



THE CITY OF WINNIPEG

TENDER

TENDER NO. 512-2019

**2019 SLAW REBCHUK OVERPASS - DECK, EXPANSION JOINTS &
MISCELLANEOUS REPAIRS**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 2019 SLAW REBCHUK OVERPASS - DECK, EXPANSION JOINTS & MISCELLANEOUS REPAIRS

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, June 26, 2019.

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

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

B3. SITE INVESTIGATION

B3.1 Further to C3.1, the Bidder may view the Site without making an appointment.

B4. ENQUIRIES

B4.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.

B4.2 If the Bidder finds errors, discrepancies or omissions in the Tender, or is unsure of the meaning or intent of any provision therein, the Bidder shall promptly notify the Contract Administrator of the error, discrepancy or omission at least five (5) Business Days prior to the Submission Deadline.

B4.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Tender will be provided by the Contract Administrator to all Bidders by issuing an addendum.

B4.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Tender will be provided by the Contract Administrator only to the Bidder who made the enquiry.

B4.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B4 unless that response or interpretation is provided by the Contract Administrator in writing.

B5. CONFIDENTIALITY

B5.1 Information provided to a Bidder by the City or acquired by a Bidder by way of further enquiries or through investigation is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Contract Administrator. The use and disclosure of the confidential information shall not apply to information which:

- (a) was known to the Bidder before receipt hereof; or
- (b) becomes publicly known other than through the Bidder; or
- (c) is disclosed pursuant to the requirements of a governmental authority or judicial order.

B5.2 The Bidder shall not make any statement of fact or opinion regarding any aspect of the Tender to the media or any member of the public without the prior written authorization of the Contract Administrator.

B6. ADDENDA

- B6.1 The Contract Administrator may, at any time prior to the Submission Deadline, issue addenda correcting errors, discrepancies or omissions in the Tender, or clarifying the meaning or intent of any provision therein.
- B6.2 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.
- B6.3 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>
- B6.4 The Bidder is responsible for ensuring that he/she has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B6.5 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.
- B6.6 Notwithstanding B4, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D3.

B7. SUBSTITUTES

- B7.1 The Work is based on the Plant, Materials and methods specified in the Tender.
- B7.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B7.3 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.
- B7.4 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 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 Total Performance.
- B7.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/her sole discretion grant approval for the use of a substitute as an "approved equal" or as an "approved alternative", or may refuse to grant approval of the substitute.

- B7.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.
- B7.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.
- B7.7 If the Contract Administrator approves a substitute as an "approved equal", any Bidder may use the approved equal in place of the specified item.
- B7.8 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 B18.
- B7.9 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.

B8. BID SUBMISSION

- B8.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
 - (b) Form B: Prices; and
 - (c) Form G1: Bid Bond and Agreement to Bond
- B8.2 Further to B8.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B7.
- B8.3 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.
- B8.4 The Bid shall be submitted enclosed and sealed in an envelope clearly marked with the Tender number and the Bidder's name and address.
- B8.4.1 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 Tender number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid.
- B8.5 Bidders are advised not to include any information/literature except as requested in accordance with B8.1.
- B8.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Tender document, including the General Conditions, will be evaluated in accordance with B18.1(a).
- B8.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B8.8 Bids shall be submitted to:
- The City of Winnipeg
Corporate Finance Department
Materials Management Division
185 King Street, Main Floor
Winnipeg MB R3B 1J1

B9. BID

- B9.1 The Bidder shall complete Form A: Bid, making all required entries.
- B9.2 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.
- B9.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B9.2.
- B9.3 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.
- B9.4 Paragraph 13 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, should 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.
- B9.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.
- B9.5 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.

B10. PRICES

- B10.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B10.1.1 Prices stated on Form B: Prices shall not include any costs which may be incurred by the Contractor with respect to any applicable funding agreement obligations as outlined in D26.
- B10.1.2 Any such costs shall be determined in accordance with D26. Notwithstanding C11.1.3, prices on Form B: Prices shall not include the Goods and Services Tax (GST) or Manitoba Retail Sales Tax (MRST, also known as PST), which shall be extra where applicable.
- B10.2 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.
- B10.3 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.
- B10.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B11. DISCLOSURE

B11.1 Various Persons provided information or services with respect to this Work. In the City's opinion, this relationship or association does not create a conflict of interest because of this full disclosure. Where applicable, additional material available as a result of contact with these Persons is listed below.

B11.2 The Persons are:

- (a) N/A

B12. CONFLICT OF INTEREST AND GOOD FAITH

B12.1 Bidders, by responding to this Tender, declare that no Conflict of Interest currently exists, or is reasonably expected to exist in the future.

B12.2 Conflict of Interest means any situation or circumstance where a Bidder or employee of the Bidder proposed for the Work has:

- (a) other commitments;
- (b) relationships;
- (c) financial interests; or
- (d) involvement in ongoing litigation;

that could or would be seen to:

- (i) exercise an improper influence over the objective, unbiased and impartial exercise of the independent judgment of the City with respect to the evaluation of Bids or award of the Contract; or
- (ii) compromise, impair or be incompatible with the effective performance of a Bidder's obligations under the Contract;
- (e) has contractual or other obligations to the City that could or would be seen to have been compromised or impaired as a result of its participation in the Tender process or the Work; or
- (f) has knowledge of confidential information (other than confidential information disclosed by the City in the normal course of the Tender process) of strategic and/or material relevance to the Tender process or to the Work that is not available to other bidders and that could or would be seen to give that Bidder an unfair competitive advantage.

B12.3 In connection with its Bid, each entity identified in B12.2 shall:

- (a) avoid any perceived, potential or actual Conflict of Interest in relation to the procurement process and the Work;
- (b) upon discovering any perceived, potential or actual Conflict of Interest at any time during the Tender process, promptly disclose a detailed description of the Conflict of Interest to the City in a written statement to the Contract Administrator; and
- (c) provide the City with the proposed means to avoid or mitigate, to the greatest extent practicable, any perceived, potential or actual Conflict of Interest and shall submit any additional information to the City that the City considers necessary to properly assess the perceived, potential or actual Conflict of Interest.

B12.4 Without limiting B12.3, the City may, in its sole discretion, waive any and all perceived, potential or actual Conflicts of Interest. The City's waiver may be based upon such terms and conditions as the City, in its sole discretion, requires to satisfy itself that the Conflict of Interest has been appropriately avoided or mitigated, including requiring the Bidder to put into place such policies, procedures, measures and other safeguards as may be required by and be acceptable to the City, in its sole discretion, to avoid or mitigate the impact of such Conflict of Interest.

B12.5 Without limiting B12.3, and in addition to all contractual or other rights or rights at law or in equity or legislation that may be available to the City, the City may, in its sole discretion:

- (a) disqualify a Bidder that fails to disclose a perceived, potential or actual Conflict of Interest of the Bidder or any of its employees proposed for the Work;
- (b) require the removal or replacement of any employees proposed for the Work that has a perceived, actual or potential Conflict of Interest that the City, in its sole discretion, determines cannot be avoided or mitigated;
- (c) disqualify a Bidder or employees proposed for the Work that fails to comply with any requirements prescribed by the City pursuant to B12.4 to avoid or mitigate a Conflict of Interest; and
- (d) disqualify a Bidder if the Bidder, or one of its employees proposed for the Work, has a perceived, potential or actual Conflict of Interest that, in the City's sole discretion, cannot be avoided or mitigated, or otherwise resolved.

B12.6 The final determination of whether a perceived, potential or actual Conflict of Interest exists shall be made by the City, in its sole discretion.

B13. QUALIFICATION

B13.1 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, or if the Bidder does not carry on business in Manitoba, in the jurisdiction where the Bidder does carry on business; 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.

B13.2 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 <https://winnipeg.ca/finance/findata/matmgt/listing/debar.pdf>

B13.3 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);

B13.4 Further to B13.3(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) Written confirmation of a safety and health certification meeting SAFE Work Manitoba's SAFE Work Certified Standard (e.g., COR™ and SECOR™) in the form of:
 - (i) a copy of their valid Manitoba COR certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Certificate of Recognition (COR) Program administered by the Construction Safety Association of Manitoba or by

- the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
- (ii) a copy of their valid Manitoba SECOR™ certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Small Employer Certificate of Recognition Program (SECOR™) administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ 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/>).
- B13.5 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.
- B13.6 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.
- B14. BID SECURITY**
- B14.1 The Bidder shall provide bid security in the form of 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).
- B14.1.1 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.
- B14.1.2 All signatures on bid securities shall be original.
- B14.1.3 The Bidder shall sign the Bid Bond.
- B14.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.
- B14.2 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 contract securities are furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.
- B14.3 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 Tender.
- B15. OPENING OF BIDS AND RELEASE OF INFORMATION**
- B15.1 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.
- B15.1.1 Bidders or their representatives may attend.
- B15.2 Following the Submission Deadline, the names of the Bidders and their 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/>

- B15.3 After award of Contract, the name(s) of the successful Bidder(s), their address(es) 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/>
- B15.4 The Bidder is advised that any information contained in any Bid may be released if required by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law or by City policy or procedures (which may include access by members of City Council).
- B15.4.1 To the extent permitted, the City shall treat as confidential information, those aspects of a Bid Submission identified by the Bidder as such in accordance with and by reference to Part 2, Section 17 or Section 18 or Section 26 of The Freedom of Information and Protection of Privacy Act (Manitoba), as amended.

B16. IRREVOCABLE BID

- B16.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.
- B16.2 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 for time period specified in Paragraph 11 of Form A: Bid.

B17. WITHDRAWAL OF BIDS

- B17.1 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.
- B17.1.1 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.
- B17.1.2 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 13 of Form A: Bid, and only such person, has authority to give notice of withdrawal.
- B17.1.3 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 13 of Form A: Bid; and
 - (c) if the notice has been given by any one of the persons specified in B17.1.3(b), declare the Bid withdrawn.
- B17.2 A Bidder who withdraws his Bid after the Submission Deadline but before his Bid has been released or has lapsed as provided for in B16.2 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.

B18. EVALUATION OF BIDS

- B18.1 Award of the Contract shall be based on the following bid evaluation criteria:
- (a) compliance by the Bidder with the requirements of the Tender, or acceptable deviation therefrom (pass/fail);
 - (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B13(pass/fail); and
 - (c) Total Bid Price;
 - (d) economic analysis of any approved alternative pursuant to B7.

- B18.2 Further to B18.1(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.
- B18.3 Further to B18.1(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/she is qualified.
- B18.4 Further to B18.1(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.
- B18.4.1 Further to B18.1(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.

B19. AWARD OF CONTRACT

- B19.1 The City will give notice of the award of the Contract, or will give notice that no award will be made.
- B19.2 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 qualified, and the Bids are determined to be responsive.
- B19.2.1 Without limiting the generality of B19.2, 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.
- B19.3 If funding for the Work is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, Bidders are advised that the terms of D26 shall immediately take effect upon confirmation of such funding, regardless of when funding is confirmed.
- B19.4 Where an award of Contract is made by the City, the award shall be made to the qualified Bidder submitting the lowest evaluated responsive Bid in accordance with B18.
- B19.4.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for Supply of Services* (Revision 2019-01-15) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for Supply of Services* 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 Tender to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for Supply of Services*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

D1.1 In addition to the *General Conditions for Supply of Services*, 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 of all operations relating to concrete bridge deck and approach slab spot repairs; sidewalk, barrier, backwall and wingwall spot repairs; replacement of expansion joints; galvanizing existing expansion joint cover plates; and deck / crack sealing.

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

- (a) Traffic Control
- (b) Removal of remaining existing epoxy wearing surface
- (c) Concrete removal and patching at delamination and spalled areas
- (d) Installation of localized galvanic anodes at spot repair areas
- (e) Remove and replace existing expansion joints
- (f) Grade adjustment at the north approach slab and bridge deck in the vicinity of the north expansion joint
- (g) Surface preparation with sand blasting or shot blasting, and air blown clean
- (h) Application of sealer/healer over entire deck and approach slabs
- (i) Remove, galvanize and reinstall steel sliding plates and mounting plates over sidewalks, curbs and traffic barriers

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is AECOM Canada Ltd., represented by:

Eric B. Loewen, P.Eng.
Senior Project Manager, AECOM
Telephone No. 204 928-8440
Email Address. Eric.loewen@aecom.com

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/her designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

D5. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE

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

- D5.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.
- D5.3 The following shall be confidential and shall not be disclosed by the Contractor to the media or any member of the public without the prior written authorization of the Contract Administrator;
- (a) information provided to the Contractor by the City or acquired by the Contractor during the course of the Work;
 - (b) the Contract, all deliverables produced or developed; and
 - (c) any statement of fact or opinion regarding any aspect of the Contract.
- D5.4 A Contractor who violates any provision of D5 may be determined to be in breach of Contract.

D6. NOTICES

- D6.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.
- D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3, D6.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator identified in D3.
- D6.3 Notwithstanding C21., all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following:

The City of Winnipeg
Attn: Chief Financial Officer
Office of the Chief Administrative Officer
Susan A. Thompson Building
2nd Floor, 510 Main Street
Winnipeg, MB R3B 1B9

- D6.4 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following facsimile number:

The City of Winnipeg
Legal Services Department
Attn: Director of Legal Services

Facsimile No.: 204 947-9155

- D6.5 Bids Submissions must not be submitted to the above facsimile number. Bids must be submitted in accordance with B8.**

D7. FURNISHING OF DOCUMENTS

- D7.1 Upon award of the Contract, the Contractor will be provided with three (3) complete sets of the Tender. If the Contractor requires additional sets of the Tender, they will be supplied to him/her at cost.

SUBMISSIONS

D8. AUTHORITY TO CARRY ON BUSINESS

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

D9. SAFE WORK PLAN

D9.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

D9.2 The Safe Work Plan should 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>

D9.3 Notwithstanding B13.4 at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated COR Certificate or Annual Letter of Good Standing. A Contractor, who fails to provide a satisfactory COR Certificate or Annual Letter of Good Standing, will not be permitted to continue to perform any Work.

D10. INSURANCE

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

- (a) A wrap up liability insurance policy, in the amount of at least two million dollars (\$2,000,000) inclusive covering bodily injury, property damage, damage to the existing structure, crane and hoist operator's liability, and products and completed operations. Such policy to be written in the name of the Contractor, the City and all sub-contractors, consultants and sub-consultants and include 24 months completed operations which will take effect after Total Performance.
- (b) Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Service. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence;
- (c) All risks course of construction insurance in the amount of one hundred percent (100%) of the total Contract Price, written in the name of the Contractor and The City of Winnipeg, at all times during the performance of the Work and until the date of Total Performance.
- (d) Property insurance for equipment, tools, field office and portable toilets used by the Contractor directly or indirectly in the performance of the Work on the project that may be owned, rented leased or borrowed.

D10.2 Deductibles shall be borne by the Contractor.

D10.3 The Contractor shall provide the Contract Administrator 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 on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

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

D10.5 All policies shall be taken out with insurers duly licensed to carry on business in the Province of Manitoba.

D11. CONTRACT SECURITY

D11.1 The Contractor shall provide and maintain the performance bond and the labour and material payment bond 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; and
- (b) a labour and material payment bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H2: Labour and Material Payment Bond), in an amount equal to fifty percent (50%) of the Contract Price.

D11.2 The Contractor shall provide the City Solicitor with the required performance and labour and material payment bonds 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 but in no event later than the date specified in C4.1 for the return of the executed Contract.

D11.3 The Contractor shall, as soon as practicable after entering into a contract with a Subcontractor:

- (a) give the Subcontractor written notice of the existence of the labour and material payment bond in D11.1(b); and
- (b) post a notice of the bond and/or a copy of that bond in a conspicuous location at the Site of the Work.

D12. SUBCONTRACTOR LIST

D12.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site.

D13. DETAILED WORK SCHEDULE

D13.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract..

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

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

all acceptable to the Contract Administrator.

D13.3 Further to D13.2(a), the C.P.M. schedule shall clearly identify the start and completion dates of all of the following activities/tasks making up the Work as well as showing those activities/tasks on the critical path:

- (a) Mobilization;
- (b) Traffic Control including staging for Northbound and Southbound lane closures;
- (c) Removal of remaining existing epoxy wearing surface;
- (d) Concrete bridge deck surface, approach slabs, sidewalks, traffic barriers, backwall and wingwall repairs including staging for lane closures;
- (e) Removal and installation of expansion joints;
- (f) Placement of Sealer/Healer including staging for lane closures;

- (g) Removal, galvanizing and reinstallation of steel sliding plates and mounting plates; and
- (h) Demobilization

D13.4 Further to D13.2(b), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

D13.5 Further to D13.2(c), the daily manpower schedule shall list the daily number of individuals on the Site for each trade.

SCHEDULE OF WORK

D14. COMMENCEMENT

D14.1 The Contractor shall not commence any Work until he/she is in receipt of a notice of award from the City authorizing the commencement of the Work.

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

- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D8;
 - (ii) evidence of the workers compensation coverage specified in C6.14;
 - (iii) the Safe Work Plan specified in D9;
 - (iv) evidence of the insurance specified in D10;
 - (v) the contract security specified in D11;
 - (vi) the Subcontractor list specified in D12;
 - (vii) the detailed work schedule specified in D13; and
- (b) the Contractor has attended a meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a meeting.

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

D14.4 The City intends to award this Contract by July 17, 2019

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

D15. SUBSTANTIAL PERFORMANCE

D15.1 The Contractor shall achieve Substantial Performance by September 23, 2019.

D15.2 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.

D15.3 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.

D16. TOTAL PERFORMANCE

D16.1 The Contractor shall achieve Total Performance by September 30, 2019.

D16.2 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 reinspected.

D16.3 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.

D17. LIQUIDATED DAMAGES

D17.1 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 dollars (\$1,000) per Working Day for each and every Working Day following the day fixed herein for Total Performance during which such failure continues.

D17.2 The amount specified for liquidated damages in D17.1 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.

D17.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

CONTROL OF WORK

D18. JOB MEETINGS

D18.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

D18.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

D19. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

D19.1 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).

D20. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) - QUALIFICATIONS

D20.1 Further to B13.3, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require updated proof of compliance, as set out in B13.3.

D21. COOPERATION WITH OTHERS

D21.1 The Contractor's attention is directed to the fact that other Contractors, the personnel of Utilities and the staff of the City may be working on the structure, approach roadways, railways below the bridge, adjacent roadways or rights-of-way. The activities of these agencies may coincide with the Contractor's execution of the Work. And it will be the contractor's responsibility to

cooperate to the fullest extent with the other personnel working in the area, and such cooperation is an obligation of the Contract under the terms of the Contract.

D22. ENVIRONMENTAL PLANNING

D22.1 The contractor shall conduct his operations in accordance with all Federal, Provincial, or other regulations concerning environmental protection and pollution control. It shall be the Contractor's responsibility to familiarize himself with all applicable regulations and to obtain all necessary approval and permits for his operations.

D23. CLEAN UP

D23.1 The Contractor shall maintain the site of Work in a tidy condition free from the accumulations of waste and debris.

MEASUREMENT AND PAYMENT

D24. PAYMENT

D24.1 Further to C11, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D25. WARRANTY

D25.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire two (2) years thereafter unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D25.2 Notwithstanding C13.2, the warranty period for the expansion joints shall begin on the date of Total Performance and shall expire five (5) years thereafter unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

THIRD PARTY AGREEMENTS

D26. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

D26.1 In the event that funding for the Work of the Contract is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, the following terms and conditions shall apply, as required by the applicable funding agreements.

D26.2 Further to D26.1, in the event that the obligations in D26 apply, actual costs legitimately incurred by the Contractor as a direct result of these obligations ("Funding Costs") shall be determined by the actual cost to the Contractor and not by the valuation method(s) outlined in C7.4. In all other respects Funding Costs will be processed in accordance with Changes in Work under C7.

D26.3 For the purposes of D26:

- (a) "**Government of Canada**" includes the authorized officials, auditors, and representatives of the Government of Canada; and
- (b) "**Government of Manitoba**" includes the authorized officials, auditors, and representatives of the Government of Manitoba.

D26.4 Modified Insurance Requirements

- D26.4.1 If not already required under the insurance requirements identified in D10, the Contractor will be required to provide wrap-up liability insurance in an amount of no less than two million dollars (\$2,000,000) inclusive per occurrence. Such policy will be written in the joint names of the City, Contractor, Consultants and all sub-contractors and sub-consultants and include twelve (12) months completed operations. The Government of Manitoba and its Ministers, officers, employees, and agents shall be added as additional insureds.
- D26.4.2 If not already required under the insurance requirements identified in D10 the Contractor will be required to provide builders' risk insurance (including boiler and machinery insurance, as applicable) providing all risks coverage at full replacement cost, or such lower level of insurance that the City may identify on a case-by-case basis, such as an installation floater.
- D26.4.3 The Contractor shall obtain and maintain third party liability insurance with minimum coverage of two million dollars (\$2,000,000.00) per occurrence on all licensed vehicles operated at the Site. In the event that this requirement conflicts with another licensed vehicle insurance requirement in this Contract, then the requirement that provides the higher level of insurance shall apply.
- D26.4.4 Further to D10 insurers shall provide satisfactory Certificates of Insurance to the Government of Manitoba prior to commencement of Work as written evidence of the insurance required. The Certificates of Insurance must provide for a minimum of thirty (30) days' prior written notice to the Government of Manitoba in case of insurance cancellation.
- D26.4.5 All policies must be taken out with insurers licensed to carry on business in the Province of Manitoba.
- D26.5 Indemnification By Contractor
- D26.5.1 In addition to the indemnity obligations outlined in C17 of the General Conditions for Construction, the Contractor agrees to indemnify and save harmless the Government of Canada and the Government of Manitoba and each of their respective Ministers, officers, servants, employees, and agents from and against all claims and demands, losses, costs, damages, actions, suit or other proceedings brought or pursued in any manner in respect of any matter caused by the Contractor or arising from this Contract or the Work, or from the goods or services provided or required to be provided by the Contractor, except those resulting from the negligence of any of the Government of Canada's or the Government of Manitoba's Ministers, officers, servants, employees, or agents, as the case may be.
- D26.6 Records Retention and Audits
- D26.6.1 The Contractor shall maintain and preserve accurate and complete records in respect of this Contract and the Work, including all accounting records, financial documents, copies of contracts with other parties and other records relating to this Contract and the Work during the term of the Contract and for at least six (6) years after Total Performance. Those records bearing original signatures or professional seals or stamps must be preserved in paper form; other records may be retained in electronic form.
- D26.6.2 In addition to the record keeping and inspection obligations outlined in C6 of the General Conditions for Construction, the Contractor shall keep available for inspection and audit at all reasonable times while this Contract is in effect and until at least six (6) years after Total Performance, all records, documents, and contracts referred to in D26.6.1 for inspection, copying and audit by the City of Winnipeg, the Government of Manitoba and/or the Government of Canada and their respective representatives and auditors, and to produce them on demand; to provide reasonable facilities for such inspections, copying and audits, to provide copies of and extracts from such records, documents, or contracts upon request by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada and their respective representatives and auditors, and to promptly provide such other information and explanations as may be reasonably requested by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada from time-to-time.
- D26.7 Other Obligations

- D26.7.1 The Contractor consents to the City providing a copy of the Contract to the Government of Manitoba and/or the Government of Canada upon request from either entity.
- D26.7.2 If the Lobbyists Registration Act (Manitoba) applies to the Contractor, the Contractor represents and warrants that it has filed a return and is registered and in full compliance with the obligations of that Act, and covenants that it will continue to comply for the duration of this Contract.
- D26.7.3 The Contractor shall comply with all applicable legislation and standards, whether federal, provincial, or municipal, including (without limitation) labour, environmental, and human rights laws, in the course of providing the Work.
- D26.7.4 The Contractor shall properly account for the Work provided under this Contract and payment received in this respect, prepared in accordance with generally accepted accounting principles in effect in Canada, including those principles and standards approved or recommended from time-to-time by the Chartered Professional Accountants of Canada or the Public Sector Accounting Board, as applicable, applied on a consistent basis.

FORM H1: PERFORMANCE BOND
(See D11)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

_____ dollars (\$_____)

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

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

TENDER NO. 512-2019

2019 SLAW REBCHUK OVERPASS - DECK, EXPANSION JOINTS & MISCELLANEOUS REPAIRS

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: LABOUR AND MATERIAL PAYMENT BOND
(See D11)

KNOW ALL MEN BY THESE PRESENTS THAT

his/its heirs, executors, administrators, successors or assigns (hereinafter called the "Principal"), and

his/its heirs, executors, administrators, successors or assigns (hereinafter called the "Surety"), are held and firmly bound unto **THE CITY OF WINNIPEG** (hereinafter called the "Obligee"), for the use and benefit of claimants as herein below defined, in the amount of

_____ dollars (\$_____)

of lawful money of Canada, for the payment whereof we, the Principal and the Surety jointly and severally bind ourselves firmly by these presents.

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

TENDER NO. 512-2019

2019 SLAW REBCHUK OVERPASS - DECK, EXPANSION JOINTS & MISCELLANEOUS REPAIRS

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 promptly make payment to all claimants as hereinafter defined, for all labour, service and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void, otherwise it shall remain in full force and effect subject, however, to the following conditions:

- (a) A claimant is defined as one having a direct contract with the Principal for labour, service and material, or any of them, used or reasonably required for use in the performance of the contract, labour, service and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment (but excluding rent of equipment where the rent pursuant to an agreement is to be applied towards the purchase price thereof) directly applicable to the Contract;
- (b) The above-named Principal and Surety hereby jointly and severally agree with the Obligee that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work, labour or service was done or performed, or materials were furnished by such claimant, may sue on this bond, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon;
- (c) No suit or action shall be commenced hereunder by any claimant
 - (ii) unless claimant shall have given written notice to the Principal and the Surety above-named, within one hundred and twenty (120) days after such claimant did or performed the last of the work, labour or service, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work, labour or service was done or performed. Such notice shall be served by mailing the same by registered mail to the Principal, and Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the Province of Manitoba;
 - (iii) after the expiration of one (1) year following the date on which Principal ceased work

- on said Contract; including work performed under the guarantees provided in the Contract;
- (iv) other than in a court of competent jurisdiction in the Province of Manitoba.
 - (d) The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.
 - (e) The Surety shall not be liable for a greater sum than the specified penalty of this bond.

The Principal and Surety hereby agree that The Guarantors' Liability Act (Manitoba) shall apply to this Bond.

IN TESTIMONY WHEREOF, the Principal has hereunto set its hand affixed its seal, and the Surety has caused these presents to be sealed and with its corporate seal duly attested by the authorized signature of its signing authority this

_____ 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)

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 Tender shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.3 Bidders are reminded that requests for approval of substitutes as an approved equal or an approved alternative shall be made in accordance with B7. In every instance where a brand name or design specification is used, the City will also consider approved equals and/or approved alternatives in accordance with B7.
- E1.4 The following are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
B115-19-01	Cover Page and Location Plan
B115-19-02	Deck Repair Plan (1 of 3)
B115-19-03	Deck Repair Plan (2 of 3)
B115-19-04	Deck Repair Plan (3 of 3)
B115-19-05	Deck Repair Details
B115-19-06	Miscellaneous Repair Details for Barriers, Wingwalls and Backwall
B115-19-07	Grade Adjustment Details of North Approach Slab
B115-19-08	Expansion Joint Details

E1.5 Reference Drawings

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
B115-84-B07C	Abutments and Wingwalls
B115-84-B13C	Deck Reinforcing I
B115-84-B14C	Deck Reinforcing II
B115-84-B17C	Concrete Traffic Barrier Details
B115-84-B21C	Expansion Joint Details
B115-84-B23C	Approach Slab Details
B115-94-03	Shoulder Barrier Expansion Joint Slider Plate Modifications
B115-94-04	Concrete Shoulder Barrier Details

E2. MOBILIZATION AND DEMOBILIZATION

- E2.1 Description
- This Specification covers all operations relating to the mobilization and demobilization of the Contractor to the Site, as specified herein.
 - 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.

E2.2 Scope of Work

E2.2.1 The Work under this specification shall include but not be limited to:

- (a) Mobilizing and demobilizing on-site Work facilities.
- (b) Supplying, setting up, laying out, and removing site office facilities as detailed in E4 "Office Facilities".

E2.3 Materials

- (a) All materials supplied under this Specification shall be of a type approved by the Contract Administrator and shall be subject to inspection and testing by the Contract Administrator.
- (b) The Contractor shall be responsible for the supply, safe storage and handling of all materials as set forth in this Specification. All materials shall be handled in a careful and workmanlike manner, to the satisfaction of the Contract Administrator.

E2.4 Equipment

- (a) All equipment shall be of a type acceptable to the Contract Administrator and shall be kept in good working order.

E2.5 Construction Methods

E2.5.1 Layout of On-Site Work Facilities

- (a) The Contractor shall mobilize all on-site Work and other temporary facilities.
- (b) Upon completion of construction activities, the Contractor shall remove all on-site Work and other temporary facilities.

E2.6 Cellular Telephone Communication

- (a) The Contractor's site supervisor is required to carry, at all times, a cellular telephone, with voice mail.

E2.7 Surface Restoration

- (a) Prior to construction, inspect the grassed, pavement and gravel surfaces within and adjacent to the Site with the Contract Administrator to record the current condition. After construction and Site cleanup is complete, re-inspect the condition with the Contract Administrator.
- (b) Restoration of grassed areas damaged as a result of construction activities shall be restored in accordance with CW 3510. Restoration of grassed areas will not be measured for payment and shall be included as part of the Work being done.
- (c) Pavement damaged as a result of construction activities shall be restored in accordance with CW 3230 and CW 3410. Restoration of the pavement will not be measured for payment and shall be included as part of the Work being done.
- (d) Gravel surfacing damaged as a result of construction activities shall be restored in accordance with CW 3150. Restoration of the gravel surfacing will not be measured for payment and shall be included as part of the Work being done.

E2.8 Measurement and Payment

- (a) The Work associated with "Mobilization and Demobilization" shall be paid for on a Lump Sum basis, as accepted by the Contract Administrator.
- (b) Mobilization and demobilization will be paid for at a percentage of the contract Lump Sum Prices, as specified herein. These percentages shall be as follows:
 - (i) 30% when Contract Administrator is satisfied that construction has commenced.
 - (ii) 60% when Substantial Performance has been met.
 - (iii) 10% upon completion of the project.

E3. OFFICE FACILITIES

- E3.1 The Contractor shall supply office facilities meeting the following requirements:
- (a) The building shall be conveniently located near the site of the Work.
 - (b) The building shall have a minimum floor area of 25 square metres, a height of 2.4m with a window and a door entrance with a suitable lock.
 - (c) The building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between either 16-18°C or 24-25°C.
 - (d) The building shall be adequately lighted with fluorescent fixtures and have a minimum of three wall outlets.
 - (e) 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 12 chairs.
 - (f) 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.
 - (g) 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.
 - (h) Drinking water shall be available from the date of commencement of the Work to the date of Total Performance.
- E3.2 The Contractor shall be responsible for all installation and removal costs, all operating costs, and the general maintenance of the office facilities.
- E3.3 The office facilities will be provided from the date of the commencement of the Work to the date of Total Performance.
- E3.4 Measurement and Payment
- (a) The Work associated with "Office Facilities" will be paid for under the Work for "Mobilization and Demobilization" and no additional measurement or payment will be made.

E4. TRAFFIC CONTROL

- E4.1 Further to clauses 3.6 and 3.7 of CW 1130:
- (a) In accordance with the Manual of Temporary Traffic Control in Work Areas on City Streets, the Contractor ("Agency" in the manual) is responsible to provide all temporary Traffic Control. The Contractor has the option of using his own forces or providing the services through a Subcontractor. If using the services of a Subcontractor refer to D12 - Subcontractor List.
- E4.2 Further to clause 3.7 of CW1130:
- E4.2.1 Before proceeding with Mobilization to Site or any lane closures, the Contractor must submit a proposed Traffic Management Plan (Drawing or Sketch) to the Contract Administrator for review and approval at least ten (10) business days prior to the initial closure. The Contractor must submit a revised Traffic Management Plan to the Contract Administrator for review and approval at least three (3) business days prior to any adjustments. The Contract Administrator is to be notified of lane closures at least three (3) business days prior to closures.
- E4.2.2 The Contractor shall be restricted to a maximum of one lane closure in each of the Northbound and Southbound directions at all times.
- E4.2.3 The Contractor shall maintain a minimum of one lane of traffic southbound and one lane of traffic northbound during their respective construction times.

- E4.2.4 One pedestrian sidewalk and ambulance/emergency vehicle access must be maintained at all times.
- E4.2.5 Winnipeg Transit service shall be maintained at all times.
- E4.3 Measurement and Payment
- (a) The Work associated with lane closures, signage, and traffic management will be paid for at a Lump Sum price under "Traffic Control" as accepted by the Contract Administrator.

E5. CONCRETE DECK SURFACE AND MISCELLANEOUS REPAIRS

E5.1 Description

- (a) This Specification shall cover all concrete repairs to the bridge deck surface, approach slabs, traffic barriers, sidewalks, abutment backwalls, and wingwalls as required.
- (b) The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E5.2 Materials

E5.2.1 General

- (a) The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification. All materials shall be new and within the recommended shelf-life, as approved by the Contract Administrator.

E5.2.2 Concrete Mix Design Requirements

- (a) The Contractor shall submit a concrete mix design statement to the Contract Administrator that reflects the specified performance properties of the concrete. The mix design statement shall contain all the information as outlines on the concrete mix design statement as shown on the Manitoba Ready Mix Concrete Association website (www.mrmca.com). In addition, the mix design statement must indicate the expected method of placement (buggies, chute, or pump) methods which are to be used. The method of placement must include a clear description of the pumping methods (line, vertical drop, length of hose, etc.).
- (b) The Supplier shall submit directly, in confidence, to the City of Winnipeg, the concrete mix design for the concrete type specified herein. The purpose of this confidential submission will be for record keeping purposes only. The concrete mix design shall contain a description of the constituents and proportions, and at the minimum the following:
- (i) Cementitious content in kilograms per cubic metre or equivalent units, and type of cementitious materials;
 - (ii) Designated size, or sizes, of aggregates, and the gradation;
 - (iii) Aggregate source location(s);
 - (iv) Weights of aggregates in kilograms per cubic metre or equivalent units. Mass of aggregates is saturated surface dry basis;
 - (v) Maximum allowable water content in kilograms per cubic metre or equivalent units and the water/cementitious ratio;
 - (vi) The limits for slump;
 - (vii) The limits for air content;
 - (viii) Quantity of other admixtures; and
- (c) The concrete mix design statement must be received by the Contract Administrator a minimum of ten (10) Business Days prior to the scheduled commencement of concrete placement. The concrete mix design must be received by the City of Winnipeg a minimum of five (5) Business Days prior to the scheduled commencement of concrete placement.

- (d) Any change in the constituent materials of any approved mix design shall require submission of a new concrete mix design statement, mix design, and mix design test data. If, during the progress of the Work, the concrete supplied is found to be unsatisfactory for any reason, including poor workability, the Contract Administrator may require the Contractor to make any necessary adjustments and associated resubmissions.

E5.2.3 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 accepted by the Contract Administrator at least five (5) 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 material shall be rejected by the Contract Administrator and replaced by the Contractor at his own expense.

E5.2.4 Concrete Repair Material

- (a) The Contractor shall be responsible for the design and performance of all concrete mixes supplied under this specification. Either ready mix concrete or proprietary repair mortars may be used having the following minimum properties to meet a Class C-1 exposure in accordance with CSA A23.1-14:
 - (i) Compressive Strength @ 28 days = 35 Mpa
 - (ii) Water / Cementing Materials Ratio = 0.4
 - (iii) Air Content: Category 1 per Table 4 of CSA A23.1-014.
- (b) Mix design for ready-mix concrete shall be submitted to Contract Administrator at least two weeks prior to concrete placing operations.
- (c) Any proposed proprietary repair mortar shall be subject to the approval of the Contract Administrator.
- (d) The temperature of all types of concrete shall be between 10°C and 25°C at discharge. Temperature requirement for mass concrete and concrete containing silica fume shall be between 10° and 18°C at discharge.
- (e) The concrete slump of all types of concrete shall be 100mm +/- 20mm.
- (f) The synthetic fibres shall be added to all types of concrete.
- (g) The volumetric resistivity of the concrete shall be maintained based on the anodes supplier requirement. Two concrete cylinders shall be cast from first batch of concrete pour for the volumetric resistivity test by the Contractor.

E5.2.5 Aggregates

- (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 may be 10 to 14 mm 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, an 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%.

(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.

E5.2.6 Formwork

- (a) Formwork materials shall conform to CSA Standard A23.1-04, and American Concrete Publication SP4, "Formwork for Concrete."
- (b) Boards used for formwork shall be fully seasoned and free from defects such as knots, warps, cracks, etc., which may mark the concrete surface.
- (c) No formwork accessories will be allowed to be left in place within 50 mm of the surface following form removal. Items to be left in place must be made from a non-rusting material or galvanized steel; and they shall not stain, blemish, or spall the concrete surface for the life of the concrete.
- (d) All formwork fastener holes drilled in to existing concrete deck must be filled with epoxy grout before casting concrete overlay.

E5.2.7 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 CI 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.

E5.2.8 Admixtures

- (a) Air entraining admixtures shall conform to the requirements of ASTM C260.
- (b) Chemical admixtures shall conform to the requirements of ASTM C494 or C1017 for flowing concrete.
- (c) All admixtures shall be compatible with all other constituents. The addition of calcium chloride, accelerators, and air-reducing agents will not be permitted.
- (d) Appropriate low range water reducing and/or superplasticizing admixtures shall be used in concrete containing silica fume. Approved retarders or set controlling admixtures may be used for concrete containing silica fume.

E5.2.9 Water

- (a) Water to be used for mixing and curing concrete or grout and saturating substrate shall conform to the requirements of CSA A23.1 and shall be free of oil, alkali, acidic, organic materials or deleterious substances.

E5.2.10 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.

E5.2.11 Synthetic Fibres

- (a) The synthetic fibres shall consist of 100% virgin polypropylene as accepted by the Contract Administrator. The dosage shall be designed by the Contractor to meet the requirements for post-cracking residual strength index (Ri) and fibre dispersion in accordance to the CHBDC CSA-S6-06, Fibre-Reinforced Structures, Clause 16.6.

E5.2.12 Curing Blankets

- (a) Curing blankets for wet curing shall be 100 percent polyester, 3 mm thick, white in colour. An approved product is "Mirafi Geotextile P150". Alternately, a 10 oz burlap, 5 mil polyethylene, curing blanket white in colour shall be used; "Curelap" manufactured by Midwest Canvas, together with a second layer of burlap, or equal as accepted by the Contract Administrator, in accordance with B7.

E5.2.13 Epoxy Grout

- (a) Epoxy grout for bonding agent and for expansion joint blockouts and grade adjustment concrete pours shall be one of the following approved products: Sternson Talygrout 100, Sika Sikadur 42, CPD Epoxy Grout by Specialty Construction Products, Meadows Rezi-Weld EG-96, or equal as accepted by the Contract Administrator, in accordance with B7.

E5.2.14 Epoxy Adhesive

- (a) Epoxy adhesive for concrete to steel bonding shall be one of the following approved products: Sternson ST432 or ST433, Dural Duralbond, Capper Capbond E, Sikadur 32 Hi-bond, Concessive 1001 LPL, Meadows Rezi-Weld 1000, or equal as accepted by the Contract Administrator, in accordance with B7.

E5.2.15 Reinforcing Steel

- (a) All reinforcing steel and dowels shall be Grade 316, stainless steel unless otherwise specified for all types of concrete repairs as specified in Section E5.4 of this Specification..
- (b) Reinforcing steel shall be deemed to include all reinforcing bars, tie-bars, and dowels.
- (c) Stainless steel, as shown on the Drawings, shall be a high-manganese, low-nickel, nitrogen-strengthened austenitic stainless steel. Stainless steel reinforcing shall meet or exceed the minimum requirements of ASTM A955M, 300 Series, minimum Grade 420, of the Types listed below "Type of Stainless Steel Reinforcing". Reinforcing deformations shall conform to the requirements of ASTM A615M. All hoods and bends shall be bent using pin diameters and dimension recommended by Reinforcing Steel Institute of Canada (RSIC), Manual of Standard Practice.
- (d) If, in the opinion of the Contract Administrator, any reinforcing steel provided for the concrete Works exhibit flaws in manufacture or fabrication, such material shall be immediately removed from the Site and replaced with acceptable reinforcing steel. No

additional costs will be applied to this Contract for the replacement of deficient reinforcing steel.

- (e) All reinforcing steel shall be straight and free from paint, oil, millscale, and injurious defects. Rust, surface seams or surface irregularities will not be cause for rejection, provided that the minimum dimensions, cross-sectional area, and tensile properties of a hand wire-brushed specimen are not less than the requirements of CSA Standard CAN/CSA G30. 18-M92 and ASTM A955M.

Types of Stainless Steel Reinforcing

Common or Trade Name	AISI Type	UNS Designation
Type 316 LN	316 LN	S31653
Type 2205	Duplex 2205	S31803
Type 2304	EnduraMet 2304	S32304

E5.3 Equipment

- E5.3.1 All equipment shall be a type approved by the Contract Administrator and shall be kept in good working order.

E5.4 Construction Methods

E5.4.1 Scope of Work

- (a) Repairing the bridge deck surface shall consist of these following types:
- (i) "Type 1 Repair - Surface (25 to 75 mm)"
 - (ii) "Type 2 Repair - Partial Depth (76 mm to Mid-Height of Top Rebar)"
 - (iii) "Type 3 Repair - Full Depth (Mid-Height of Top Rebar to 200 mm)"
- (b) Repairing the barriers, sidewalks, abutment backwall, wingwall, and approach slabs shall consist of these following types:
- (i) "Type 4 Repair - Surface (25 to 49 mm)"
 - (ii) "Type 5 Repair - Partial Depth (50 to 89 mm)"
 - (iii) "Type 6 Repair - Full Depth (90 to 150 mm)"
 - (iv) "Type 7 Repair (Barrier Top - Saw Cut)"

E5.4.2 Concrete Removal and Surface Preparation

- (a) The Contract Administrator will mark out areas on the deck, traffic barriers, sidewalk, abutment backwalls, wingwalls, and approach slabs requiring concrete repairs.
- (b) For Type 2, 3, 5, 6 and 7 repairs the deteriorated concrete around reinforcing shall be removed using a chipping hammer no heavier than 20 pounds so as not to damage the reinforcing steel.
- (c) Deck slab concrete is to be removed a minimum of 25 mm or to the depth of deterioration, whichever is greater. If reinforcing is not exposed this will be considered a Type 1 Repair - Surface (25 to 75 mm). If the removals exceed 75 mm, however and less than half the bar diameter is exposed, concrete shall be removed only up to half the bar diameter. This will be considered a Type 2 Repair - Partial Depth (76 mm to Mid-height of Top Rebar). The resulting surface is to be rough with minimum amplitude of 6 mm a maximum frequency of 15 mm.
- (d) Concrete shall be removed a minimum of 25 mm behind reinforcing steel bars if more than half the bar diameter is exposed, this will be considered a Type 3 Repair - Full Depth (Mid-Height of Top Rebar to 200 mm). The resulting surface is to be rough with minimum amplitude of 6 mm a maximum frequency of 15 mm.

- (e) Traffic barrier, sidewalk, abutment backwall, wingwall and approach slab concrete is to be removed a minimum of 25 mm or to the depth of deterioration, whichever is greater. If reinforcing is not exposed this will be considered a Type 4 Repair - Surface (25 to 49 mm). If the removals exceed 50 mm, however and less than half the bar diameter is exposed, concrete shall be removed only up to half the bar diameter. This will be considered a Type 5 Repair - Partial Depth (50 to 89 mm). The resulting surface is to be rough with minimum amplitude of 6 mm a maximum frequency of 15 mm.
- (f) Concrete shall be removed a minimum of 25 mm behind reinforcing steel bars if more than the bar diameter is exposed, this will be considered a Type 6 Repair - Full Depth (90 to 150 mm). The resulting surface is to be rough with minimum amplitude of 6 mm a maximum frequency of 15 mm.
- (g) Type 7 Repair (Barrier Top – Saw Cut) shall be considered only at the top of the traffic barriers where delamination or spall exists at the vicinity of the traffic barrier posts. Concrete shall be removed to below the anchor bolt depth minimum 175 mm from top of barrier.
- (h) The resulting surface is to be rough with minimum amplitude of 6mm a maximum frequency of 15mm. If reinforcing steel bars are damaged during saw cutting or concrete removal, the damaged reinforcing steel bars shall be replaced with dowels as shown on the drawings.
- (i) Limits of the repair area are to be saw cut 20 mm deep to provide a well-defined interface and bonding surface with the existing sound concrete.
- (j) All reinforcing steel and prepared concrete surfaces shall be sandblasted. Surface preparation type shall be SP-6.
- (k) Epoxy coated reinforcing steel in the deck, approach slabs, sidewalks and barriers shall be touched up with approved epoxy paint.

E5.4.3 Mixing and Placing Concrete

- (a) The Contract Administrator must be notified at least twenty-four (24) hours prior to placing concrete so that an adequate inspection may be made of the prepared concrete substrate surface and related works. Placement without required prior notification will not be allowed.
- (b) Equipment for mixing or conveying the concrete shall be thoroughly flushed with clean water prior to commencement of the repair operation. All equipment and processes are subject acceptance by the Contract Administrator.

E5.4.4 Concrete Temperature

- (a) The temperature of the concrete as placed shall be as low as practicable and in no case greater than 27°C.

E5.4.5 Curing

- (a) All patches shall be wet cured for a minimum of three (3) days unless otherwise approved by the Contract Administrator.

E5.4.6 Hot Weather Concreting

- (a) General
 - (i) The requirements of this section shall be applied during hot weather, i.e., air temperatures forecast to go higher than 27°C during placing.
 - (ii) Concrete at discharge shall be at as low a temperature as possible, preferably as low as 15°C, but not above 25°C. Concrete containing silica fume shall be between 10°C minimum and 18°C maximum at discharge. Aggregate stockpiles should be cooled by water sprays and sun shades.
 - (iii) The Contractor shall use cold water and/or ice in the mix to keep the temperature of the fresh concrete down, if required. Ice may be substituted for a portion of the mixing water; provided it has melted by the time mixing is completed.

- (iv) Form and conveying equipment shall be kept as cool as possible before concreting by shading them from the sun, painting their surfaces white and/or the use of water sprays.
 - (v) Sun shades and wind breaks shall be used as required during placing and finishing.
 - (vi) Work shall be planned so that concrete can be placed as quickly as possible to avoid "cold joints".
 - (vii) The Contract Administrator's acceptance is necessary before the Contractor may use admixtures such as retardants to delay setting, or water reducing agents to maintain Workability and strength, and these must appear in the Mix Design Statement submitted to the Contract Administrator.
 - (viii) Hot weather curing shall follow immediately after the finishing operation.
- (b) Hot-Weather Curing
- (i) When the air temperature is at or above 25°C, curing shall be accomplished by fog misting and by using saturated absorptive fabric, in order to achieve cooling by evaporation.
- (c) Job Preparation
- (i) When the air temperature is forecast to rise to 25°C or higher during the placing period, provisions shall be made by the Contractor for protection of the concrete in place from the effects of hot and/or drying weather conditions. Under severe drying conditions, the formwork, reinforcement, and concreting equipment shall be protected from the direct rays of the sun or cooled by mist fogging and evaporation, to the satisfaction of the Contract Administrator.

E5.5 Quality Control

- E5.5.1 All workmanship and 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 specified Work. The Contractor shall be wholly responsible for the control of all operations incidental hereto notwithstanding any inspection or acceptance 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.
- E5.5.2 The Contractor shall be responsible for all concrete testing, including but not limited to making test cylinders, transporting cylinders to an independent certified testing laboratory of his choice, storage, curing, breaking, and providing written reports of the concrete test results to the Contract Administrator. The quality control testing shall meet the minimum testing requirement for the specified frequency and test procedure as described in Table 1. All testing shall be completed by qualified personnel who are certified at the time of testing as ACI CASA-Based Concrete Field Testing Technician – Grade 1, and shall be conducted at the point of discharge into the forms.
- E5.5.3 If Ready Mix Concrete is being used, and loads are frequently being rejected, or strength results are not to specifications, the Contract Administrator, on 24 hour notice, may refuse permission for further use of the Ready Mix Supplier.
- E5.5.4 Concrete
- (a) Compressive Strength Tests
 - (i) A "Strength Test" shall consist of the compression tests of four standard test specimens, sampled, made, cured, and tested in accordance with CSA Standard Specifications as referenced with modifications as indicated. One cylinder shall be tested at seven days. One cylinder shall be tested at fourteen days. The 28 day test result shall be the average of the strengths of the remaining two specimens. Additional cylinders may be cast, at the discretion of the Contract Administrator or Contractor.
 - (b) Sampling
 - (i) Sampling of concrete shall be carried out in accordance with CSA A23.2-1C.

- (ii) When a concrete pump is used to place concrete, sampling shall be at the end of the discharge hose.
- (c) Test Cylinders
 - (i) Making and curing concrete test cylinders shall be carried out in accordance with CSA A23.2-3C, except that the time for cylinders to reach the testing laboratory shall be between 20 and 48 hours. The test cylinders shall be cast by the Contractor in standard CSA approved moulds. The Contractor shall provide properly designed temperature-controlled storage boxes for test cylinders, as specified in Section 7.3.2.1 of CSA A23.2-3C, for a period of at least 24 hours, and further protection from adverse weather and mishandling until removed from the site. The Contractor shall provide a max-min thermometer for each storage box and record site curing temperatures for all test cylinders. Storage in a site office trailer that is used by the Contractor's personnel during the first 24 hour storage period will not be permitted. Storage facilities shall be provided, installed, and approved by the Contract Administrator before any concrete is placed.
 - (ii) The Contractor shall deliver the test cylinders to an independent CSA certified testing laboratory. Handling and transporting of the cylinders shall be in accordance with CSA 23.2-3C. No extra laboratory curing time will be allowed for cylinders that are delivered late to the laboratory. A copy of the test results shall be forwarded to the Contract Administrator within 2 days of the break date.
 - (iii) Test cylinders will be tested in compression in accordance with CSA-A23.2-9C.
 - (iv) If the test cylinders were allowed to freeze or were otherwise mishandled resulting in unreliable strength test results, the Contract Administrator may reject the affected portions of the Work, unless core-testing, at the Contractor's expense, confirms the in-situ strength of the concrete.
- (d) Slump
 - (i) Slump tests shall be completed in accordance with CSA A23.2-5C.
- (e) Air Content
 - (i) Air content tests shall be completed in accordance with CSA A23.2-4C.
- (f) Failure to Meet Slump or Air Content Specifications
 - (i) In the event that slump and/or air content are outside the specified tolerance range, as determined by the Contractor's or the Contract Administrator's testing, the Contract Administrator may accept adjustments of the deficient condition as an alternate to rejection provided adjustments are made within the maximum time allowed as specified. Concrete that does not meet the specifications will be rejected after the maximum time is exceeded.

E5.5.5 Quality Assurance

- (a) Quality assurance testing may be carried out by the Contract Administrator and the costs for breaking and provision of concrete test cylinder reports will be paid for by the City.
- (b) The Contract Administrator shall be afforded full facilities for the random quality assurance inspection and testing that may be carried on to the concrete itself and/or the constituent materials. This includes at the worksite and any plant used for the manufacture of concrete. The facilities shall be adequate in the opinion of the Contract Administrator to permit proper sampling of but not limited to, making of test cylinders and testing slump and air content. The proper storage of all site cast concrete cylinders in accordance with the relevant specifications is the responsibility of the Contractor and shall be provided prior to any concrete pour.
- (c) The results of the quality assurance testing carried out by the Contract Administrator will serve to monitor and review the quality control program of the Contractor.
- (d) Additional tests will be required if the results are borderline or widely variable. In case of an unacceptable result, one check test will be permitted.

- (e) All materials supplied by the Contractor to be permanently incorporated in the structure are subject to testing by the Contract Administrator and subject to the Contract Administrator's approval prior to their use in construction. Concrete cylinders, slump tests and all other field tests considered necessary shall be made by the Contract Administrator. The Contractor shall assist the Contract Administrator in the performance of these tests as often during the processes of mixing and depositing concrete as the Contract Administrator shall direct. The Contractor shall be responsible for removing and replacing all defective concrete at his own expense.
- (f) There shall be no charge to the City for materials taken by the Contract Administrator for testing purposes.

E5.6 Measurement and Payment

E5.6.1 The concrete repairs on the deck surface will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Concrete Deck Surface and Miscellaneous Repairs". The area to be paid for will be the total number of square metres of concrete deck surface repairs installed in accordance with the specification, classified as either:

- (a) "Type 1 Repair – Surface (25 to 75 mm)";
- (b) "Type 2 Repair - Partial Depth (76 to Mid-Height of Top Rebar)";
- (c) "Type 3 Repair - Full Depth (Mid-Height of Top Rebar Depth to 200 mm)";

accepted and measured by the Contract Administrator.

E5.6.2 The concrete repairs on the traffic barriers, sidewalks, abutment backwalls, wingwalls, and approach slab surfaces will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Concrete Deck Surface and Miscellaneous Repairs". The area to be paid for will be the total number of square metres of concrete miscellaneous repairs installed in accordance with the specification, classified as either:

- (a) "Type 4 Repair - Surface (25 to 49 mm)";
- (b) "Type 5 Repair - Partial Depth (50 to 89 mm)";
- (c) "Type 6 Repair - Full Depth (90 to 150 mm)";
- (d) "Type 7 Repair (Barrier Top – Saw Cut)"

accepted and measured by the Contract Administrator.

E5.6.3 No cost will be associated for the reinforcing steel supply, placement, and doweling for Type 7 Repair. It will be included and will be paid for under "Type 7 Repair (Barrier Top – Saw Cut)" and no additional measurement and payment will be made.

**Table 1
CONCRETE TESTING REQUIREMENTS**

TEST	STANDARD REFERENCE	MANITOBA STANDARD	MINIMUM FREQUENCY
Ready-Mix Concrete			
Sampling	CSA A23.2-1c		One complete test and set of cylinders for compressive strength testing for one out of every eight (8) m ³ of concrete placed including temperature, air content and slump.
Temperature	ASTM C 1064		
Compressive Strength	CSA A23.2-3C CSA A23.2-9c	MRB-C405	
Air Content by Pressure Method	CSA A23.2-4C	MRB-C403	
Slump	CSA A23.2-5C	MRB-C402	
Rapid Chloride Permeability	ASTM C 1202	<1500 Coulomb @ 28 Day	Two concrete cylinders for each test shall be cast from first batch of concrete pour.
Air Void Parameters	ASTM C 457	5-8% @ 28 Days	
Volumetric Resistivity Test	ASTM D 257	Shall be matched with anodes supplier requirement	

E6. EMBEDDED GALVANIC ANODES

E6.1 Description

- (a) This Section shall cover the installation for embedded galvanic anodes for corrosion mitigation of concrete deck surface repairs and for mitigation in technically sound deck concrete.
- (b) The Work to be done by the Contractor under this Section shall include the furnishing of all superintendence, overhead, labour, material, equipment, tools, supplies and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E6.2 References

- (a) ACI/ICRI 1999 Concrete Repair Manual
- (b) ACI Guideline No. 222 – Corrosion of Metals in Concrete
- (c) CAN/CSA A23.1 Standard for Repair Mortars, Concrete and Bonding Agents
- (d) CAN/CSA G30.18-M92 (R1998) Billet-Steel Bar for Concrete Reinforcement
- (e) ASTM B418-95a Standard Specification for Cast and Wrought Galvanic Zinc Anodes
- (f) G30.3-M1983 (R1998) Cold-Drawn Steel Wire for Concrete Reinforcement

E6.3 Embedded Anodes for Concrete Partial and Full Depth Repairs

E6.3.1 Materials

- (a) Embedded galvanic anodes shall be Galvashield® XPT by Vector Corrosion Technologies (204) 489-6300 or approved equal. All anodes shall compliance with ASTM B418 and the galvanic anodes shall be alkali-activated and shall not be contained intentionally added chloride. Anodes shall be supplied by the Contractor.
- (b) Low resistivity bed grout shall be Portland cement based material with suitable electrical conductivity, supplied by the Contractor. Non-conductive repair materials such as epoxy, urethane, or magnesium phosphate shall not be permitted.
- (c) Deliver, store, and handle all materials in accordance with the manufacturer's instructions.

E6.3.2 Construction Methods

- (a) Cleaning and Repair of Reinforcing Steel
 - (i) Clean exposed reinforcing steel of rust, mortar, etc. to provide sufficient electrical connection and mechanical bond. If significant reduction in the cross section of the reinforcing steel has occurred, replace or install supplemental reinforcing as directed by the Contract Administrator.
 - (ii) Secure loose reinforcing steel by tying tightly to other bars with steel wire.
- (b) Galvanic Anode Installation
 - (i) The Contract Administrator will determine the location of all anodes. Galvanic anodes shall be installed around the perimeter of the repair area with an approximate spacing of 500 mm. Each repair area with exposed reinforcing shall have a minimum of one (1) anode. In no case shall the distance between anodes exceed 600 mm.
 - (ii) Provide sufficient clearance between the anode and the substrate to allow repair material (Concrete) to encase the anodes.
 - (iii) Secure the galvanic anodes as close as possible to the patch edge using the anode tie wires. The tie wires shall be wrapped around the cleaned reinforcing steel and twisted tight to allow little or no free movement.
 - (iv) If the anode is to be tied onto a single bar, or if less than 50 mm of concrete cover is expected, place anode beside or beneath the bar and secure to clean reinforcing steel. In locations marked for Type 2 Repair or Type 5 Repair (Partial Depth), where the reinforcing steel bars are not fully exposed, ensure

additional concrete is removed around the bars only where anodes are to be installed, ie. ensure that the bar is exposed enough so tie wires can be wrapped around it twisted tight to allow little or no free movement.

- (v) If sufficient concrete cover exists, the anode may be placed at the intersection between two bars and secured to each clean bar.
 - (vi) Set the anode in a bed of low resistivity grout if the Concrete to be used is determined by the anode supplier to have too high an electrical resistance.
- (c) Electrical Continuity
- (i) Confirm electrical connection between anode tie wire and reinforcing steel by measuring DC resistance (ohm, Ω) with a multi-meter.
 - (ii) Confirm electrical continuity of the exposed reinforcing steel within the repair area. If necessary, electrical continuity shall be established with steel tie wire.
 - (iii) Electrical continuity is acceptable if the DC resistance measure with the multi-meter is less than 1 ohm (Ω).
- (d) Concrete Replacement
- (i) Following normal concrete repair procedures, complete the repair, taking care not to create voids within the repair. Refer to Section E5 Concrete Deck Surface and Miscellaneous Repairs.
- (e) Clean Up
- (i) The Contractor shall maintain the Sites of Work in a tidy condition and free from the accumulation of waste and debris.

E6.4 Measurement and Payment

E6.4.1 Corrosion Mitigation Anodes

- (a) The supply and installation of corrosion mitigation anodes will be measured on a unit basis and paid for at the Contract Unit Price per Each anode for "Corrosion Mitigation Anodes Supply and Installation". The number to be paid for will be the total number of anodes installed in accordance with the specification, accepted and measured by the Contract Administrator.

E7. SUPPLY AND PLACEMENT OF SEALER/HEALER

E7.1 Description

- (a) This section outlines the requirements for the application of the concrete sealer to concrete in the following locations;
 - (i) Sealer/Healer to the Deck Slab (Roadway Surface).
 - (ii) Sealer/Healer to the Approach Slabs (Roadway Surface).

E7.2 References

- (a) American Society for Testing and Materials International, (ASTM).
 - (i) C672/C672M Standard Test Method for Scaling Resistance of Concrete Surfaces Exposed to De-icing Chemicals.
- (b) International Concrete Repair Institute.
 - (i) Guideline No. 03732, Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.

E7.3 Submittals

- (a) Site mock-up: The Contractor is to prepare and install one (1) test panel for each of the proposed products listed in this specification as well as equivalent mock ups for any alternatives proposed, for confirmation of performance, construction sequencing and standard of acceptance. These test panels are to be completed in accordance with this specification and prior to commencing with the project. The City acceptance of site mock-

up is required prior to starting works. The location of these test panels are to subject to agreement with the Contract Administrator.

E7.4 Delivery, Storage and Handling

- (a) Deliver, handle, store and protect materials of this section in accordance with manufacturer's recommendations.
- (b) Protect products from freezing.

E7.5 Site Conditions

E7.5.1 Site Environmental Requirements

- (a) Ensure substrate temperature at time of installation is in accordance with manufacturer's printed instructions.
- (b) Apply coating during dry weather. Concrete surface shall be completely dry before application of Sealer/Healer. Allow surfaces to dry minimum of 3 days after rainfall or cleaning before applying further coats.
- (c) Protect plants and vegetation which might be damaged by water repellents.
- (d) Protect surfaces not intended to have application of water repellents.

E7.6 Precautions

- (a) Concrete sealers contain flammable solvents. Extra precautions shall be taken in confined areas. Do not allow open flame or sparks in areas where the sealer is being used. Adequate ventilation must be provided when applying.
- (b) Wear protective clothing and prevent direct contact with skin. The special precautions recommended by the manufacturer shall be rigidly followed where hazardous materials are included.
- (c) The solvent is flammable; do not allow open lights, flames, sparking motors or pilot lights in the vicinity. Smoking near the solvent is to be forbidden.

E7.7 Materials

- (a) The Sealer/Healer employed shall be the following.
 - (i) T-78 Crack Sealer, low viscosity methyl methacrylate resin system. (Transpo Industries, Inc.) or approved equal in accordance with B7;
 - (ii) MasterSeal® 630, Reactive methacrylate resin for sealing cracks and concrete decks (Master Builders Solutions by BASF) or approved equal in accordance with B7.

E7.7.1 Should the Contractor wish to use an alternative product the Contractor shall submit to the Contract Administrator as part of the bid package, in writing, the sealer to be employed coupled with manufacturer's printed product literature, specifications, and application instructions. Any alternative should either meet or exceed the specification of the products listed above.

E7.7.2 The sealers shall be delivered to the job site in the manufacturer's original unopened containers.

E7.7.3 Containers shall include manufacturer's labels indicating; the supplier, name of material, formula or specification number (if applicable), date of manufacture and shelf life.

E7.8 Manufacturer's Instructions

- (a) Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

E7.9 Preparation

- (a) All concrete surfaces to which a water repellent is to be applied are to be prepared by sand blasting or shot blasting and blown clean by oil free compressed air. Follow surface preparation procedures outlined under the manufacturer's specification.
- (b) Areas which exhibit delamination, spalling, or scaling shall be repaired by removing the deteriorated concrete to the depth required to obtain a sound surface. Complete repairs in accordance with applicable sections.
- (c) The substrate surface shall have a profile designation of ICRI-CSP-3 as defined by the International Concrete Repair Institute.
- (d) No traffic (vehicular or pedestrian) shall be allowed on the prepared surface.
- (e) The surface of the concrete must be allowed to dry continuously following a heavy rainfall for at least 72 hours at a minimum of 10°C.
- (f) If the concrete surface becomes wet and subsequently dries, the surface preparation and cleaning procedure must be repeated.
- (g) Service life of the sealer is primarily dependent upon good service preparation; therefore preparation is of the utmost importance.

E7.10 Application

E7.10.1 General

- (a) Protect adjacent work areas and finish surfaces from damage during sealer application.
- (b) Slab temperature to be obtained immediately prior to sealer application, to confirm that the slab temperature is within allowable range as dictated by manufacturer's specifications.
- (c) Remove all oils, grease, dirt and wax solutions from surface, using a non-solvent degreaser/detergent. Remove all debris from working surface. Prepare components as per manufacturer's instructions.
- (d) Manufacturer's representative must be on site during initial applications and provide written acceptance of methods and equipment employed.
- (e) Adequate cure time must be allocated to new concrete prior to installation of the sealer.
- (f) Consult manufacturer for specified concrete cure period.
- (g) Allow Contract Administrator to view empty sealer containers after every application process. Do not discard containers without prior authorization from Contract Administrator.
- (h) The system manufacturer/Contractor shall assume responsibility for performance of the sealer.
- (i) Coverages rates where shown will vary depending on surface profile and porosity. Dilution of the products is strictly forbidden. Unless otherwise specified they are provided in a factory blended state ready for installation. The introduction of thinners will not be allowed and will jeopardize performance.

E7.10.2 T-78 Crack Sealer

- (a) Mixing
 - (i) T-78 must be mixed with the appropriate amount of powder hardener just prior to application. Air/substrate temperature determines the amount of powder hardener used. The appropriate amount of powder hardener to be added to one gallon of T-78 resin as per the manufacturer's guidelines. Using clean, dry plastic buckets and scoops; add powder hardener to T-78 and mix until dissolved (approximately one minute). A drill-mounted paddle mixer should be used for larger batches. Mixed T-78 must be used immediately.
- (b) Application

- (i) T-78 is applied in a gravity-fed process. The rate of application of T-78 resin should be approximately 100 – 150 ft²/gal. However, this will vary depending on the surface porosity, size, and quantity of cracks present in the area being treated.
- (ii) Apply the Sealer/Healer as many times as required to fill the crack to surface level allowing for settlement between applications. Pre-treatment application of Sealer/Healer in cracks along length of medium to wide cracks may be required to ensure adequate penetration.
- (iii) During application the concrete surface should be flooded with the resin, allowing sufficient time for penetration into the surface and complete filling of all cracks. Excess material should be redistributed using squeegees or brooms within five minute after application. The quantity of T-78 resin mixed at one time should be limited to five gallons.

E7.10.3 MasterSeal® 630

(a) Mixing

- (i) MasterSeal® 630 must be mixed with the appropriate amount of Master Top SRS 100HD just prior to application. Air/substrate temperature determines the amount as per the manufacturer's guidelines.

(b) Application

- (i) MasterSeal® 630 is applied as a flood coat in a gravity-fed process by broom or roller.
- (ii) Apply the sealer/healer as many times as required to fill the crack to surface level allowing for settlement between applications. Pre-treatment application of sealer/healer in cracks along length of medium to wide cracks may be required to ensure adequate penetration.
- (iii) During application the contents of the mixed batch should be immediately poured onto the substrate and worked into cracks by distributing with 1/2" to 3/4" (13-20 mm) nap solvent grade rollers or broom. Do not allow material to pond. Application rate is 100 ft²/gal (2.5 m²/L).
- (iv) Do not allow the mixed batch to remain in the mixing vessel. It is advisable to randomly broadcast a 30 mesh (600 µm), dry aggregate into the wet, uncured resin at the rate of approximately 4 lb/100 ft² (200 g/ m²).
- (v) Working time for MasterSeal® 630 is between 10 and 15 minutes once it has been applied to the substrate. Full cure to specification will be between 45 minutes and 1 hour.

E7.10.4 Cleaning

- (a) Use manufacturer recommended cleaning solvent. Clean equipment immediately after use.
- (b) Remove temporary coverings and protection of adjacent work areas. Remove over spray coating from windows or areas not intended to be coated with hot soapy water solution or a mild detergent cleaner.
- (c) Remove construction debris resulting from work in this section.
- (d) Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

E7.11 Coring for Sealer/Healer Penetration Check at Cracks.

- (a) Provide coring to confirm sealer/healer penetration at cracks. The result of penetration testing shall be subject to review and approval by the Contract Administrator. Minimum three (3) 100mm diameter cores, 100mm deep, shall be taken from each lane by the Contractor. The location of the cores shall be as directed by the Contract Administrator. The sealer/healer shall penetrate a minimum of 15mm deep into the cracks from the concrete surface. In each case of unsatisfactory results, the Contractor shall refill the cracks again until accepted by the Contract Administrator.

E7.12 Measurement and Payment

- (a) The supply and placement of sealer/healer shall be measured on an area basis and paid for at the Contract Unit Price per square metre for "Supply and Placement of Sealer/Healer". The area to be paid for will be the total number of square metres of Sealer/Healer applied in accordance with the specification, accepted and measured by the Contract Administrator.

E8. EXPANSION JOINTS REMOVAL AND REPLACEMENT

E8.1 Description

- (a) This Specification shall cover the removal of the existing expansion joints, supply, galvanizing, and installation of new expansion joints and miscellaneous steel items, as specified herein and 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 other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E8.2 Referenced Specifications and Drawings

- (a) The latest edition and subsequent revisions of the following:
 - (i) ASTM A108 – Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished;
 - (ii) ASTM A780 – Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings;
 - (iii) ASTM D412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension;
 - (iv) ASTM D471 – Standard Test Method for Rubber Property – Effect of Liquids;
 - (v) ASTM D573 – Standard Test Method for Rubber – Deterioration in an Air Oven;
 - (vi) ASTM D1149 – Standard Test Methods for Rubber Deterioration – Cracking in an Ozone Controlled Environment;
 - (vii) ASTM D2240 – Standard Test Method for Rubber Property – Durometer Hardness;
 - (viii) CAN/CSA G40.21 – General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel;
 - (ix) CAN/CSA W59 – Welded Steel Construction (Metal Arc Welding);
 - (x) CAN/CSA G164-M92 – Hot Dip Galvanizing of Irregularly Shaped Articles; and
 - (xi) Ontario Provincial Standard Specification OPSS 1210 – Material Specification for Deck Joint Assemblies.

E8.3 Scope of Work

- (a) The Work under this Specification shall involve:
 - (i) Removal and disposal of existing expansion joints and expansion joints concrete blockouts;
 - (ii) Supplying, galvanizing and installing expansion joints at the deck including sidewalks and traffic barriers;
 - (iii) Supply and placement of the new expansion joints concrete blockouts;
 - (iv) Supplying and installing the expansion joint seals;
 - (v) Completing a watertight verification of the expansion joint seals; and
 - (vi) Removing, galvanizing, and reinstalling the expansion joint sliding plates, mounting plates, and other miscellaneous steel items.

E8.4 Submittals

- (a) The Contractor shall submit to the Contract Administrator for review and approval, at least ten (10) Business Days prior to the commencement of any scheduled Work on the Site, a proposed schedule, including methods and sequence of operations.
- (b) The Contractor shall submit to the Contract Administrator for review and approval, at least twenty (10) Business Days prior to the scheduled commencement of any fabrication, the proposed Shop Drawings showing all fabrication details and any proposed field splice details of the steel components of the expansion joints. The complete expansion joint shop fabrication and installation shall be done by or under the direct supervision of a trained factory representative, who shall also be responsible for the expansion joint installation procedure.
- (c) The Contractor shall submit to the Contract Administrator for review and approval, at least ten (10) Business Days prior to the commencement of any Work on Site, the proposed approved materials to be used.

E8.5 Materials

E8.5.1 General

- (a) All materials supplied under this Specification shall be of a type approved by the Contract Administrator and shall be subject to inspection and testing by the Contract Administrator.
- (b) The Contractor shall be responsible for the supply, safe storage and handling of all materials as set forth in this Specification. All materials shall be handled in a careful and workmanlike manner, to the satisfaction of the Contract Administrator.

E8.5.2 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 the latest edition and all subsequent revisions of CAN/CSA-A23.1.
- (b) Store materials under cover in a dry and clean location off the ground.

E8.5.3 Expansion Joints

- (a) Expansion joints shall be a strip seal type where and as shown on the Drawings.
- (b) Expansion joints shall be Wabo Joint System "STM-600" strip seal system for the South Abutment and "STM900" strip seal system for the North Abutment, as shown on the Drawings, or equal as accepted by the Contract Administrator, in accordance with B7.
- (c) Expansion joints shall have fabricated cover plates and slider plates as shown on the Drawings.
- (d) The seals at each joint shall be made out of neoprene, as accepted by the Contract Administrator and shall be supplied in one continuous piece, separate from the steel extrusions or joint. No shop or field splicing will be allowed in the seals.
- (e) All fasteners and hardware of the modular bridge deck expansion joints shall be galvanized.

E8.5.4 Steel

- (a) Steel supplied for the fabrication of the expansion joints shall conform to the requirements of CAN/CSA G40.21, Grade 300W, or equal as accepted by the Contract Administrator, in accordance with Substitutes. They shall be galvanized after shop fabrication in accordance with CAN/CSA G164-M92 to a minimum net retention of 610 g/ m².

E8.5.5 Steel Extrusions

- (a) Steel for the extrusions shall conform to the requirements of CAN/CSA G40.21, Grade 230G minimum. They shall be galvanized after shop fabrication in accordance with CAN/CSA G164-M92 to a minimum net retention of 610 g/ m².

- E8.5.6 Anchor Studs
- (a) Anchor studs shall conform to the requirements of ASTM A108, Grade Designation 1020 and shall be galvanized.
- E8.5.7 Expansion Joint Blockout Steel Reinforcing
- (a) Reinforcing steel for expansion joint blockout shall conform to CAN/CSA G30.18, Grade 400W.
 - (b) Reinforcing steel shall be deemed to include all reinforcing bars, tie-bars, stirrups and dowels.
 - (c) Reinforcing steel for expansion joint blockouts shall be hot dip galvanized in accordance with CAN/CSA G164 M92 to a minimum net retention of 610 g/ m².prior to installation.
- E8.5.8 Miscellaneous Steel Items
- (a) Rods, cover plates, brackets and washer plates, slider plates, mounting plates, and all other associated steel items shown on the Drawings shall be fabricated from steel conforming to the requirements of CAN/CSA G40.21, Grade 300W and shall be galvanized in accordance with CAN/CSA G164 M92 to a minimum net retention of 610 g/ m².
 - (b) The existing sidewalk sliding plates and mounting plate shall be removed, receive surface preparation, hot dip galvanized, and reinstalled. Care shall be taken during concrete removal and removal of the plates to allow for their reuse. Existing mounting screw holes shall be re-tapped and new screws provided for reinstallation of the plates. Existing welded connections shall be carefully and accurately cut to allow reuse and re-welding of the expansion joint assemblies and mounting plates.
 - (c) The existing shoulder and median traffic barrier sliding plates and mounting plates shall be touched up with field applied galvanizing. Existing mounting screw holes shall be re-tapped and new screws provided for reinstallation of the plates.
 - (d) The northbound north approach shoulder barrier sliding plate shall be straightened, have rough edges ground smooth, and shall be touched up with field applied galvanizing.
 - (e) Spacing of temporary anchor bolts and levelling of expansion joint shall be done as per manufacture instructions.
- E8.5.9 Galvanizing Touch-up and Field Applied Galvanizing
- (a) Field-applied galvanizing, to touch-up damaged hot-dip galvanizing, metallizing, or field welds, shall be done with self-fluxing, low temperature, zinc-based alloy rods in accordance with ASTM A780.
 - (b) Approved products are:
 - (i) Galvalloy as manufactured by Metalloy Products Company, P.O. Box No. 3093, Terminal Annex, Los Angeles, California; and
 - (ii) Welco Gal-Viz Galvanizing Alloy, as manufactured by Thermocote Welco, Highway 161 York Road, Kings Mountain, North Carolina or approved equal as accepted by the Contract Administrator, in accordance with B7.
- E8.5.10 Welding
- (a) Full penetration groove weld, ground smooth and touch up with galvanize shall be done for expansion joint extrusion splice.
 - (b) Welding shall be of a low oxygen classification. Manual electrodes shall be E7016 or E7018. All welding shall be in accordance with CAN/CSA W59.
- E8.5.11 Prefomed Neoprene Joint Seals
- (a) Further to E58.5.3(e)E58.5.3(f), the prefomed neoprene expansion joint seals shall be manufactured from a vulcanized elastomeric compound using crystallization resistant polychloroprene (neoprene) as the only polymer.

- (b) The preformed neoprene expansion joint seals shall meet the requirements of the latest edition and all subsequent revisions of Ontario Provincial Standard Specification (OPSS) 1210 "Material Specification for Preformed Neoprene Joint Seals", and as amended herein. All tests will be made on specimens prepared from the extruded seals.

E8.5.12 Epoxy Adhesive

- (a) If required, epoxy adhesive for concrete to steel bonding shall be one of the following approved products: Sternson ST432 or ST433, Dural Duralbond, Capper Capbond E; Sikadur 32 Hi-bond, Concessive 1001 LPL, Meadows Rezi-Weld 1000; or approved equal as accepted by the Contract Administrator, in accordance with B7.

E8.6 Construction Methods

E8.6.1 Fabrication

- (a) No fabrication shall commence until acceptance of the Shop Drawings from the Contract Administrator has been obtained.
- (b) Care shall be taken to ensure that all members are straight and flat and free from twists, bends, and distortions due to welding. The units shall be shop assembled and checked for matching of sliding surfaces, correct cross-fall and skew, as well as accurate positioning and alignment of supporting brackets. The Contractor shall exercise care in the handling of all units during shipping and loading operations prevent twists, bends, and warping.
- (c) Matching expansion joint assemblies shall be assembled and bolted together for shipping.
- (d) Expansion joint assemblies shall be shop checked for fit and match marked.
- (e) All metal surfaces to be galvanized shall be cleaned thoroughly of rust, rust scale, mill scale, dirt, paint, and other foreign material by commercial sand, grit or shop blasting, and pickling prior to galvanizing. Heavy deposits or oil and grease shall be removed with solvents prior to blasting and pickling.
- (f) In no case shall weldments be substituted for extrusion shapes.
- (g) The zinc coating shall be adherent, continuous, and reasonably smooth. It shall be free from imperfections such as blisters; gritty or uncoated areas; acid, black spots, or dross particle adhering to the coating; or other imperfections inconsistent with good commercial galvanizing practice. Globules of zinc that will interfere with the intended use of the material will not be permitted.
- (h) The colour of the galvanizing shall be consistent and continuous.

E8.6.2 Removal of existing expansion joint cover plates

- (a) Remove shoulder barrier and median barrier expansion joint sliding cover plates.
- (b) Remove sidewalk sliding plates and sidewalk mounting plates at expansion joint.

E8.6.3 Installation of New Expansion Joints

- (a) The Contractor shall install expansion joints as shown on the Drawings and shall be responsible for the correct matching and seating of parts. The expansion joints shall be checked for accurate matching of sliding plates with the bridge deck expansion joints installed at the specified skews and crossfalls. One field splice in the length of each expansion joint is permitted.
- (b) The edges of the sidewalk expansion joint mounting plates shall be seal welded to the expansion joint angle as shown on the Drawings.

E8.6.4 Galvanizing Touch-up Prior to Placement of Concrete

- (a) Any areas of damaged galvanizing and field welds are to receive field applied galvanizing.
- (b) Surfaces to receive field-applied galvanizing shall be cleaned using a wire brush, a light grinding action, or mild blasting to remove loose scale, rust, paint, grease, dirt, or

other contaminants. Preheat the surface to 315°C and wire brush the surface during preheating. Rub the cleaned preheated area with the repair stick to deposit an evenly distributed layer of zinc alloy. Spread the alloy with a wire brush, spatula, or similar tool. Field-applied galvanizing shall be blended into existing galvanizing of surrounding surfaces and shall be buffed and polished if required to match the surrounding surfaces. Care shall be taken to not overheat surfaces beyond 400°C and to not apply direct flame to the alloy rods.

- (c) The process is to be repeated as required to achieve a thickness comparable to original galvanizing, as approved by the Contract Administrator.

E8.6.5 Placement of Concrete at Expansion Joints

- (a) Concrete at expansion joints shall meet all requirements in accordance with Section E5 of this specification.
- (b) The expansion joint assemblies shall be set in position to match existing expansion joint elevations, and secured rigidly in place, such that they will remain true to line and elevation during and after concreting, in accordance with approved details as shown on the Shop Drawings. Provide survey of existing expansion joints as required.
- (c) Care shall be taken during consolidation of the concrete to ensure that there are no voids in the concrete under and around the expansion joint components and associated reinforcing steel.
- (d) Before concreting, the expansion joint opening shall be set to give the correct width for the mean concrete temperature of the deck. The gap width shall be obtained from the Temperature Width Adjustment Table provided on the Drawings, as approved on-site by the Contract Administrator immediately prior to the start of concrete placement.
- (e) Immediately in front of concrete placement at the expansion joints, all metal contact surfaces between the expansion joint and concrete shall be coated with epoxy adhesive.
- (f) After the concrete has set, the wet cure shall be done for one hundred twenty (120) hours, and after the removal of the Manufacturer's temporary clamping channels, epoxy grout shall be used to fill any associated bolt holes.

E8.6.6 Installation of Seal

- (a) A permanent seal at each expansion joint unit shall be installed as one continuous piece after completion of all concreting operations, to the satisfaction of the Contract Administrator.
- (b) Only upon completion of all concrete cleanup operations the Contractor shall open up the seating areas and prepare them for installation of the seals.
- (c) The installation of the expansion joint seals shall be completed with the closure of maximum one lane of traffic at a time.

E8.6.7 Watertight Verification of Expansion Joint, Joint Seals, and Concrete Blockouts

- (a) Prior to installing the expansion joint and sidewalk cover plates, the Contractor shall dyke off the bridge deck expansion joints and maintain a minimum of 75 mm of water over all areas of the seal for a period of not less than four (4) hours, with no leakage. Any and all leaks shall be corrected, using mechanical or other adjustment of the bridge deck expansion joints to the satisfaction of the Contract Administrator. In no case shall caulk or other temporary devices or materials be used to seal leaks in the expansion joints. The Contract Administrator's decision in this regard shall be final.
- (b) Prior to commencing the test, the Contractor shall remove all expansion joints forming materials and debris from the deck and from the substructure units below.

E8.6.8 Re-Installation of Expansion Joint Cover Plates

- (a) Hot-dip galvanizing shall be done for existing shoulder barrier slide plates, existing median barrier slide plates, existing sidewalk slide plates and existing sidewalk mounting plates.

- (b) Existing shoulder barrier mounting plates and all median barrier mounting plates shall be sand blasted before re-install sliding plates.
- (c) Adjust height of existing sidewalk mounting plates and sliding plates to provide free movement at expansion joints and smooth transition to sidewalk.
- (d) All existing sliding plates and mounting plates shall be reinstalled at existing locations.
- (e) The thermal expansion and contraction gap shall be maintained as shown on drawings.

E8.6.9 Fabrication Warranty

- (a) Before final acceptance of the expansion joints by the Contract Administrator, the bridge deck expansion joints supplier shall provide the City with a written warranty stating that they will perform satisfactorily within the design range of movement and under the design loads for a period of five (5) years from the date of issuance of the Certificate of Acceptance (Certificate of Acceptance is issued after the successful completion by the Contractor of the Project's standard warranty period), provided that the expansion joints have been properly installed, acceptable to the Contract Administrator. The Supplier shall state that they have observed the installation and found it to be in accordance with their recommended procedure. The Supplier shall warranty the replacement of the expansion joints, including removal of the defective expansion joint assemblies and supply and installation of the replacement expansion joint, at no cost to the City, in the event that the joint does not perform satisfactorily within the design range of movement and under the design loads for a period of five (5) years from the date of issuance of the Certificate of Acceptance.

E8.6.10 Installation Warranty

- (a) The Contractor shall ensure that the expansion joints are installed in such a manner that will not void the fabrication warranty.
- (b) Similar to the expansion joint Supplier, and before final acceptance by the Contract Administrator, the Contractor shall warranty, in writing, the performance of the expansion joints and concrete expansion joint blockouts for a period of five (5) years from the date of issuance of the Certificate of Acceptance (Certificate of Acceptance is issued after the successful completion by the Contractor of the Project's standard warranty period). Provide in the warranty for the replacement of the expansion joints at no cost to the City, including all direct and indirect costs in the event that the expansion joints do not perform satisfactorily in the range of design movement and under the design loads for a period of five (5) years from the date of issuance of the Certificate of Acceptance.

E8.7 Quality Control

E8.7.1 General

- (a) All workmanship and all materials furnished and supplied under this Specification are subject to the 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.
- (b) The Contractor shall be wholly responsible for the control of all operations incidental thereto notwithstanding any inspection or acceptance that may have been previously given. The Contract Administrator reserves the right to reject any materials or works which are not in accordance with the requirements of this Specification.

E8.7.2 Access

- (a) The Contractor shall allow the Contract Administrator free access to all parts of the Work at all times. The Contractor shall supply samples to the Contract Administrator or his inspector for testing purposes as required. There will be no charge to the City for samples taken.

E8.7.3 Expansion Joint Seal Markings

- (a) All expansion joint seals shall be identified as to the Manufacturer by means of a continuous permanent mould mark. The mould marks shall be registered with the Contract Administrator and shall be used on all seals produced by the respective Manufacturer. The seal shall also be permanently marked, on the side of the seal, with the date of production and the batch/lot, at intervals of not more than 1.2 m.
- (b) The Contractor shall supply to the Contract Administrator a summary of the seals identifying the date of manufacture, the batch/lot, and the proposed installation location.

E8.7.4 Joint Seal Samples and Testing Procedures

- (a) The Contractor shall supply seal sample material at no charge to The City for quality control testing purposes. The samples will each be 1.5 m long. Each sample will represent not more than three expansion joint seals of the same size, lot, and make and shall be continuous with same until sampled by the Contract Administrator. As soon as the seals to be used in the joint assemblies have been manufactured, they shall be available to the Contract Administrator for sampling.
- (b) Testing procedures will be in accordance with the latest revisions of the methods indicated in the table below.
- (c) All materials failing to meet the Specification requirements will be rejected.
- (d) Lots rejected may be culled by the supplier and, upon satisfactory evidence of compliance with the Specifications, will be accepted.

**Table 2
TEST FREQUENCY REQUIREMENTS**

Property	Physical Requirements	Test Procedure*
1. Tensile Strength	Minimum 13.5 MPa	ASTM D412 OPSS 1210.07.03.01.02
2. Elongation at Break	Minimum 250%	ASTM D412 OPSS 1210.07.03.01.02
3. Hardness, Type A Durometer	55: +7 Points -5 Points	ASTM D2240 OPSS 120.07.03.01.03
4. Oven aging Test 70 Hours at 100°C Reduction in Tensile Strength Reduction in Elongation Increase in Hardness	Maximum 20% Maximum 20% Maximum 10 Points	ASTM D573
5. Permanent Set at Break	Maximum 10%	ASTM D412
6. Low Temperature Stiffening Hardness, Type A Durometer	Maximum 15 Points	ASTM D2240 OPSS 1210.07.03.01.03
7. Oil Swell, ASTM Oil No. 3 70 H at 40°C (wipe with toluene to remove surface contamination)	45 max	ASTM D471
8. Ozone Resistance	No Cracks	ASTM D1149
9. **Safe Compressibility Test (Z min.) Bridge Seal - < 63.5 mm > 63.5 mm	Minimum 50% Minimum 55%	OPSS 1210.07.03.01.04
10. **Pressure Generation at 15% Deflection	Minimum 20 kPa	OPSS 1210.07.03.01.04
11. **Recovery 22 h at -28°C 70 h at - 10°C 70 h at + 100°C	Minimum 80% No Cracking Minimum 88% Splitting or Minimum 85% Sticking	OPSS 1210.07.03.01.05

E8.8 Measurement and Payment

- (a) Supplying, galvanizing, and installing expansion joints shall be measured by linear metre and paid for at the Contract Unit Price Per Unit for the "Expansion Joints Removal and Replacement", which price shall be paid in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification, accepted and measured by the Contract Administrator.
- (b) No cost will be associated for supply and placement for expansion joint blockout concrete, reinforcing steel for blockout, removal and reinstall of the existing expansion joint steel cover plates (sliding plates and mounting plates) and galvanizing of steel cover plates. It will be included and will be paid for under "Expansion Joints Removal and Replacement", and no additional measurement and payment will be made.

E9. REMOVAL OF REMAINING EXISTING EPOXY WEARING SURFACE

E9.1 Description

- (a) This specification shall cover all the operations relating to the removal and disposal of the remaining epoxy wearing surface.
- (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 work as hereinafter specified.

E9.2 Construction Method

- (a) The Contractor shall submit a removal procedure plan to the Contract Administrator for review and approval. The removal procedure plan shall be submitted at least five (5) days prior to starting this work.
- (b) The Contractor may choose to make a field trip to understand potential removal procedure.

E9.3 Measurement and Payment

- (a) Removal of the remaining existing epoxy wearing surface will be measured on an area basis and paid for at the Contract Unit Price for the "Removal of Remaining Existing Epoxy Wearing Surface". The area to be paid for will be the total number of square metres for removal and disposal in accordance with this specification, accepted and measured by the Contract Administrator.

E10. GRADE ADJUSTMENT OF NORTH APPROACH SLAB AND BRIDGE DECK

E10.1 Description

- (a) This Specification shall cover all operations relating to the grade adjustment of the north approach slab and bridge deck including the expansion joint blockouts, and all concreting operations related to, the construction of structural concrete works as specified herein 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 work as hereinafter specified.

E10.2 Scope of Work

- (a) Survey to confirm existing and proposed road profile and crossfall at the grade adjustment areas as shown on the drawings. Coordinate with survey of existing expansion joints.
- (b) Supplying and Placing Concrete for Grade Adjustment on North Approach Slab and Bridge Deck.
- (c) Supplying and Placing Concrete for Expansion Joint Blockouts.

E10.3 Construction Methods

E10.3.1 General

- (a) It is intended that this Section cover all construction Work including survey associated with grade adjustment operations.
- (b) All concrete shall meet the requirement of specification E5 Concrete Deck Surface and Miscellaneous Repairs.

E10.3.2 Expansion Joint Blockout and Approach/Deck Grade Adjustment Screeds

(a) Setting Screeds

- (i) The Contractor may choose to use a mechanical or non-mechanical screed or straight edge and hand tools to strike the surface of the grade adjustment concrete at the north approach slab and bridge deck.
- (ii) The Contractor shall complete the survey to confirm the existing grade and the proposed grade for the grade adjustment on north approach slab and bridge deck.
- (iii) The Contractor shall adjust screeds to maintain uniform thickness. Adjust screed heights to plan elevations or that other elevation as may be determined by the Contract Administrator in the field. Screed bases shall be permitted to be drilled and grouted into existing concrete and shall be adjustable to achieve the required elevations.
- (iv) The screed chairs and screed rail supports shall be spaced to prevent deflections of the screed bars or screed rails during screeding operations.

E10.3.3 Finishing of Concrete Surfaces

(a) Finishing Operations for Unformed Surfaces

- (i) The Contractor shall ensure that sufficient personnel are provided for the finishing of the approach slab and bridge deck surfaces. In the event that the depositing, vibrating, and screeding operations progress faster than the concrete finishing, the Contractor shall reduce the rate of concrete placement or cease the depositing of concrete until the exposed area of unfinished concrete has been satisfactorily minimized. The Contract Administrator's judgement in this matter shall be final and binding on the Contractor. All loads of concrete that exceed the 120 minute discharge time limit during the delay, while the finishing operations catch up, shall be rejected.
- (ii) All unformed concrete surfaces, shall be finished as outlined hereinafter.
- (iii) Screeding of all unformed concrete surfaces shall be performed by the sawing movement of a straightedge along wood or metal strips or form edges that have been accurately set at required elevations.
- (iv) Screeding shall be done on all concrete surfaces as a first step in other finishing operations. Screeding shall be done immediately after the concrete has been vibrated.
- (v) After screeding, the concrete shall not be worked further until ready for floating. Floating shall begin when the water sheen has disappeared. Concrete surfaces after floating shall have a uniform, smooth, granular texture.
- (vi) After final floating, the slab surface shall receive coarse transverse scored texture by drawing a steel tined broom uniformly across the slab surface, to the satisfaction of the Contract Administrator.

E10.3.4 General Curing Requirements

- (a) Freshly finished concrete shall be moist cured by immediately applying wet curing blankets to the exposed concrete surface following finishing operations for at least five (5) consecutive days thereafter. Construction joints shall be cured by means of wet curing blankets only.

E10.3.5 Measurement and Payment

- (a) Structural Concrete for Grade Adjustment on Approach Slab and Bridge Deck

- (i) Supplying and placing structural concrete shall be measured on an area basis and paid for at the Contract Unit Price per square metre for “Concrete Deck Surface”, performed in accordance with this Specification and accepted by the Contract Administrator, which price shall be paid in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work. The area to be paid for will be the total number of square metres of concrete deck surface installed in accordance with the specification, classified as “Type 1 Repair – Surface (25 to 75 mm)” for the Deck Slab and “Type 4 Repair – Surface (25 to 49 mm)” for the Approach Slab. All other items shall be considered incidental to the work.
 - (ii) No cost will be associated for the grade adjustment survey. It shall be included and paid for under “Type 1 Repair – Surface (25 to 75 mm)” for the Deck Slab and “Type 4 Repair – Surface (25 to 49 mm)” for Approach Slab and no additional measurement and payment will be made.
- (b) Structural Concrete for Expansion Joint Blockout
- (i) Supplying and placing structural concrete for Expansion Joint Blockout shall be included and paid under “Expansion Joints Removal and Replacement”, which price shall be paid in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification, accepted and measured by the Contract Administrator.
 - (ii) No cost will be associated for supply and placement for expansion joint blockout concrete and reinforcing steel for blockout. It shall be included and paid for under “Expansion Joints Removal and Replacement”, and no additional measurement and payment will be made.