THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 227-2010

2010 REGIONAL STREET RENEWAL PROGRAM - REGENT AVENUE WEST FROM WINONA STREET TO DAY STREET AND REGENT AVENUE EAST FROM DAY STREET TO KANATA STREET – ASPHALT RESURFACING, STREETSCAPING AND ASSOCIATED WORKS

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 2010 REGIONAL STREET RENEWAL PROGRAM - REGENT AVENUE WEST FROM WINONA STREET TO DAY STREET AND REGENT AVENUE EAST FROM DAY STREET TO KANATA STREET – ASPHALT RESURFACING, STREETSCAPING AND ASSOCIATED WORKS

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, June 4th, 2010.

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

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

B3. ENQUIRIES

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

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

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

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

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

B4. ADDENDA

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

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

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

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

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

B5. SUBSTITUTES

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

B6. BID COMPONENTS

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

(a) Form A: Bid;

(b) Form B: Prices, hard copy;

(c) Bid Security;

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

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

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

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

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

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

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

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

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

B6.8 Bids shall be submitted to:

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

B7. BID

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

B8. PRICES

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

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

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

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

B8.4 Prices from Non-Resident Bidders are subject to a Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B9. QUALIFICATION

B9.1 The Bidder shall:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

B10. BID SECURITY

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

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

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

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

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

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

B10.1.3 The Bidder shall sign the Bid Bond.

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

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

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

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

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

B11. OPENING OF BIDS AND RELEASE OF INFORMATION

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

B11.1.1 Bidders or their representatives may attend.

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

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

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

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

B12. IRREVOCABLE BID

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

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

B13. WITHDRAWAL OF BIDS

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

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

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

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

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

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

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

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

B14. EVALUATION OF BIDS

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

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

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

(c) Total Bid Price;

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

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

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

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

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

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

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

B15. AWARD OF CONTRACT

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

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

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

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

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

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

(d) only one Bid is received; or

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

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

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

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

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

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

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

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

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

(a) Asphalt resurfacing, streetscaping and associated works
  (i) Regent Avenue West – Winona Street to Day Street
  (ii) Regent Avenue East – Day Street to Kanata Street

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

(a) Regent Avenue West – Winona Street to Day Street
  (i) Planing of existing asphalt overlay where required
  (ii) Full depth concrete slab and joint repairs
  (iii) Installation of catch basins/catch pits and sewer services/drainage pipes
  (iv) Adjustment of existing pavement and boulevard structures
  (v) Vertical mulching of boulevards (Winona Street to Bond Street)
  (vi) Construct archway foundation piles and bases
  (vii) Remove and replace concrete bases
  (viii) Construct tree vaults
  (ix) Construct boulevard planter
  (x) Placement of 38mm diameter conduit
  (xi) Renewal of existing concrete medians
  (xii) Construct median grade beams
  (xiii) Construct median planters
  (xiv) Renewal of existing barrier curb
  (xv) Renewal of existing sidewalk with block-outs for interlocking paving stones
  (xvi) Boulevard restoration
  (xvii) Placement of asphalt overlay (average thickness 80mm)

(b) Regent Avenue East – Day Street to Kanata Street
  (i) Planing of existing asphalt overlay where required
  (ii) Full depth concrete slab and joint repairs
  (iii) Installation of catch pit and drainage pipe
  (iv) Adjustment of existing pavement and boulevard structures
  (v) Remove and replace concrete bases
  (vi) Placement of 38mm diameter conduit
  (vii) Renewal of existing barrier curb
  (viii) Renewal of existing sidewalk
  (ix) Boulevard restoration
  (x) Placement of asphalt overlay (average thickness 40mm)

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is:

Gary Campbell, C.E.T.
Technologist III
106-1155 Pacific Avenue
Winnipeg, MB, R3E 3P1

Telephone No. (204) 794-4379
Facsimile No. (204) 986-5302

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

D4. CONTRACTOR'S SUPERVISOR

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

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

D5. NOTICES

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

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

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

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

Facsimile No.: (204) 949-1174

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

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

Facsimile No.: (204) 947-9155

D6. FURNISHING OF DOCUMENTS

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

SUBMISSIONS

D7. AUTHORITY TO CARRY ON BUSINESS

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

D8. SAFE WORK PLAN

D8.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D8.2 The Safe Work Plan shall be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/safety/default.stm

D9. INSURANCE

D9.1 The Contractor shall provide and maintain the following insurance coverage:

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

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

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

D9.2 Deductibles shall be borne by the Contractor.

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

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

D10. PERFORMANCE SECURITY

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

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

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

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

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

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

D11. SUBCONTRACTOR LIST

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

D12. DETAILED WORK SCHEDULE

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

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

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

D12.3 Further to D12.2(a), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

SCHEDULE OF WORK

D13. COMMENCEMENT

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

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

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

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

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

(iii) the twenty-four (24) hour emergency response phone number specified in D4.2.
(iv) the Safe Work Plan specified in D8;
(v) evidence of the insurance specified in D9;
(vi) the performance security specified in D10;
(vii) the subcontractor list specified in D11; and
(viii) the detailed work schedule specified in D12.

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

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

D13.4 The City intends to award this Contract by June 25th, 2010.

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

D14. WORKING DAYS

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

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

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

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

D15. RESTRICTED WORK HOURS

D15.1 Further to clause 3.10 of CW 1130, the Contractor shall require written permission forty-eight (48) hours in advance from the Contract Administrator for any work to be performed between 2000 hours and 0700 hours, or on Saturdays, Sundays, Statutory Holidays and or Civic Holidays.

D16. WORK BY OTHERS

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

(a) Various works on survey monuments by Geomatics Services Branch of the Planning Property and Development at various locations throughout the sites.

(b) The installation of loops and signals plant by the Traffic Signals Branch of the Public Works Department.

(c) The Water and Waste Department will be performing a point repair to the waste water sewer at Regent Avenue West/Bond Street intersection.

(d) Streetscaping Contractor will be removing Transcona Biz Banner Poles.

(e) Traffic Services will be performing line painting Works and Signing.

D17. SEQUENCE OF WORK

D17.1 Further to C6.1, the sequence of work shall be as follows:

D17.1.1 The Work shall be divided into two (2) Phases. Each Phase shall be subdivided into stages. Stages are further subdivided into major items of work.

D17.1.2 **<u>Phase I</u> – Regent Avenue East from Day Street to Kanata Street**

(a) **Stage I –West bound curb lane, east bound curb lane and boulevards**

(i) Planing of asphalt where required;

(ii) Concrete pavement slab, joint work, catch pit Works, adjustments to pavement structures and appurtenances;

(iii) Curb renewals, sidewalk renewals;

(iv) Placing topsoil and finish grading; and

(v) Placing final lift of asphalt on Stage I.

(b) **Stage II – West bound median lane and east bound median lane**

(i) Planing of asphalt where required;

(ii) Concrete pavement slab, joint work, adjustments to pavement structures and appurtenances;

(iii) Placing final lift of asphalt on Stage II; and

(iv) Laying of sod (if not done with placing of top soil).

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

D17.1.4 All asphaltic concrete work shall be performed using a lane-at-a-time method (see E5 for minimum requirements of traffic lanes to be left open at various times).

D17.1.5 At the end of any day, there shall be no drop-off along any longitudinal joint, excepting the longitudinal joint between the gutter and approaches.

D17.1.6 Immediately following the completion of the asphaltic concrete works of Phase I, the Contractor shall clean up the Site and remove all plant, surplus material, waste and debris, other than that left by the City or other Contractors.

D17.1.7 **<u>Phase II</u> – Regent Avenue West from Winona Street to Day Street**

(a) **Stage I –West bound curb lane, east bound curb lane and boulevards**

(i) Trenchless installation of sewer services and catch basin Works crossing Regent Avenue, approximately 35m east of Winona Street;

(ii) Planing of asphalt and concrete where required (approximately half the westbound/eastbound roadway width);

(iii) Concrete pavement slab, joint work, catch basin/catch pit Works, adjustments to pavement structures and appurtenances;

(iv) Streetscaping Works – archway foundation piles and bases, concrete bases, vertical mulching, tree vaults and boulevard planter;

(v) Curb renewals, sidewalk renewals and concrete boulevard Works;

(vi) Placing topsoil and finish grading; and

(vii) Placing of scratch course of asphalt.

(b) **Stage II – West bound median lane and east bound median lane**

(i) Planing of asphalt and concrete where required;

(ii) Concrete pavement slab, joint work, adjustments to pavement structures and appurtenances;

(iii) Median renewals;

(iv) Streetscaping Works – median grade beams and median planters; and

(v) Placing of scratch course of asphalt.

(c) **Stage III – All lanes**

(i) Placing of final lift of asphalt on Phase II; and

(ii) Laying of sod (if not done with placing of top soil).

D17.1.8 Placing of topsoil and finished grading of all boulevard areas shall be completed prior to commencing construction of the asphaltic concrete overlay, including the scratch course.

D17.1.9 All asphaltic concrete work shall be performed using a lane-at-a-time method (see E5 for minimum requirements of traffic lanes to be left open at various times).

D17.1.10 At the end of any day, there shall be no drop-off along any longitudinal joint, excepting the longitudinal joint between the gutter and approaches.

D17.1.11 Immediately following the completion of the asphaltic concrete works of Phase II, the Contractor shall clean up the Site and remove all plant, surplus material, waste and debris, other than that left by the City or other Contractors.

D18. SUBSTANTIAL PERFORMANCE

D18.1 The Contractor shall achieve Substantial Performance within seventy (70) consecutive Working Days of the commencement of the Work as specified in D13.

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

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

D19. TOTAL PERFORMANCE

D19.1 The Contractor shall achieve Total Performance within seventy-five (75) consecutive Working Days of the commencement of the Work as specified in D13.

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

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

D20. LIQUIDATED DAMAGES

D20.1 If the Contractor fails to achieve Total Performance in accordance with the Contract by the day fixed herein for Total Performance, the Contractor shall pay the City one thousand five hundred dollars ($1500.00) per Working Day for each and every Working Day following the day fixed herein for Total Performance during which such failure continues.

D20.2 The amount specified for liquidated damages in D20.1 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.

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

D21. SCHEDULED MAINTENANCE

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

(a) Sod Maintenance as specified in CW 3510-R9;

(b) Reflective Crack Maintenance as specified in CW 3250-R7.

D21.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

CONTROL OF WORK

D22. JOB MEETINGS

D22.1 Regular weekly job meetings will be held at the Site or location agreed to by both the Contract Administrator and the Contractor. These meetings shall be attended by a minimum of one representative of the Contract Administrator and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

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

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

D23.1 Further to C6.24, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

FORM H1: PERFORMANCE BOND
(See D10)

KNOW ALL MEN BY THESE PRESENTS THAT

_____
(hereinafter called the "Principal"), and

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

_____

_____ dollars ($_____.____)

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

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

BID OPPORTUNITY NO. 227-2010

2010 REGIONAL STREET RENEWAL PROGRAM - REGENT AVENUE WEST FROM WINONA STREET TO DAY STREET AND REGENT AVENUE EAST FROM DAY STREET TO KANATA STREET – ASPHALT RESURFACING, STREETSCAPING AND ASSOCIATED WORKS
which is by reference made part hereof and is hereinafter referred to as the “Contract”.

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

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

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

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

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

_____ day of _____ , 20____ .

SIGNED AND SEALED
in the presence of:

_____
(Witness as to Principal if no seal)

_____
(Name of Principal)

Per: _____ (Seal)

Per: _____

_____
(Name of Surety)

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

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

_____
(Date)

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

RE: PERFORMANCE SECURITY – BID OPPORTUNITY NO. 227-2010

2010 REGIONAL STREET RENEWAL PROGRAM - REGENT AVENUE WEST FROM WINONA STREET TO DAY STREET AND REGENT AVENUE EAST FROM DAY STREET TO KANATA STREET – ASPHALT RESURFACING, STREETSCAPING AND ASSOCIATED WORKS

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

_____ ,
(Name of Contractor)

_____
(Address of Contractor)

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

_____

_____ Canadian dollars.

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

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

Partial drawings are permitted.

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

_____
(Address)

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

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

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

_____ .
(Date)

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

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

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

_____
(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

FORM J: SUBCONTRACTOR LIST
(See D11)

2010 REGIONAL STREET RENEWAL PROGRAM - REGENT AVENUE WEST FROM WINONA STREET TO DAY STREET AND REGENT AVENUE EAST FROM DAY STREET TO KANATA STREET – ASPHALT RESURFACING, STREETSCAPING AND ASSOCIATED WORKS

Portion of the Work	Name	Address
SURFACE WORKS:		
Supply of Materials:		
Base Course Material		
Concrete		
Asphalt		
Soil and Sod		
Detectable Warning Surface Tiles		
Reinforced Precast Concrete Sidewalk Panels		
Installation/Placement:		
Base Course Material		
Concrete		
Asphalt		
Soil and Sod		
Joint Sealant		
Concrete Piles, Concrete Foundation Bases, Concrete Grade Beams, Concrete Base and Conduit		
Vertical Mulching of Boulevards by an ISA Certified Arborist		
UNDERGROUND WORKS:		
Supply of Materials:		
Pre-cast Concrete Catch Pit/Catch Basin/Risers		
Catch Pit/Catch Basin/Manhole Frames, Covers, Boxes and Lifter Rings		
Drainage Connection Pipes/Sewer Service Pipes/Subdrains		
Watermain Valves/Service Boxes		
Installation/Placement:		
Pre-cast Concrete Catch Pit/Catch Basin/Risers and Inlet Box		
Catch Pit/Catch Basin/Manhole Frames, Covers, Boxes and Lifter Rings		
Drainage Connection Pipes/Sewer Service Pipes/Subdrains		

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
	Cover Sheet	A1
SE-10-1	Regent Avenue West from Winona Street to Day Street – Asphalt Resurfacing, Streetscaping and Associated Works from Sta. 1+06 to Sta. 2+50	A1
SE-10-2	Regent Avenue West from Winona Street to Day Street – Asphalt Resurfacing, Streetscaping and Associated Works from Sta. 2+50 to Sta. 4+00	A1
SE-10-3	Regent Avenue West from Winona Street to Day Street – Asphalt Resurfacing, Streetscaping and Associated Works from Sta. 4+00 to Sta. 5+50	A1
SE-10-4	Regent Avenue East from Day Street to Kanata Street – Asphalt Resurfacing, Streetscaping and Associated Works from Sta. 5+50 to Sta. 6+89	A1
SE-10-16	Regent Avenue West from Winona Street to Day Street – Asphalt Resurfacing, Streetscaping and Associated Works - Details	A1
SE-10-31	Regent Avenue West from Winona Street to Day Street – Asphalt Resurfacing, Streetscaping and Associated Works - Details	A1
SE-10-32	Regent Avenue West from Winona Street to Day Street – Asphalt Resurfacing, Streetscaping and Associated Works – Structural Details	A1

E2. OFFICE FACILITIES

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

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

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

(c) The building shall have a minimum floor area of 25 square metres, a height of 2.4m with two windows for cross ventilation and a door entrance with a suitable lock.

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

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

(f) The building shall be furnished with one desk, one drafting table, table 3m x 1.2m, one stool, one four drawer legal size filing cabinet and a minimum of 8 chairs.

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

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

E2.2 The Contractor shall be responsible for all installation and removal costs, all operating costs, and the general maintenance of the office facilities.

E2.3 The office facilities will be provided from the date of the commencement of the Work to the date of Substantial Performance.

E2.4 On a one time basis, where directed by the Contract Administrator, the Contractor shall relocate the office facilities to a location more convenient for the remaining Work.

E3. PROTECTION OF EXISTING TREES

E3.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities 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.

E3.2 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his designate.

E3.3 No separate measurement or payment will be made for the protection of trees.

E3.4 Except as required in clause E3.1(c) and E3.1(e), Elm trees shall not be pruned at any time between April 1 and July 31.

E4. TRAFFIC CONTROL

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

(a) Where directed, the Contractor shall construct and maintain temporary asphalt ramps to alleviate vertical pavement obstructions such as manholes and planing drop-offs to the satisfaction of the Contract Administrator. Payment shall be in accordance with CW3410.

(b) In accordance with the Manual of Temporary Traffic Control in Work Areas on City Streets, the Contractor ("Agency" in the manual) shall make arrangements with the Traffic Services Branch of the City of Winnipeg to place all temporary regulatory signs. The Contractor shall bear all costs associated with the placement of temporary traffic control devices by the Traffic Services Branch of the City of Winnipeg in connection with the works undertaken by the Contractor.

E5. TRAFFIC MANAGEMENT

E5.1 Further to clause 3.7 of CW 1130:

E5.1.1 Maintain a minimum of one lane of traffic westbound and one lane of traffic eastbound (Phase I & Phase II) during all Stages of construction.

E5.1.2 North/South traffic at Winona Street, Bond Street, Day Street and Kanata Street intersections must be maintained during construction to allow for one lane of traffic in each direction. 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.

E5.1.3 Intersecting street and private approach access shall be maintained at all times.

E5.1.4 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.

E5.1.5 Pedestrian and ambulance/emergency vehicle access must be maintained at all times.

E6. WATER OBTAINED FROM THE CITY

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

E7. INFRASTRUCTURE SIGNS

E7.1 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

E8. RECYCLED CONCRETE BASE COURSE MATERIAL

DESCRIPTION

E8.1 General

E8.1.1 Further to CW 3110, this specification covers supply and placement of recycled concrete base course material for Full-Depth Partial Slab Patches (Class A, B, C, & D), miscellaneous concrete slabs and sidewalks.

E8.2 Definitions

E8.2.1 Deleterious material – are materials such as vegetation, organic material, wood, glass, plastic, metal, reinforcing steel, building rubble, brick, salvaged asphalt materials, clay, shale, and friable particles.

E8.3 Referenced Standard Construction Specifications

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

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

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

(d) CW 3325 – Portland Cement Concrete Sidewalk.

MATERIALS

E8.4 Recycled Concrete Base Course Material

E8.4.1 Recycled concrete base course material when used for Full-Depth Partial Slab Patches (Class A, B, C, & D), miscellaneous concrete slabs and sidewalks will be considered equal to granular or limestone base course material specified in Section 2.2 of CW 3110.

E8.4.2 Recycled concrete base course material will be approved by the Contract Administrator.

E8.4.3 Recycled concrete base course material will consist of sound durable particles produced by crushing, screening, and grading of recovered concrete materials, free from soft material that would disintegrate through decay or weathering.

E8.4.4 The recycled concrete base course material will be well graded and conform to the following grading requirements:

Recycled Concrete Base Course Material Grading Requirements

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

E8.4.5 Recycled concrete base course material when subjected to the abrasion test will have a loss of not more than 35% when tested in accordance with grading B of ASTM C131, Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.

E8.4.6 The amount of deleterious material will be limited to a maximum of two percent of the total dry weight.

CONSTRUCTION METHODS

E8.5 Placement of Recycled Concrete Base Course Material

E8.5.1 Place and compact recycled concrete base course material as a levelling course to a maximum thickness of 50 millimetres.

E8.5.2 Spread materials uniformly to avoid segregation free of pockets of fine and coarse material.

E8.5.3 Level and compact to the finished elevation. Compact to 100% Standard Proctor Density for Full-Depth Partial Slab Patches (Class A, B, C, & D) and 90% Standard Proctor Density for miscellaneous concrete slabs and sidewalks.

E8.5.4 Maintain the finished material until the pavement or sidewalk is placed.

MEASUREMENT AND PAYMENT

E8.6 Recycled Concrete Base Course Material

E8.6.1 The supplying, placing and compaction of recycled concrete base course material will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for the "Supplying and Placing Base Course Material" as specified in accordance with CW 3110.

E8.6.2 No measurement or payment will be made for material placed as a levelling course under miscellaneous concrete slabs and sidewalks where the costs are included in accordance with CW 3235 and CW 3325.

E8.6.3 No measurement or payment will be made for materials rejected by the Contract Administrator.

E9. SUPPLY AND INSTALL DETECTABLE WARNING SURFACE TILES

DESCRIPTION

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

SPECIFICATIONS AND DRAWINGS

E9.2 Referenced Standard Construction Specifications and Standard Details

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

E9.3 Attached; SDE Drawings and Installation Manual

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

MATERIALS

E9.4 Acceptable Detectable Warning Surface Tile product is:

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

Available from:

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

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

or

Alsip's Building Products
1 Cole Avenue
Winnipeg, Manitoba

Attention: Jason Alsip
Ph. 204-667-3330

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

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

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

CONSTRUCTION METHODS

E9.5 General

E9.5.1 Construct curb ramps, sidewalk ramps and multi-use path in accordance with referenced Standard Construction Specifications, Standard Details, and SDE drawings (attached).

E9.5.2 Construct the lip of the depressed curb in accordance with SDE – 229E.

E9.5.3 Construct sidewalk ramp grades in accordance with SD-229C and SD-229D.

E9.5.4 Install the detectable warning surface tile in accordance with the amended Manufacturer's Installation Manual (attached). Drill additional 6mm air vent holes in ribs under the tile as required and use vibration to help seat the tile, to facilitate the installation process.

E9.5.5 Trim the corner of the tile at radii in accordance with SDE-229A, SDE-229AA and SDE-228AB

E9.5.6 Install and orient the detectable warning surface tiles as shown on the referenced drawings or as directed by the Contract Administrator.

E9.6 Medians and Refuge Islands:

E9.6.1 Where the distance from back of curb to back of curb is 1.32m or greater, install one detectable warning surface tile 50mm from the back of each curb.

E9.6.2 Where the distance from back of curb to back of curb is less than 1.32m, leaving 50mm between the back of curb and the tile, cut the tile(s) to fill the remaining area between the curbs.

E9.7 Multi-use Paths

E9.7.1 Construct a curb ramp with a depressed curb to the full width of the multi-use path in accordance with SDE-229E.

E9.7.2 Construct a concrete ramp the width of the multi-use path and a minimum of 1.50m deep from back of curb in accordance with SD-229C and SD-229D.

E9.7.3 Install two (2) tiles in each concrete ramp, one (1) on each side for each direction. Place the short edge of each tile 150mm from the edge of the concrete ramp, with both tiles in line with each other transversely across the concrete ramp. The tile(s) nearest the curb must be 50mm from back of curb similar to tile placement in SDE-229A.

E9.7.4 Saw cut the middle of the concrete slab, perpendicular to the curb and to a depth of D/4. Cut additional sawcuts as directed by the Contract Administrator.

MEASUREMENT AND PAYMENT

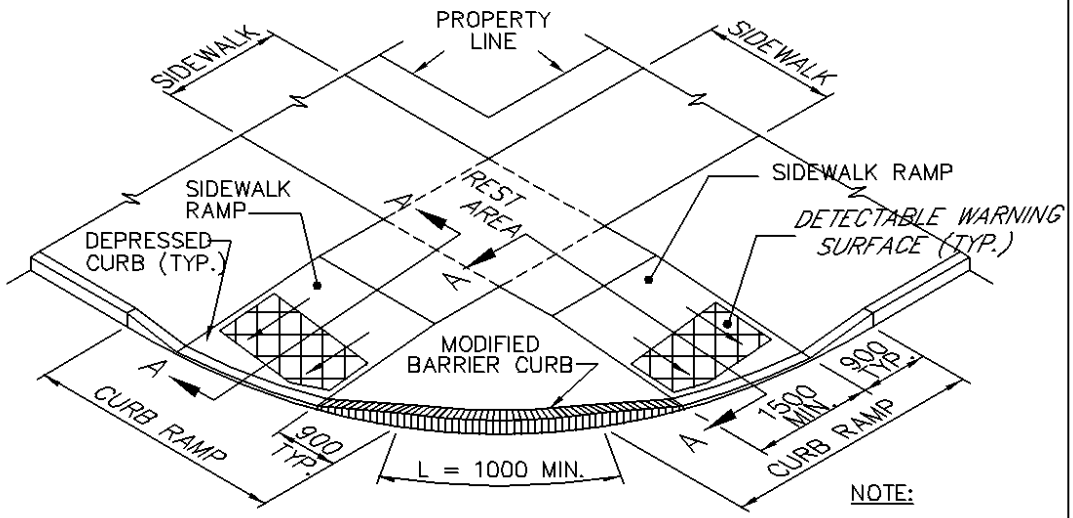
E9.8 Supply and installation of detectable warning surface tiles will be measured on a unit basis and paid for at the Contract Unit Price for “Detectable Warning Surface Tiles”. The number of units to be paid for will be the total number of full or trimmed tiles supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

E9.8.1 The area under the detectable warning surface tile is part of the concrete sidewalk ramp and will be paid in accordance with CW 3235 and CW 3325.

E9.8.2 The concrete sidewalk ramp and the concrete ramp for multi-use paths will be paid as 100mm sidewalk in accordance with CW 3235 or CW 3325.

E9.8.3 Curb ramp will be paid in accordance with CW 3240 or CW 3310.

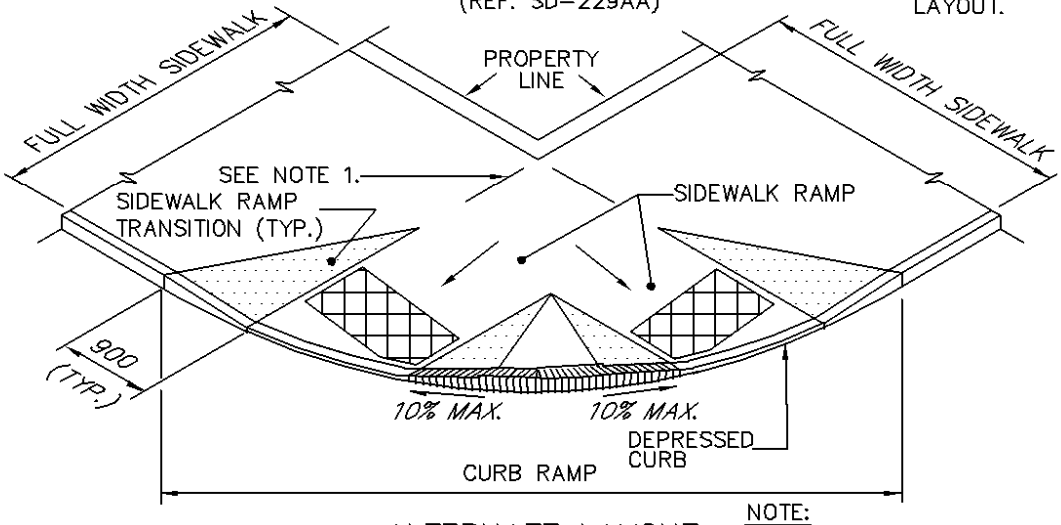
DRAWINGS AND INSTALLATION MANUAL



STANDARD LAYOUT
(REF. SD-229AA)

NOTE:

IF L<1000 USE ALTERNATE LAYOUT.



ALTERNATE LAYOUT
(REF. SD-229AA)

NOTE:

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

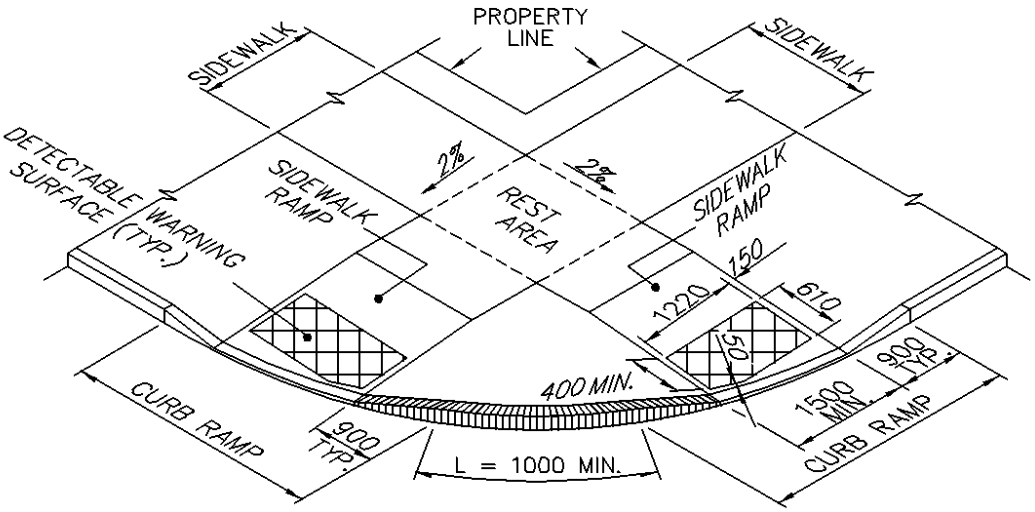
DIMENSIONS ARE IN MILLIMETRES

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

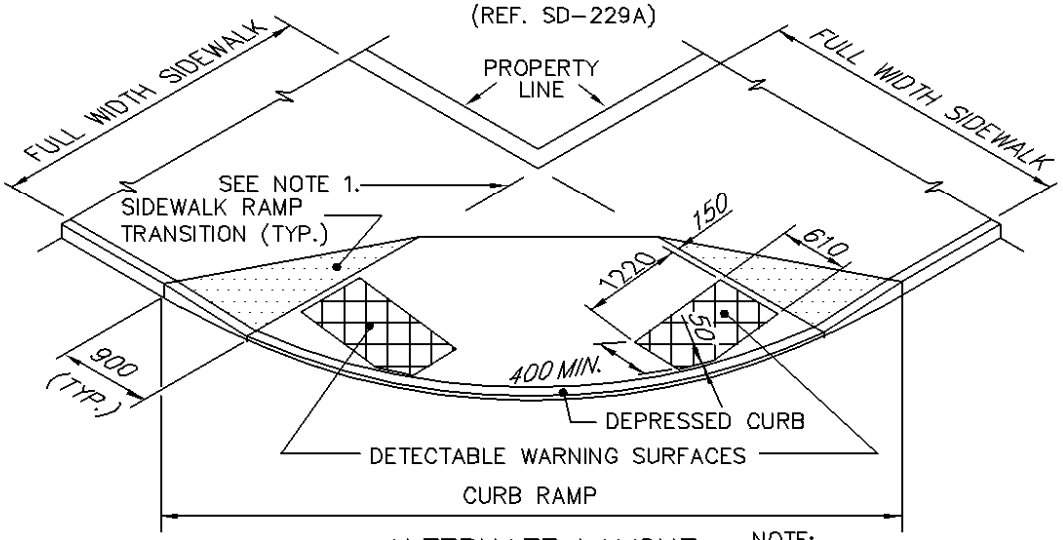
Reference Spec. No.
CW 3235, CW 3310, CW 3325
E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE

CURB RAMP LAYOUT FOR INTERSECTIONS

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



STANDARD LAYOUT
(REF. SD-229A)



ALTERNATE LAYOUT
(REF. SD-229A)

NOTE:

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

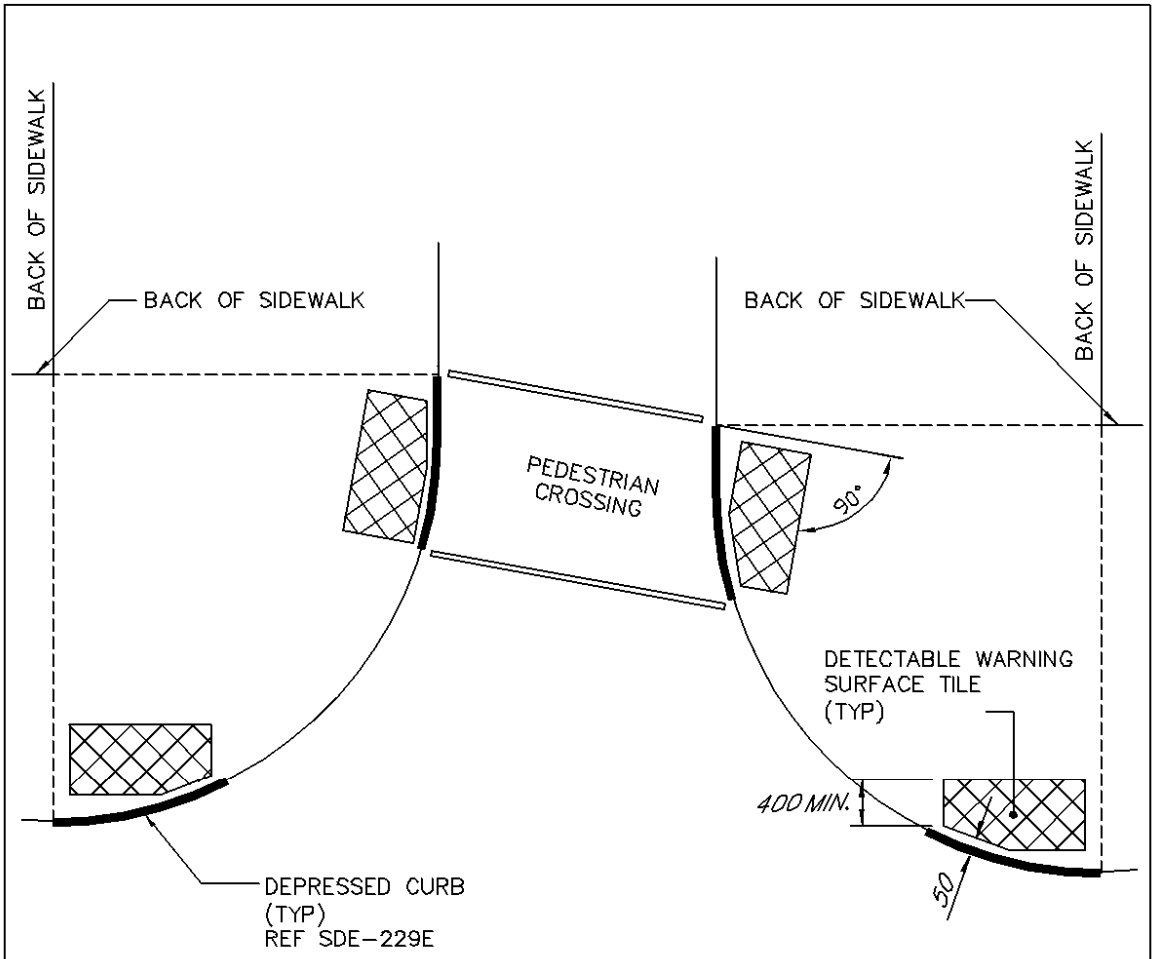
DIMENSIONS ARE IN MILLIMETRES

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

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

DETECTABLE WARNING SURFACE IN CURB RAMPS FOR INTERSECTIONS

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



NOTES:

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

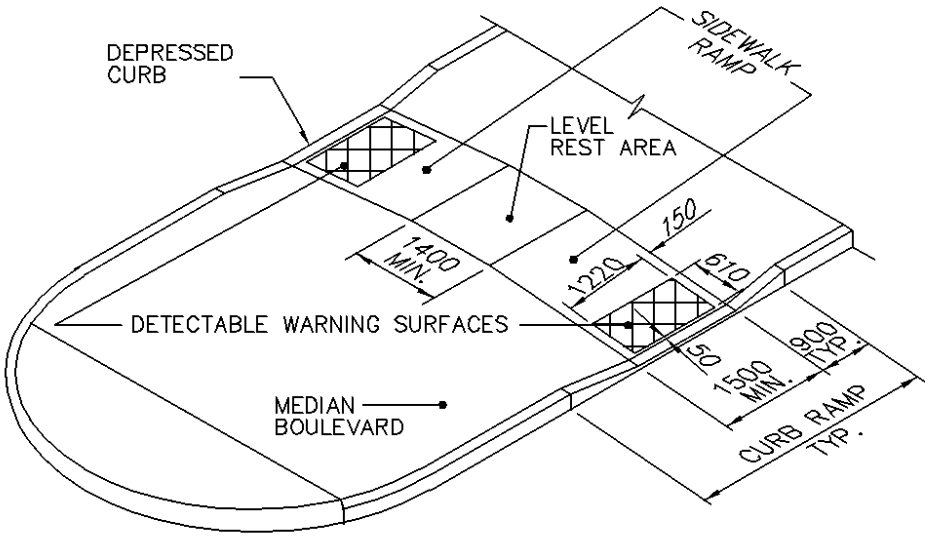
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

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

DIMENSIONS ARE IN MILLIMETRES

CURB RAMP LAYOUT FOR OFFSET INTERSECTIONS

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



MEDIAN SIDEWALK CROSSING

(REF. SD-229B)

NOTE:

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

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

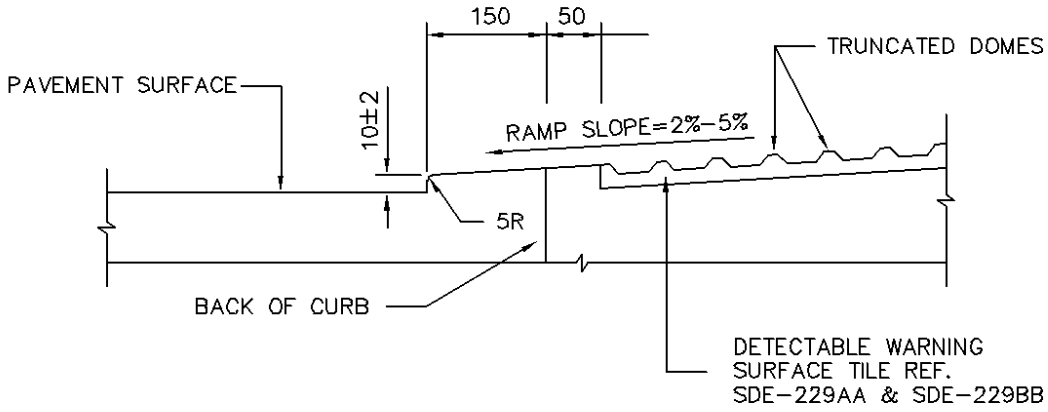
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

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

DIMENSIONS ARE IN MILLIMETRES

DETECTABLE WARNING SURFACE IN CURB RAMPS FOR MEDIANS

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



DEPRESSED CURB

NOTES:

1) SIDEWALK RAMP SURFACE SHALL BE GIVEN A PARALLEL TEXTURED BROOM FINISH.

2) INSTALL DETECTABLE WARNING SURFACE SO THAT THE TOP OF THE TRUNCATED DOMES ARE FLUSH WITH THE SURFACE FO THE ADJACENT SIDEWALK.

THE CITY OF WINNIPEG PUBLIC WORKS DEPARTMENT			
Reference Spec. No. CW 3235, CW 3310, CW 3325 E-SUPPLY & INSTALL DETECTABLE WARNING SURFACE	DIMENSIONS ARE IN MILLIMETRES		
CURB RAMP DEPRESSED CURB	Designed By: B.P.	Drawn By: T.G.A.	Scale : N.T.S.
	Checked By: F.W.C.	Date: 10-02-18	Drawing No. SDE-229E
	Approved:		

Manufacturer's Installation Manual
Armor-Tile Cast In Place
Inline Dome Detectable/Tactile Warning Surface Tile

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

B. The specifications of the structural embedment flange system and related materials shall be in strict accordance with the contract documents and the guidelines set by their respective manufacturers. Not recommended for asphalt applications.

C. The physical characteristics of the concrete shall be consistent with the contract specifications ~~while maintaining a slump range of 4 - 7 to permit solid placement of the Cast In Place Detectable/Tactile Warning Surface Tile system.~~. An overly wet mix will cause the tile to float. Under these conditions, suitable weights such as 2 concrete blocks or sandbags (25 lb) shall be placed on each tile.

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

E. The concrete pouring and finishing operations require typical mason's tools, however, a 4' long level with electronic slope readout, 25 lb. weights, and a large non-marring rubber mallet are specific to the installation of the Cast In Place Detectable/Tactile Warning Surface Tile system. A vibrating mechanism such as that manufactured by Vibco can be employed, if desired. The vibrating unit should be fixed to a soft base such as wood, at least 1 foot square.

F. The factory-installed plastic sheeting must remain in place during the entire installation process to prevent the splashing of concrete onto the finished surface of the tile.

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

H. The concrete shall be poured and finished true and smooth to the required dimensions and slope prior to the tile placement. Immediately after finishing concrete, the electronic level should be used to check that the required slope is achieved. The tile shall be placed in accordance with the contract drawings. The Cast In Place Detectable/Tactile Warning Surface Tiles shall be tamped (or vibrated) into the fresh concrete to ensure that the field level of the tile is flush to the adjacent concrete surface. The embedment process should not be accomplished by stepping on the tile as this may cause uneven setting which can result in air voids under the tile surface. ~~The contract drawings indicate that the tile field level (base of truncated dome) is flush to adjacent surfaces to permit proper water drainage and eliminate tripping hazards between adjacent finishes.~~

I. In cold weather climates it is recommended that the Cast In Place Detectable/Tactile Warning Surface Tiles be set deeper such that the top of domes are level to the adjacent concrete on the top and sides of ramp and that the base of domes to allow water drainage. This installation will reduce the possibility of damage due to snow clearing operations.

J. Immediately after placement, the tile elevation is to be checked to adjacent concrete. The elevation and slope should be set consistent with contract drawings to permit water drainage to curb as the design dictates.

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

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

M. Following tile placement, review installation tolerances to contract drawings and adjust tile before the concrete sets. Two suitable weights of 25 lb each shall be placed on each tile as necessary to ensure solid contact of the underside of tile to concrete.

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

O. If desired, individual tiles can be bolted together using ¼ inch or equivalent hardware. This can help to ensure that adjacent tiles are flush to each other during the installation process. Tape or caulking can be placed on the underside of the bolted butt joint to ensure that concrete does not rise up between the tiles during installation. Any protective plastic wrap which was peeled back to facilitate bolting or cutting, should be replaced and taped to ensure that the tile surface remains free of concrete during the installation process.

P. Tiles can be cut to custom sizes, or to make a radius, using a continuous rim diamond blade in a circular saw or mini-grinder. Use of a straightedge to guide the cut is advisable where appropriate.

~~Q. Any sound-amplifying plates on the underside of the tile, which are dislodged during handling or cutting, should be replaced and secured with construction adhesive. The air gap created between these plates and the bottom of the tile is important in preserving the detectability properties of the Armor-Tile system as required in various jurisdictions.~~

E10. REINFORCED CONCRETE TREE VAULT CURB

DESCRIPTION

E10.1 This Specification shall cover the operations relating to the construction of reinforced concrete tree vault curb. The Work to be done under this Specification shall include the furnishings of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all other things necessary for and incidental to the satisfactory performance and completion of all Work specified.

MATERIALS

E10.2 Concrete Mix

(i) Cement: Type 50 Sulphate resistant
(ii) Maximum Coarse Aggregate: 20 mm
(iii) Minimum Compressive Strength at 28 days: 35 Mpa
(iv) Minimum Cement Content: 310 Kg/cu.m
(v) Maximum Water/Cement Ratio: 0.45
(vi) Class of Exposure: C-2
(vii) Maximum Slump: 80 mm + or - 20 mm
(viii) Air Content: 5 – 8%
(ix) Fly ash Content: Maximum 15% of Cementitious Material

E10.3 10M Longitudinal Deformed Bars

CONSTRUCTION METHODS

E10.4 Construction of Reinforced Concrete Tree Vault Curb

E10.4.1 The Contractor must ensure that the extent of all buried utilities and services are located and if necessary, protected and exposed prior to any excavation.

E10.4.2 Excavate to accommodate for forms and granular base.

E10.4.3 Dispose of material in accordance with section 3.4 of CW 1130.

E10.4.4 Compact granular base in accordance with specification CW 3110

E10.4.5 Place 10M Longitudinal Deformed Bars for reinforcement in accordance with section 9.2 of CW 3310 and as specified on the Contract drawings.

E10.4.6 Place Concrete for Tree Vault Curb with the intention of leaving forms in place to prevent granular base undermining during future tree vault excavation activities.

MEASUREMENT AND PAYMENT

E10.5 Construction of Reinforced Concrete Tree Vault Curb

E10.5.1 Construction of Reinforced Concrete Tree Vault Curb will be measured on a length basis and paid for at the Contract Unit Price per metre for “Construction of Reinforced Concrete Tree Vault Curb”. The length to be paid for will be the total number of metres of Reinforced Concrete Tree Vault Curb constructed in accordance with this Specification, accepted and measured by the Contract Administrator.

E11. SUPPLY AND INSTALLATION OF REINFORCED PRECAST CONCRETE SIDEWALK PANEL

DESCRIPTION

E11.1 Supply and Installation

E11.1.1 Barkman Reinforced Precast Concrete Sidewalk Panel – 1370mm x 1370mm x 152mm, plain concrete finish to match concrete sidewalk finish and with inset galvanized hardware to facilitate lifting. Hardware to be covered with flush durable cover coloured to match concrete or approved equal.

GENERAL

E11.2 Delivery and Storage

E11.2.1 Store units in protected location, immediately upon arrival on the site.

E11.2.2 Remove from site any units which have been damaged during transportation and replace.

E11.3 Source

E11.3.1 Barkman Reinforced Precast Concrete Sidewalk Panel (Part No. 45-48199-2)

Barkman Concrete
909 Gateway Road
Winnipeg, MB
R3K 3L1
Ph: (204) 667-3310 Fax: 663-4854

E11.4 Installation

E11.4.1 Reinforced Precast Concrete Sidewalk Panel shall be installed by the contractor in locations and indicated on the Contract drawings.

MEASUREMENT AND PAYMENT

E11.5 Supply and Installation of Reinforced Precast Concrete Sidewalk Panel

E11.5.1 The supply and installation of Reinforced Precast Concrete Sidewalk Panel will be measured on a unit basis and paid at the Contract Unit Price per unit for “Supply and Install Reinforced Precast Concrete Sidewalk Panel”. The number of units to be paid for will be the total number of units of Reinforced Precast Sidewalk Panel supplied and installed in accordance with this Specification, accepted and measured by the Contract Administrator.

E12. 100MM CONCRETE SIDEWALK WITH BLOCK-OUTS FOR INTERLOCKING PAVING STONES

GENERAL

E12.1 Further to Specification CW 3325 the Contractor shall construct the proposed concrete sidewalk with block-outs (for interlocking paving stones) with a minimum 100mm depth of concrete below pavers. The “block-outs” shall be constructed utilizing forming techniques capable of accommodating the proposed paving stones to the dimensions and tolerances as confirmed with interlocking paving stone manufacturer.

E12.2 A 50mm levelling course of Granular Base Course Material will be used for the 100mm Concrete Sidewalk with Block-outs for Interlocking Paving Stones. Quarried limestone and/or crushed concrete will **not** be acceptable.

E12.3 The concrete sidewalk shall be poured such that the “block-outs” and remaining sidewalk act as a monolithic section.

E12.4 All costs in connection with the additional forming and placement of concrete as a result of the "block-outs", shall be included in the Contract Unit Price for 100mm Concrete Sidewalk with Block-outs for Interlocking Paving Stones.

E12.5 Where concrete sidewalk is to be poured up to adjacent buildings, an approved bond breaker shall be supplied and installed from the base of the concrete slab up to the concrete surface. Cost of the bond breaker shall be included in the Contract Unit Price for 100mm Concrete Sidewalk with Block-outs for Interlocking Paving Stones.

MEASUREMENT AND PAYMENT

E12.6 Construction of 100mm Concrete Sidewalk with Block-outs for Interlocking Paving Stones will be measured on an area basis and paid for at the Contract Unit Price per square metre for "100mm Concrete Sidewalk with Block-outs for Interlocking Paving stones". The area to be paid for will be the total number of square metres constructed of 100mm Concrete Sidewalk with Block-outs for Interlocking Paving Stones in accordance with this Specification, accepted and measured by the Contract administrator.

E12.7 The supply, placement and compaction of Granular Base Course Material for 100mm Concrete Sidewalk with Block-outs for Interlocking Paving Stones shall be included in the cost of 100mm Concrete Sidewalk with Block-outs for Interlocking Paving Stones and no separate measurement and payment will be made.

E13. INTERLOCKING PAVING STONES

DESCRIPTION

E13.1 This Specification shall cover the supply and installation of interlocking paving stones and bedding course of sand. This Specification supplements CW 3335.

MATERIALS

E13.2 Concrete Pavers

E13.2.1 Holland Stone – Charcoal, Size: 105mm x 210mm x 57mm depth.

E13.2.2 Double Holland Stone – Natural, Size: 210mm x 210mm x 57mm depth.

CONSTRUCTION METHODS

E13.3 All joints to be tight and not to be wider than 4 mm.

E13.4 All pavers shall be set flush with contiguous adjacent concrete and curb materials. Sand depth to vary to ensure constant surface finish.

MEASUREMENT AND PAYMENT

E13.5 The supplying and placing of Interlocking Paving Stones will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Supply and Install Interlocking Paving Stones". The area to be paid for will be the total number of square metres of Interlocking Paving Stone supplied and placed in accordance with this Specification, accepted and measured by the Contract Administrator.

E13.6 The supply and placement of sand bedding and infill material for interlocking paving stones is incidental to the Works and no separate measurement and payment will be made.

E14. VERTICAL MULCHING OF BOULEVARDS

DESCRIPTION

E14.1 This Specification shall cover vertical mulching services using air spade technology by an ISA Certified Arborist of the north side and south side boulevards on Regent Avenue West from Winona Street to Bond Street in accordance with the requirements and completion of all Work specified.

SERVICES

E14.2 Procedures that shall be followed:

E14.2.1 Obtain utility clearances.

E14.2.2 Blow air holes using an “Air Spade” on a 450mm grid spacing throughout the entire boulevard, starting at 1.0m from the tree trunk. The diameter of the holes should be approximately 50mm in diameter. The depth of the holes is to be approximately 300mm. “Air Spade” means an air compressor and attachment capable of generating anywhere between 150 to 220 p.s.i.. The air spade must have a shield.

E14.2.3 If hard object is encountered while blowing one of the holes, the Contractor is to move to another location of the same tree and attempt the same procedure.

E14.2.4 Remove material that is blown from each hole and properly dispose of material.

E14.2.5 Backfill holes with topsoil to the existing grade.

E14.3 Temporary traffic and pedestrian control and awareness barricades are required for all Work areas. Grounds person(s) must be present within 10 metres of the Work area for the public’s protection.

E14.4 The Contractor shall locate, protect and maintain benchmarks, monuments, control points and engineering reference points.

E14.5 The Contractor shall control dust caused by the Work by dampening surfaces as required.

MATERIALS

E14.6 Topsoil

E14.6.1 Topsoil shall be supplied in accordance with Clause 5.2 of CW 3540.

MEASUREMENT AND PAYMENT

E14.7 Method of Measurement

E14.7.1 Vertical mulching by air spade will be measured on a lump sum basis as accepted by the Contract Administrator and no measurement will be made for this work.

E14.8 Basis of Payment

E14.8.1 Vertical mulching by air spade shall be paid for at the Contract Lump Sum Price for “Vertical Mulching of Boulevards”, which price shall be payment in full for performing all operations herein described including the cost of furnishing all necessary labour and all other items incidental to the work in accordance with this Specification, accepted and measured by the Contract Administrator.

E14.9 The supply and placement of topsoil in air spaded holes is included in the Lump Sum Price for Vertical Mulching of Boulevards and no separate measurement and payment will be made.

E15. SALVAGE EXISTING INTERLOCKING PAVING STONES

DESCRIPTION

E15.1 This Specification shall cover the removal, stockpiling and delivery of existing interlocking paving stones.

CONSTRUCTION METHODS

E15.2 The Contractor shall carefully remove and clean existing paving stones from the areas determined by the Contract Administrator. The contractor shall ensure the removal and cleaning methods do not chip or damage existing interlocking paving stones.

E15.3 The Contractor shall take care when stockpiling existing interlocking paving stones on wooden pallets.

E15.4 The Contractor shall dispose of damaged existing interlocking paving stones in accordance with section 3.4 of CW 1130.

E15.5 Salvaged interlocking paving stones shall be delivered to the City of Winnipeg Yard, 849 Ravelston Avenue West or as directed by the Contract Administrator.

MEASUREMENT AND PAYMENT

E15.6 The salvaging of existing interlocking paving stones will be measured on an area basis and paid for at the Contract Unit Price per square metre for “Salvage Existing Interlocking Paving Stones”. The area to be paid for will be the total number of square metres of existing interlocking paving stones removed, stockpiled and delivered in accordance with this Specification, accepted and measured by the Contract Administrator.

E15.7 The supply of wooden pallets for stockpiling existing interlocking paving stones is included in the salvaging of existing interlocking paving stones and no separate measurement and payment will be made.

E16. REMOVAL OF TREES

DESCRIPTION

E16.1 This Specification shall cover the removal of existing trees as specified on the Contract drawings. This Specification supplements CW 3010.

CONSTRUCTION METHODS

E16.2 The Contractor shall remove trees as directed by the Contract Administrator.

E16.3 The Contractor shall cut down designated trees, grub out the stumps and root balls.

E16.4 The Contractor shall remove and/or dispose of all material resulting from the Work immediately by removing to a landfill site.

MEASUREMENT AND PAYMENT

E16.5 The removal of trees will be measured on a unit basis and paid for at the Contract Unit Price per tree and associated stump/roots for “Tree Removal”. The number to be paid for will be the total number of trees and associated stump/roots removed and disposed of in accordance with this Specification, accepted and measured by the Contract Administrator.

E17. REMOVAL OF EXISTING SEWER SERVICE PIPE AND EXISTING DRAINAGE CONNECTION PIPE

DESCRIPTION

E17.1 This Specification shall cover the removal of existing 300mm CSP sewer service pipe and existing 150mm PVC drainage connection pipe as specified on the Contract drawings.

CONSTRUCTION METHODS

E17.2 The Contractor shall remove existing 300mm CSP sewer service pipe as directed by the Contract Administrator.

E17.3 The Contractor shall remove existing 150mm PVC drainage connection pipe as directed by the Contract Administrator.

E17.4 The Contractor shall dispose of 300mm CSP sewer service pipe and 150mm PVC drainage connection pipe in accordance with section 3.4 of CW 1130.

E17.5 The excavation for the removal of existing 300mm CSP sewer service pipe and existing 150mm PVC drainage pipe shall be backfilled to Class 4 standards in accordance with CW 2030.

MEASUREMENT AND PAYMENT

E17.6 The removal of existing 300mm CSP sewer service pipe and existing 150mm PVC drainage connection pipe will be measured on a length basis and paid for at the Contract Unit Price for "Removal of Existing 300mm CSP Sewer Service Pipe" and "Removal of Existing 150mm PVC Drainage Connection Pipe". The length to be paid for will be the total number of linear metres removed, measured horizontally at grade, in accordance to this Specification, accepted and measured by the Contract Administrator.

E17.7 The supply and placement of backfill is incidental to the Works and no separate measurement and payment will be made.

E18. SUPPLY AND PLACEMENT OF TOPSOIL

DESCRIPTION

E18.1 This Specification shall cover the supply, placement and compaction of topsoil for proposed tree vaults as specified on the Contract drawings or as directed by the Contract Administrator.

CONSTRUCTION METHODS

E18.2 Placement of Topsoil:

E18.2.1 Excavate tree vaults as directed by the Contract Administrator.

E18.2.2 Clear the excavation of all construction debris, trash, rubble and any foreign material.

E18.2.3 Place topsoil in 150mm lifts and compact each lift to a minimum of 95% Standard Proctor Density.

E18.2.4 Bring topsoil to 175mm below finished grade of existing concrete sidewalk.

E18.2.5 Upon completion of topsoil placement operations, clean areas of topsoil Works. Remove all excess fills, topsoil stockpiles and legally dispose of all waste materials, trash and debris.

E18.2.6 Immediately protect the topsoil from contamination by toxic materials, trash, debris, clay, silt or materials that will alter the topsoil mix by installing proposed reinforced precast concrete sidewalk panels.

MATERIALS

E18.3 Topsoil

E18.3.1 Topsoil shall be supplied in accordance with Clause 5.2 of CW 3540.

MEASUREMENT AND PAYMENT

E18.4 The supplying, placing and compaction of topsoil will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for the "Supply and Placement of Topsoil". The volume to be paid for will be the total number of cubic metres of topsoil supplied and placed in accordance with this Specification, accepted and measured by the Contract Administrator.

E18.5 The excavation of tree vaults for topsoil Works shall be measured and paid separately as Hydro-Excavation of Tree Vaults.

E19. REINFORCED CAST IN PLACE CONCRETE PLANTER

DESCRIPTION

E19.1 This Specification shall cover the operations relating to the removal of existing stack stone planter and construction of a reinforced cast in place concrete planter. The Work to be done under this Specification shall include the furnishings of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all other things necessary for and incidental to the satisfactory performance and completion of all Work specified.

MATERIALS

E19.2 Concrete Mix

(i) Cement: Type 50 Sulphate resistant
(ii) Maximum Coarse Aggregate: 20 mm
(iii) Minimum Compressive Strength at 28 days: 35 Mpa
(iv) Minimum Cement Content: 310 Kg/cu.m
(v) Maximum Water/Cement Ratio: 0.45
(vi) Class of Exposure: C-2
(vii) Maximum Slump: 80 mm + or - 20 mm
(viii) Air Content: 5 – 8%
(ix) Fly ash Content: Maximum 15% of Cementitious Material

E19.3 10M Longitudinal Deformed Bars

CONSTRUCTION METHODS

E19.4 Removal of Existing Stack Stone Planter

E19.4.1 Remove existing stack stone planter as specified on the Contract drawing.

E19.4.2 Remove existing drainage inlet and box in existing stack stone planter as specified on the Contract drawing.

E19.4.3 Remove planter earth, shrubs and objects within the existing stack stone planter designated by the Contract Administrator.

E19.4.4 Dispose of material in accordance with section 3.4 of CW1130.

E19.4.5 Relocate 120v electrical outlet in existing stack stone planter to a similar location in proposed reinforced cast in place concrete planter by a Certified Electrician as specified on the Contract Drawing or as directed by the Contract Administrator.

E19.5 Construction of Reinforced Cast in Place Concrete Planter

E19.5.1 The Contractor must ensure that the extent of all buried utilities and services are located and if necessary, protected and exposed prior to any excavation.

E19.5.2 Excavate to accommodate for forms and granular base.

E19.5.3 Dispose of material in accordance with section 3.4 of CW 1130.

E19.5.4 Compact granular base in accordance with specification CW 3110

E19.5.5 Construct cast in place inlet box with curb inlet frame and inlet box cover as specified on the Contract drawings.

E19.5.6 Place 10M Longitudinal Deformed Bars for reinforcement in accordance with section 9.2 of CW 3310 and as specified on the Contract drawings.

MEASUREMENT AND PAYMENT

E19.6 Method of Measurement

E19.6.1 Construction of reinforced cast in place concrete planter will be measured on a lump sum basis as accepted by the Contract Administrator and no measurement will be made for this work.

E19.7 Basis of Payment

E19.7.1 Construction of reinforced cast in place concrete planter shall be paid for at the Contract Lump Sum Price for “Construction of Reinforced Cast in Place Concrete Planter”, which price shall be payment in full for performing all operations herein described including the cost of furnishing all necessary labour and all other items incidental to the work in accordance with this Specification, accepted and measured by the Contract Administrator.

E19.8 The removal of existing stack stone planter is included in the construction of reinforced cast in place concrete planter and no separate measurement and payment will be made.

E19.9 The removal of planter earth, shrubs and objects within the existing stack stone planter is included in the construction of reinforced cast in place concrete planter and no separate measurement and payment will be made.

E19.10 The relocation of 120v electrical outlet in existing stack stone planter to a similar location in proposed reinforced cast in place concrete planter by a Certified Electrician is included in the construction of reinforced cast in place concrete planter and no separate measurement and payment will be made.

E19.11 The construction of cast in place inlet box with curb inlet frame and inlet box cover shall be measured and paid separately as Construction of Inlet Box with Curb Inlet Frame and Inlet Box Cover.

E20. HYDRO-EXCAVATION OF TREE VAULTS

DESCRIPTION

E20.1 This Specification shall cover the operations relating to the removal of earthen material within constructed tree vaults by means of high pressure water spray and the recovery of earthen material by vacuum type means as specified on the Contract drawing or as directed by the Contract Administrator.

EQUIPMENT

E20.2 Hydro-excavation unit shall be capable of maintaining a minimum working pressure of 10,000 psi, at a rate of flow of 10 12 gallons per minute. Unit should be adjustable, so as to provide adequate pressure to remove earthen material.

E20.3 Spray head shall be equipped with rotating type nozzle, in order to provide a wider path of cut.

CONSTRUCTION METHODS

E20.4 Hydro removal of earthen material

E20.4.1 Earthen material shall be sprayed with high pressure water so as to remove all such material within tree vault as specified on the Contract drawing or as identified by the Contract Administrator.

E20.5 Recovery of excavated material

E20.5.1 The recovery of excavated material shall be done using vacuum type method or other type method as approved by the Contract Administrator.

E20.5.2 The recovery of material shall follow immediately behind the excavation, to avoid excavated areas from filling with excavated material.

E20.5.3 Dispose of material in accordance with section 3.4 of CW 1130.

MEASUREMENT AND PAYMENT

E20.6 Hydro-excavation of constructed tree vaults will be measured on a hourly basis and paid for at the Contract Unit Price per hour for “Hydro-Excavation of Tree Vaults”. The volume to be paid for will be the total number of cubic metres excavated in accordance with this Specification, accepted and measured by the Contract Administrator.

E21. CAST-IN-PLACE CONCRETE FOUNDATIONS

E21.1 Description

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

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

E21.2 Materials

E21.2.1 General

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

E21.2.2 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.

E21.2.3 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.

E21.2.4 Cement

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

E21.2.5 Concrete

(a) General

(i) All concrete is to be manufactured and installed in accordance with the latest edition of CAN/CSA-A23.1-09 "concrete materials and methods of concrete construction" and CAN/CSA-A23.2-09 "method of test for concrete".

(ii) Provide certification that mix proportions selected will produce concrete of quality, yield and strength as specified in concrete mixes, and will comply with CAN/CSA-A23.1. Certification letter to be sealed by a Professional Engineer registered in the Province of Manitoba.

(iii) Provide certification that plant, equipment, and materials to be used in concrete comply with requirements of CAN/CSA-A23.1. Certification letter to be sealed by a professional engineer registered in the Province of Manitoba.

(iv) Concrete strengths at 28 days shall be as follows unless noted otherwise on the drawings.

(b) The Contractor shall be responsible for the design and performance of concrete mixes for Piles supplied under this specification. Use ready mix concrete having the following minimum properties in accordance with CSA A23.1-04:

(i) Compressive Strength @ 56 days = 35 MPa

(ii) Class of Exposure: S-1

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

(iv) Slump: min. 120mm

(v) Aggregate: Max 20mm as specified in E13.2.6

(vi) Cement – HS as specified in E21.2.4

(c) The Contractor shall be responsible for the design and performance of concrete mixes for Median Grade Beams and Pile Caps supplied under this specification. Use ready

mix concrete having the following minimum properties in accordance with CSA A23.1-04:

(i) Compressive Strength @ 28 days = 35 MPa

(ii) Class of Exposure: C-1

(iii) Air Content: Category 1 per Table 4 of CSA A23.1-04 (5-8%)

(iv) Curing type: type 2 - additional

(v) Aggregate: Max 20mm as specified in E13.2.6

(vi) Cement – as specified in E21.2.4

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

(e) Unless indicated otherwise the Contractor shall specify concrete slump appropriate with placement methods and Site conditions. The Contractor specified slump must be shown on the certification letter and concrete delivery ticket.

(f) Unless noted otherwise concrete curing to conform to the latest edition of can/csa-a23.1-04 as follows:

(i) Type 1 – basic: 3 days ≥ 10°c or for a time necessary to attain 40% of the specified strength.

(ii) Type 2 – additional: 7 days ≥ 10°c or for a time necessary to attain 70% of the specified strength.

(iii) Type 3 – extended: 7 days wet curing ≥ 10°c.

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

(h) 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.

(i) 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.

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

E21.2.6 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.

E21.2.7 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.

E21.2.8 Admixtures

(a) Air entraining admixtures shall conform to the requirements of ASTM C260 -01 "standard specification for air entraining admixtures for concrete".

(b) Superplasticizing admixtures shall conform to ASTN C494/C494M "standard specification for chemical admixtures for concrete" or ASTM C1017/C1017M "standard specification for chemical admixtures for use in producing flowing concrete" when flowing concrete is applicable.

(c) Air entrained admixtures to have a durability factor greater than 75, when tested to ASTM standards C666/C666M procedure A.

(d) Spacing factor for any air entraining admixture must be 0.17mm or less when tested in accordance with ASTM C457 "standard test method for microscopical determination of parameters of the air-void system in hardened concrete".

(e) 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.

(f) 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.

(g) 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.

E21.2.9 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.

E21.2.10 Concrete Supply

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

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

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

E21.2.11 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. Reinforcing steel supply and installation will be incidental to construction of concrete pile foundation and no separate payment will be made.

(c) Reinforcing steel cover is to conform to CAN/CSA A23.3-04 "design of concrete structures for buildings" and as follows:

(i) Pile caps: Exposure class: C-1 60 mm to ties.

(ii) Piles: Exposure class: S-1 75 mm to ties.

(d) All reinforcing in pile cap to be epoxy coated.

(e) Submit shop drawings indicating reinforcing steel layout, sizes, bends and chairs to contract administrator for review. Allow a minimum of 7 days review time.

E21.2.12 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 600 g/m^2, for the entire length of the anchor bolts. The threaded portion of the anchor bolts shall be 90 mm long. Anchor bolt supply and installation will be included in the construction of cast-in-place concrete foundations and no separate payment will be made.

E21.2.13 Anchor Bolt Templates

(a) Anchor bolt templates shall be CSA G40.21 Grade 300W, minimum 10 mm thick, and will be included in the construction of cast-in-place concrete foundations and no separate payment will be made.

E21.2.14 Miscellaneous Materials

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

E21.3 Construction Methods

E21.3.1 Location and Alignment of Piles

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

(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.

E21.3.2 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.

E21.3.3 Excavation

(a) The Contractor is responsible for determining the excavation method at each pile location. For quantity purposes, Hydro-Jet excavation has been assumed whenever a utility or building appears to be within one metre of the edge of the pile or if there are overhead utility lines. No additional measurement or payment shall be made for Hydro-Jet excavation as it is included in the construction of cast-in-place concrete foundations under this contract.

(b) Excavations for piles shall be made with equipment designed to remove a core of the diameter shown on the Drawings, or hydro-jet excavation (if required) to a depth to bypass and/or expose adjacent utilities. A pile will be considered to be “hydro-jet excavated” if at least 0.5 vertical metres of earth is excavated using hydro-jet excavation methods.

(c) 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.

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

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

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

(g) If any hole is condemned because of caving, it shall be filled with lean-mix concrete and a new hole bored 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 above the utility. Payment will not be made for condemned piles.

E21.3.4 Sleeving

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

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

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

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

E21.3.5 Inspection of Bores

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

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

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

E21.3.6 Placing Reinforcing Steel

(a) Reinforcement shall be:

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

(ii) rigidly fastened together, and

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

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

E21.3.7 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. 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.

E21.3.8 Forms

(a) Provide plastic tube, greased completely on inside for top 1800 mm of piles indicated on plan.

(b) Shearmat or approved cardboard void form with a min. Depth of 200mm shall be used as the bottom form for structural slabs at grade, grade beams, and walls in contact with soil. Select and install in accordance with manufacturer’s recommendations.

(c) Unless noted otherwise provide slip joint at all paving or concrete slabs on grade against structural members with 12 mm asphalt impregnated fibreboard.

(d) For bored piles, the top of the piles shall be formed with tubular forms (Sonotube) to a minimum depth of 1000 mm below final grade.

(e) 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.

(f) 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 E21.3.8 (a) and E21.3.8 (e).

(g) 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.

E21.3.9 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.

E21.3.10 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 bore 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 bore 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 bore.

E21.3.11 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.

E21.3.12 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.

E21.3.13 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.

E21.3.14 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.

E21.3.15 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.

E21.4 Quality Control

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

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

E21.5 Measurement and Payment

E21.5.1 Construction of Cast-in-Place Concrete Median Grade Beam, Pile and Footing

(a) Construction of "Cast-in-Place Concrete Median Grade Beam, Pile and Footing" including installation of anchor bolts, steel template and reinforcing steel will be measured and paid for at the Contract Unit Price per "Cast-in-Place Concrete Median Grade Beam, Pile and Footing" constructed in accordance with this Specification and accepted by the Contract Administrator.

E21.5.2 Construction of Cast-in-Place Concrete Piles for Foundation Base

(a) Construction of "Cast-in-Place Concrete Piles for Foundation Base" including installation of anchor bolts, steel template and reinforcing steel will be measured and paid for at the Contract Unit Price per "Cast-in-Place Concrete Piles for Foundation Base" constructed in accordance with this Specification and accepted by the Contract Administrator.

E21.5.3 Construction of Cast-in-Place Concrete Foundation Base for Future Archway

(a) Construction of "Cast-in-Place Concrete Foundation Base for Future Archway" including installation of anchor bolts, steel template and reinforcing steel will be measured and paid for at the Contract Unit Price per "Cast-in-Place Concrete Foundation Base for Future Archway" constructed in accordance with this Specification and accepted by the Contract Administrator.