent of welds.

(ii) Ultrasonic testing of 100 percent of full penetration sections of longitudinal seam welds and circumferential butt welds.

(iii) Magnetic particle testing of a random 10 percent of partial penetration sections of longitudinal seam welds.

(iv) Ultrasonic testing of 25 percent of base plate and flange plate welds.

(v) Inspection of hot-dip galvanizing and coating thickness.

(c) Welds that are found by any of the inspection and testing methods to be inadequate and unsatisfactory shall be repaired in accordance with CSA W59 and then retested. The cost of the repairs and the cost of the retest shall be paid for by the Contractor.

(d) No repair shall be made until agreed to by the Contract Administrator.

(e) Defects in hot-dip galvanizing shall be rectified as directed by the Contract Administrator.

E15.4.4 Unacceptable Work

(a) Any Work found to be unacceptable shall be corrected in accordance with CSA W59.

(b) No repair shall be made until agreed to by the Contract Administrator.

E15.5 Measurement and Payment

E15.5.1 Supply of Steel Overhead Sign Support Structures

(a) Supply of steel overhead sign support structures will be measured and paid for at the Contract Lump Sum Price per structure per Site for the “Items of “Work” listed here below for steel overhead sign support structures supplied in accordance with this Specification and accepted by the Contract Administrator.

(i) Items of Work:

Supply of Steel Overhead Sign Support Structures
(a) WB Chancellor Matheson Rd. E. of Pembina Hwy.
(b) SB Pembina Hwy. N. of Bison Dr.

E15.5.2 Installation of Steel Overhead Sign Support Structures

(a) Installation of steel overhead sign support structures will be measured and paid for at the Contract Lump Sum Price per structure per Site for the "Items of "Work" listed here below for steel overhead sign support structures installed in accordance with this Specification and accepted by the Contract Administrator.

(i) Items of Work:
Installation of Steel Overhead Sign Support Structures

E16. SHOP DRAWINGS FOR OVERHEAD SIGN SUPPORT STRUCTURES

DESCRIPTION

E16.1 This Specification provides instructions for the preparation and submission of shop drawings.

E16.1.1 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.

E16.1.2 The Contractor shall submit specified 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.

E16.2 Shop Drawings

E16.2.1 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.

E16.2.2 Shop drawings for the following structural components shall bear the seal of a registered Engineer of Manitoba.

(a) Metal Fabrications

(b) Shoring

E16.3 Contractor's Responsibilities

E16.3.1 Review shop drawings, product data and samples prior to submission and stamp and sign drawings indicating conformance to the Contract requirements.

E16.3.2 Verify:

(a) Field Measurements

(b) Field Construction Criteria

(c) Catalogue numbers and similar data

E16.3.3 Coordinate each submission with requirements of Work and Contract Documents. Individual shop drawings will not be reviewed until all related drawings are available.

E16.3.4 Notify Contract Administrator, in writing at time of submission, of deviations from requirements of Contract Documents.

E16.3.5 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.

E16.3.6 Responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.

E16.3.7 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.

E16.3.8 After Contract Administrator's review and return of copies, distribute copies to subtrades as appropriate.

E16.3.9 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.

E16.4 Submission Requirements

E16.4.1 Schedule submissions at least fourteen (14) Calendar Days before dates 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.

E16.4.2 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.

E16.4.3 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

E16.4.4 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.

E16.4.5 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.

E17. REMOVAL OF FORT GARRY INDUSTRIAL PARK SIGN

E17.1.1 Description

(a) This specification will cover the removal and salvage of the “Fort Garry Industrial Park Sign” located in the boulevard east of Pembina Highway approximately 300m south of the intersection of Bison Drive and Pembina Highway. A picture of the sign is shown in Figure 1.

Figure 1 - Fort Garry Industrial Park Sign

E17.2 The Work to be done by the Contractor under this Specification shall include the supply of all materials, and 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 as hereinafter specified.

E17.3 Construction Methods

E17.3.1 The Contractor shall remove the sign panel, sign posts and helical screw in bases separately.

E17.3.2 The helical screw in bases shall be removed by hydro-jet excavating around the bases until they are sufficiently loose to be removed without damaging the base.

E17.3.3 All sign materials (sign panel, posts, bases and hardware) shall be delivered to 421 Osborne Street within 72 hours of being removed. The Contractor shall arrange with the

City of Winnipeg to receive the sign at 421 Osborne Street at a time suitable for both parties.

(a) Contact person: Richard Fredette (204) 232-0301

E17.4 Measurement and Payment

E17.4.1 Removal of existing Fort Garry Industrial Park Sign will not be measured and all costs will be considered incidental to the Contract.

E18. TREE REMOVALS

DESCRIPTION

E18.1 General

E18.1.1 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

E18.2 Tree Removals

E18.2.1 Remove only trees marked and confirmed for removal in the field by the Contract Administrator.

E18.2.2 Remove trees in accordance with CW 3010.

E18.2.3 The Contractor shall arrange for any Elmwood to be disposed of by the City of Winnipeg.

E18.2.4 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

E19. OPERATING CONSTRAINTS FOR WORK IN CLOSE PROXIMITY TO FEEDERMAINS

E19.1 Description

E19.1.1 This Section details operating constraints for all work to be carried out in close proximity to feedermains. Close proximity shall be deemed to be any construction activity within a 5 m offset from the centreline of the feedermain.

E19.1.2 General Considerations for Work in Close Proximity to Feedermains are a critical component of the City of Winnipeg Regional Water Supply System and work in close proximity to the pipeline shall be undertaken with an abundance of caution. The pipe cannot be taken out of service for extended periods to facilitate construction and inadvertent damage caused to the pipe would likely have catastrophic consequences. Work around feedermains shall be planned and implemented to minimize the time period that work is carried out in close proximity to the pipe and to ensure that the pipeline is not subjected to excessive construction related loads, including excessive vibrations and/or concentrated or asymmetrical lateral loads during backfill placement.

E19.1.3 South Fort Garry Feedermain is constructed of Prestressed Concrete Cylinder Pipe (Lined Core) conforming to AWWA Standard C301. The South Fort Garry Feedermain was manufactured and installed in 1981.

E19.1.4 The Fort Garry Feedermain is constructed of Absestos-Cement (AC) pressure pipe conforming to AWWA Standard C400. The Fort Garry Feedermain was manufactured and installed in 1966.

E19.1.5 The 350 mm AC University of Manitoba Feedermain is constructed of Absestos- Cement (AC) pressure pipe conforming to AWWA Standard C400. The Pipeline was manufactured and installed in 1972.

E19.1.6 Large diameter pressure pipe generally has limited ability to withstand increased earth and live loading. Therefore, every precaution must be undertaken to ensure that applied loading during all phases of construction is within accepted loading parameters. Prestressed pipe typically fails in a non-ductile mode and has the potential to cause extensive consequential damage to infrastructure if failure should occur.

E19.1.7 Loading limitations and calculated loads associated with typical construction equipment is attached to this specification as Appendix A for illustrative purposes. The loading calculations shall be interpreted with caution, however, as many factors can cause applied loads to increase considerably, such as unbalanced loading, variations in wheel base or track width payload, impact factors due to excessive speed or vibration, etc.

E19.2 Submittals

E19.2.1 Submit proposed construction equipment specifications to the Contract Administrator for review seven (7) days prior to construction. The submissions need to include sufficient data on operational weights, dimensions, and payloads to facilitate assessment that the proposed construction equipment is not in excess of the typical construction loading that this assessment was based on. Submittal shall include:

(a) Equipment operating weight and dimensions including wheel or track base, track length or axle spacing, track widths or wheel configurations

(b) Payload weights

(c) Load distributions in the intended operating configuration

E19.2.2 Submit a Construction Method Statement with proposed construction plan including haul routes, excavation equipment locations, loading positioning and base construction sequencing, to the Contract Administrator for review seven (7) days prior to construction. Do not commence construction until the Construction Method Statement has been reviewed and accepted by the Contract Administrator.

E19.3 Protection of Feedermains During Construction

E19.3.1 The sections of the Feedermains affected by construction:

(a) South Fort Garry Feedermain - Runs parallel to Bison Drive beneath the south boulevard from the valve chamber at Bison Drive and Shore Street to the west to Waverley Street.

(b) Fort Garry Feedermain – Crosses Bison Drive at Shore Street, ties into valve chamber at Shore Street and Bison Drive.

(c) 350 AC Feedermain – Runs parallel to Bison Drive from the valve chamber at Shore Street and Bison Drive, across Pembina Highway and continues along Chancellor Matheson Road.

E19.3.2 Contractors carrying out repair work or working in close proximity to feedermains shall meet the following conditions and technical requirements:

(a) Pre-Work, Planning and General Execution

(i) No work shall commence at the site until the Equipment Specifications and Construction Method Statement have been submitted and accepted, and feedermain locations have been clearly delineated in the field. Work over feedermains shall only be carried out with equipment that has been reviewed and quantified in terms of its loading implications on the pipe. All proposed construction equipment must be submitted to Contract Administrator for review prior to construction. Work in areas in close proximity to feedermains shall only be carried out with equipment that has been reviewed and quantified in terms of its loading implications by the Contract Administrator.

(ii) Contact the City of Winnipeg WWD Department, Construction Services Coordinator (Andy Vincent) prior to construction.

(iii) Notify WWD well in advance of construction to coordinate required service interruptions

(iv) Where work is in close proximity to a feedermain, utilize construction practices and procedures that do not impart excessive vibration loads on the feedermain or that would cause settlement of the subgrade below the feedermain.

(v) Crossing feedermains is prohibited in the time period from removal of existing roadway structure until the completion of granular base construction. At all times prior to completion of final paving; reduce equipment speeds to levels that minimize the effects of impact loading to the pipe

(vi) For construction work activities either longitudinally or transverse to the alignment of a feedermain, work only with equipment and in the manner stipulated in the accepted Construction Method Statement and the supplemental requirements noted herein.

(vii) Where work is in proximity to a feedermain, utilize construction practices and procedures that do not impart excessive vibration loads on the feedermain or that would cause settlement of the subgrade below the feedermain.

(viii) The pipeline elevation datum relative to the proposed roadway shall be adequately verified. Deviations from the elevations noted herein shall be reported to Contract Administrator for review prior to construction of the subgrade.

(ix) Construction operations should be staged in such a manner as to limit multiple construction loads at one time, (e.g. offset crossings sufficiently from each other, rollers should remain a sufficient distance behind spreaders to limit loads. A reasonable offset distance is 3m between loads).

(x) No vehicular traffic shall be allowed to cross or operate over the valve chamber at Bison Drive and Shore Street. The valve chamber shall be staked and flagged off before commencement of construction activities. Any equipment working within 5 m of the chamber is required to be approved by the Contract Administrator as per above requirements. Notwithstanding all restrictions on working near feedermains noted herein equipment will not be allowed to operate within 3 m of the valve chamber walls.

(xi) The Contractor and all site supervisory personnel and equipment operators have to be formally briefed to ensure that they are fully cognizant of the associated restrictions, constraints, and risks associated with working adjacent to and over this pipeline. New personnel introduced after commencement of the project need to be formally orientated as to the significance and constraints associated with working over the feedermain.

(b) Demolition and Excavation

(i) Use of pneumatic concrete breakers within 3 metres of a feedermain is prohibited. Pavement shall be full depth sawcut and carefully removed. Use of hand held jackhammers for pavement removal will be allowed.

(ii) Where there is less than 1.6 metres of earth cover over a feedermain and further excavation is required either adjacent to or over the feedermain, utilize only smooth edged excavation buckets, soft excavation or hand excavation techniques. Where there is less than 1 metre of cover over the feedermain, carefully expose the feedermain by hand excavation to delineate the location and depth of the main, and provide full time supervision of the excavation.

(iii) Where there is less than 2.5 m of earth cover over a feedermain, offset backhoe or excavation equipment from the feedermain, a minimum of 3 m from centerline, to carry out excavation.

(iv) Equipment should not be allowed to operate while positioned directly over a feedermain.

(v) For feedermain inspection, expose the top 1/3 of the feedermain by hand excavation, for a minimum length of 1 metre, to allow City to inspect condition of the main. Notify City a minimum of 24 hours in advance of exposure, and allow a minimum of 2 hours for City to complete inspection works. Backfill test excavation with bedding sand upon completion.

(c) Subgrade Construction

(i) Subgrade compaction shall be prohibited within 2 m of a feedermain. Subgrade compaction within 3 m of a feedermain shall be limited to non vibratory methods only.

(ii) Subgrade, sub-base and base course construction shall be kept in a rut free condition at all times. Construction equipment is prohibited from crossing pipelines if the grade is insufficient to support the equipment without rutting.

(iii) Subgrade conditions should be inspected by personnel with competent geotechnical experience (e.g. ability to adequately visually classify soils and competency of subgrade, subbase, and base course materials). In the event of encountering unsuitable subgrade materials above the feedermain, proposed design revisions shall be submitted to this office for review to obtain approval from the Water and Waste Department relative to any change in conditions.

(iv) Construction operations shall be staged to minimize the time period between excavation to subgrade and placement of granular subbase materials. Should bare subgrade be left overnight, measures shall be implemented to protect the subgrade against inadvertent travel over it and to minimize the impact of wet weather.

(d) Subbase and Base Course Construction

(i) Granular material, construction material, soil or other material shall not be stockpiled on the pipelines or within 5 metres of the pipe centerline.

(ii) Subbase or base course materials shall not be dumped directly on pipelines but shall be stockpiled outside limits noted in these recommendation and shall be carefully bladed in-place.

(iii) Subbase compaction within 3 metres of the centreline of a feedermain shall be either carried out by static methods (without vibration) or with smaller approved equipment such as hand held plate packers or smaller roller equipment.

E20. PATHWAY GRADING

E20.1 Description

E20.1.1 General

(a) This specification covers the earth work, grading and associated ditch re-grading related to the construction of the asphalt pathway parallel to Pembina Highway from the Sta 1+280 (approximately 50m north of the exit of 2634 Pembina Highway - Windsor Plywood) to Sta 1+695 (proposed Catchbasin in boulevard in the south east corner of the intersection).

(b) Referenced Standard Construction Specifications

(i) CW 1130 – Site Requirements

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

(iii) CW 3170 – Earth Work and Grading

E20.2 Materials and Equipment

E20.2.1 Materials

(a) Imported Fill Material supplied shall be as per CW 3110 Clause 2.5. Imported fill material must be approved by the Contract Administrator.

E20.2.2 Equipment

(a) Equipment as per CW 3170 Clause 8.

E20.3 Construction Methods

E20.3.1 Further to CW 1130 Clause 3.15, the Contract Administrator will mark out pathway grading cut and fill alignment and elevations.

E20.3.2 Pathway Grading

(a) Strip existing topsoil and organic soils within the limits identified by the Contract Administrator.

(b) Refer to the Contract Drawings for typical cut/fill elevations along the length of the pathway and the limits of the work.

(c) Refer to the Contract Drawings for sections.

(d) The Contractor is to note the following are estimated cut and fill volumes for the Work. This information is provided to assist bidders in estimation of level of effort for the Work only. Note these volumes include the existing topsoil. Actual earth work and grading volumes will not be measured by the Contract Administrator:

Location	Cut (m^3)	Fill (m^3)
Northbound Pembina Highway From Sta. 1+280 to 1+693	450	250

(e) The cut material will be considered unusable as fill material. Fill material for pathway construction shall be suitable site material excavated from elsewhere on site or where insufficient suitable site material is available it shall be imported fill material.

(f) Compact area including side slopes to a minimum of 90% Standard Proctor Density, except under pathway structure.

(g) Place and compact sub-grade to 95% Standard Proctor Density under pathway alignment

(h) Place and compact sub-grade in maximum lifts of 250 mm compacted depth.

(i) Construct and shape ditch grades to 50 mm below final design grade to allow for topsoil placement.

E20.4 Measurement and Payment

E20.5 Pathway Grading

E20.5.1 Pathway Grading will be measured on an area basis and paid for at the Contract Unit Price per square metre for “Pathway Grading”. The area to be paid for will be the total area of the pathway earthwork including stripping topsoil, excavating subgrade, placing suitable site fill or imported fill, compacting, grading, and shaped in accordance with this specification, accepted and measured by the Contract Administrator.

(a) Note that the area for “Pathway Grading” will be measured from the back of proposed curb to the “Limits of Pathway Grading” as shown on the Contract drawings and as marked out by the Contract Administrator.

(b) Note that the excavation of the existing boulevard from back of existing curb to back of proposed curb adjacent to “Pathway Grading” will be as per CW 3110.

E21. SALVAGING EXISTING ALUMINUM BARRIER RAIL AND POSTS

E21.1 Description

E21.1.1 General

(a) This specification shall cover the salvaging of the existing aluminum barrier rail and posts in accordance with the Standard Construction Specification CW-3650 and as specified herein.

(b) The Work to be done by the Contractor under this Specification shall include the supply of all materials, and 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 as hereinafter specified.

E21.2 Construction Methods

E21.2.1 Further to Standard Construction Specification CW 3650, all guardrail components to be salvaged, including hardware, shall be delivered to the City of Winnipeg Bridge Storage Yard at 849 Ravelston Ave. Winnipeg, MB, R3W 1S8. Prior to delivery the Contractor shall contact Mike Tereleski (204-794-8570) to confirm an appropriate date and time to deliver the salvaged parts. At the storage yard, the Contractor shall off-load the salvaged material with his own labour and equipment and place in the designated location indicated by the City Bridge Inspectors and as directed by the Contract Administrator.

E21.3 Measurement and Payment

E21.3.1 Removal and Salvage of Existing Barrier Rail and Posts

(a) The Work under this specification will be measured and paid for in accordance with the Standard Construction Specification CW 3650.

E22. RELOCATION OF EXISTING RECYCLING CENTRES

E22.1 Description

E22.1.1 General

(a) This specification shall cover the removal, storage and reinstallation of existing recycling centres

E22.2 Materials

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

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

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

E22.3 Removal and Storage

E22.3.1 Remove from Site all Site furniture to be reinstalled and store in a secure facility. Ensure Site furniture is not damages during removal, transport and storage.

E22.4 Installation

E22.4.1 Bolt recycling centre to concrete sidewalk with tamper proof bolts. Predrill holes for bolts and epoxy in place. Bolts to be minimum 100mm long.

E22.5 Measurement and Payment

E22.5.1 Relocation of existing recycling centre shall be measured and paid on a per unit basis for "Relocate Existing Recycling Centre ". The number to be paid shall be the total number of recycling centers reinstalled in accordance with the Drawings and Specifications and as measure and accepted by the Contract Administrator.

E23. INSTALLATION OF INTERLOCKING PAVING STONES ON A LEAN CONCRETE BASE

DESCRIPTION

E23.1 General

E23.1.1 This specification shall supplement and amend City of Winnipeg Standard Construction Specification CW 3335 “Installation of Interlocking Paving Stones on a Lean Concrete Base”.

E23.1.2 Referenced Standard Construction Specifications

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

E23.1.3 Referenced Standard Detail

(a) SD-240B - Interlocking Paving Stones On Lean Concrete Base

MATERIALS

E23.2 Interlocking Paving Stones

E23.2.1 Paving stones shall be Barkman Concrete “Victorian Pavers” as found in the Barkman Concrete Ltd. 2011 Catalogue. The first two outside courses shall be antique brown colour in a soldier course pattern. Inside courses shall be antique brown in colour and in a paving pattern #1.

E23.2.2 Paving stones shall conform to the requirements of CAN3-A231.2, Precast Concrete Pavers.

E23.2.3 Further to CAN3-A231.2.6.1.1, where concrete pavers are shipped for installation before the pavers are twenty-eight (28) days old, the average compressive strength of these pavers at the time of delivery to the work site shall be not less than 40 MPa.

E23.3 Other Materials

E23.3.1 All other materials, including aggregates for the lean concrete mix, the lean concrete mix, bedding sand and filler sand shall be in accordance with CW 3335. The City of Winnipeg Specifications

CONSTRUCTION METHODS

E23.4 Installation of Paving Stones on a Lean Concrete Base

E23.4.1 Install paving stones on a lean concrete base in accordance with CW 3335 and SD-240B.

MEASUREMENT AND PAYMENT

E23.5 Supply and Installation of Interlocking Paving Stones

E23.5.1 Supply and installation of “Victorian Pavers” interlocking paving stones shall be measured and paid for in accordance with CW 3335.

E23.6 Supply and Installation of Lean Concrete Base

E23.6.1 Supply and installation of lean concrete base shall be measured and paid for in accordance with CW 3335.

E24. UNIT PAVER INSERT FOR BUS STOP

DESCRIPTION

E24.1 Further to CW 3335 this Specification shall cover the:

(a) Supply and installation of interlocking paving stones (unit pavers),

(b) supply and installation of sand setting bed,

(c) supply and installation of grout.

E24.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary or and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

MATERIALS

E24.3 Concrete interlocking paving stones (unit pavers) shall be Holland Stone Pavers, supplied by Barkman Concrete, contact Wayne Wiebe, phone 667-3310, as shown on the Drawings and as follows:

(a) Blue Holland Stone 105 x 210 x 60mm

E24.4 Sand:

(a) Clean brick sand as joint filler.

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

E24.5 Grout:

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

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

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

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

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

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

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

CONSTRUCTION METHODS

E24.6 Interlocking paving stones shall be installed in block out in concrete sidewalk or on granular base as per the Drawings.

E24.7 If cutting of existing concrete sidewalk is required, this shall be incidental to the pay item described in this specification.

E24.8 Install sand setting bed for pavers on granular base as shown on the Drawings.

E24.9 Contractor to verify the exact dimensions of pavers and panels prior to construction of block outs in concrete sidewalk.

E24.9.1 Install concrete sidewalk as specified on Drawings.

E24.9.2 Install sand bed to minimum 13mm depth as specified on Drawings. Adjust depth of pavers under areas to be re-levelled to ensure surface of pavers is flush with adjacent paving.

E24.9.3 Do not compact setting bed prior to installation of pavers.

E24.9.4 Spread only sufficient area which can be covered with pavers same day.

E24.9.5 Lay pavers on sand bed hand tight.

E24.9.6 In areas where pavers are to be grouted in place clean existing concrete, install grout bed and then place pavers on grout.

E24.9.7 Grout between pavers as required ensuring stability.

E24.9.8 Remove adjacent pavers in bands as required to ensure that bricks do not require cutting on straight bands.

E24.9.9 Where paving pattern is interrupted by vertical structural elements pavers must be sawcut and fit true and hand tight.

E24.9.10 Commence installation of pavers against edge to obtain straightest possible course for installation.

E24.9.11 Pavers shall be cut with a saw only, to obtain true even undamaged edges. Chipped pavers are unacceptable.

E24.9.12 Crews shall Work on installed pavers, not on sand layer.

E24.9.13 Spread and fine grade brick sand over paving surface and sweep into joints, in several directions. Sand is incidental to the price for supply and installation of pavers.

E24.9.14 Compact pavers with vibratory plate compactor having mass of at least 113kg. Compaction is incidental to the price for supply and installation of paving stone.

E24.9.15 Sweep remaining sand over all paving areas and remove from Site.

E24.9.16 Replace at no extra cost all whole or cut stones marked as unacceptable.

E24.9.17 Remove cracked, chipped, broken or otherwise damaged paving materials from Site immediately.

E24.9.18 Upon completion, clean in accordance with manufacturer's recommendations.

MEASUREMENT AND PAYMENT

E24.10 Measurement and payment for the supply and installation of “Blue Holland” interlocking paving stones shall be as per City of Winnipeg Specification CW 3335.

E25. DITCH INLET GRATE COVERS

E25.1 Description

E25.1.1 General

(a) This specification covers the supply and installation of “Ditch Inlet Grate Covers” manhole covers, typically used in open swales or ditches as an alternative to City of Winnipeg Approved Product grated manhole cover AP-006.

E25.2 Materials and Equipment

E25.2.1 As per Contract Drawings.

E25.2.2 All steel shall be supplied in accordance with details on the Contract Drawings. All steel shall be hot dip galvanized after fabrication and all hardware shall be stainless steel.

E25.2.3 Cover to be Shopost Iron Works MK-A1 or approved equal.

E25.3 Construction Methods

E25.3.1 General

(a) Contractor to securely affix “Ditch Inlet Grate Covers” cover to manhole reducer or riser utilizing stainless steel hardware.

(b) Any galvanized surfaces that are damaged shall be coated with a galvanizing compound approved by the Contract Administrator

E25.4 Method of Measurement

E25.5 The supply and installation of ditch inlet grate covers will not be measured for payment and shall be included in the payment for catchbasins or catchpits.

E26. TRANSIT SHELTER FOUNDATIONS

E26.1 Description

E26.1.1 General

(a) This specification covers the construction of the Transit Shelter Foundations on the northwest and southeast corner of the intersection.

E26.2 Materials and Equipment

E26.2.1 As per Contract Drawings.

E26.2.2 All steel shall be supplied in accordance with details on the Contract Drawings.

E26.3 Construction Methods

E26.3.1 General

(a) Contractor shall construct Transit Shelter Foundations in accordance with CW 3325.

E26.3.2 Coordination

(a) The Contractor shall not commence the construction of the Transit Shelter Foundation until the location has been marked out and approved by the Contract Administrator.

(b) The Contractor shall call CBS Outdoor (Lyle Gretchen 925-9010), prior to pouring the concrete slab for the north west island shelter to coordinate the roughing-in of all electrical conduit. Electrical conduit shall be supplied by CBS Outdoor.

(c) The Contractor shall call City of Winnipeg Transit Department (Todd Ducharme 925-9016), prior to pouring the concrete slab for the south east island shelter to coordinate the roughing-in of all electrical conduit. Electrical conduit shall be supplied by CBS Outdoor or Winnipeg Transit.

E26.4 Measurement and Payment

E26.4.1 The construction of Transit Shelter Foundations will be measured on an area basis and paid for according to CW 3325. Reinforcing steel supply and installation will be incidental to construction of Transit Shelter Foundations and no separate payment will be made.

E27. AT GRADE CONCRETE BUS PADS

E27.1 Description

E27.1.1 General

(a) This specification covers the construction of the At Grade Concrete Bus Pads as shown on the Contract Drawings.

E27.2 Materials and Equipment

E27.2.1 As per CW 3310

E27.2.2 As per Contract Drawings.

E27.3 Construction Methods

E27.3.1 General

(a) Contractor shall construct At Grade Concrete Bus Pads in accordance with CW 3310 and the Contract Drawings at the locations shown on the Contract Drawings and as marked out in the field by the Contract Administrator.

(b) The Contractor shall construct the At Grade Concrete Bus Pads such that the bottom of the existing adjacent slab matches the elevation of the bottom of the new slab.

(c) As shown on the Contract Drawing details the Contractor shall block out the concrete to allow for an offset asphalt joint.

E27.4 Measurement and Payment

(a) The construction of At Grade Concrete Bus Pads will be measured on an area basis and paid for at the Contract unit price for "Construction of At Grade Concrete Bus Pads for Early Opening 72 Hour (Plain-Dowelled)" measured as herein specified, which price will be payment in full for constructing At Grade Concrete Bus Pads.

E28. CULVERT REMOVALS

E28.1 Description

E28.1.1 General

(a) This Special Provision shall amend the City of Winnipeg Standard Construction specification CW 3110 "Sub-Grade, Sub Base and Base Course Construction", and shall cover the removal of existing corrugated steel pipes as specified on the Contract Drawings.

E28.2 Construction Methods

E28.2.1 Corrugated Steel Pipe Removals

(a) Remove only Corrugated Steel Pipe marked and confirmed for removal in the field by the Contract Administrator.

E28.3 Measurement and Payment

E28.3.1 Removal of Corrugated Steel Pipe will be incidental to the excavation of the surrounding earth and will be measured and paid for according to CW 3110.

E29. CLEARING AND GRUBBING

E29.1 Description

E29.1.1 General

(a) This Special Provision shall amend the units of measurement specified in the City of Winnipeg Standard Construction specification CW 3010-R4 "Clearing and Grubbing".

(b) All other Specifications from CW 3010-R4 shall still apply.

E29.2 Method of Measurement

E29.2.1 Clearing and Grubbing will be measured on an area basis in square meter units.

E29.3 Method of Payment

E29.3.1 Payment will be as per CW 3010-R4.

E30. SAFETY CURB COMPLETE WITH SPLASH STRIP

E30.1 Description

E30.1.1 This Specification shall cover all aspect of the construction of Safety Curb Complete With Splash Strip as shown on the Contract Drawings and as marked out by the Contract Administrator.

E30.2 Materials

E30.2.1 General

(a) As per CW 3310-R14

E30.3 Construction Methods

E30.3.1 General

(a) As per CW 3310-R14

(b) The contractor shall construct the Safety Curb Complete with Splash Strip as shown on the Contract Drawing Details Sheet 19 - Detail 2 and 4.

E30.4 Measurement and Payment

(a) The construction of Safety Curb Complete with Splash Strip will be measured on a linear basis and paid for at the contract unit price for “Safety Curb Complete with Splash Strip (300mm ht)” measured as herein specified, which price will be payment in full for constructing Safety Curb Complete with Splash Strip.