



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 625-2008**

**LA BARRIERE PARK PEDESTRIAN BRIDGE REHABILITATION**

## TABLE OF CONTENTS

### PART A - BID SUBMISSION

Form A: Bid	1
Form B: Prices	4
Form G1: Bid Bond and Agreement to Bond	5
Form G2: Irrevocable Standby Letter of Credit and Undertaking	7

### PART B - BIDDING PROCEDURES

B1. Contract Title	1
B2. Submission Deadline	1
B3. Site Investigation	1
B4. Enquiries	1
B5. Addenda	1
B6. Substitutes	2
B7. Bid Components	3
B8. Bid	3
B9. Prices	4
B10. Qualification	4
B11. Bid Security	5
B12. Opening of Bids and Release of Information	6
B13. Irrevocable Bid	6
B14. Withdrawal of Bids	6
B15. Evaluation of Bids	7
B16. 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. Definitions	1
D4. Contract Administrator	1
D5. Contractor's Supervisor	1
D6. Notices	1
D7. Furnishing of Documents	2

#### Submissions

D8. Authority to Carry on Business	2
D9. Safe Work Plan	2
D10. Insurance	2
D11. Performance Security	3
D12. Environmental protection Plan	3

#### Schedule of Work

D13. Commencement	4
D14. Substantial Performance	4
D15. Total Performance	4
D16. Liquidated Damages	4

#### Control of Work

D17. Job Meetings	5
D18. Prime Contractor – The Workplace Safety and Health Act (Manitoba)	5
D19. AUTHORIZED WORK ON PRIVATE PROPERTY	5
D20. LAYOUT OF THE WORK	5
D21. COOPERATION WITH OTHERS	5
D22. ENVIRONMENTAL PLANNING	6

**Measurement and Payment**

D23. Payment	6
--------------	---

**Warranty**

D24. Warranty	6
---------------	---

Form H1: Performance Bond	7
---------------------------	---

Form H2: Irrevocable Standby Letter of Credit	9
---	---

**PART E - SPECIFICATIONS**

**General**

E1. Applicable Specifications and Drawings	1
--	---

E2. Mobilization and Demobilization	1
-------------------------------------	---

E3. Public Access and Traffic Control	3
---------------------------------------	---

E4. Epoxy injection - Timber Crack Repair	3
---	---

E5. Epoxy Patching - Timber Surface Repair	5
--	---

E6. Removal and Reinstallation of Aluminum Handrails and Posts	7
--	---

E7. Treated Timber	8
--------------------	---

E8. Glue-Laminated Timber Repair	10
----------------------------------	----

E9. Sheet Membrane Waterproofing	12
----------------------------------	----

E10. Nail Laminated Deck	14
--------------------------	----

E11. Painting	16
---------------	----

## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

B1.1 LA BARRIERE PARK PEDESTRIAN BRIDGE REHABILITATION

### **B2. SUBMISSION DEADLINE**

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, August 20, 2008.

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.

B3.2 The Bidder is advised that, prior to submission, he is to make himself fully acquainted with the extent of the Work required and the nature of the site.

B3.3 No claim shall be made by the Contractor, after Bid Submission is made or the Work is completed, that there was a misunderstanding as to his responsibility in securing for himself information relative to the nature or amount of Work to be done.

### **B4. ENQUIRIES**

B4.1 All enquiries shall be directed to the Contract Administrator identified in D4.1.

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

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

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

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

### **B5. ADDENDA**

B5.1 The Contract Administrator may, at any time prior to the Submission Deadline, issue addenda correcting errors, discrepancies or omissions in the Bid Opportunity, or clarifying the meaning or intent of any provision therein.

B5.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.

B5.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Division internet site at <http://www.winnipeg.ca/matmgt>.

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

B5.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

## **B6. SUBSTITUTES**

B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.

B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.

B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.

B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:

- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
- (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
- (c) identify any anticipated cost or time savings that may be associated with the substitute;
- (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
- (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.

B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his sole discretion grant approval for the use of a substitute as an "approved equal" or as an "approved alternative", or may refuse to grant approval of the substitute.

B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, only to the Bidder who requested approval of the substitute.

B6.6.1 The Bidder requesting and obtaining the approval of a substitute shall be entirely responsible for disseminating information regarding the approval to any person or persons he wishes to inform.

B6.7 If the Contract Administrator approves a substitute as an "approved equal", any Bidder may use the approved equal in place of the specified item.

B6.8 If the Contract Administrator approves a substitute as an "approved alternative", any Bidder bidding that approved alternative may base his Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B15.

B6.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

**B7. BID COMPONENTS**

B7.1 The Bid shall consist of the following components:

- (a) Form A: Bid;
- (b) Form B: Prices;
- (c) Bid Security
  - (i) Form G1: Bid Bond and Agreement to Bond, or  
Form G2: Irrevocable Standby Letter of Credit and Undertaking, or  
a certified cheque or draft;

B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.

B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Bid.

B7.4 The Bid shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.

B7.4.1 Samples or other components of the Bid which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid.

B7.5 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.

B7.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, may result in the Bid being determined to be non-responsive.

B7.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.

B7.8 Bids shall be submitted to:

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

**B8. BID**

B8.1 The Bidder shall complete Form A: Bid, making all required entries.

B8.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:

- (a) if the Bidder is a sole proprietor carrying on business in his own name, his name shall be inserted;
- (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
- (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;

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

B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.

B8.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.

B8.4 Paragraph 12 of Form A: Bid shall be signed in accordance with the following requirements:

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

B8.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.

B8.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

## **B9. PRICES**

B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B9.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.

B9.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B9.4 Prices from Non-Resident Bidders are subject to a Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

## **B10. QUALIFICATION**

B10.1 The Bidder shall:

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

B10.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) be responsible and not be suspended, debarred or in default of any obligations to the City (a list of suspended or debarred individuals and companies is available on the Information

Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division internet site at <http://www.winnipeg.ca/matmgt/debar.stm> ).

- B10.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) have successfully carried out work similar in nature, scope and value to the Work; and
  - (b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and
  - (c) have a written workplace safety and health program if required pursuant to The Workplace Safety and Health Act (Manitoba);
- B10.4 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.
- B10.5 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

## **B11. BID SECURITY**

- B11.1 The Bidder shall provide bid security in the form of:
- (a) a bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in the form included in the Bid Submission (Form G1: Bid Bond and Agreement to Bond); or
  - (b) an irrevocable standby letter of credit, in the amount of at least ten percent (10%) of the Total Bid Price, and undertaking issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form included in the Bid Submission (Form G2: Irrevocable Standby Letter of Credit and Undertaking); or
  - (c) a certified cheque or draft payable to "The City of Winnipeg", in the amount of at least fifty percent (50%) of the Total Bid Price, drawn on a bank or other financial institution registered to conduct business in Manitoba.
- B11.1.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.
- B11.1.2 All signatures on bid securities shall be original.
- B11.1.3 The Bidder shall sign the Bid Bond.
- B11.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.
- B11.2 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly executed by the successful Bidder and the performance security furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.
- B11.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B11.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.
- B11.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.



B11.3 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Bid Opportunity.

## **B12. OPENING OF BIDS AND RELEASE OF INFORMATION**

B12.1 Bids will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Division, or in such other office as may be designated by the Manager of Materials.

B12.1.1 Bidders or their representatives may attend.

B12.2 Following the Submission Deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division internet site at <http://www.winnipeg.ca/matmgt>.

B12.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract Amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division internet site at <http://www.winnipeg.ca/matmgt>.

B12.4 The Bidder is advised that any information contained in any Bid may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

## **B13. IRREVOCABLE BID**

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

B13.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly executed and the performance security furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid.

## **B14. WITHDRAWAL OF BIDS**

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

B14.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.

B14.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid, and only such person, has authority to give notice of withdrawal.

B14.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:

- (a) retain the Bid until after the Submission Deadline has elapsed;
- (b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid; and
- (c) if the notice has been given by any one of the persons specified in B14.1.3(b), declare the Bid withdrawn.

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

imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law, including the right to retain the Bidder's bid security.

## **B15. EVALUATION OF BIDS**

B15.1 Award of the Contract shall be based on the following bid evaluation criteria:

- (a) compliance by the Bidder with the requirements of the Bid Opportunity (pass/fail);
- (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B10 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B6.

B15.2 Further to B15.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities, if the interests of the City so require.

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

B15.4 Further to B15.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.

B15.4.1 If there is any discrepancy between the Total Bid Price written in figures, the Total Bid Price written in words and the sum of the quantities multiplied by the unit prices for each item, the sum of the quantities multiplied by the unit prices for each item shall take precedence.

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

## **B16. AWARD OF CONTRACT**

B16.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B16.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.

B16.2.1 Without limiting the generality of B16.2, the City will have no obligation to award a Contract where:

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

B16.3 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B15.

**B16.3.1** Following the award of contract, a Bidder will be provided with information related to the evaluation of his Bid upon written request to the Contract Administrator.

## **PART C - GENERAL CONDITIONS**

### **C0. GENERAL CONDITIONS**

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

C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division internet site at [http://www.winnipeg.ca/matmgt/gen\\_cond.stm](http://www.winnipeg.ca/matmgt/gen_cond.stm) .

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

## **PART D - SUPPLEMENTAL CONDITIONS**

### **GENERAL**

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

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

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

D2.1 The Work to be done under the Contract shall consist of the rehabilitation of the timber pedestrian bridge located in La Barriere Park as shown on the Drawings and stated in the Specifications

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

- (a) Replacement of the bridge deck.
- (b) Repairs to the truss arches, ties, and sub-framing members.
- (c) Refinishing of the superstructure and substructure surfaces.

#### **D3. DEFINITIONS**

D3.1 When used in this Bid Opportunity:

- (a) "**tension tie**" means main superstructure timber arch bottom chord;
- (b) "**arch**" means main superstructure timber arch top chord;

#### **D4. CONTRACT ADMINISTRATOR**

D4.1 The Contract Administrator is Earth Tech | AECOM, represented by:

Nolan Domenico  
Project Manager  
99 Commerce Drive  
Winnipeg, MB, R3P 0Y7

Telephone No. (204) 477-5381  
Facsimile No. (204) 284-2040

D4.2 At the pre-construction meeting, Nolan Domenico will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

#### **D5. CONTRACTOR'S SUPERVISOR**

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

#### **D6. NOTICES**

D6.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.

D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3,

D6.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the address or facsimile number identified in D4.1.

- D6.3 Notwithstanding C21.3, all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following address or facsimile number:

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

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

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

## **D7. FURNISHING OF DOCUMENTS**

- D7.1 Upon award of the Contract, the Contractor will be provided with five (5) complete sets of the Bid Opportunity. If the Contractor requires additional sets of the Bid Opportunity, they will be supplied to him at cost.

## **SUBMISSIONS**

### **D8. AUTHORITY TO CARRY ON BUSINESS**

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

### **D9. SAFE WORK PLAN**

- D9.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.
- D9.2 The Safe Work Plan 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 internet site at <http://www.winnipeg.ca/matmgt/safety/default.stm> .

### **D10. INSURANCE**

- D10.1 The Contractor shall provide and maintain the following insurance coverage:
- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a

cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;

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

D10.2 Deductibles shall be borne by the Contractor.

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

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

## **D11. PERFORMANCE SECURITY**

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

- (a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; or
- (b) an irrevocable standby letter of credit issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form attached to these Supplemental Conditions (Form H2: Irrevocable Standby Letter of Credit), in the amount of fifty percent (50%) of the Contract Price; or
- (c) a certified cheque or draft payable to "The City of Winnipeg", drawn on a bank or other financial institution registered to conduct business in Manitoba, in the amount of fifty percent (50%) of the Contract Price.

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

D11.2 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.

## **D12. ENVIRONMENTAL PROTECTION PLAN**

D12.1 The Contractor shall provide the Contract Administrator with an Environmental Protection 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.

D12.2 The Environmental Protection Plan should be prepared and submitted in conformance with the Government of Canada Department of Fisheries and Oceans' "Bridge Maintenance" requirements. These requirements may be seen on the Department's internet site at [http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/mb/os-eo04\\_e.htm](http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/prov-terr/mb/os-eo04_e.htm)

## **SCHEDULE OF WORK**

### **D13. COMMENCEMENT**

- D13.1 The Contractor shall not commence any Work until he is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.
- D13.2 The Contractor shall not commence any Work on the Site until:
- (a) the Contract Administrator has confirmed receipt and approval of:
    - (i) evidence of authority to carry on business specified in D8;
    - (ii) evidence of the workers compensation coverage specified in C6.15;
    - (iii) the Safe Work Plan specified in D9;
    - (iv) evidence of the insurance specified in D10;
    - (v) the performance security specified in D11; and
    - (vi) the Environmental Protection Plan specified in D12
  - (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.
- D13.3 The Contractor shall not commence the Work on the Site before September 2, 2008.
- D13.3.1 If the actual date of award is later than the intended date, the dates specified for Commencement, Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

### **D14. SUBSTANTIAL PERFORMANCE**

- D14.1 The Contractor shall achieve Substantial Performance by October 31, 2008.
- D14.2 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.
- D14.3 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.

### **D15. TOTAL PERFORMANCE**

- D15.1 The Contractor shall achieve Total Performance by November 15, 2008.
- D15.2 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.
- D15.3 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.

### **D16. LIQUIDATED DAMAGES**

- D16.1 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 five hundred dollars (\$500)



per Calendar Day for each and every Calendar Day following the day fixed for Total Performance during which such failure continues.

- D16.2 The amounts specified for liquidated damages in D16.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve Substantial Performance or Total Performance by the days fixed herein for same.
- D16.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

## **CONTROL OF WORK**

### **D17. JOB MEETINGS**

- D17.1 Regular bi-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.
- D17.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he deems it necessary.

### **D18. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

- D18.1 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).

### **D19. AUTHORIZED WORK ON PRIVATE PROPERTY**

- D19.1 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.

### **D20. LAYOUT OF THE WORK**

- D20.1 The Contract Administrator will provide the basic centrelines and an elevation of the Works.
- D20.2 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.
- D20.3 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.
- D20.4 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.

### **D21. COOPERATION WITH OTHERS**

- D21.1 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.

**D22. ENVIRONMENTAL PLANNING**

D22.1 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**

**D23. PAYMENT**

D23.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

**WARRANTY**

**D24. WARRANTY**

D24.1 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 D11)

KNOW ALL MEN BY THESE PRESENTS THAT

\_\_\_\_\_ ,  
(hereinafter called the "Principal"), and

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

\_\_\_\_\_ dollars (\$\_\_\_\_\_)

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

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

BID OPPORTUNITY NO. 625-2008

LA BARRIERE PARK PEDESTRIAN BRIDGE REHABILITATION

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)



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 Division 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>
B130-08-01	Cover Sheet
B130-08-02	General Arrangement
B130-08-03	Longitudinal Section & Deck Plan
B130-08-04	Cross Section & Tension Tie Repair Details
B130-08-05	Deck Replacement Plans
B130-08-06	Deck Replacement Details

#### E2. MOBILIZATION AND DEMOBILIZATION

- E2.1 Description
- This specification shall cover all operations related to mobilization and demobilization as hereinafter specified. It also includes supplying and installation of work platforms and debris collectors to prevent foreign materials from entering the water stream underneath the bridge.
  - The Work includes furnishing all superintendence / overhead, labour, materials, equipment, tools, supplies and all things necessary for and incidental to the satisfactory performance and completion of all Work associated with the mobilization and demobilization.
  - The Work also includes items associated with Safe Work Plan, Environmental Protection Plan, Authorized Work on Private Property, and Environmental Planning stated in Part D Supplemental Conditions.
  - Disposing of non-reusable materials and debris is also covered under this Specification.
- E2.2 Construction Methods
- E2.2.1 Preparation
- Ensure that the safe work plan has been submitted in accordance with section D9.
  - The Contractor shall submit to the Contract Administrator for review and approval, at least five (5) Business Days prior to the commencement of any Work on Site, a detailed plan and schedule, clearly illustrating the method and sequence by which he proposes to perform the structural removals, including a description of the measures that will be implemented to meet the environmental requirements. The plan shall include detailed design notes and Shop Drawings that are sealed, signed, and dated by a Professional Engineer licensed to practice in the Province of Manitoba necessary

to describe the following: work platforms; type and capacity of equipment; sequence of operations; design of demolition catch platforms / debris collectors; and description of the measures that will be implemented to meet the requirements of D12 - Environmental Protection Plan.

- (c) The Contractor shall ensure that his Structural Removal Plan submittal is in conformance with the latest version of the Fisheries and Oceans Canada – Manitoba Operational Statement – Bridge Maintenance.

#### E2.2.2 Mobilization

- (a) If required to access the site through a private property, ensure that the requirements in section D19 have been met.
- (b) Inform the Contract Administrator of the intended area for setting up site office, area for stocking piling, site access route and the intended move-in date. The Contract Administrator will arrange with the park officer and provide a confirmation or an alternative arrangement.
- (c) Follow all the park safety and security requirements. The Contract Administrator will provide these requirements.
- (d) Inform the Contract Administrator and request his presence during the move-in.

#### E2.2.3 Removal and Disposal of Materials

- (a) The Contractor shall provide all necessary access/work platforms to safely facilitate structural removals and subsequent inspection of all Works by the Contract Administrator.
- (b) The Contractor shall provide all necessary catch platforms / protective structures to prevent (structural removal) materials from entering the waterway or the embankments underneath the bridge.
- (c) All structural removal materials not reused for the rehabilitation shall become the property of the Contractor to be removed from site.
- (d) In no case shall disposable material be dumped into the channel of any water course.

#### E2.2.4 Demobilization

- (a) Inform the park officer and the Contract Administrator of the intended move-out date and confirm the exit route to use.
- (b) Ensure that all the excess construction materials have been removed from the park.
- (c) Restore the site office area, access route, the stockpiling areas, and all other areas used during the construction to their previous existing conditions or better as approved by the Contract Administrator.

#### E2.3 Measurement and Payment

- (a) Mobilization and demobilization will be paid for on a lump sum basis under “Mobilization and Demobilization,” which price will be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.
- (b) Mobilization and demobilization will be paid for at a percentage of the Contract Lump Sum Price for “Mobilization and Demobilization” specified as follows:
  - (i) 30% when the Contract Administrator is satisfied that construction has commenced.
  - (ii) 50% when substantial performance has been met.
  - (iii) 20% upon completion of the project.



### **E3. PUBLIC ACCESS AND TRAFFIC CONTROL**

#### **E3.1 Description**

- (a) This specification shall cover all operations related to establishing and executing the public access and traffic control plan as hereinafter specified.
- (b) The Work includes furnishing all superintendence / overhead, labour, materials, equipment, tools, supplies and all things necessary for and incidental to the satisfactory performance and completion of all Work associated with the public access and traffic control.

#### **E3.2 Construction Methods**

##### **E3.2.1 General**

- (a) The Contractor will be responsible for pedestrian and traffic control at the Site as acceptable to the Contract Administrator.
- (b) For traffic control in the immediate Work area, the Contractor shall 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 users 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 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.

##### **E3.2.2 Specific**

- (a) The bridge will be closed for the duration of the rehabilitation work.
- (b) Set up working area perimeter and erect barricades to deter and prevent pedestrian traffic from entering the work area.

#### **E3.3 Measurement and Payment**

- (a) Public Access and Traffic Control are considered incidental to the Works of Specification E2 and no additional measurement or payment will be made.

### **E4. EPOXY INJECTION - TIMBER CRACK REPAIR**

#### **E4.1 Description**

- (a) This specification will cover all operations relating to the epoxy injection of timber cracks, checks, de-laminations, and voids in the timber arches and main tension ties.
- (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.

## 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.

### E4.2.2 Handling and Storage of Materials

- (a) All materials shall be handled and stored in a careful and workmanlike manner, to the satisfaction of the Contract Administrator.

### E4.2.3 Testing and Approval

- (a) All materials supplied under this Specification shall be subject to inspection and testing by the Contract Administrator or by the Testing Laboratory designated by the Contract Administrator. There shall be no charge to The City for any materials taken by the Contract Administrator for testing purposes.
- (b) All materials shall be approved by the Contract Administrator at least seven (7) days before any construction is undertaken. If, in the opinion of the Contract Administrator, such materials in whole or in part, do not conform to the Specifications detailed herein or are found to be defective in manufacture or have become damaged in transit, storage, or handling operations, then such materials shall be rejected by the Contract Administrator and replaced by the Contractor at his own expense.

### E4.2.4 Injection resin

- (a) Two-component epoxy adhesive which has the capability to bond to wood surfaces.
- (b) Rotafix Structural Adhesive manufactured by Rotafix Ltd. or equal in accordance with B6.

### E4.2.5 Injection equipment

- (a) Compatible with the injection resin per the manufacturer's guidelines and as approved by the Contract Administrator.

## E4.3 Construction Methods

### E4.3.1 General

- (a) The Contract Administrator will identify the locations and limits of the repairs.
- (b) Installation of the injection resin shall be in accordance with the manufacturer's specifications and to the satisfaction of the Contract Administrator.

### E4.3.2 Qualification

- (a) The contractor/sub-contractor shall be competent and experienced in epoxy injection installations. Competence and experience shall be demonstrated by submission of documentation confirming a minimum of three previous successful installation projects of a similar nature with similar materials and equipment to the scope required above within the last five years. Acceptance of said documentation as evidence of competency and experience is solely up to the discretion of the Contract Administrator.

### E4.3.3 Surface Preparation and Placement of Injection Ports

- (a) Measure depths of cracks using filler gages and estimate the amount of epoxy resin required.
- (b) Clean the surfaces adjacent to cracks, checks, or de-laminations. The surfaces are to be free of dirt, dust, oil, efflorescence, paint or other foreign material which may be detrimental to establishing a bond of the sealing material prior to epoxy injection.
- (c) Set the entry port locations. Each entry port shall be either on the crack surface or in a drilled hole intersecting the crack. Avoid port setting that could plug the crack at that location and thereby prevent subsequent adhesive injection.

- (d) Entry port spacing is to suit the epoxy resin and the injection equipment as recommended by the manufacturer.
- (e) Seal the cracks between and around the entry ports, where recommended by the manufacturer. For through cracks the surface seal shall be on both faces.

#### E4.3.4 Injection

- (a) For sealed cracks, do not start the injection until the seal material has had adequate time to acquire sufficient strength to withstand injection pressure.
- (b) For each crack, start injecting the epoxy adhesive from the lowest entry port and continue until there the adhesive emerges from the next adjacent (higher) port. As soon as the adhesive emerges from the adjacent port, injection shall be stopped, the port sealed and the injection transferred to the adjacent port. Continue the process until the crack is completely filled.
- (c) If port-to-port travel of the injection adhesive is not indicated, the work shall be stopped and remedial action shall be taken which may require resetting of surface ports or drilling holes which intersect with the crack from a different angle. Such work shall only be done after authorization from the Contract Administrator.

#### E4.3.5 Quality Control

- (a) The epoxy injection is to be performed by workers approved by the manufacturer's representatives to use the epoxy adhesive and the injection equipment.
- (b) Each crack's complete filling is to be inspected by a representative from the manufacturer during the presence of the Contract Administrator. This is to ensure that no void exists in the crack that could induce a capillary action to attract moisture into the filled crack.

#### E4.3.6 Finishing

- (a) After the crack has been completely filled, the injection adhesive shall be given sufficient time to cure to a state which allows removal of the seal without any adhesive run-out or smearing of the adjacent surface.
- (b) All surface seal material and injection adhesive runs or spills shall be carefully removed from the surface, if so directed by the Contract Administrator.
- (c) The face of the repaired crack shall be finished flush with the adjacent surface and indentations or protrusions caused by the placement of entry ports shall be removed.
- (d) Seal removal, surface finishing, and removal of runs or spills is included in the unit contract price per lineal meter of crack filling.

#### E4.4 Measurement and Payment

- (a) Epoxy injection of timber cracks will be measured on a lineal meter basis and paid for at the Contract Unit Price per lineal meter for "Epoxy-Injection – Timber Crack Repairs." The length to be paid for will be the total number of linear meters of epoxy injection of timber cracks installed in accordance with this Specification, accepted and measured by the Contract Administrator.

### **E5. EPOXY PATCHING - TIMBER SURFACE REPAIR**

#### E5.1 Description

- (a) This specification will cover all operations relating to the epoxy patching of rotten timber surfaces in the timber arches.
- (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.

## 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.

### E5.2.2 Handling and Storage of Materials

- (a) All materials shall be handled and stored in a careful and workmanlike manner, to the satisfaction of the Contract Administrator.

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

### E5.2.4 Epoxy Wood Filler

- (a) Two-component epoxy paste which has the capability to bond to wood surfaces.
  - (b) TM3 Moulding Mortar by ROTAFIX Ltd. or equal in accordance with B6.
- (b) It shall be installed in accordance with the manufacturer's specifications and to the satisfaction of the Contract Administrator.

## E5.3 Construction Methods

### E5.3.1 General

- (a) The Contract Administrator will identify the locations and limits of the repairs.
- (b) Installation of the epoxy wood filler shall be in accordance with the manufacturer's specifications and to the satisfaction of the Contract Administrator.

### E5.3.2 Removal of rotten material on timber arch surfaces

- (a) Remove rotten materials from surfaces of arches and tension ties to the extent of exposing the sound materials underneath.
- (b) Have the surfaces inspected by the Contract Administrator and further remove the materials if instructed to do so. The Contract Administrator will provide additional site instruction for rotten area deeper than 25 mm.

### E5.3.3 Epoxy Patching

- (a) Remove and store the arch top metal flashing if required. Confirm with the Contract Administrator prior to the removal.
- (b) Clean the timber surface and remove all decayed materials, dust, and loose particles.
- (c) Mix the epoxy wood filler components in accordance with the manufacturer's guidelines.
- (d) Firmly place the mixed epoxy wood filler into the wood cavity and consolidate it by hand or with a steel or wooden float.
- (e) Use the material to restore the before decayed shape of the timber.
- (f) Leave the filler to cure.

- (g) Remove excess wood filler from the repaired surface to have the repaired area flush with the adjacent surface
- (h) Smooth the repaired surface with a sander.
- (i) Reinstall the previously removed metal flashing.

#### E5.4 Measurement and Payment

- (a) Epoxy patching of rotten timber surfaces will be measured on an area basis and paid for at the Contract Unit Price per square centimetre for "Epoxy Patching – Timber Surface Repairs." The area to be paid for will be the total number of square centimetres of epoxy patching of rotten timber surfaces installed in accordance with this Specification, accepted and measured by the Contract Administrator.

### **E6. REMOVAL AND REINSTALLATION OF ALUMINUM HANDRAILS AND POSTS**

#### E6.1 Description

- (a) This specification will cover all operations relating to the removal and reinstallation of Aluminum handrails and posts.
- (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

##### E6.2.1 Flexible Joint Sealant

- (a) Flexible joint sealant for sealing the railing post base plates shall be guaranteed non-staining, gray polyurethane, accepted by the Contract Administrator and applied in strict accordance with the Manufacturer's instructions including appropriate primers if recommended. Accepted products are Vulkem 116 by Mameco, Sonolastic NPI by Sonneborn, Sikaflex-la by Sika, Bostik 915 by Bostik, or equal in accordance with B6.

#### E6.3 Construction Methods

- (a) Develop a drawing to identify systematically the locations of handrails, rail posts, and base plates.
- (b) Tag each piece of hand rail and railing post with their location identifying tags.
- (c) Detach handrails from posts and store them with their associated hardware.
- (d) Mark each railing post base plate with its orientation direction.
- (e) Loosen and remove nut and washer from each (railing post) base plate bolt.
- (f) Carefully and systematically remove bolts from each base plate. Colour-tag each bolt to identify its original location on the base plate.
- (g) Detach each base plate (and post) from the tension tie and store it together with its set of bolts, nuts and washers.
- (h) Once the tension tie repair and the deck replacement is completed, all the hand rails, railing post, their base plates together with their nuts and bolts are to be reinstalled at their original locations and to their original orientations.
- (i) Replace all the damaged materials (or hardware) with the same or similar material (or hardware) as approved by the Contractor Administrator. The City will reimburse the costs of materials (or hardware) that were not damaged by the Contractor.
- (j) Re-seal the gaps at each rail post with Aluminium colour sealant.

#### E6.4 Measurement and Payment

- (a) Removal and Reinstallation of Aluminum Handrails and Posts will not be measured. This item of Work will be paid for at the Contract Lump Sum Price for "Removal and Reinstallation of Aluminum Railing and Posts," which price will be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

### E7. TREATED TIMBER

#### E7.1 Description

- (a) This specification will cover all operations relating to the removal and replacement of deficient stringers and floor-beams.
- (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.

#### E7.2 Materials

##### E7.2.1 General

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

##### E7.2.2 Handling and Storage of Materials

- (a) All materials shall be handled and stored in a careful and workmanlike manner, to the satisfaction of the Contract Administrator.
- (b) Store all materials in accordance with the requirements of CSA Standard CAN3 A23.1.8-M77, Storage of Materials, except as otherwise specified herein.
- (c) Handle treated timber carefully to avoid chipping, scarring of the surfaces, and causing other damage to it.
- (d) Do not use hooks, chains, picks, wire cables, or other pointed metal tools liable to injure the surface.
- (e) Use ropes (and not chains) for binding treated timber on vehicles.
- (f) Do not drop timber from the truck to the ground.
- (g) Store the treated timber in neat regular piles with large pieces properly spaced to allow the use of slings. Closely stack them to prevent warping. Place the bottom pieces in each pile on blocks in such a way as to be level, free of weeds and rubbish, and to be free of warping and bending.

##### E7.2.3 Testing and Approval

- (a) All materials supplied under this Specification shall be subject to inspection and testing by the Contract Administrator or by the Testing Laboratory designated by the Contract Administrator. There shall be no charge to The City for any materials taken by the Contract Administrator for testing purposes.
- (b) All materials shall be approved by the Contract Administrator at least seven (7) days before any construction is undertaken. If, in the opinion of the Contract Administrator, such materials in whole or in part, do not conform to the Specifications detailed herein or are found to be defective in manufacture or have become damaged in transit, storage, or handling operations, then such materials shall be rejected by the Contract Administrator and replaced by the Contractor at his own expense.

- E7.2.4 Treated Timber
- (a) Treated Timber: Grade No.1 Structural Douglas Fir, treated with Chromate Copper Arsenate (CCA), Alkaline Copper Quaternary (ACQ) or equal in accordance with B6, conforming to the requirements of CSA Standard 086-1 (1994), National Building Code of Canada (1995) and to the details as shown on the Drawings.
- E7.2.5 Field Preservative
- (a) Field Preservative: Copper Naphthenate, IPBC, CCA chemical based system or equal in accordance with B6.
- E7.2.6 Fastenings and Hardware
- (a) Fastenings and hardware shall conform to the requirements of CAN/CSA-S6-00. All fastenings and hardware shall be hot-dip galvanized in accordance with CSA G164 with minimum retention of 610 g/m<sup>2</sup>.
- E7.2.7 Miscellaneous Materials
- (a) Miscellaneous material incidental to this work shall be approved by the Contract Administrator.
- E7.3 Construction Methods
- E7.3.1 Stringer and Floor-beam Replacement
- (a) After the deck removal, the Contract Administrator will perform an inspection and identify which stringers and floor-beams are to be replaced.
  - (b) Disconnect deficient stringers and floor-beams from their splices and connections or both. Confirm with the Contract Administrator prior to performing this step. Save the bolts for reinstallation.
  - (c) Prepare the new stringers and floor-beams to their correct lengths. Drill bolts holes to match their corresponding existing connections.
  - (d) Treat all the cut ends and bolt holes with field preservative.
  - (e) Place and align each new stringer to its original position and alignment. Using the existing connections and hardware, reconnect new stringer to the original connections or splices or both.
  - (f) Adopt the steps above for the replacement of each floor-beam.
- E7.3.2 Disposal of Materials
- (a) All structural removal materials not reused for the rehabilitation shall become the property of the Contractor to be removed from site.
  - (b) In no case shall disposable material be dumped into the channel of any water course.
- E7.4 Measurement and Payment
- E7.4.1 Treated Timber – Stringer Replacement
- (a) Treated timber for stringer replacement will be measured on a unit basis and paid for at the Contract Unit Price for “Treated Timber – Stringer Replacement,” performed in accordance with this Specification and accepted by the Contract Administrator, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work.
- E7.4.2 Treated Timber – Floorbeam Replacement
- (a) Treated timber for floorbeam replacement will be measured on a unit basis and paid for at the Contract Unit Price for “Treated Timber – Floorbeam Replacement,” performed in accordance with this Specification and accepted by the Contract Administrator, which price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work.

## **E8. GLUE-LAMINATED TIMBER REPAIR**

### **E8.1 Description**

- (a) This specification will cover all operations relating to the repairs of the tension ties. The Work includes the following:
  - (i) Supply and installation of milled lumbers to replace top laminates of repair decayed tension ties as shown on the Drawings.
  - (ii) Supply and installation of epoxy resin timber grout to repair the tension ties where the timber decay extends below the top 50 mm.
  - (iii) Supply and installation of epoxy adhesive to bond the replaced laminates to the tension ties.
  - (iv) Supply and installation of galvanized steel plates and lag screws on the repaired tension ties 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.

### **E8.2 Materials**

#### **E8.2.1 General**

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

#### **E8.2.2 Handling and Storage of Materials**

- (a) All materials shall be handled and stored in a careful and workmanlike manner, to the satisfaction of the Contract Administrator.

#### **E8.2.3 Testing and Approval**

- (a) All materials supplied under this Specification shall be subject to inspection and testing by the Contract Administrator or by the Testing Laboratory designated by the Contract Administrator. There shall be no charge to The City for any materials taken by the Contract Administrator for testing purposes.
- (b) All materials shall be approved by the Contract Administrator at least seven (7) days before any construction is undertaken. If, in the opinion of the Contract Administrator, such materials in whole or in part, do not conform to the Specifications detailed herein or are found to be defective in manufacture or have become damaged in transit, storage, or handling operations, then such materials shall be rejected by the Contract Administrator and replaced by the Contractor at his own expense.

#### **E8.2.4 Milled Lumber**

- (a) Milled Lumber: Select Structural (SS) Grade Douglas-Fir-Larch Dimension Lumber, conforming to the requirements of CSA Standard 086-1 (1994), National Building Code of Canada (1995), milled to the dimensions shown on the drawings.

#### **E8.2.5 Timber Grout**

- (a) Timber Grout: RESIWOOD TG6 Timber Grout by ROTAFIX or equal in accordance with B6.

#### **E8.2.6 Epoxy Adhesive**

- (a) Epoxy Adhesive: Low modulus epoxy structural bonding adhesive by ROTAFIX or equal in accordance with B6.

#### **E8.2.7 Steel Plates**

- (a) Steel Plates: per CAN/CSA G40.21-M Grade 300W, hot-dip galvanized in accordance with CAN/CSA G164-M92 with minimum retention of 610 g/m<sup>2</sup>.



- E8.2.8 Lag Screws
- (a) Lag Screws: per ASME B18.2.1, galvanized
- E8.2.9 Miscellaneous Materials
- (a) Miscellaneous material incidental to this work shall be approved by the Contract Administrator.
- E8.2.10 Equipment
- (a) All equipment shall be of a type approved by the Contract Administrator and shall be kept in good working order.
- E8.3 Construction Methods
- E8.3.1 Removal of Decayed Materials
- (a) After removing the existing deck and exposing the top surface of the tension ties, notify the Contract Administrator whom will inspect the decayed extents of the structural members.
  - (b) After confirming with the Contract Administrator, remove the top 50 mm from the tension tie. The Contract Administrator will then conduct another inspection to determine the locations where repairing by timber grouting are required.
  - (c) For the locations to be repaired by timber grouting, remove the decayed materials to the extent instructed by the Contract Administrator.
- E8.3.2 Localized Repair by Timber Grouting
- (a) Prepare the timber surfaces where the timber grout is to be applied.
  - (b) Unless otherwise instructed by the Contract Administrator, each repair shall extend full width of the tension tie.
  - (c) Provide side form if required.
  - (d) Apply the timber grout and wait for it to cure in accordance with the Manufacturer's specifications.
  - (e) Mark and drill pilot holes to install bridging plates as shown on the drawings.
  - (f) Install the bridging plates using lag screws and epoxy adhesive as shown on the drawings.
  - (g) At the locations near hangers, the Contract Administrator may instruct the Contractor to shorten the bridging plates and omit lag screws to avoid conflict with the subsequent repair, i.e. the replacement of the top laminates.
- E8.3.3 Replacing Top Laminates
- (a) Once all the localized repairs on both tension ties between two consecutive hangers are completed, proceed to the typical tension tie repair shown on the drawings, i.e. replacing the top 50 mm and reinforcing it with bridging plates.
  - (b) Clean and prepare the dimension lumber pieces to be used as top laminates. Mill down to provide recesses for bridging plates and hangers. Pre-drill holes to match the existing bolt holes for the railing posts.
  - (c) Glue each piece of dimension lumber to the prepared surface of each tension tie to form its new top laminate, using epoxy adhesive. Apply the adhesive evenly over the entire surface. Use the adhesive in accordance with the Manufacturer's specifications. Ensure the bonding between the new laminates and the existing ties during the epoxy curing period by pressure clamping or other methods as approved by the Contract Administrator.
  - (d) Mark and drill pilot holes to install bridging plates as shown on the drawings.

- (e) Bond the end of each piece of the new top laminate on both sides of each hanger using epoxy adhesive. Prevent the adhesive from bonding the hanger to the new laminates and the existing tension ties.
- (f) Field-drill each bridging plate to match the existing bolt holes for railing posts. Touch up the drilled holes with zinc spray.
- (g) Install the bridging plates using lag screws and epoxy adhesive as shown on the drawings.
- (h) The Contractor may proceed to waterproofing sections of tension ties once the Contract Administrator has inspected the repairs within those sections.

#### E8.3.4 Disposal of Materials

- (a) All structural removal materials not reused for the rehabilitation shall become the property of the Contractor to be removed from site.
- (b) In no case shall disposable material be dumped into the channel of any water course.

#### E8.4 Measurement and Payment

##### E8.4.1 Glue Laminated Timber Repair – Localized Repair by Timber Grouting

- (a) Repair of localized decayed areas on the tension ties will be measured on a lineal meter basis and paid for at the Contract Unit Price per linear meter for “Glue Laminated Timber Repair – Localized Repair by Timber Grouting.” The length to be paid for will be the total number of linear meters of tension ties, repaired by timber grouting in accordance with this Specification, accepted and measured by the Contract Administrator. The payment will be considered full compensation for performing all operations herein described or shown on the drawings and all other items incidental to the Work.

##### E8.4.2 Glue Laminated Timber Repair – Replacing Top Laminates

- (a) Repairing each tension tie by replacing its top laminate will not be measured. This item of Work will be paid for at the Contract Lump Sum Price for “Glue Laminated Timber Repair – Replacing Top Laminates,” which price will be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

### E9. SHEET MEMBRANE WATERPROOFING

#### E9.1 Description

- (a) This specification will cover all operations relating to the waterproofing of the tension ties, all floorbeams, and stringers, with self-adhering sheet membrane.
- (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 Materials

##### E9.2.1 General

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

##### E9.2.2 Handling and Storage of Materials

- (a) All materials shall be handled and stored in a careful and workmanlike manner, to the satisfaction of the Contract Administrator.

### E9.2.3 Testing and Approval

- (a) All materials supplied under this Specification shall be subject to inspection and testing by the Contract Administrator or by the Testing Laboratory designated by the Contract Administrator. There shall be no charge to The City for any materials taken by the Contract Administrator for testing purposes.
- (b) All materials shall be approved by the Contract Administrator at least seven (7) days before any construction is undertaken. If, in the opinion of the Contract Administrator, such materials in whole or in part, do not conform to the Specifications detailed herein or are found to be defective in manufacture or have become damaged in transit, storage, or handling operations, then such materials shall be rejected by the Contract Administrator and replaced by the Contractor at his own expense.

### E9.2.4 Sheet Membrane

- (a) The sheet membrane material shall be one of the following types listed herein or equal in accordance with B6: Polyguard 650 manufactured by Polyguard Products Inc, Bituthene 3000 manufactured by W.R. Grace & Co., MEL-ROL manufactured by W.R. Meadows Inc., Jiffy Seal manufactured by Protecto Wrap Co., Tamko TW-60 manufactured by Tamko Building Products.
- (b) Sheet membrane waterproofing material selected shall be installed in accordance with the manufacturer's specifications and to the satisfaction of the Contract Administrator.

### E9.2.5 Primer

- (a) Primer shall be of the same manufacturer as the sheet membrane and shall be installed in accordance with the manufacturer's specifications.

## E9.3 Construction Methods

### E9.3.1 Preparation

- (a) Before applying waterproofing materials, ensure wood surfaces are smooth, clean, dry, and free from high spots, depressions, loose and foreign particles and other deterrents to adhesion.
- (b) Fill any voids, joints, and cracks with patching compound to the satisfaction of the Contract Administrator.

### E9.3.2 Application

- (a) Apply primer in a method, amount and condition as recommended by primer manufacturer.
- (b) Remove release sheet on sheet membrane prior to application.
- (c) Lap seams not less than 50 mm.
- (d) Lay succeeding sheet with laps, and roll or press into place.
- (e) Repair misaligned or inadequately lapped seams in accordance with manufacturer's instructions.
- (f) Seal seams and terminations in accordance with sheet manufacturer's instructions.

### E9.3.3 Protection

- (a) Protect sheet membrane until deck installed.
- (b) Install protection material and hold in place in accordance with instructions of manufacturer of waterproofing materials.
- (c) When waterproofing materials are subjected to damage by sunlight and cannot be immediately protected as specified, protect waterproofing materials by waterproof building paper or suitable coating approved by manufacturer of waterproofing system used.

E9.3.4 Patching

- (a) Repair tears, punctures, air blisters, and inadequately lapped seams, in accordance with manufacturer's instructions before deck is installed.

E9.4 Measurement and Payment

- (a) Sheet Membrane Waterproofing will not be measured. This item of Work will be paid for at the Contract Lump Sum Price for "Sheet Membrane Waterproofing," which price will be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

**E10. NAIL LAMINATED DECK**

E10.1 Description

- (a) This specification will cover all operations relating to the replacement of the bridge deck. The Work includes the following:
  - (i) Removal of the existing deck.
  - (ii) Filling abandoned bolt holes in the existing stringers with epoxy adhesive.
  - (iii) Supplying and installation of all treated dimension lumber and hardware to construct nail laminated deck as shown on the drawings.
  - (iv) Disposing of non-reusable materials and debris.
- (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 Materials

E10.2.1 General

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

E10.2.2 Handling and Storage of Materials

- (a) All materials shall be handled and stored in a careful and workmanlike manner, to the satisfaction of the Contract Administrator.

E10.2.3 Testing and Approval

- (a) All materials supplied under this Specification shall be subject to inspection and testing by the Contract Administrator or by the Testing Laboratory designated by the Contract Administrator. There shall be no charge to The City for any materials taken by the Contract Administrator for testing purposes.
- (b) All materials shall be approved by the Contract Administrator at least seven (7) days before any construction is undertaken. If, in the opinion of the Contract Administrator, such materials in whole or in part, do not conform to the Specifications detailed herein or are found to be defective in manufacture or have become damaged in transit, storage, or handling operations, then such materials shall be rejected by the Contract Administrator and replaced by the Contractor at his own expense.

E10.2.4 Dimension Lumber

- (a) Dimension Lumber: Grade No.1 Structural Douglas-Fir or Spruce-Pine-Fir, treated with Chromate Copper Arsenate (CCA), Alkaline Copper Quaternary (ACQ) or equal in accordance with B6, conforming to the requirements of CSA Standard 086-1 (1994), National Building Code of Canada (1995) and to the details as shown on the Drawings.

- E10.2.5 Wood Filler
- (a) Wood Filler: Epoxy adhesive gel for filling wood cavities and abandoned bolt holes shall be Rotafix Structural Adhesive manufactured by Rotafix Ltd. or equal in accordance with B6.
- E10.2.6 Plywood Shims
- (a) Plywood Shims: All plywood shims shall be treated by immersing shim in timber preservative bath for no less than 24 hours. Pre-treated plywood will also be permitted.
- E10.2.7 Field Preservative
- (a) Field preservative: Copper Naphthenate, IPBC, CCA chemical based system or equal in accordance with B6.
- E10.2.8 Fastenings and Hardware
- (a) Fastenings and hardware: to the requirements of CAN/CSA-S6-00. All fastenings and hardware including nails, bolts, nuts, washers and screws shall be hot-dip galvanized in accordance with CSA G164 with minimum retention of 610 g/m<sup>2</sup>.
  - (b) Connecting steel clip angles: per CAN/CSA G40.21-M Grade 300W, hot-dip galvanized in accordance with CAN/CSA G164-M92 with minimum retention of 610 g/m<sup>2</sup>.
  - (c) Lag screws: per ASME B18.2.1, galvanized
- E10.2.9 Miscellaneous material
- (a) Miscellaneous material incidental to this work shall be approved by the Contract Administrator.
- E10.2.10 Equipment
- (a) All equipment shall be of a type approved by the Contract Administrator and shall be kept in good working order.
- E10.3 Construction Methods
- E10.3.1 Deck Removal
- (a) Bolts, screws, pins and nails shall be carefully removed in such a manner as to avoid splitting and breaking of the timbers.
  - (b) Loosen and remove nut and washer from each deck plank bolt.
  - (c) Remove nails and bolts from each deck plank, disconnecting it from tension ties and stringers.
  - (d) Detach each deck plank from the tension ties and stringers.
  - (e) Dismantle and remove the nail laminated deck at the beginning and at the end of bridge in a similar manner.
- E10.3.2 Epoxy filling of abandoned bolt holes
- (a) All bolt holes previously used to connect the stringers to the deck planks will be abandoned. Fill these abandoned bolt holes with epoxy resin, following the manufacturer's guidelines.
  - (b) In lieu of filling each bolt hole entirely with epoxy adhesive, the Contractor may elect to insert a glass fibre rod and bond it to the hole using the epoxy adhesive. For this option, submit the rod property information to the Contract Administrator for review and approval prior to proceeding.

### E10.3.3 Deck Replacement

- (a) After waterproofing the tension ties, install dimension lumber to form a nail-laminated deck for the bridge. Start from one end of the bridge and work toward the drop-in section near the other end of the bridge as shown on the drawings.
- (b) For nailing each laminate to its adjacent one, use the nailing pattern shown on the drawings.
- (c) Connect the bridge deck to the stringers and tension ties using galvanized steel clip angles and lag screws as shown on the drawings.
- (d) For the installation of each lag screw, drill an appropriate size pilot hole.
- (e) If, during the attaching of the deck (to the stringers or tension ties), it is found that some areas of the deck do not bear fully on the structural members, these areas shall be shimmed using plywood shims as required, to obtain full bearing of the deck on the members.
- (f) For the drop-in section of the deck, omit nailing for the first laminate, use 70 mm long gage #4 screws (instead on 16d nails) on the second laminate, and follow the typical nailing pattern shown on the drawings for the 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> laminates and so on.
- (g) After the completion of the deck replacement, prepare the deck surface to receive painting.

### E10.3.4 Disposal of Materials

- (a) All structural removal materials not reused for the rehabilitation shall become the property of the Contractor to be removed from site.
- (b) In no case shall disposable material be dumped into the channel of any water course.

### E10.4 Measurement and Payment

- (a) Nail laminated deck Works shall not be measured. This item of Work will be paid for at the Contract Lump Sum Price for "Nail Laminated Deck," which price will be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

## E11. PAINTING

### E11.1 Description

- (a) This specification will cover all operations relating to painting of the entire timber superstructure and the abutments.
- (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.

### E11.2 Materials

#### E11.2.1 Paint for Deck and Timber Superstructure

- (a) Paint for deck and timber superstructure shall be Olympic Navajo Red Stain or equal in accordance with B6.

#### E11.2.2 Abutment Paint

- (a) Paint for concrete abutments shall be Standard Beige Ultra Exterior Flat Latex by Glidden Paint or equal in accordance with B6.

### E11.2.3 Equipment

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

### E11.3 Construction Methods

#### E11.3.1 Painting Deck and Timber Superstructure

- (a) Remove all cracked or peeled paints, loose chalky paint, dirt and other foreign material from the surfaces of members to be painted by wire brushing, scraping or other means.
- (b) Apply paint using brush, air spray, or roller. Spread evenly and work thoroughly into all seasoning cracks, corners, and recesses.
- (c) Apply the first coat of paint and let it dry.
- (d) Putty flush with the surface, all cracks, checks, nail holes or other depressions and allow the surface to dry.
- (e) Apply the second coat of paint and allow it to dry.

#### E11.3.2 Repainting Abutments

- (a) Apply at least two applications to produce a uniform appearance.
- (b) Apply paint only at ambient temperature of 10C or above.

### E11.4 Measurement and Payment

- (a) Painting will not be measured. This item of Work will be paid for at the Contract Lump Sum Price for "Items of Work" below, which price will be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

#### Items of Work

##### Painting

- (i) Timber Superstructure and Deck
- (ii) Concrete Abutments