



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 469-2007**

**2007 BRIDGE MAINTENANCE - MISCELLANEOUS CONCRETE & ASPHALT DECK  
REPAIRS**

## TABLE OF CONTENTS

### PART A - BID SUBMISSION

Form A: Bid	1
Form B: Prices	4
Form G1: Bid Bond and Agreement to Bond	6
Form G2: Irrevocable Standby Letter of Credit and Undertaking	8

### PART B - BIDDING PROCEDURES

B1. Contract Title	1
B2. Submission Deadline	1
B3. Enquiries	1
B4. Addenda	1
B5. Substitutes	2
B6. Bid Components	2
B7. Bid	3
B8. Prices	4
B9. Qualification	4
B10. Bid Security	5
B11. Opening of Bids and Release of Information	5
B12. Irrevocable Bid	6
B13. Withdrawal of Bids	6
B14. Evaluation of Bids	6
B15. Award of Contract	7

### PART C - GENERAL CONDITIONS

C0. General Conditions	1
------------------------	---

### PART D - SUPPLEMENTAL CONDITIONS

#### General

D1. General Conditions	1
D2. Scope of Work	1
D3. Contract Administrator	1
D4. Contractor's Supervisor	1
D5. Notices	1

#### Submissions

D6. Authority to Carry on Business	2
D7. Safe Work Plan	2
D8. Insurance	2
D9. Performance Security	3

#### Schedule of Work

D10. Commencement	3
D11. Total Performance	3
D12. Liquidated Damages	4

#### Control of Work

D13. Job Meetings	4
D14. Prime Contractor – The Workplace Safety and Health Act (Manitoba)	4
D15. AUTHORIZED WORK ON PRIVATE PROPERTY	4
D16. Layout of the Work	4
D17. Cooperation With Others	5
D18. Environmental Planning	5

#### Measurement and Payment

D19. Payment	5
--------------	---

#### Warranty

D20. Warranty	5
---------------	---

Form H1: Performance Bond	6
Form H2: Irrevocable Standby Letter of Credit	8

**PART E - SPECIFICATIONS**

**General**

E1. Applicable Specifications and Drawings	1
E2. Detailed Traffic Control	1
E3. Asphalt Resurfacing Works	2
E4. Concrete Deck Surface and Concrete Expansion Joint Nosing Repairs	4
E5. Embedded Galvanic Anodes	7
E6. Specifications For Hot-poured Rubberized Asphalt Waterproofing	9

## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

- B1.1 2007 BRIDGE MAINTENANCE - MISCELLANEOUS CONCRETE & ASPHALT DECK REPAIRS

### **B2. SUBMISSION DEADLINE**

- B2.1 The Submission Deadline is 12:00 noon Winnipeg time, July 5, 2007.
- B2.2 Bids determined by the Manager of Materials to have been received later than the Submission Deadline will not be accepted and will be returned upon request.
- B2.3 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

### **B3. ENQUIRIES**

- B3.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.
- B3.2 If the Bidder finds errors, discrepancies or omissions in the Bid Opportunity, or is unsure of the meaning or intent of any provision therein, the Bidder shall notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.
- B3.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator to all Bidders by issuing an addendum.
- B3.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Bid Opportunity will be provided by the Contract Administrator only to the Bidder who made the enquiry.
- B3.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B3 unless that response or interpretation is provided by the Contract Administrator in writing.

### **B4. ADDENDA**

- B4.1 The Contract Administrator may, at any time prior to the Submission Deadline, issue addenda correcting errors, discrepancies or omissions in the Bid Opportunity, or clarifying the meaning or intent of any provision therein.
- B4.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.
- B4.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.
- B4.2.2 The Bidder is responsible for ensuring that he has received all addenda and is advised to check the Materials Management Branch internet site for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B4.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

## **B5. SUBSTITUTES**

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

## **B6. BID COMPONENTS**

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

- (c) Form G1: Bid Bond and Agreement to Bond, or  
Form G2: Irrevocable Standby Letter of Credit and Undertaking, or  
a certified cheque or draft;
- B6.2 Further to B6.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B5.
- B6.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Bid.
- B6.4 The Bid shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.
- B6.4.1 Samples or other components of the Bid which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid.
- B6.5 Bidders are advised not to include any information/literature except as requested in accordance with B6.1.
- B6.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, may result in the Bid being determined to be non-responsive.
- B6.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B6.8 Bids shall be submitted to:  
The City of Winnipeg  
Corporate Finance Department  
Materials Management Branch  
185 King Street, Main Floor  
Winnipeg MB R3B 1J1
- B7. BID**
- B7.1 The Bidder shall complete Form A: Bid, making all required entries.
- B7.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his own name, his name shall be inserted;
  - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
  - (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
  - (d) if the Bidder is carrying on business under a name other than his own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.
- B7.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B7.2.
- B7.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.
- B7.4 Paragraph 12 of Form A: Bid shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his own name, it shall be signed by the Bidder;

- (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
- (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, 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.

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

B7.4.2 All signatures should be witnessed, except where a corporate seal has been affixed.

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

## **B8. PRICES**

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

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

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

## **B9. QUALIFICATION**

B9.1 The Bidder shall:

- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba; and
- (b) be financially capable of carrying out the terms of the Contract; and
- (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.

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

- (a) be responsible and not be suspended, debarred or in default of any obligations to the City (a list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>).

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

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

## **B10. BID SECURITY**

- B10.1 The Bidder shall provide bid security in the form of:
- (a) a bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in the form included in the Bid Submission (Form G1: Bid Bond and Agreement to Bond); or
  - (b) an irrevocable standby letter of credit, in the amount of at least ten percent (10%) of the Total Bid Price, and undertaking issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form included in the Bid Submission (Form G2: Irrevocable Standby Letter of Credit and Undertaking); or
  - (c) a certified cheque or draft payable to "The City of Winnipeg", in the amount of at least fifty percent (50%) of the Total Bid Price, drawn on a bank or other financial institution registered to conduct business in Manitoba.
- B10.1.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.
- B10.1.2 All signatures on bid securities shall be original, and shall be witnessed or sealed as required.
- B10.2 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly executed by the successful Bidder and the performance security furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.
- B10.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B10.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.
- B10.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.
- B10.3 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Bid Opportunity.

## **B11. OPENING OF BIDS AND RELEASE OF INFORMATION**

- B11.1 Bids will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Branch, or in such other office as may be designated by the Manager of Materials.
- B11.1.1 Bidders or their representatives may attend.
- B11.1.2 Bids determined by the Manager of Materials, or his designate, to not include the bid security specified in B10 will not be read out.
- B11.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.
- B11.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract Amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.



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

## **B12. IRREVOCABLE BID**

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

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

## **B13. WITHDRAWAL OF BIDS**

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

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

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

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

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

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

## **B14. EVALUATION OF BIDS**

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

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

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

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

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

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

## **B15. AWARD OF CONTRACT**

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

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

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

- (a) the prices exceed the available City funds for the Work;
- (b) the prices are materially in excess of the prices received for similar work in the past;
- (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
- (d) only one Bid is received; or
- (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.

B15.3 Subject to B15.2, where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid.

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

## **PART C - GENERAL CONDITIONS**

### **C0. GENERAL CONDITIONS**

- C0.1 The *General Conditions for Construction* (Revision 2006 12 15) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Branch internet site at <http://www.winnipeg.ca/matmgt>.
- C0.2 A reference in the Bid Opportunity to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for Construction*.

## **PART D - SUPPLEMENTAL CONDITIONS**

### **GENERAL**

#### **D1. GENERAL CONDITIONS**

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

#### **D2. SCOPE OF WORK**

D2.1 The Work to be done under the Contract shall consist of asphalt deck repairs, concrete girder repairs and placement of waterproofing membranes.

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

- (a) Asphalt planing
- (b) Asphalt removal on girders
- (c) Removal of deteriorated concrete
- (d) Install anodes
- (e) Expansion joint resetting
- (f) Concrete forming and placing
- (g) Waterproofing membrane placing
- (h) Asphalt placing

#### **D3. CONTRACT ADMINISTRATOR**

D3.1 The Contract Administrator is Dillon Consulting Limited, represented by:

Mr. Mark Doucet, EIT  
200 – 895 Waverley Street  
Winnipeg, Manitoba R3T 5P4  
Telephone No. (204) 453-2301  
Facsimile No. (204) 452-4412

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

#### **D4. CONTRACTOR'S SUPERVISOR**

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

#### **D5. NOTICES**

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

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

- D5.3 All notices of appeal to the Chief Administrative Officer shall be sent to the following address or facsimile number:

The City of Winnipeg  
Chief Administrative Officer Secretariat  
Attn: Chief Administrative Officer  
Administration Building, 3rd Floor  
510 Main Street  
Winnipeg MB R3B 1B9  
Facsimile No.: (204) 949-1174

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

The City of Winnipeg  
Corporate Services Department  
Legal Services Division  
Attn: City Solicitor  
185 King Street, 3rd Floor  
Winnipeg MB R3B 1J1  
Facsimile No.: (204) 947-9155

## **SUBMISSIONS**

### **D6. AUTHORITY TO CARRY ON BUSINESS**

- D6.1 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.

### **D7. SAFE WORK PLAN**

- D7.1 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.
- D7.2 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 Branch internet site at <http://www.winnipeg.ca/matmgt>.

### **D8. INSURANCE**

- D8.1 The Contractor shall provide and maintain the following insurance coverage:
- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
  - (b) automobile liability insurance for owned automobiles used for or in connection with the Work in the amount of at least two million dollars (\$2,000,000.00) at all times during the performance of the Work and until the date of Total Performance;

- D8.2 Deductibles shall be borne by the Contractor.
- D8.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in C4.1 for the return of the executed Contract.
- D8.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least fifteen (15) Calendar Days prior written notice to the Contract Administrator.

## **D9. PERFORMANCE SECURITY**

- D9.1 The Contractor shall provide and maintain performance security until the expiration of the warranty period in the form of:
- (a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; or
  - (b) an irrevocable standby letter of credit issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form attached to these Supplemental Conditions (Form H2: Irrevocable Standby Letter of Credit), in the amount of fifty percent (50%) of the Contract Price; or
  - (c) a certified cheque or draft payable to "The City of Winnipeg", drawn on a bank or other financial institution registered to conduct business in Manitoba, in the amount of fifty percent (50%) of the Contract Price.
- D9.1.1 Where the performance security is in the form of a certified cheque or draft, it will be deposited by the City. The City will not pay any interest on certified cheques or drafts furnished as performance security.
- D9.2 If the bid security provided in his Bid was not a certified cheque or draft pursuant to B10.1(c), the Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of letter of intent and prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.

## **SCHEDULE OF WORK**

### **D10. COMMENCEMENT**

- D10.1 The Contractor shall not commence any Work until he is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.
- D10.2 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 D6;
    - (ii) evidence of the workers compensation coverage specified in C6.15;
    - (iii) the Safe Work Plan specified in D7;
    - (iv) evidence of the insurance specified in D8;
    - (v) the performance security specified in D9;
  - (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.

### **D11. TOTAL PERFORMANCE**

- D11.1 The Contractor shall achieve Total Performance by August 31, 2007.

D11.2 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.

D11.3 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.

## **D12. LIQUIDATED DAMAGES**

D12.1 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 four-hundred-and-twenty-five dollars (\$425) per Calendar Day for each and every Calendar Day following the day fixed herein for Total Performance during which such failure continues.

D12.2 The amount specified for liquidated damages in D12.1 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.

D12.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

## **CONTROL OF WORK**

### **D13. JOB MEETINGS**

D13.1 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.

D13.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

### **D14. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

D14.1 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).

### **D15. AUTHORIZED WORK ON PRIVATE PROPERTY**

D15.1 The Contractor shall confine his works to the right of way or easements as much as possible. Where Work is required to be done on or accessed through private property, the Contractor shall obtain written permission from the property owner and provide a copy to the Contract Administrator.

### **D16. LAYOUT OF THE WORK**

D16.1 The Contract Administrator will provide the basic centrelines and an elevation of the Works.

D16.2 The Contractor shall be responsible for the true and proper layout of the Work and for the correctness of the location, levels, dimensions, and alignment of all aspects of the Work. He shall provide all required instruments and competent personnel for performing all layouts.

D16.3 The Contract Administrator shall be notified at least one (1) working day prior to any Work being commenced in order to have the option to check and review all elevations and layouts at his discretion.

D16.4 The Contractor shall carefully protect and preserve all benchmarks, stakes, and other items used in giving the basic data supplied by the Contract Administrator. Any such benchmarks or stakes removed or destroyed by the Contractor, without the consent of the Contract Administrator, shall be replaced by the Contract Administrator at the expense of the Contractor.

#### **D17. COOPERATION WITH OTHERS**

D17.1 The Contractor's attention is directed to the fact that other Contractor's, the personnel of Utilities and the staff of the City may be working on the structure, approach roadways, adjacent roadways or right-of-ways. 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 Contractor under the terms of this Contract.

#### **D18. ENVIRONMENTAL PLANNING**

D18.1 The Contractor shall conduct his operations in accordance with all current 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 approvals and permits for his operations.

#### **MEASUREMENT AND PAYMENT**

##### **D19. PAYMENT**

D19.1 Further to C12, effective January 1, 2007 the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

#### **WARRANTY**

##### **D20. WARRANTY**

D20.1 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.



**FORM H1: PERFORMANCE BOND**  
(See D9)

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 dated the

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, for:

BID OPPORTUNITY NO. 469-2007

2007 BRIDGE MAINTENANCE - MISCELLANEOUS CONCRETE & ASPHALT DECK 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)

\_\_\_\_\_  
(Name of Principal)

Per: \_\_\_\_\_ (Seal)

Per: \_\_\_\_\_

\_\_\_\_\_  
(Name of Surety)

By: \_\_\_\_\_ (Seal)  
(Attorney-in-Fact)

**FORM H2: IRREVOCABLE STANDBY LETTER OF CREDIT  
(PERFORMANCE SECURITY)  
(See D9)**

\_\_\_\_\_  
(Date)

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

RE: PERFORMANCE SECURITY - BID OPPORTUNITY NO. 469-2007

2007 BRIDGE MAINTENANCE - MISCELLANEOUS CONCRETE & ASPHALT DECK REPAIRS

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

\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

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

\_\_\_\_\_ Canadian dollars.

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

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

Partial drawings are permitted.

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

\_\_\_\_\_  
(Address)

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

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

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

\_\_\_\_\_  
(Date)

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

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

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

\_\_\_\_\_  
(Name of bank or financial institution)

Per: \_\_\_\_\_  
(Authorized Signing Officer)

Per: \_\_\_\_\_  
(Authorized Signing Officer)

## 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 Branch internet site at <http://www.winnipeg.ca/matmgt>.
- E1.2.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.2.3 Further to C2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.3 The following are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
B109-07-01	2007 Bridge Maintenance – Osborne Street Bridge at Assiniboine River– Miscellaneous Concrete & Asphalt Repairs – Sheet 1 of 2
B109-07-02	2007 Bridge Maintenance – Osborne Street Bridge at Assiniboine River– Miscellaneous Concrete & Asphalt Repairs – Sheet 2 of 2
B126-07-01	2007 Bridge Maintenance – St. James Street Bridge at Omand's Creek – Concrete Girder Repairs – Sheet 1 of 2
B126-07-02	2007 Bridge Maintenance – St. James Street Bridge at Omand's Creek – Concrete Girder Repairs – Sheet 2 of 2

#### E2. DETAILED TRAFFIC CONTROL

- E2.1 Description
- The Work covered under this item shall cover specific traffic control requirements.
  - 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 herinafter specified.
- E2.2 Notification
- The Contractor shall notify the City of Winnipeg Customer Services at 986-7472 forty-eight hours in advance of Work taking place at each of the sites. This call is necessary so that the public can be notified of impending lane closures.
- E2.3 Construction Methods
- E2.3.1 General
- The Contractor will be responsible for pedestrian and traffic control at the Site acceptable to the Contract Administrator.
  - For traffic control in the immediate Work area, the Contractor shall supply, erect, and maintain all applicable traffic control devices in accordance with the provision contained in the latest edition of the "Manual of Temporary Traffic Control in Work Areas on City Streets," issued by the City of Winnipeg.

- c) The Contractor shall provide and maintain flagmen in accordance with the above-mentioned manual.
- d) The Contractor shall take all other safety measures necessary to cope with any peculiar or unusual circumstances that have not been set out in the above-mentioned manual and shall, at all times, ensure that maximum protection is afforded to the road-user and that his operations in no way interfere with the safe operation of traffic.
- e) Improper signing will be sufficient reason for the Contract Administrator or Inspector to immediately shut down the entire job.
- f) Barricades supplied and installed by the Contractor in the performance of the Work must clearly show the name of the Contractor and the telephone number(s) at which he can be reached twenty-four (24) hours per day, seven (7) days per week.
- g) During the hours when the Contractor is not working, equipment and stockpiled materials shall be left in such a location so as not to interfere with or present a hazard to motorists or pedestrians

#### E2.3.2 Specific

- a) Osborne Street Bridge at Assiniboine River
  - (i) Contractor may close one lane of each of the north bound and south bound directions at a time.
  - (ii) Contractor to ensure that the bridge and roadway are clean and free of debris when they are opened.
  - (iii) Sidewalks shall remain open at all times.
- b) St. James Street Bridge at Omand's Creek
  - (i) Contractor may close one lane of each of the north bound and south bound directions at a time.
  - (ii) Contractor to ensure that the bridge and roadway are clean and free of debris when they are opened.
  - (iii) Sidewalks shall remain open at all times.

#### E2.4 Measurement and Payment

- (a) Traffic control will be paid on a lump sum basis at the Contract Lump Sum Price for the Items of Work, which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

##### **Items of Work**

##### Traffic Control

- (i) Osborne Street Bridge
- (ii) St. James Street Bridge

### **E3. ASPHALT RESURFACING WORKS**

#### E3.1 Description

- (a) The Work covered under this item shall include all operations relating to asphalt resurfacing Works in accordance with this Specification and as shown on the Drawings.
- (b) The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

#### E3.2 Materials

- (a) All materials shall be in accordance with Standard Construction Specification CW 3250-R6, CW 3410-R7 and CW 3450-R5.
- (b) Protection Board
  - (i) Protection board shall be compatible with the hot-poured rubberized asphalt waterproofing and intended for that purpose.

### E3.3 Equipment

- (a) All equipment shall be in accordance with Standard Construction Specification, CW 3410-R7 and CW 3450-R5.

### E3.4 Construction Methods

- (a) All construction methods shall be in accordance with Standard Construction Specification CW 3250-R6, CW 3410-R7 and CW 3450-R5 and as amended below.

#### E3.4.1 Additional Asphalt Removal on Girders

- (a) Additional asphalt removal may be required and shall be accomplished without damage to the concrete channel girders. This may require hand work in addition to planing. According to the original design drawings, the asphalt thickness is 50 mm deep overtop of the concrete girders.
- (b) The additional removal is required to the extent that inspection by the Contract Administrator of the girder surface by "sounding" is possible.

#### E3.4.2 Tack Coat

- (a) Application of tack coat onto the protection board is required if a protection board is used.

#### E3.4.3 Direction of Placement

- (a) The asphalt paving machine shall proceed in the same direction as the lap in the protection board.

#### E3.4.4 Asphalt Placement on Girders

- (a) Place asphalt to the grades shown on the drawings. Protect the hot-poured rubberized asphalt waterproofing when placing new asphalt. A protection board may be used.

### E3.5 Measurement and Payment

#### E3.5.1 Asphalt Removal

- (a) Planing of Pavement

Planing of pavement including on the girders will be measured and paid for in accordance with Standard Construction Specification CW 3450-R5. Planing of pavement will be measured on an area basis and paid for at the Contract Unit Price per square metre for the "Items of Work" listed here below. The area to be paid for will be the total number of square metres of existing pavement planed in accordance with this specification, accepted and measured by the Contract Administrator.

##### **Items of Work**

##### Planing of Pavement

- i) 0-50 m depth Asphalt

- (b) Additional Asphalt Removal on Girders

The additional removal of asphalt on the girders will not be measured. This item of Work will be paid for at the Contract Lump Sum Price per Site for the "Additional Asphalt Removal on Girders". in accordance with this specification, accepted by the Contract Administrator.

### E3.5.2 Construction of Asphaltic Concrete Overlay

Construction of asphaltic concrete overlay will be measured and paid for at the Contract Unit Price per tonne for the "Items of Work" listed here below, which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

#### **Items of Work**

##### Construction of Asphaltic Concrete Overlay

- i) Main Line Paving (Type IA)

## **E4. CONCRETE DECK SURFACE AND CONCRETE EXPANSION JOINT NOSING REPAIRS**

### E4.1 Description

- (a) This Specification shall cover all concrete repairs to the bridge deck top surface and construction of concrete expansion joint nosings as required prior to the installation of deck waterproofing and asphalt.
- (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.

### E4.2 Materials

#### E4.2.1 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.

#### E4.2.2 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.

#### E4.2.3 Concrete Repair Material

- (a) Concrete repair material shall be compatible with the concrete substrate and shall be of a rapid cure type to limit the overall length of the time of the lane closures.
- (b) The Contractor shall be responsible for the design and performance of all concrete mixes supplied under this specification. Either ready mix concrete or proprietary repair mortars may be used having the following minimum properties to meet a Class C-1 exposure in accordance with CSA A23.1-04:
  - (i) Compressive Strength @ 28 days = 35 MPa
  - (ii) Compressive Strength @ 1 day = 20 MPa
  - (iii) Water / Cementing Materials Ratio = 0.4
  - (iv) Air Content : Category 1 per Table 4 of CSA A23.1-04.
- (c) Mix design for ready-mix concrete shall be submitted to Contract Administrator at least two weeks prior to concrete placing operations.



- (d) Any proposed proprietary repair mortar shall be subject to the approval of the Contract Administrator.

#### E4.2.4 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 shall 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 5mm 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%.
  - (v) Tests of the coarse aggregate shall not exceed the limits for standard for requirements prescribed in CSA A23.1, Table 12, for concrete exposed to freezing and thawing.
- (c) Fine Aggregate
  - (i) Fine aggregate shall meet the grading requirements of CSA A23.1, Table 10, Gradation FA1.
  - (ii) Fine aggregate shall consist of sand, stone, screenings, other inert materials with similar characteristics or a combination thereof, having clean hard, strong, durable, uncoated grains free from injurious amounts of dust, lumps, shale, alkali, organic mater, loam, or other deleterious substances.
  - (iii) Tests of the fine aggregate shall not exceed the limits fro standard requirements prescribed in CSA A23.1, Table 12.

#### E4.2.5 Cementing Materials

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

#### E4.2.6 Admixtures

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

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

#### E4.2.7 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.

#### E4.2.8 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.

#### E4.2.9 Nelson D2L Deformed Bar Anchors

- (a) 10 mm Nelson D2L deformed bar anchors. If, in the opinion of the Contract Administrator, any reinforcing steel provided for the concrete works exhibits flaws in manufacture or fabrication, such material shall be immediately removed from the Site and replaced with acceptable reinforcing steel

#### E4.3 Equipment

- E4.3.1 All equipment shall be a type approved by the Contract Administrator and shall be kept in good working order.

#### E4.4 Construction Methods

##### E4.4.1 Concrete Removal and Surface Preparation

- (a) After removal of the existing asphalt and, or existing concrete nosings, the Contract Administrator will mark out areas requiring concrete repairs.
- (b) Concrete is to be removed a minimum of 50mm or to the depth of deterioration, whichever is greater. Concrete shall be further removed a minimum of 20mm behind reinforcing steel bars if more than half the bar diameter is exposed. The resulting surface is to be rough with a minimum amplitude of 6mm and a maximum frequency of 15mm.
- (c) Limits of the repair area are to be sawcut (undercut) 20 mm deep to provide a well-defined interface and bonding surface with the existing sound concrete.
- (d) All reinforcing steel and prepared concrete surfaces shall be sandblasted.
- (e) Epoxy coated reinforcing steel shall be touched up with approved epoxy paint.

##### E4.4.2 Install D2L Deformed Bar Anchors

- (a) Install the 10 mm D2L deformed bar anchors by welding to both the expansion joint extrusion and suitable adjacent exposed reinforcing steel. Bend the anchors as required to fit.

##### E4.4.3 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.

#### E4.4.4 Curing

- (a) All patches shall be wet cured and in accordance with CSA A 23.1-04, unless otherwise approved by the Contract Administrator.

#### E4.5 Quality Control

E4.5.1 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.

#### E4.6 Measurement and Payment

##### E4.6.1 Concrete Deck Surface and Concrete Nosing Repairs

The concrete repairs and nosings will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Concrete Deck Surface and Concrete Nosing Repairs". The area to be paid for will be the total number of square metres of concrete deck surface repairs and concrete nosings installed in accordance with the specification, accepted and measured by the Contract Administrator.

##### E4.6.2 Supply and Install Nelson D2L Deformed Bar Anchors

The supply and install Nelson D2L deformed bar anchors will be measured on an unit basis and paid for at the Contract Unit Price for "10 mm Nelson D2L Deformed Bar Anchors". The amount to be paid for will be the total number of units installed in accordance with the specification, accepted and measured by the Contract Administrator.

### E5. EMBEDDED GALVANIC ANODES

#### E5.1.1 Description

- (a) This Section shall cover the installation of embedded galvanic anodes for corrosion mitigation of surface concrete repairs and for corrosion mitigation in mechanically sound concrete.
- (b) The Work to be done by the Contractor under this Section 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.

#### E5.1.2 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

## E5.2 Embedded Anodes for Concrete Surface Repairs

### E5.2.1 Materials

- (a) Embedded galvanic anodes will be Galvashield® XP by Vector Corrosion Technologies (204) 489-6300. Anodes will be supplied by the City of Winnipeg, for pickup by the Contractor at the City of Winnipeg Bridge Yard, 849 Ravelston Ave. West. Upon completion of the Work, any extra anodes shall be returned to the City, and the Contractor will be required to deliver the extra anodes to the City of Winnipeg Bridge Yard.
- (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 manufacturer's instructions.

### E5.2.2 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 reinforcement as directed by the Contract Administrator.
  - (ii) Secure loose reinforcing steel by tying tightly to other bars with steel tie 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 will have a minimum of two (2) anodes. In no case shall the distance between anodes exceed 600 mm.
  - (ii) Provide sufficient clearance between anodes and substrate to allow repair material 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 25 mm of concrete cover is expected, place anode beneath the bar and secure to clean reinforcing steel.
  - (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 patch grout material to be used by the Contractor 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,  $\Omega$ ) 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 measured with multi-meter is less than 5  $\Omega$ .
- (d) Concrete Replacement

- (i) Following normal concrete repair procedures, complete the repair with the repair material, taking care not to create any air voids within the repair. Refer to Section E4 for concrete surface repair specifications.

E5.2.3 Clean Up

- (i) The Contractor shall maintain the Sites of Work in a tidy condition and free from the accumulation of waste and debris.

E5.3 Measurement and Payment

E5.3.1 Corrosion Mitigation Anodes

The supply and installation of corrosion mitigation anodes will be measured on a unit basis and paid for at the Contract Unit Price for the "Items of Work" listed here below, which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification, accepted and measured by the Contract Administrator.

**Items of Work**

Corrosion Mitigation Anodes

- i) Supply
- ii) Install

**E6. SPECIFICATIONS FOR HOT-POURED RUBBERIZED ASPHALT WATERPROOFING**

E6.1 Description

- (a) The Work covered under this item will consist of all operations related to the waterproofing of the concrete deck.
- (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.

E6.2 Materials

- (a) Rubberized asphalt waterproofing shall be American Hydrotech's Monolithic Membrane 6125 or approved equivalent.

E6.2.1 Elastomeric Sheet Membrane

- (a) The elastomeric sheet membrane shall be Elaso-Petrotech No. 240 or approved equivalent.

E6.2.2 Cement

- (a) Cement shall be Normal Portland Cement.

E6.2.3 Surface Conditioner

- (a) Surface conditioner, to be applied to the bridge deck, shall conform to the requirements of the manufacturer of the rubberized asphalt waterproofing.

E6.3 Construction Methods

#### E6.3.1 Melting On-Site

- (a) Cakes of rubberized asphalt waterproofing shall be melted in an approved double shell melter under continuous agitation until the material can be drawn free flowing and lump free from the melter.
- (b) The temperature of the rubberized asphalt waterproofing shall not exceed 218°C at any time during and entire melting procedure

#### E6.3.2 Application

- (a) The hot-poured rubberized asphalt waterproofing shall be applied on the bridge deck to the limits of the asphalt removal and placement as shown on the Plans.
- (b) The concrete surfaces onto which the hot-poured rubberized asphalt waterproofing is to be applied shall be thoroughly cleaned by means of gritblasting. All rough spots, ridges, and edges in the concrete surface resulting from protrusions of concrete aggregate or cement paste shall be removed by light chipping or grinding or other approved methods to leave a rubberized asphalt waterproofing, a final cleaning of the concrete surfaces shall be done using high velocity compressed air. The concrete surfaces shall be dry, clean, and free from frost, dust, dirt, and all foreign matter.
- (c) After the deck has been cleaned, it shall be covered with the surface conditioner. The quantity used shall be 160 mL/m<sup>2</sup>, or as recommended by the manufacturer. The surface conditioner shall be allowed to dry before the application of the waterproofing membrane
- (d) The rubberized asphalt waterproofing shall be brought to a temperature of between 190°C and 218°C, and then applied to the deck.
- (e) The application of the rubberized asphalt waterproofing shall be carried out under the supervision of experienced personnel.
- (f) The in-place thickness of hot-poured rubberized asphalt waterproofing shall not be less than 3 mm nor more than 5 mm.
- (g) The Contractor shall supply and install an approved heavy-duty elastomeric sheet membrane which is compatible with the hot-poured rubberized asphalt waterproofing material. The heavy-duty elastomeric sheet membrane shall be installed at the designated locations shown on the Plans. Installation of the heavy-duty elastomeric sheet membrane shall be in accordance with the manufacturer's recommendations.
- (h) The finished waterproofing membrane surface shall be lightly dusted with Normal Portland Cement. The quantity used shall be one bag of cement per 45 m<sup>2</sup>.

#### E6.4 Measurement and Payment

##### E6.4.1 Hot-Poured Rubberized Asphalt Waterproofing

Hot-poured rubberized asphalt waterproofing will be measured on a area basis and paid for at the Contract Unit Price per square metre for "Hot-Poured Rubberized Asphalt Waterproofing," The area to be paid for will be the total number of square metres of hot-poured rubberized asphalt waterproofing installed in accordance with the specification, accepted and measured by the Contract Administrator.