



**THE CITY OF WINNIPEG**

# **TENDER**

**TENDER NO. 356-2019**

**2019 BRIDGE MAINTENANCE - PROVENCHER BRIDGE, DUGALD BRIDGE &  
PROVENCHER CULVERT**

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## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

B1.1 2019 BRIDGE MAINTENANCE - PROVENCHER BRIDGE, DUGALD BRIDGE & PROVENCHER CULVERT

### **B2. SUBMISSION DEADLINE**

B2.1 The Submission Deadline is 4:00 p.m. Winnipeg time, May 17, 2019.

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

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

### **B3. SITE INVESTIGATION**

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

### **B4. ENQUIRIES**

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

B4.2 If the Bidder finds errors, discrepancies or omissions in the Tender, or is unsure of the meaning or intent of any provision therein, the Bidder shall 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 Tender will be provided by the Contract Administrator to all Bidders by issuing an addendum.

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

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

### **B5. CONFIDENTIALITY**

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

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

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

## **B6. ADDENDA**

- B6.1 The Contract Administrator may, at any time prior to the Submission Deadline, issue addenda correcting errors, discrepancies or omissions in the Tender, or clarifying the meaning or intent of any provision therein.
- B6.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.
- B6.3 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>
- B6.4 The Bidder is responsible for ensuring that he/she has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B6.5 The Bidder shall acknowledge receipt of each addendum in Paragraph 8 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive
- B6.6 Notwithstanding B4, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D4.

## **B7. SUBSTITUTES**

- B7.1 The Work is based on the Plant, Materials and methods specified in the Tender.
- B7.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B7.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B7.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
  - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
  - (c) identify any anticipated cost or time savings that may be associated with the substitute;
  - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance; and,
  - (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.
- B7.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/her sole discretion grant approval for the use of a substitute as an "approved equal" or as an "approved alternative", or may refuse to grant approval of the substitute.

- B7.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.
- B7.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.
- B7.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B7.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his/her 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 B17.
- B7.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.
- B8. BID COMPONENTS**
- B8.1 The Bid shall consist of the following components:
- (a) Form A: Bid
  - (b) Form B: Prices
- B8.2 Further to B8.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B7.
- B8.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely.
- B8.4 The Bid Submission may be submitted by mail, courier or personal delivery, or by facsimile transmission.
- B8.5 If the Bid Submission is submitted by mail, courier or personal delivery, it shall be enclosed and sealed in an envelope clearly marked with the Tender number and the Bidder's name and address, and shall be submitted to:
- The City of Winnipeg
  - Corporate Finance Department
  - Materials Management Division
  - 185 King Street, Main Floor
  - Winnipeg MB R3B 1J1
- B8.5.1 Samples or other components of the Bid Submission which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Tender number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid Submission.
- B8.6 If the Bid Submission is submitted by facsimile transmission, it shall be submitted to 204-949-1178.
- B8.6.1 The Bidder is advised that the City cannot take responsibility for the availability of the facsimile machine at any time or guarantee the successful receipt of a faxed Bid Submission.
- B8.7 Bidders are advised not to include any information/literature except as requested in accordance with B8.1.

B8.8 Bidders are advised that inclusion of terms and conditions inconsistent with the Tender document, including the General Conditions, will be evaluated in accordance with B17.1(a).

B8.8.1 Bids submitted by internet electronic mail (e-mail) will not be accepted.

## **B9. BID**

B9.1 The Bidder shall complete Form A: Bid, making all required entries.

B9.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:

- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, his/her 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/her own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.

B9.2.1 If a Bid is submitted jointly by two (2) or more persons, each and all such persons shall identify themselves in accordance with B9.2.

B9.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.

B9.4 Paragraph 11 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/her 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;
- (d) if the Bidder is carrying on business under a name other than his/her own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.

B9.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.

B9.4.2 All signatures shall be original.

B9.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

## **B10. PRICES**

B10.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B10.1.1 Prices stated on Form B: Prices shall not include any costs which may be incurred by the Contractor with respect to any applicable funding agreement obligations as outlined in D25. Any such costs shall be determined in accordance with D25.

B10.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.

B10.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.

B10.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

**B11. DISCLOSURE**

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

B11.2 The Persons are:

- (a) N/A

**B12. CONFLICT OF INTEREST AND GOOD FAITH**

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

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

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

that could or would be seen to:

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

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

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

- B12.4 Without limiting B12.3, the City may, in its sole discretion, waive any and all perceived, potential or actual Conflicts of Interest. The City's waiver may be based upon such terms and conditions as the City, in its sole discretion, requires to satisfy itself that the Conflict of Interest has been appropriately avoided or mitigated, including requiring the Bidder to put into place such policies, procedures, measures and other safeguards as may be required by and be acceptable to the City, in its sole discretion, to avoid or mitigate the impact of such Conflict of Interest.
- B12.5 Without limiting B12.3, and in addition to all contractual or other rights or rights at law or in equity or legislation that may be available to the City, the City may, in its sole discretion:
- (a) disqualify a Bidder that fails to disclose a perceived, potential or actual Conflict of Interest of the Bidder or any of its employees proposed for the Work;
  - (b) require the removal or replacement of any employees proposed for the Work that has a perceived, actual or potential Conflict of Interest that the City, in its sole discretion, determines cannot be avoided or mitigated;
  - (c) disqualify a Bidder or employees proposed for the Work that fails to comply with any requirements prescribed by the City pursuant to B12.4 to avoid or mitigate a Conflict of Interest; and,
  - (d) disqualify a Bidder if the Bidder, or one of its employees proposed for the Work, has a perceived, potential or actual Conflict of Interest that, in the City's sole discretion, cannot be avoided or mitigated, or otherwise resolved.
- B12.6 The final determination of whether a perceived, potential or actual Conflict of Interest exists shall be made by the City, in its sole discretion.

### **B13. QUALIFICATION**

- B13.1 The Bidder shall:
- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba;
  - (b) be financially capable of carrying out the terms of the Contract; and,
  - (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.
- B13.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/debar.stm>
- B13.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) have successfully carried out work similar in nature, scope and value to the Work; and
  - (b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and
  - (c) have a written workplace safety and health program if required pursuant to The Workplace Safety and Health Act (Manitoba).
- B13.4 Further to B13.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

- (a) written confirmation of a safety and health certification meeting SAFE Work Manitoba's SAFE Work Certified Standard (e.g., COR™ and SECOR™) or
  - (i) a copy of their valid Manitoba COR certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Certificate of Recognition (COR) Program administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
  - (ii) a copy of their valid Manitoba SECOR™ certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Small Employer Certificate of Recognition Program (SECOR™) administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or
- (b) a report or letter to that effect from an independent reviewer acceptable to the City. (A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>).

B13.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B13.6 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

#### **B14. OPENING OF BIDS AND RELEASE OF INFORMATION**

B14.1 Bids will not be opened publicly.

B14.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/bidopp.asp>

B14.3 After award of Contract, the name(s) of the successful Bidder(s), their address(es) and the Contract amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>

B14.4 The Bidder is advised that any information contained in any Bid may be released if required by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law or by City policy or procedures (which may include access by members of City Council).

B14.4.1 To the extent permitted, the City shall treat as confidential information, those aspects of a Bid Submission identified by the Bidder as such in accordance with and by reference to Part 2, Section 17 or Section 18 or Section 26 of The Freedom of Information and Protection of Privacy Act (Manitoba), as amended.

#### **B15. IRREVOCABLE BID**

B15.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 9 of Form A: Bid.

B15.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work for the time period specified in Paragraph 9 of Form A: Bid.

## **B16. WITHDRAWAL OF BIDS**

- B16.1 A Bidder may withdraw his/her Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.
- B16.1.1 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.
- B16.1.2 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 11 of Form A: Bid, and only such person, has authority to give notice of withdrawal.
- B16.1.3 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 11 of Form A: Bid; and,
  - (c) if the notice has been given by any one of the persons specified in B16.1.3(b), declare the Bid withdrawn.
- B16.2 A Bidder who withdraws his/her Bid after the Submission Deadline but before his/her Bid has been released or has lapsed as provided for in B15.2 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.

## **B17. EVALUATION OF BIDS**

- B17.1 Award of the Contract shall be based on the following bid evaluation criteria:
- (a) compliance by the Bidder with the requirements of the Tender or acceptable deviation there from (pass/fail);
  - (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B13 (pass/fail);
  - (c) Total Bid Price; and,
  - (d) economic analysis of any approved alternative pursuant to B7.
- B17.2 Further to B17.1(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.
- B17.3 Further to B17.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is qualified.
- B17.4 Further to B17.1(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.
- B17.4.1 Further to B17.1(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.

## **B18. AWARD OF CONTRACT**

- B18.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B18.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be qualified, and the Bids are determined to be responsive.

- B18.2.1 Without limiting the generality of B18.2, 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.
- B18.3 If funding for the Work is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, Bidders are advised that the terms of D25 shall immediately take effect upon confirmation of such funding, regardless of when funding is confirmed.
- B18.4 Where an award of Contract is made by the City, the award shall be made to the qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B17.
- B18.4.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.
- B18.5 Notwithstanding C4, the City may issue a Purchase Order to the successful Bidder in lieu of the execution of a Contract.
- B18.6 The Contract, as defined in C1.1, in its entirety shall be deemed to be incorporated in and to form a part of the Purchase Order notwithstanding that it is not necessarily attached to or accompany said Purchase Order.

## **PART C - GENERAL CONDITIONS**

### **C1. GENERAL CONDITIONS**

- C1.1 The *General Conditions for Construction* (Revision 2019-01-15) are applicable to the Work of the Contract.
- C1.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at [http://www.winnipeg.ca/matmgt/gen\\_cond.stm](http://www.winnipeg.ca/matmgt/gen_cond.stm)
- C1.2 A reference in the Tender to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for 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 concrete repairs and roadway expansion joint replacement at the Provencher Bridge over the Red River; median barrier replacement at the Dugald Bridge over CN Rail; concrete repairs, crack injection and slope protection repairs, roadway works and chain link fence repairs at the Provencher Culvert over the Seine River.

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

- (a) Provencher Bridge southwest concrete barrier and northwest concrete curb repairs;
- (b) Provencher Bridge west roadway expansion joint renewal;
- (c) Dugald Bridge median concrete barrier replacement;
- (d) Provencher Culvert wingwall concrete repairs;
- (e) Provencher Culvert arch soffit concrete repairs and chemical grout crack injection;
- (f) Provencher Culvert slope protection repairs;
- (g) Provencher Culvert roadway asphalt planing, asphalt overlay placement, concrete curb repairs; and,
- (h) Provencher Culvert chain link fence repairs.

#### D3. DEFINITIONS

D3.1 When used in this Tender:

- (a) **“Weekday Peak Period”** for the Provencher Bridge Site means 07:00 to 09:00 for westbound traffic and 15:00 to 18:00 for eastbound traffic of any Business Day.
- (b) **“Under Bridge Crane”** means the City of Winnipeg truck, which remains on the road with a crane that extends a lift basket underneath the bridge.

#### D4. CONTRACT ADMINISTRATOR

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

Kevin Breukelman, CET  
Project Manager

Telephone No. 204-453-2301

Email Address [kbreukelman@dillon.ca](mailto:kbreukelman@dillon.ca)

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

D4.3 Bids Submissions must be submitted to the address in B8.

**D5. CONTRACTOR'S SUPERVISOR**

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

**D6. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE**

D6.1 The Contract, all deliverables produced or developed, and information provided to or acquired by the Contractor are the property of the City and shall not be appropriated for the Contractor's own use, or for the use of any third party.

D6.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.

D6.3 The following shall be confidential and shall not be disclosed by the Contractor to the media or any member of the public without the prior written authorization of the Contract Administrator:

- (a) information provided to the Contractor by the City or acquired by the Contractor during the course of the Work;
- (b) the Contract, all deliverables produced or developed; and,
- (c) any statement of fact or opinion regarding any aspect of the Contract.

D6.4 A Contractor who violates any provision of D6 may be determined to be in breach of Contract.

**D7. NOTICES**

D7.1 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.

D7.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D7.3, D7.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator identified in D4.

D7.3 Notwithstanding C21., all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following:

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

D7.4 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following facsimile number:

The City of Winnipeg  
Legal Services Department  
Attn: Director of Legal Services  
Facsimile No.: 204 947-9155

**D7.1 Bids Submissions must not be submitted to the above facsimile number. Bids must be submitted in accordance with B8.**

## **SUBMISSIONS**

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

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

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

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

D9.2 The Safe Work Plan should be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/Safety/default.stm>

### **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) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than two million dollars (\$2,000,000.00) inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence;
- (c) all risks installation floater, carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation.

D10.2 Deductibles shall be borne by the Contractor.

D10.3 The Contractor shall provide the Contract Administrator with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than seven (7) Calendar Days from notification of the award of Contract by Purchase Order.

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. CONTRACT SECURITY**

D11.1 If the Contract Price exceeds twenty-five thousand dollars (\$25,000.00), the Contractor shall provide and maintain contract 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; and

- (b) a labour and material payment bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H2: Labour and Material Payment Bond), in an amount equal to fifty percent (50%) of the Contract Price; or,
- (c) 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 H3: Irrevocable Standby Letter of Credit), in the amount of fifty percent (50%) of the Contract Price; or,
- (d) 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 contract 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 contract security.

D11.2 The Contractor shall provide the City Solicitor with the required contract security within seven (7) Calendar Days of notification of the award of the Contract by way of Purchase Order and prior to the commencement of any Work on the Site.

D11.3 Where the Contract Security is provided in accordance with D11.1(a) and D11.1(b), the Contractor shall, as soon as practicable after entering into a contract with a Subcontractor:

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

## **D12. SUBCONTRACTOR LIST**

D12.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than seven (7) Calendar Days from notification of the award of Contract.

## **D13. DETAILED WORK SCHEDULE**

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

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

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

D13.3 Further to D13.2(a), the Gantt chart shall clearly identify the start and completion dates as well as critical path items for all activities listed under D2.2.

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

## **SCHEDULE OF WORK**

### **D14. COMMENCEMENT**

D14.1 The Contractor shall not commence any Work until he/she is in receipt of a Purchase Order from the Award Authority authorizing the commencement of the Work.

- D14.2 The Contractor shall not commence any Work on the Site until:
- (a) the Contract Administrator has confirmed receipt and approval of:
    - (i) evidence of authority to carry on business specified in D8;
    - (ii) evidence of the workers compensation coverage specified in C6.15;
    - (iii) the Safe Work Plan specified in D9;
    - (iv) evidence of the insurance specified in D10;
    - (v) the contract security specified in D11;
    - (vi) the Subcontractor list specified in D12;
    - (vii) the detailed work schedule specified in D13; and,
    - (viii) The Environmental Protection Plan specified in E5.
  - (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.
- D14.3 Provencher Culvert
- D14.3.1 The Contractor shall coordinate the Work in accordance with D15.
- D14.3.2 The Contractor shall not commence the following Work at the Provencher Culvert before July 15, 2019:
- (a) C.3 Chemical Grout Crack Injection
  - (b) C.5 Concrete Curb Renewal;
  - (c) C.6 Planing of Pavement; and
  - (d) C.7 Construction of Asphaltic Concrete Overlay.
- D14.3.3 The Contractor shall not commence the following Work at the Provencher Culvert before January 1, 2020:
- (a) C.1 Grouted Stone Riprap;
  - (b) C.2 Concrete Repairs; and,
  - (c) C.4 Chain Link Fence Repairs.
- D14.4 The City intends to award this Contract by June 3, 2019.
- D14.4.1 If the actual date of award is later than the intended date, the dates specified for Substantial Performance and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

## **D15. WORK BY OTHERS**

- D15.1 Contractor shall coordinate the Work of this Contract with the work of others and City forces so as to not hinder, delay or interfere with the others and/or City forces in the performance of their work. Contractor shall connect their Work with the work of others as shown in the Contract.
- D15.2 Contractor shall report to the Contract Administrator any apparent deficiencies in other's and/or City's work which would affect the Work of this Contract immediately as they come to Contractor's attention and Contractor shall confirm such report in writing within ten (10) Calendar Days of becoming aware of the deficiency. Failure by Contractor to report shall invalidate any claims against the City by reason of the deficiencies of other's and/or City forces work except as to those of which Contractor was not reasonably aware.
- D15.3 Work by others on or near the Site will include but not necessarily be limited to:
- (a) City of Winnipeg – Public Works – Renewal of safety median curb by contractor on Provencher Boulevard at the Provencher Culvert until July 14, 2019.

**D16. CRITICAL STAGE**

- D16.1 The Contractor shall achieve Critical Stages of the Work in accordance with the following:
- (a) Provencher Culvert Chemical Grout Injection.
    - (i) The Contractor will be permitted to use the City's Under Bridge Crane for five (5) Working Days.

**D17. SUBSTANTIAL PERFORMANCE**

- D17.1 The Contractor shall achieve Substantial Performance by February 28, 2020.
- D17.2 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 reinspected.
- D17.3 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.

**D18. TOTAL PERFORMANCE**

- D18.1 The Contractor shall achieve Total Performance by March 6, 2020.
- D18.2 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.
- D18.3 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.

**D19. LIQUIDATED DAMAGES**

- D19.1 If the Contractor fails to achieve Critical Stages in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:
- (a) Provencher Culvert Chemical Grout Injection – two thousand five hundred dollars (\$2,500.00).
- D19.2 If the Contractor fails to achieve Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per for each and every following the days fixed herein for same during which such failure continues:
- (a) Total Performance – Seven hundred and fifty dollars (\$750.00).
- D19.3 The amounts specified for liquidated damages in D19.1 and D19.2 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve critical stages, Substantial Performance or Total Performance by the days fixed herein for same.
- D19.4 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

## **CONTROL OF WORK**

### **D20. JOB MEETINGS**

- D20.1 Regular weekly job meetings will be held at the Site as determined by the Contract Administrator. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one (1) representative of the City and one (1) 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.
- D20.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

### **D21. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

- D21.1 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).

### **D22. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS**

- D22.1 Further to B13.4, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require updated proof of compliance, as set out in B13.4.

### **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.
- D24.1.1 For the purpose of Contract Security, the warranty period shall be two (2) years.
- D24.2 Notwithstanding C13.2 or D24.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if:
- (a) a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use.
- D24.2.1 In such case, the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

## THIRD PARTY AGREEMENTS

### D25. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

- D25.1 In the event that funding for the Work of the Contract is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, the following terms and conditions shall apply, as required by the applicable funding agreements.
- D25.2 Further to D25.1, in the event that the obligations in D25 apply, actual costs legitimately incurred by the Contractor as a direct result of these obligations ("Funding Costs") shall be determined by the actual cost to the Contractor and not by the valuation method(s) outlined in C7.4. In all other respects Funding Costs will be processed in accordance with Changes in Work under C7.
- D25.3 For the purposes of D25:
- (a) "**Government of Canada**" includes the authorized officials, auditors, and representatives of the Government of Canada; and
  - (b) "**Government of Manitoba**" includes the authorized officials, auditors, and representatives of the Government of Manitoba.
- D25.4 Modified Insurance Requirements
- D25.4.1 If not already required under the insurance requirements identified in D10, the Contractor will be required to provide wrap-up liability insurance in an amount of no less than two million dollars (\$2,000,000) inclusive per occurrence. Such policy will be written in the joint names of the City, Contractor, Consultants and all sub-contractors and sub-consultants and include twelve (12) months completed operations. The Government of Manitoba and its Ministers, officers, employees, and agents shall be added as additional insureds.
- D25.4.2 If not already required under the insurance requirements identified in D10, the Contractor will be required to provide builders' risk insurance (including boiler and machinery insurance, as applicable) providing all risks coverage at full replacement cost, or such lower level of insurance that the City may identify on a case-by-case basis, such as an installation floater.
- D25.4.3 The Contractor shall obtain and maintain third party liability insurance with minimum coverage of two million dollars (\$2,000,000.00) per occurrence on all licensed vehicles operated at the Site. In the event that this requirement conflicts with another licensed vehicle insurance requirement in this Contract, then the requirement that provides the higher level of insurance shall apply.
- D25.4.4 Further to D10.3, insurers shall provide satisfactory Certificates of Insurance to the Government of Manitoba prior to commencement of Work as written evidence of the insurance required. The Certificates of Insurance must provide for a minimum of thirty (30) days' prior written notice to the Government of Manitoba in case of insurance cancellation.
- D25.4.5 All policies must be taken out with insurers licensed to carry on business in the Province of Manitoba.
- D25.5 Indemnification By Contractor
- D25.5.1 In addition to the indemnity obligations outlined in C17 of the General Conditions for Construction, the Contractor agrees to indemnify and save harmless the Government of Canada and the Government of Manitoba and each of their respective Ministers, officers, servants, employees, and agents from and against all claims and demands, losses, costs, damages, actions, suit or other proceedings brought or pursued in any manner in respect of any matter caused by the Contractor or arising from this Contract or the Work, or from the goods or services provided or required to be provided by the Contractor, except those resulting from the negligence of any of the Government of Canada's or the Government of Manitoba's Ministers, officers, servants, employees, or agents, as the case may be.

## D25.6 Records Retention and Audits

D25.6.1 The Contractor shall maintain and preserve accurate and complete records in respect of this Contract and the Work, including all accounting records, financial documents, copies of contracts with other parties and other records relating to this Contract and the Work during the term of the Contract and for at least six (6) years after Total Performance. Those records bearing original signatures or professional seals or stamps must be preserved in paper form; other records may be retained in electronic form.

D25.6.2 In addition to the record keeping and inspection obligations outlined in C6 of the General Conditions for Construction, the Contractor shall keep available for inspection and audit at all reasonable times while this Contract is in effect and until at least six (6) years after Total Performance, all records, documents, and contracts referred to in D25.6.1 for inspection, copying and audit by the City of Winnipeg, the Government of Manitoba and/or the Government of Canada and their respective representatives and auditors, and to produce them on demand; to provide reasonable facilities for such inspections, copying and audits, to provide copies of and extracts from such records, documents, or contracts upon request by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada and their respective representatives and auditors, and to promptly provide such other information and explanations as may be reasonably requested by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada from time-to-time.

## D25.7 Other Obligations

D25.7.1 The Contractor consents to the City providing a copy of the Contract to the Government of Manitoba and/or the Government of Canada upon request from either entity.

D25.7.2 If the Lobbyists Registration Act (Manitoba) applies to the Contractor, the Contractor represents and warrants that it has filed a return and is registered and in full compliance with the obligations of that Act, and covenants that it will continue to comply for the duration of this Contract.

D25.7.3 The Contractor shall comply with all applicable legislation and standards, whether federal, provincial, or municipal, including (without limitation) labour, environmental, and human rights laws, in the course of providing the Work.

D25.7.4 The Contractor shall properly account for the Work provided under this Contract and payment received in this respect, prepared in accordance with generally accepted accounting principles in effect in Canada, including those principles and standards approved or recommended from time-to-time by the Chartered Professional Accountants of Canada or the Public Sector Accounting Board, as applicable, applied on a consistent basis.

**FORM H1: PERFORMANCE BOND**  
(See D11)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

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

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

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

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CULVERT

which is by reference made part hereof and is hereinafter referred to as the "Contract".

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

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

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

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

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

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

**SIGNED AND SEALED**  
in the presence of:

\_\_\_\_\_  
(Witness as to Principal if no seal)

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

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

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

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

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

**FORM H2: LABOUR AND MATERIAL PAYMENT BOND**  
(See D11)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

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

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

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

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which is by reference made part hereof and is hereinafter referred to as the "Contract".

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

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

- (iii) after the expiration of one (1) year following the date on which Principal ceased work on said Contract; including work performed under the guarantees provided in the Contract;
  - (iv) other than in a court of competent jurisdiction in the Province of Manitoba.
- (d) The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.
- (e) The Surety shall not be liable for a greater sum than the specified penalty of this bond.

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

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

\_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

SIGNED AND SEALED

in the presence of:

\_\_\_\_\_  
(Witness as to Principal if no seal)

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

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

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

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

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



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.

Except where they may conflict with the terms and conditions contained in this Letter of Credit, the International Standby Practices 1998 shall apply to this Letter of Credit. This Letter of Credit shall also be governed by and construed in accordance with the laws of the Province of Manitoba and of Canada as applicable therein, except to the extent that such laws are inconsistent with the International Standby Practices 1998. This Letter of Credit is subject to the exclusive jurisdiction of the courts in the Province of Manitoba and all courts competent to hear appeals therefrom.

\_\_\_\_\_  
(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 website at <http://www.winnipeg.ca/matmgt/Spec/Default.stm>
- E1.2.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.2.3 Further to C2.4(d), Specifications included in the Tender shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.3 Bidders are reminded that requests for approval of substitutes as an approved equal or an approved alternative shall be made in accordance with B7. In every instance where a brand name or design specification is used, the City will also consider approved equals and/or approved alternatives in accordance with B7.
- E1.4 The following are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>
B110-19-00/ B117-19-00/ C302-19-00	Cover Sheet
B110-19-01	Provencher Bridge Site Plan
B110-19-02	Provencher Bridge Roadway and Barrier Joint Details
B117-19-01	Dugald Bridge Site Plan
B117-19-02	Dugald Bridge Barrier Repair Details
C302-19-01	Provencher Culvert Site Plan and Roadworks
C302-19-02	Provencher Culvert Concrete Repairs 1
C302-19-03	Provencher Culvert Concrete Repairs 2

#### E2. SHOP DRAWINGS

- E2.1 Description
- E2.1.1 This Specification provides instructions for the preparation and submission of Shop Drawings.
- (a) The term 'Shop Drawings' means Drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, including Site erection Drawings which are to be provided by the Contractor to illustrate details of a portion of the Work; and,
- (b) Submit specified Shop Drawings to the Contract Administrator for review. All submissions must be in metric units. Where data is in imperial units, the correct metric equivalent shall also be show on all submissions for Contract Administrator review.
- E2.2 Shop Drawings
- E2.2.1 Original Shop Drawings shall be prepared by Contractor, Subcontractor, supplier, distributor or manufacturer to illustrate appropriate portion of Work including fabrication, layout, setting or erection details as specified in appropriate sections.

E2.2.2 Shop Drawings are required for the following components:

- (a) Dugald Bridge median barrier reinforcing steel.

E2.3 Contractor's Responsibilities

- (a) Review Shop Drawings, product data and samples prior to submission and stamp and sign Drawings indicating conformance to the Contract requirements.
- (b) Verify:
  - (i) field measurements;
  - (ii) field construction criteria; and,
  - (iii) catalogue numbers and similar data.
- (c) Coordinate each submission with requirements of Work and Contract Documents. Individual Shop Drawings will not be reviewed until all related Drawings are available.
- (d) Notify Contract Administrator, in writing at time of submission, of deviations from requirements of Contract Documents.
- (e) Responsibility for deviations in submission from requirements of Contract Documents is not relieved by Contract Administrator's review of submission, unless Contract Administrator gives written acceptance of specified deviations.
- (f) Responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.
- (g) Make any corrections required by the Contract Administrator and resubmit the required number of corrected copies of Shop Drawings. Direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections requested by the Contract Administrator on previous submission.
- (h) After Contract Administrator's review and return of copies, distribute copies to Subcontractors and others as appropriate.
- (i) Maintain one (1) complete set of reviewed Shop Drawings, filed by Specification section number, at the Site of the Work for use and reference of the Contract Administrator and Subcontractors.

E2.4 Submission Requirements

- (a) Schedule submissions at least fourteen (14) Calendar Days before dates reviewed submissions will be needed, and allow for a fourteen (14) Calendar Day period for review by the Contract Administrator of each individual submission and re-submission, unless noted otherwise in the Contract Documents.
- (b) Submit one (1) electronic copy of Shop Drawings.
- (c) Accompany submissions with transmittal letter containing:
  - (i) date;
  - (ii) project title and Tender document number;
  - (iii) Contractor's name and address;
  - (iv) number of each Shop Drawing, product data, and sample submitted;
  - (v) Specification section, title, number and clause;
  - (vi) Drawing number and detail / section number; and,
  - (vii) other pertinent data.
- (d) Submissions shall include:
  - (i) date and revision dates;
  - (ii) project title and Tender document number;
  - (iii) name of:
    - ◆ Contractor;
    - ◆ Subcontractor;

- ◆ supplier;
  - ◆ manufacturer; and,
  - ◆ detailer (if applicable).
- (iv) identification of product or material;
  - (v) relation to adjacent structure or materials;
  - (vi) field dimensions, clearly identified as such;
  - (vii) Specification section name, number and clause number or drawing number and detail / section number;
  - (viii) applicable standards, such as CSA or CGSB numbers; and,
  - (ix) Contractor's stamp, initialled or signed, certifying review of submission, verification of field measurements and compliance with Contract Documents

#### E2.5 Other Considerations

- (a) Fabrication, erection, installation or commissioning may require modifications to equipment or systems to conform to the design intent. Revise pertinent Shop Drawings and resubmit.
- (b) Material and equipment delivered to the Site of the Works will not be paid for at least until pertinent Shop Drawings have been submitted and reviewed.
- (c) Incomplete Shop Drawing information will be considered as stipulated deductions for the purposes of progress payment certificates.
- (d) No delay or cost claims will be allowed that arise because of delays in submissions, re-submissions and review of Shop Drawings.

### E3. HAZARDOUS MATERIALS

- E3.1 If asbestos or other hazardous materials are encountered during the Work of the Contract, the Contractor shall stop all work and notify the Contract Administrator immediately. Removal of hazardous materials shall be dealt with by the City and the Contractor shall await further instruction by the Contract Administrator.

### E4. PROTECTION OF EXISTING TREES

- E4.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing trees within the limits of the construction area:
- (a) the Contractor shall not stockpile materials and soil or park vehicles and equipment within two (2) metres of trees;
  - (b) trees identified to be at risk by the Contract Administrator are to be strapped with twenty-five (25) by one hundred (100) by twenty-four hundred (2400) millimetres wood planks, or suitably protected as approved by the Contract Administrator;
  - (c) excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of one and a half (1.5) times the diameter (measured in inches), with the outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation;
  - (d) operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the Work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located; and,
  - (e) Work on-Site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.

- E4.2 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his/her designate.
- E4.3 Elm trees shall not be pruned at any time between April 1 and July 31.
- E4.4 No separate measurement or payment will be made for performing all operations herein described and all other items incidental to the Work described.

## **E5. ENVIRONMENTAL PROTECTION PLAN**

- E5.1 Prior to commencing construction activities or delivery of materials to the Provencher Culvert Site, submit an Environmental Protection Plan for review and approval by Contract Administrator. The Environmental Protection Plan shall present a comprehensive plan to address all of the Contractor's chosen means and methods towards performing the Work that may impact the environment. The submission of the Environmental Protection Plan to the Contract Administrator shall in no way relieve the Contractor of full responsibility for the success or failure of all environmental management practices and procedures.
- E5.2 The Contractor is advised that at least the following Acts, Regulations, and By-laws apply to the Work:
- (a) Federal
    - (i) Canadian Environmental Assessment Act, 2012 (CEAA, 2012);
    - (ii) Canadian Environmental Protection Act (CEPA) C.33;
    - (iii) Fisheries Act C.F-14;
    - (iv) Hazardous Products Act C.H.-3;
    - (v) Transportation of Dangerous Goods Act and Regulations C.34;
    - (vi) Migratory Birds Convention Act and Regulations, c. 22;
    - (vii) Species at Risk Act, c. 29;
    - (viii) And any other applicable Acts, Regulations and By-laws;
    - (ix) Applicable Fisheries and Oceans Canada (DFO) Operational Statements for Manitoba for stream crossings and bridge works;
    - (x) The DFO Freshwater Intake End-of-Pipe Fish Screen Guidelines, DFO 1995;
    - (xi) DFO Policy for the Management of Fish Habitat 1986;
    - (xii) Federal Policy on Wetland Conservation 1991; and,
    - (xiii) Transportation Association of Canada's National Guide to Erosion and Sediment Control on Roadway Projects, 2005.
  - (b) Provincial
    - (i) The Dangerous Goods Handling and Transportation Act D12;
    - (ii) The Endangered Species and Ecosystems Act E111;
    - (iii) The Environment Act C.E125;
    - (iv) The Fire Prevention Act F80;
    - (v) The Manitoba Heritage Resources Act H39-1;
    - (vi) The Manitoba Noxious Weeds Act N110;
    - (vii) The Manitoba Nuisance Act N120;
    - (viii) Pesticides and Fertilizers Control Act P40;
    - (ix) The Water Protection Act, c. W65;
    - (x) The Public Health Act C.P210;
    - (xi) The Workplace Safety and Health Act W210;
    - (xii) The Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat, Manitoba Natural Resources and DFO, 1996;
    - (xiii) current applicable associated regulations; and,

(xiv) any other applicable Acts, Regulations, and By-laws.

(c) Municipal

- (i) The City of Winnipeg By-law Neighbourhood Liveability No. 1/2008 and all amendments;
- (ii) The City of Winnipeg Traffic By-law No. 1573/77 and all amendments;
- (iii) City of Winnipeg Best Management Practices Handbook for Activities In and Around the City's Waterways and Watercourses, City of Winnipeg, 2005;
- (iv) City of Winnipeg Motor Vehicle Noise Policies and Guidelines;
- (v) The City of Winnipeg Sewer By-law No. 92/2010 and all amendments; and,
- (vi) any other applicable Acts, Regulations, and By-laws and associated updates and amendments.

E5.3 The Contractor is advised that the following environmental protection measures apply to the Work.

E5.3.1 Materials Handling and Storage

- (a) Storage of construction materials and equipment will be confined within a fenced area or at a location approved by the Contract Administrator with environmental protection (e.g., silt fence) as appropriate.
- (b) Construction materials will not be deposited or stored on or near watercourses unless written acceptance from the Contract Administrator is received in advance.
- (c) Construction materials and debris will be tied down or secured if severe weather and high wind velocities are forecasted. Work shall be suspended during extreme high wind conditions.
- (d) Construction materials and debris will be prevented from entering watercourses. In the event that materials and/or debris inadvertently enter the land drainage system, the Contractor will be required to remove the material to an appropriate landfill or storage facility and restore the watercourse to its original condition.

E5.3.2 Fuel Handling and Storage

- (a) The Contractor will obtain all necessary permits from Manitoba Sustainable Development (MSD) for the handling and storage of fuel products and shall provide copies to the Contract Administrator.
- (b) All fuel handling and storage facilities will comply with The Dangerous Goods and Transportation Act Storage and Handling of Petroleum Products Regulation and any local land use permits.
- (c) Fuels, lubricants and other potentially hazardous materials as defined in The Dangerous Goods and Transportation Act will be stored and handled within approved storage areas.
- (d) The Contractor will ensure that any temporary fuel storage areas established for construction of the project are contained by an impermeable dike and are located a minimum distance of one hundred (100) metres away from the Seine River and any other watercourse. Dikes will be designed, constructed, and maintained to retain not less than one hundred percent (100%) of the capacity of the total number of containers or one hundred and ten percent (110%) of the largest container, whichever is greatest. The dikes will be constructed of clay or similar impervious material. If this type of material is not available, the dike will be constructed of locally available material and lined with high-density polyethylene (HDPE). Furthermore, the fuel storage area(s) will be secured by a barrier such as a high fence and gate to prevent vandalism.
- (e) The Contractor will ensure that all fuel storage containers are inspected daily for leaks and spillage.
- (f) Products transferred from the fuel storage area(s) to specific Work sites will not exceed the daily usage requirement.

- (g) When servicing requires the drainage or pumping of fuels, lubricating oils or other fluids from equipment, a groundsheet of suitable material (such as HDPE) and size will be spread on the ground to catch the fluid in the event of a leak or spill.
- (h) Wash, refuel and service machinery and store fuel and other materials for the machinery a minimum of one hundred (100) metres away from watercourses to prevent deleterious substances from entering the water.
- (i) The area around storage sites and fuel lines will be distinctly marked and kept clear of snow and debris to allow for routine inspection and leak detection.
- (j) The deposit of deleterious substances into water frequented by fish is prohibited under the Fisheries Act, 1985. The Contractor will take appropriate precautions to ensure that potentially deleterious substances (such as fuel, hydraulic fluids, oil, sediment, etc.) do not enter any water body.
- (k) Machinery is to arrive on Site in a clean condition and is to be maintained free of fluid leaks.
- (l) A sufficient supply of materials, such as absorbent material and plastic oil booms, to clean up minor spills will be stored nearby on Site. The Contractor will ensure that additional material can be made available on short notice. Additionally, appropriate staff on Site will be trained in proper handling of deleterious liquids (i.e., fuelling) and trained on how to prevent and clean-up minor spills.

#### E5.3.3 Waste Handling and Disposal

- (a) The construction area will be kept clean and orderly at all times and at the completion of construction.
- (b) At no time during construction will personnel or construction waste be permitted to accumulate for more than one (1) day at any location on the construction Site, other than at a dedicated storage area as may be approved by the Contract Administrator.
- (c) The Contractor will, during and at the completion of construction, clean up the construction area and all resulting debris shall be deposited at a Waste Disposal Ground operating under the authority of Waste Disposal Grounds Regulation, Manitoba Regulation 150/91. Exceptions are liquid industrial and hazardous wastes which require special disposal methods.
- (d) On Site volumes of sewage and/or septage will be removed on a weekly basis.
- (e) The Contractor will ensure sewage, septage and other liquid wastes generated on Site are handled and disposed of by a certified disposal contractor.
- (f) Indiscriminate dumping, littering, or abandonment will not take place.
- (g) No burning of waste or other materials is permitted.
- (h) Clearing debris will be disposed of by chipping and/or mulching with the material being used by the City of Winnipeg for future uses.
- (i) The Contractor will use structurally suitable Site excavation material as fill within the project. Should excavated material exceed fill needs, the remainder would be stockpiled for use on other local projects.
- (j) Structurally unsuitable site excavation material will be removed by the Contractor.
- (k) Waste storage areas will not be located so as to block natural drainage.
- (l) Runoff from a waste storage area will not be allowed to cause siltation of a watercourse.
- (m) Waste storage areas will be left in a neat and finished appearance and/or restored to their original condition to the satisfaction of the Contract Administrator.
- (n) Equipment will not be cleaned near (within one hundred (100) metres) watercourses; contaminated water from onshore cleaning operations will not be permitted to enter watercourses.

- (o) The Contractor will notify and receive written approval from the Contract Administrator prior to discharge from any dewatered areas. The discharge will be released into a well-vegetated area, filter bag, settling basin, or storm sewer system to remove suspended material and other deleterious substances from the discharge before it finds its way into any watercourse. Discharge from dewatering areas may require approved disposal via the sanitary sewer system or disposal truck.
- (p) Flows will be dissipated so that dewatering discharges minimize erosion at the discharge point.

#### E5.3.4 Dangerous Goods/Hazardous Waste Handling and Disposal

- (a) Dangerous goods/hazardous waste are identified by, and will be handled according to, The Dangerous Goods Handling and Transportation Act and Regulations.
- (b) The Contractor will be familiar with The Dangerous Goods Handling and Transportation Act and Regulations.
- (c) The Contractor will have on Site staff that are trained and certified in the handling of the dangerous/hazardous goods, when said dangerous/hazardous goods are being utilized on Site for the performance of the Work.
- (d) Different waste streams will not be mixed.
- (e) Disposal of dangerous goods/hazardous wastes will be at approved hazardous waste facilities.
- (f) Liquid hydrocarbons will not be stored or disposed of in earthen pits on Site.
- (g) Used oils will be stored in appropriate drums or tankage until shipment to waste oil recycling centres, incinerators, or secure disposal facilities approved for such wastes.
- (h) Used oil filters will be drained, placed in suitable storage containers, and buried or incinerated at approved hazardous waste treatment and disposal facilities.
- (i) Dangerous goods/hazardous waste storage areas will be located at least one hundred (100) metres away from the ordinary high water line of any watercourse or wetland areas and be diked.
- (j) Dangerous goods/hazardous waste storage areas will not be located so as to block natural drainage.
- (k) Runoff from a dangerous goods/hazardous waste storage area will not be allowed to cause siltation of a watercourse.
- (l) Dangerous goods/hazardous waste storage areas will be left in a neat and finished appearance and/or restored to their original condition to the satisfaction of the Contract Administrator.

#### E5.3.5 Emergency Response

- (a) The Contractor will ensure that due care and caution is taken to prevent spills.
- (b) The Contractor will report all major spills of petroleum products or other hazardous substances with significant impact on the environment and threat to human health and safety (as defined in Table E5-1 below) to Manitoba Sustainable Development, immediately after occurrence of the environmental accident, by calling the twenty-four (24) hour emergency phone number (204) 945-4888.
- (c) The Contractor will designate a qualified supervisor as the on Site emergency response coordinator for the project. The emergency response coordinator will have the authority to redirect manpower in order to respond in the event of a spill.
- (d) The following actions will be taken by the person in charge of the spilled material or the first person(s) arriving at the scene of a hazardous material accident or the on Site emergency response coordinator.
  - (i) Notify emergency-response coordinator of the accident:
    - ◆ identify exact location and time of the accident;
    - ◆ indicate injuries, if any; and,

- ◆ request assistance as required by magnitude of accident [Manitoba Sustainable Development twenty-four (24) hour Spill Response Line (204) 945-4888, Police, Fire Department, Ambulance, company backup].
- (ii) Attend to public safety:
  - ◆ stop traffic, roadblock/cordon off the immediate danger area;
  - ◆ eliminate ignition sources; and,
  - ◆ initiate evacuation procedures if necessary.
- (iii) Assess situation and gather information on the status of the situation, noting:
  - ◆ personnel on Site;
  - ◆ cause and effect of spill;
  - ◆ estimated extent of damage;
  - ◆ amount and type of material involved; and,
  - ◆ proximity to waterways, sewers and manholes.
- (iv) If safe to do so, try to stop the dispersion or flow of spill material:
  - ◆ approach from upwind;
  - ◆ stop or reduce leak if safe to do so;
  - ◆ dike spill material with dry, inert absorbent material or dry clay soil or sand;
  - ◆ prevent spill material from entering waterways and utilities by diking; and,
  - ◆ prevent spill material from entering manholes and other openings by covering with rubber spill mats or diking.
- (v) Resume any effective action to contain, clean up, or stop the flow of the spilled product.
- (vi) The emergency response coordinator will ensure that all environmental accidents involving contaminants shall be documented and reported to Manitoba Sustainable Development according to The Dangerous Goods Handling and Transportation Act Environmental Accident Reports Regulation 439/87.
- (vii) When dangerous goods are used on Site, materials for containment and cleanup of spill material (e.g., absorbent materials, plastic oil booms, and oversized recovery drums) shall be available on Site.
- (viii) Minor spills of such substances that may be contained on land with no significant impact on the environment may be responded to with in-house resources without formal notification to MSD.
- (ix) City emergency response, 9-1-1, shall be used if other means are not available.

**Table E5-1: Environmental Accident Reporting**

Reportable Quantities of Spills that must be Reported to Manitoba Sustainable Development [(204) 944-4888]		
Classification	Hazard	Reportable Quantity or Level
1	Explosives	All
2.1	Compressed Gas (Flammable)	100 L*
2.2	Compressed Gas	100 L*
2.3	Compressed Gas (Toxic)	All
2.4	Compressed Gas (Corrosive)	All
3	Flammable Liquids	100 L
4	Flammable Solids	1 Kg

Reportable Quantities of Spills that must be Reported to Manitoba Sustainable Development [(204) 944-4888]		
Classification	Hazard	Reportable Quantity or Level
5.1 Packing Groups I and II	Oxidizer	1 Kg or 50 L
Packing Group III	Oxidizer	5 Kg or 50 L
5.2	Organic Peroxide	1 Kg or 1 L
6.1 Packing Group I	Acute Toxic	1 Kg or 1 L
Packing Groups II and III	Acute Toxic	5 Kg or 5 L
6.2	Infectious	All
7	Radioactive	Any discharge or level exceeding 10 m Sv/h at the package surface and 200 uSv/h at 1 m from the package surface
8	Corrosive	5 Kg or 5 L
9.1	Miscellaneous (except PCB Mixtures)	50 Kg
9.1	PCB Mixtures	500 grams
9.2	Aquatic Toxic	1 Kg or 1 L
9.3	Wastes (Chronic Toxic)	5 Kg or 5 L

\* Container Capacity (refers to container water capacity)

Source: *Environmental Accident Reporting Regulation M.R. 439/87*

#### E5.3.6 Noise and Vibration

- (a) Noise generating activities will be limited to the hours indicated in the City of Winnipeg Neighbourhood Liveability By-law No. 1/2008. The activities will generally be restricted to 7:00 to 19:00 weekdays with written permission of the Contract Administrator and the City of Winnipeg for any after-hours or weekend work required for special cases. No extended or alternative working hours/dates will be permitted for pile driving activities.
- (b) The Contractor will be responsible for scheduling Work to avoid potential noise problems and/or employ noise reduction measures to reduce noise to acceptable limits. The Contractor will also demonstrate to the Contract Administrator that Works to be performed during the night-time period, on Sundays, and Holidays will not exceed the approved limit.
- (c) The Contractor will locate stationary noise generating equipment (e.g., generators) away from sensitive receptors and wildlife areas.
- (d) Construction vehicles and equipment will adhere to posted speed limits.

#### E5.3.7 Dust and Emissions

- (a) Construction vehicles and machinery will be kept in good working order by the Contractor through the use of inspection and maintenance.
- (b) The Contractor will minimize construction equipment idling times and turn off machinery, when feasible.
- (c) Dust control practices implemented by the Contractor during construction will include regular street cleaning and dampening of construction access roads and Works areas with water or approved chemicals at an adequate frequency to prevent the creation of dust.
- (d) Only water or chemicals approved by the Contract Administrator will be used for dust control. The use of waste petroleum or petroleum by-products is not permitted.

- (e) The Contractor will ensure that trucks which are used to haul excavated material and backfill material to and from the Work site utilize tarpaulin covers during transport to prevent material from falling onto the street and creating dust.
- (f) Stockpiled soils will be wetted down or covered with tarpaulin covers to prevent the creation of dust, when appropriate.

#### E5.3.8 Erosion Control

- (a) The Contractor will develop a sediment control plan prior to beginning construction in adherence with the Transportation Association of Canada National Guide to Erosion and Sediment Control on Roadway Projects, 2005 and to the satisfaction of the Contract Administrator.
- (b) Sediment control will be applied to all in-water works to prevent the release or re-suspension of sediments to the watercourse. A turbidity curtain will be used to contain sediments from coffer dam construction/removal and riprap placement, if warranted. This turbidity curtain should isolate as small an area as possible to complete the works, and should be completely removed once turbidity within the isolated area has returned to background levels.
- (c) The Contractor will inspect all sediment control structures daily during heavy construction activity in the areas of the structures and after a heavy rainfall to ensure their continued integrity.
- (d) Exposure of soils along drain slopes will be kept to the minimum practical amount, acceptable to the Contract Administrator.
- (e) Effective sediment and erosion control measures (e.g., straw mulch, erosion control blankets, interceptor ditches) will be used both during construction and until vegetation is re-established to prevent sediment-laden runoff from entering wetlands and other watercourses.
- (f) All areas disturbed during construction will be landscaped and revegetated with native land species in order to restore and enhance the Site and protect against soil erosion unless otherwise indicated.
- (g) The disturbed surface will be revegetated as soon as possible and done so as to create a dense root system in order to defend against soil erosion within the Work area and any other disturbed areas susceptible to erosion.
- (h) The loss of topsoil and the creation of excessive dust by wind during construction will be prevented by the addition of temporary cover crop, water or tackifier, if conditions so warrant.
- (i) The Contractor will routinely inspect all erosion and sediment control structures and immediately carry out any necessary maintenance. Several inspections will be performed during rainy days.
- (j) Construction activities will be avoided during periods of high winds to prevent erosion and the creation of dust.

#### E5.3.9 Runoff Control

- (a) Measures will be undertaken to ensure that runoff containing suspended soil particles is minimized from entering the land drainage system to the extent possible to the satisfaction of the Contract Administrator.
- (b) Areas that are heavily disturbed and vulnerable to erosion or gullyng will be diked to redirect surface runoff around the area prior to spring runoff.
- (c) Construction activities on erodible slopes will be avoided during spring runoff and heavy rain falls.
- (d) Soil and fill will not be stockpiled on immediate watercourse bank areas.

E5.3.10 Fish

- (a) The Contractor will adhere to all of the protection measures below, in keeping with the provisions of the Fisheries Act and DFO's mandate for the prevention of serious harm to fish.
- (b) Due to the presence of spawning fish species, no in-stream works will occur between April 1 and June 15 of any given year.
- (c) If possible, bridge works will be constructed during periods of no flow or very low flow. Flowing water should be diverted around the construction area using a dam and bypass pump or temporary flume (culvert). Water will be diverted in a manner that avoids sediment generation to downstream areas and does not alter the volume of flow in the watercourse. Use coffer dams made of non-earthen material such as aqua dams, sand bags, sheet pile or clean granular material wrapped in poly-plastic or other suitable isolation materials. Ensure any pump inlets are appropriately screened following the DFO Freshwater Intake End-of-Pipe Fish Screen Guidelines. Ensure all isolation materials are completely removed from the watercourse once construction is complete.
- (d) Any fish trapped within the isolated area will be captured and returned to the watercourse unharmed. Fish includes fin fish, crayfish and mussels (clams).
- (e) All bridge works will be limited to within road's right-of-way.
- (f) A buffer of vegetation will be maintained when working along waterways, where possible.
- (g) Culvert stormwater outfalls will be installed according to the Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat (Manitoba Natural Resources and DFO, 1996) and will include an erosion and sediment control plan and mitigation to prevent the release or transport of deleterious substances to the river.
- (h) The duration of Work and amount of disturbance to the bed and banks of the water body will be minimized.
- (i) Use only clean rock for armouring the channel areas, and haul it in from an appropriate land-based source. Avoid using poor quality limestone that breaks down quickly when exposed to the elements or acid generating rocks typical from metal mines. All rock will be clean and free of fine materials and of appropriate size to resist displacement during high flow events.
- (j) The rock is placed such that it does not constrict the channel or change the hydraulics in a way that might damage the bed and/or banks of the watercourse or interfere with fish passage.
- (k) Where grading of stream banks is required they are sloped by pulling material back from the water's edge. Stabilize any waste materials removed from the Site, above the ordinary high water mark, to prevent them from entering any water body. Spoil piles could be contained with silt fence, flattened, covered with biodegradable mats or tarps, and/or planted with preferably native grass or shrubs.
- (l) Shoreline vegetation will be retained to the greatest extent possible to maximize the stability of the banks.
- (m) Machinery will be operated from outside of the water and in a manner that minimizes disturbance to the banks of the water body.
- (n) The intake of any pumps used in surface waters will be screened to meet the DFOs Freshwater Intake End-of-Pipe Fish Screening Guidelines (1995).

#### E5.3.11 Wildlife

- (a) The Contractor will adhere to all of the protection measures below, as well as the protection and mitigation measures for barn swallows, a Migratory bird species also protected under the federal Species At Risk Act (SARA).
- (b) The clearing of trees, shrubs or vegetation should be avoided between May 15 and September 30 of any year to protect nesting and breeding season for migratory birds and other wildlife, unless otherwise identified by a Project Biologist. Any trees or shrubs to be removed should be checked for active nests before removal.
- (c) No one will disturb, move or destroy migratory birds' nests.
- (d) If a nest is encountered, Work will cease in the immediate area and the Contract Administrator will be contacted for further direction.
- (e) In the event that SARA are encountered during the project construction, all Work will cease in the immediate area, the Site will be made safe and the Contract Administrator will be contacted.

#### E5.3.12 Wetlands

- (a) The Contractor will implement the following environmental protection measures to prevent the new loss of wetland functions, in accordance with the Federal Policy on Wetland Conservation:
  - (i) the Contractor will clearly mark wetland limits near the construction footprint prior to commencement of the Work and will remain marked throughout the construction period;
  - (ii) wetlands will not be disturbed without written permission from the Contract Administrator;
  - (iii) should additional wetlands be encountered during construction, construction in that area will halt until the area is properly marked;
  - (iv) construction equipment will avoid the marked wetland areas as much as possible, where feasible;
  - (v) the Contractor will not discharge water into adjacent wetlands without written permission from the Contract Administrator, having confirmed the quality of the water to be discharged and the capacity of the receiving wetland; and,
  - (vi) any fish located within the wetlands to be disturbed by the project will be captured and returned to a nearby watercourse unharmed.

#### E5.3.13 Vegetation

- (a) The Contractor will clearly mark the disturbance limit prior to commencement of the Work and will remain marked throughout the construction period.
- (b) Vegetation will not be disturbed without written permission from the Contract Administrator.
- (c) The Contractor will limit the removal of trees and snags (standing dead trees), surface disturbance and vegetation clearing.
- (d) Herbicides and pesticides will not be used adjacent to any surface watercourse.
- (e) Trees or shrubs will not be felled into watercourses.
- (f) Areas where vegetation is removed during clearing and construction activities will be stabilised and revegetated as soon as possible in accordance with the landscaping plans forming part of the Contract, or as directed by the Contract Administrator.
- (g) Trees damaged during construction activities will be examined by bonded tree care professionals. Viable trees damaged during construction activities will be pruned according to good practices by bonded tree care professionals.

#### E5.3.14 Landscaping

- (a) Construction waste (excluding common construction gravel, sand, etc.) will be removed to a minimum depth of six hundred (600) millimetres below final grade in all areas that are to be backfilled with suitable material and revegetated in accordance with the City of Winnipeg Standard Construction Specifications.
- (b) Topsoil will be stripped prior to construction and salvaged for use during landscaping. Surplus topsoil will be properly stockpiled for use in other projects.
- (c) The Contractor will adhere to the landscaping plan for the maintenance of initial stages and development stages of the plant community.

#### E5.3.15 Heritage Resources

- (a) If heritage material is located during the construction and soil removal process, all Work will cease and the Contractor will immediately contact the Contract Administrator. The Historic Resource Branch, Manitoba Culture, Heritage, Tourism and Sport or the Project Archaeologist, will be contacted by the Contract Administrator to determine the nature and extent of the archaeological material and to arrange for its recovery. The archaeological remains will be recovered by salvage excavation upon authorization by the Contract Administrator, having consulted with the Historic Resources Branch, Manitoba Culture, Heritage, Tourism and Sport.
- (b) The Contractor will be prepared to continue their Work elsewhere on the project while the archaeologist investigates the find and determines its heritage value.
- (c) The Contractor is advised that he may be denied access to such areas of the project until such time as a thorough archaeological investigation is conducted or the find is deemed to have no heritage value.
- (d) Construction and excavation work will not resume until the Contract Administrator, having consulted with the Historic Resources Branch, Manitoba Culture, Heritage, Tourism and Sport, or the project archaeologist, authorizes a resumption of Work.
- (e) If human remains are uncovered during the construction and soil removal process, all Work will cease and the Heritage Resources Branch, Manitoba Culture, Heritage, Tourism and Sport will be contacted by the Contract Administrator. The Historic Resources Branch will contact the City of Winnipeg Police.
- (f) If the human remains are not considered forensic, (i.e., no foul play suspected), they will be removed by the Historic Resources Branch, Manitoba, Culture, Heritage, Tourism and Sport or the project archaeologist and turned over to the Province.
- (g) If the human remains are considered forensic, the City of Winnipeg Police will be responsible for their removal.
- (h) Additional information may be obtained by contacting: Archaeological Assessment Services, Historic Resources Branch.

#### E5.3.16 Construction Traffic

- (a) Workforce parking will be limited to the areas designated for such as detailed in the Contract Documents, or as otherwise may be directed by the Contract Administrator.
- (b) Large equipment will be equipped with flashing beacons and/or an audible "back up" warning device that is audible when the transmission is in reverse.
- (c) The Contractor will adhere to the Standard Provisions of the Standard Construction Specifications, and of the Manual of Temporary Traffic Control in Work Areas on City Streets of the City of Winnipeg Public Works Department.
- (d) The Contractor's laydown area, construction Site and access road will be fenced and gated to secure the Site and materials and to discourage pedestrian entrance to construction areas and to control any potential hazard to the public, particularly children.

- (e) For circumstances where the Contract Administrator has accepted Site access of special equipment or material, the Contractor will provide adequate flagmen for traffic control in the vicinity of any public buildings.

**E5.3.17 Access**

- (a) The Contractor will maintain access to affected residential properties.
- (b) The Contractor will provide or maintain general and off-street access to any affected business during construction.

**E5.4** Implementation of the Environmental Protection Plan during construction, including monitoring shall be considered incidental to the Work.

**E5.5** Environmental mitigation measures at the Provencher Culvert shall include, but not limited to:

- (a) The repair work will be carried out using the applicable mitigation measures outlined in the following guidance information:
  - (i) DFO's 'Measures to Avoid Causing Harm to Fish and Fish Habitat' (DFO 2019);
  - (ii) 'Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat' (DFO and Manitoba Natural Resources [MNR] 1996); and,
  - (iii) The City of Winnipeg's 'Best Management Practices Handbook for Activities In and Around the City's Waterways and Watercourses' (CoW 2005).
- (b) All of the Work would be completed in the winter when the river is frozen.
- (c) No Work will be carried out during the Restricted Activity Timing Windows for the Protection of Fish and Fish Habitat from April 1 to June 15.
- (d) Concrete debris and cutting fluids will be isolated, collected and removed.
- (e) To prevent the entry of any deleterious materials into the river, a geomembrane will be placed on the ice surface to collect concrete and construction debris.
- (f) A spill kit will be required as part of standard environmental requirements.

**E6. PROTECTION OF EXISTING UTILITIES**

**E6.1** In accordance with and further to CW 1120, the Contractor shall protect and maintain all existing utilities that may be affected by the Work. The Contractor shall identify and locate utilities, and select appropriate excavation methods, which may include soft digging, as may be required by utility agencies or the Contract Administrator. The protection of existing utilities shall be considered incidental to the Work and no separate measurement or payment will be made.

**E7. WATER OBTAINED FROM THE CITY**

**E7.1** Further to clause 3.7 of CW 1120, the Contractor shall pay for all costs, including sewer charges, associated with obtaining water from the City in accordance with the Waterworks and Sewer By-laws.

**E8. VERIFICATION OF WEIGHTS**

**E8.1** All material which is paid for on a weight basis shall be weighed on a scale certified by Consumer and Corporate Affairs, Canada.

**E8.2** All weight tickets shall have the gross weight and the time and date of weighing printed by an approved electro/mechanical printer coupled to the scale.

**E8.3** The tare weight and net weight may either be hand written or machine printed. All weights, scales and procedures shall be subject to inspection and verification by the Contract Administrator. Such inspection and verification may include, but shall not be limited to:

- (a) checking Contractor's scales for Consumer and Corporate Affairs certification seals;

- (b) observing weighing procedures;
  - (c) random checking of either gross or tare weights by having such trucks or truck/trailer(s) combinations as the Contract Administrator shall select weighed at the nearest available certified scale; and,
  - (d) checking tare weights shown on delivery tickets against a current tare.
- E8.4 No charge shall be made to the City for any delays or loss of production caused by such inspection and verification.
- E8.5 The Contractor shall ensure that each truck or truck/trailer(s) combination delivering material which is paid for on a weight basis carries a tare not more than one (1) month old.
- E8.6 The tare shall be obtained by weighing the truck or truck/trailer(s) combination on a certified scale and shall show:
- (a) upon which scale the truck or truck/trailer(s) combination was weighed;
  - (b) the mechanically printed tare weight;
  - (c) the license number(s) of the truck and trailer(s); and,
  - (d) the time and date of weighing.
- E8.7 No separate measurement or payment will be made for performing all operations herein described and all other items incidental to the Work described.

## **E9. TRAFFIC AND PEDESTRIAN CONTROL**

### **E9.1 Description**

- E9.1.1 This Specification covers all items relating to traffic and pedestrian control at the Provencher Bridge, Dugald Bridge and Provencher Culvert sites.
- E9.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

### **E9.2 Construction Methods**

- E9.2.1 Further to clauses 3.6 and 3.7 of CW 1130, in accordance with the latest edition of the Manual of Temporary Traffic Control on City Streets (the Manual), the following shall be applicable for Work at all locations:
- (a) The Contractor ("Construction Agency" in the Manual) shall:
    - (i) submit a *Regional Street Lane Closure Request* form at least fourteen (14) Calendar Days prior to beginning Work on Site;
    - (ii) erect and maintain all applicable traffic control devices (including, but not limited to, warning signs, barrels, tall cones, and chevrons) in accordance with the Manual;
    - (iii) ensure intersecting street and private approach access is maintained at all times. Should the Contractor be unable to maintain pedestrian or vehicular access to a residence or business, he/she shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of twenty-four (24) hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access;
    - (iv) place, maintain and remove the appropriate temporary traffic control devices as specified by the Manual, the Traffic Management Branch, and/or the Permit issued by the City;

- (v) mark barricades supplied by the Contractor with the name and the telephone number(s) at which the Contractor can be reached twenty-four (24) hours per day, seven (7) days per week;
  - (vi) provide safety for the worker;
  - (vii) provide safety and convenience for motorists, cyclists, and pedestrians;
  - (viii) ensure all temporary traffic control devices are removed or hidden from view when no longer appropriate;
  - (ix) contact the Traffic Management Branch to report any changes to the location, limits, or duration of any lane closures;
  - (x) notify lane closure reopening to the Traffic Management Branch; and,
  - (xi) provide and maintain flagmen in accordance with the Manual.
- (b) Submittals
- (i) The Contractor shall submit a detailed traffic management plans for review a minimum of fourteen (14) Calendar Days prior to implementing the lane closure(s) or performing any Work on Site.
  - (ii) The detailed traffic management plans shall be prepared in accordance with the Manual.
  - (iii) The detailed traffic management plans shall:
    - ◆ show a plan view of the area for each stage of construction or traffic control set-up;
    - ◆ show all applicable signage and traffic management devices to be used;
    - ◆ provide all relevant dimensions and geometric layout of devices such as sign spacing, taper lengths, cone spacing, etc.;
    - ◆ indicate the general sequence of device installation;
    - ◆ indicate the date and time of implementation of the devices;
    - ◆ indicate the expected date and time of the removal of the devices;
    - ◆ confirm the work zones created by the closures are adequate for the operation of cranes, and other construction operations required for the Work; and,
    - ◆ include all other information as deemed necessary by the Contract Administrator, and/or other agencies reviewing the submitted traffic management plans.
- (c) 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 Manual and shall, at all times, ensure that maximum protection is afforded to the road-user and that his/her operations in no way interfere with the safe operation of traffic, cyclists, or pedestrians.
- (d) Improper signing will be sufficient reason for the Contract Administrator to order the Works to cease on Site.
- (e) 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, cyclists, or pedestrians.
- (f) Emergency vehicle access must be maintained at all times.
- (g) If the Contractor determines that they are unable to meet the traffic management requirements described herein for any location, they may apply in writing to the Contract Administrator to determine an alternate schedule or closure.

- E9.2.2 Provencher Bridge
- (a) Pedestrian Controls
    - (i) The Provencher Bridge north sidewalk shall remain open at all times.
  - (b) Lane Closures
    - (i) A minimum of one (1) three and a half (3.5) metres lane shall be maintained for eastbound traffic throughout construction.
    - (ii) A minimum of one (1) three and a half (3.5) metres lane shall be maintained for westbound traffic throughout construction.
    - (iii) The Contractor will not be permitted any lane closures during Weekday Peak Periods for the Provencher Bridge location.
- E9.2.3 Dugald Bridge
- (a) Pedestrian Controls
    - (i) The Dugald Bridge north sidewalk shall remain open at all times.
  - (b) Lane Closures
    - (i) A minimum of one (1) three and a half (3.5) metres lane shall be maintained for eastbound traffic throughout construction.
    - (ii) A minimum of one (1) three and a half (3.5) metres lane shall be maintained for westbound traffic throughout construction.
- E9.2.4 Provencher Culvert
- (a) Pedestrian Controls
    - (i) The Provencher Culvert south sidewalk shall remain open at all times.
    - (ii) During construction operations that require the closure of the north sidewalk, the Contractor shall erect signage and direct pedestrians to the south sidewalk in accordance with the Manual.
  - (b) Lane Closures
    - (i) A minimum of one (1) three and a half (3.5) metres lane shall be maintained for westbound traffic throughout construction.
    - (ii) Both eastbound lanes shall be maintained throughout construction.
- E9.3 Measurement and Payment
- (a) Provencher Bridge
    - (i) Traffic and pedestrian control will not be measured and will be paid for at the Contract Lump Sum Price for "Traffic and Pedestrian Control" for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.
  - (b) Dugald Bridge
    - (i) Traffic and pedestrian control will not be measured and will be paid for at the Contract Lump Sum Price for "Traffic and Pedestrian Control" for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.
  - (c) Provencher Culvert
    - (i) Traffic and pedestrian control will not be measured and will be paid for at the Contract Lump Sum Price for "Traffic and Pedestrian Control" for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

## **E10. MOBILIZATION AND DEMOBILIZATION**

### **E10.1 Description**

E10.1.1 This Specification covers all items relating to the mobilization and demobilization of the Contractor to the Sites, as specified herein.

E10.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

### **E10.2 Scope of Work**

E10.2.1 The Work under this Specification shall include but not be limited to:

- (a) the submission of a site layout plan;
- (b) mobilizing and demobilizing on site work facilities; and,
- (c) installing, maintaining and removing any access roadway.

### **E10.3 References**

- (a) Mobilization and demolition are in accordance with the most recent Standard Construction Specifications:
  - (i) CW 1120 – Existing Services, Utilities and Structures; and,
  - (ii) CW 1130 – Site Requirements.

### **E10.4 Submittals**

- (a) The Contractor shall submit the following to the Contract Administrator fourteen (14) Days prior to mobilization on Site, a plan highlighting the Site layout which includes; laydown area location(s), staging areas, office facility location, access road(s), temporary secure fencing limits, and gate locations for review and approval.

### **E10.5 Materials and Equipment**

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

### **E10.6 Construction Methods**

- (a) Site Inspection
  - (i) Inspect the Site with the Contract Administrator to verify existing conditions prior to mobilizing on Site.
  - (ii) Inspect the Site with the Contract Administrator soon after demobilizing on Site, confirming Site has been restored to its original condition prior to initiation of Work.
- (b) Layout of On-Site Work Facilities
  - (i) The Contractor shall mobilize all on Site Work and other temporary facilities.
  - (ii) Upon completion of construction activities, the Contractor shall remove all on Site Work and other temporary facilities.
- (c) Access Roadway
  - (i) The Contractor shall maintain any access roadway they install.
  - (ii) The access road shall be maintained on a regular basis to provide continual unrestricted site access, to the satisfaction of the Contract Administrator.

- (iii) Upon completion of the Work, the area shall be restored to its original condition.
- (d) Restoration of Existing Facilities
  - (i) Upon completion of the Work and demobilization, the Contractor shall restore existing facilities to their original condition, to the approval of the Contract Administrator.

#### E10.7 Measurement and Payment

##### E10.7.1 Provencher Bridge Mobilization and Demobilization

- (a) Provencher Bridge Mobilization and Demobilization will not be measured and will be paid for at the Contract Lump Sum Price for "Mobilization and Demobilization" for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

##### E10.7.2 Dugald Bridge Mobilization and Demobilization

- (a) Dugald Bridge Mobilization and Demobilization will not be measured and will be paid for at the Contract Lump Sum Price for "Mobilization and Demobilization" for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

##### E10.7.3 Provencher Culvert Mobilization and Demobilization

- (a) Provencher Culvert Mobilization and Demobilization will not be measured and will be paid for at the Contract Lump Sum Price for "Mobilization and Demobilization" for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

##### E10.7.4 Mobilization and demobilization will be paid for at a percentage of the Contract Lump Sum Price, as specified herein for each Site separately. These percentages for each Site shall be as follows for each Site:

- (a) When Contract Administrator is satisfied that construction has commenced at the Site. 30%
- (b) During construction, percentage distributed equally on a monthly basis at the discretion of the Contract Administrator. 60%
- (c) Upon completion of the project. 10%

### E11. CONCRETE REPAIRS

#### E11.1 Description

E11.1.1 This Specification covers all items relating to the repair of designated concrete traffic barriers at the Provencher Bridge and the culvert arch soffit and wingwalls at the Provencher Culvert as herein specified.

E11.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

#### E11.2 Referenced Specifications and Drawings

E11.2.1 The latest edition and subsequent revisions of the following:

- (a) American Concrete Publication SP4 – Formwork for Concrete;
- (b) ASTM A1035 – Standard Specification for Deformed and Plain, Low-Carbon, Chromium, Steel Bars for Concrete Reinforcement;

- (c) ASTM B418 – Standard Specification for Cast and Wrought Galvanic Zinc Anodes;
- (d) ASTM C260 – Standard Specification for Air-Entraining Admixtures for Concrete;
- (e) ASTM C309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete;
- (f) ASTM C494 – Standard Specification for Chemical Admixtures for Concrete;
- (g) ASTM C881- Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete;
- (h) ASTM C1017 – Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete;
- (i) ASTM C1059 – Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete;
- (j) CSA A23.1 – Concrete Materials and Methods of Concrete Construction;
- (k) CSA-A3001 – Cementitious Materials for Use in Concrete; and,
- (l) CSA O121 – Douglas Fir Plywood.

### E11.3 Materials

#### E11.3.1 General

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

#### E11.3.2 Testing and Approval

- (a) All materials supplied under this Specification shall be subject to inspection and testing by the Contract Administrator or by the testing laboratory designated by the Contract Administrator. There shall be no charge to the City for any materials taken by the Contract Administrator for testing purposes.
- (b) All materials shall be 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 their own expense.

#### E11.3.3 Adhesive Agent

- (a) Adhesive agent for bonding steel reinforcing or dowels to concrete shall conform to the requirements of ASTM C881, Type V, Grade 3, Class A, B, and C, except linear shrinkage. An acceptable product would be Hilti Hit-RE 500 V3.

#### E11.3.4 Concrete Repair Mortar

- (a) The concrete repair mortar for concrete repairs shall be a product suitable for application by form and pour or pump. The mortar product shall be Sikacrete-08 SCC or equivalent as approved by the Contract Administrator, in accordance with B7. Preparation, mixing, application, and curing shall be in accordance with manufacturer's specifications.

#### E11.3.5 Concrete Strength and Workability

- (a) Structural Concrete
  - (i) Proportioning of fine aggregate, coarse aggregate, cement, water, and air-entraining agent shall be such as to yield concrete having the required strength and workability, as follows:

##### Type C-1 Concrete

- Minimum Compressive Strength @ 28 days = 35 MPa
- Maximum water-to cementing materials ratio = 0.40
- Aggregate: 20 mm nominal

- Air Content: 5.0% to 8.0%
- Chloride Ion Penetrability at 56 days: < 1500 coulombs
- Slump = 75 mm ± 25 mm

E11.3.6 Concrete Aggregate

(a) The Contractor shall furnish in writing to the Contract Administrator, the location of the sources where aggregate will be obtained, in order that same may be inspected and tentatively approved by the Contract Administrator. Changes in the source of aggregate supply during the course of the Contract will not be permitted without notification in writing to and the expressed approval of the Contract Administrator.

(i) Fine Aggregate

- ◆ Fine aggregate shall consist of sand having clean, hard, strong, durable, uncoated grains; free from injurious amounts of dust, soft or flaking particles, shale, alkali, organic matter, load, or other deleterious substance.
- ◆ Fine aggregate shall be well-graded throughout and shall conform to the following gradation requirements:

Sieve Size	Percent of Total Dry Weight Passing Each Sieve
10 mm	100%
5 mm	95 - 100%
2.5 mm	80 - 100%
1.25 mm	50 - 90%
630 µm	25 - 65%
315 µm	10 - 35%
160 µm	2 - 10%
80 µm	0 - 3%

(ii) Coarse Aggregate (twenty (20) millimetres Nominal) Coarse aggregate shall be clean and free from alkali, organic, or other deleterious matter, shall have an absorption not exceeding three percent (3%), and shall conform to the following gradation requirements:

Sieve Size	Percent of Total Dry Weight Passing Each Sieve
28 mm	100%
20 mm	85 - 100%
14 mm	60 - 90%
10 mm	25 - 60%
5 mm	0 - 10%
2.5 mm	0 - 5%

E11.3.7 Cementitious Materials

- (a) Cementitious materials shall conform to the requirements of CSA-A3001 and shall be free from lumps.
- (b) Should the Contractor choose to include a silica fume admixture in the concrete mix design, the substitution of silica fume shall not exceed eight percent (8%) by mass of cement.
- (c) Should the Contractor choose to include fly ash in the concrete mix design, the fly ash shall be Class CI or F and the substitution shall not exceed thirty percent (30%) by mass of cement.

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

E11.3.8 Water

- (a) Water to be used for all operations in the Specification, including mixing and curing of concrete or grout, surface texturing operations, and saturating the substrate shall conform to the requirements of CSA A23.1 and shall be free of oil, alkali, acidic, organic materials or deleterious substances. The Contractor shall not use water from shallow, stagnant, or marshy sources.

E11.3.9 Admixtures

- (a) Air-entraining admixtures shall conform to the requirements of ASTM C260.
- (b) Chemical admixtures shall conform to the requirements of ASTM C494 or C1017 for flowing concrete.
- (c) All admixtures shall be compatible with all other constituents. The addition of calcium chloride, accelerators and air-reducing agents, will not be permitted, unless otherwise approved by the Contract Administrator.

E11.3.10 Bonding Agents

- (a) Latex Bonding Agent
  - (i) Latex bonding agent shall conform to the requirements of ASTM C1059, Type II. Polyvinyl acetate-based latexes will not be permitted. An acceptable product would be SikaCem 810. An acceptable product for concrete greater than twenty-eight (28) days in age would be Planicrete AC.
- (b) Epoxy Bonding Agent
  - (i) Epoxy bonding agent shall be SikaTop Armatec-110 EpoCem or equivalent as approved by the Contract Administrator, in accordance with B7.

E11.3.11 Bonding Grout

- (a) For latex bonding grouts, the grout for bonding the new concrete to the existing concrete shall be mixed in accordance with manufacturer's specifications.
- (b) The consistency of the bonding grout shall be such that it can be brushed on the existing concrete surface in a thin, even coating that will not run or puddle in low spots.

E11.3.12 Curing Compound

- (a) Curing compounds shall be liquid membrane-forming and conform to the requirements of ASTM C309. Curing compounds shall be resin-based and white-pigmented. An acceptable product would be WR Meadows 1215 WHITE Pigmented Curing Compound.

E11.3.13 Curing Blankets

- (a) Curing blankets for wet curing shall be one hundred percent (100%) polyester, three (3) millimetres thick, and white in colour. Alternately, a ten (10) ounces burlap, five (5) mil polyethylene, curing blanket white in colour shall be used. An acceptable product would be Curelap together with a second layer of burlap.

E11.3.14 Patching Mortar

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

E11.3.15 Reinforcing Steel

- (a) Reinforcing steel shall conform to the requirements of ASTM A1035 CM Grade 100 Low-Carbon Chromium Steel. An acceptable product would be ChromX 4100.

E11.3.16 Bar Accessories

- (a) Bar accessories shall be of a type approved by the Contract Administrator. They shall be made from a non-rusting material, and shall not stain, blemish, or spall the concreted surface for the life of the concrete.
- (b) Bar chairs, bolsters, and bar supports shall be cementitious material as acceptable to the Contract Administrator. Plastic, PVC or galvanized bar chairs may be permitted if accepted in writing by the Contract Administrator prior to installation.

E11.3.17 Embedded Galvanic Anodes

- (a) Embedded galvanic anodes shall conform to the requirements of ASTM B418, Type II. Embedded galvanic anodes shall utilize zinc anode core design surrounded by an enhanced formulated cement-based mortar. An acceptable product would be Galvashield XPT – Anode Type 1A Class P.

E11.3.18 Formwork

- (a) Formwork materials shall conform to CSA Standard A23.1, and American Concrete Publication SP4, "Formwork for Concrete."
- (b) Form sheeting plywood to be covered with form liner or to be directly in contact with soil shall be exterior Douglas Fir, concrete form grade, conforming to CSA O121, a minimum of twenty (20) millimetres thick.
- (c) Where form liner is not being used, form sheeting shall be Douglas Fir, overlay form liner type conforming to CSA O121.
- (d) Boards used for formwork shall be fully seasoned and free from defects such as knots, warps, cracks, etc., which may mark the concrete surface.
- (e) No formwork accessories will be allowed to be left in place within fifty (50) millimetres of the surface following form removal. Items to be left in place beyond fifty (50) millimetres must be made from a non-rusting material and shall not stain, blemish, or spall the concrete surface for the life of the concrete.
- (f) Forms for exposed surfaces that do not require a form liner may be either new plywood or steel as authorized by the Contract Administrator.
- (g) Studding shall be spruce or pine and shall have such dimensions and spacing that they shall withstand without distortion all the forces to which the forms shall be subjected.
- (h) Walers shall be spruce or pine, with minimum dimensions of one hundred (100) millimetres by one hundred and fifty (150) millimetres. Studding shall be spruce or pine, with minimum dimensions of fifty (50) by one hundred and fifty (150) millimetres.
- (i) Stay-in-place formwork or falsework is not acceptable and shall not be used by the Contractor unless specifically shown on the Drawings.

E11.3.19 Form Coating

- (a) Form coating shall not stain the surface of the concrete.

E11.3.20 Permeable Formwork Liner

- (a) Permeable formwork liner shall be a draining synthetic lining finished with two (2) different surfaces. The side in contact with the concrete shall be smooth and perform as a filter to prevent the leaching of fine cement particles when the formwork is in place. The other side shall be fibrous and act as a draining element to help evacuate the water and the excess air at the surface. An acceptable product would be Texel Drainform. This formwork liner shall be used on all exposed substructure and superstructure formed surfaces, except soffit surfaces, or where a normal form finish is specified.

- (b) Paper-lined forms shall be used on all soffit surfaces, such as deck slab overhangs. The Contractor shall provide conclusive evidence that the paper-lined form proposed for use will not stain or otherwise blemish the hardened concrete surface.

#### E11.4 Equipment

- E11.4.1 All equipment shall be of a type accepted by the Contract Administrator. The equipment shall be kept in good working order, kept free from hardened concrete or foreign materials, and shall be cleaned at frequent intervals.

#### E11.5 Construction Methods

##### E11.5.1 Type 1 – Provencher Bridge Barrier, Provencher Culvert Wingwall and Provencher Culvert Arch Soffit Concrete Repairs

- (a) Sawcut perimeter of area to be repaired to a minimum depth of twenty (20) millimetres. Mechanically remove unsound concrete to the limits indicated on the Drawings or to the depth of unsound concrete, whichever is greater. Remove at least thirty (30) millimetres of existing concrete facing, even if not delaminated, and continue removal as required to expose sound concrete.
- (b) Where reinforcing steel with active corrosion is encountered, comply with the following:
  - (i) if half or greater of the diameter of the reinforcing steel is exposed, chip out behind the reinforcing to a twenty (20) millimetres minimum depth;
  - (ii) clean reinforcing steel to remove rust and contaminants; and,
  - (iii) splice new reinforcing steel to existing steel where corrosion has depleted the cross section area by twenty-five percent (25%), as directed by the Contract Administrator.
- (c) Install galvanic anodes as per manufacturer's recommendations and as shown on the Drawings.
- (d) Clean existing concrete surfaces that will be in contact with the repair mortar to remove all deleterious substances.
- (e) The Contractor is responsible to create a bond between the new mortar and the existing substrates. The Contract Administrator will check all repaired areas for bond using a hammer "sounding" method after form removal.
- (f) Apply bonding grout or epoxy bonding agent to all existing concrete surfaces that will be in contact with the repair mortar.
- (g) Place mortar by trowelling, pumping, or into forms ensuring that all entrapped air is removed. The use of concrete for Type 1 Concrete Repairs will only be permitted when the concrete for the repair area has been removed to twenty (20) millimeters behind the existing reinforcing steel and the concrete mix design is modified to permit proper placement and consolidation.
- (h) Cure in accordance with E11.5.4.

##### E11.5.2 Type 2 – Provencher Culvert Wingwall Concrete Repairs

- (a) Remove all of the affected deteriorated concrete volume by saw cutting and removing the affected portion of the concrete to the dimensions shown on the Drawings.
- (b) Install reinforcing steel bars into predrilled holes and place reinforcing steel bars as follows:
  - (i) drill holes into adjacent concrete of the diameters and depths shown on the Drawings. Drill bits shall have a diameter no larger than two (2) millimetres larger than the bar diameter;
  - (ii) holes shall be located to the correct depth and alignment as indicated on the Drawings;

- (iii) drilling equipment shall be operated so as to ensure that no damage to the concrete results from such drilling operation. Coring of holes is not permitted. In the event that existing reinforcing steel bars are hit during the drilling operations, that hole shall be abandoned and a new hole shall be drilled nearby to the correct depth. All abandoned holes shall be filled with non-shrink grout or approved adhesive agent;
  - (iv) holes for reinforcing steel bars shall be blown clean with compressed air. Approved adhesive agent shall be placed in the back of the drilling hole. The reinforcing bars shall be worked back into the holes for complete coverage around the portion of the bar that extends into the hole, such that adhesive agent is squeezed from the hole;
  - (v) install reinforcing steel bars as shown on the Drawings; and,
  - (vi) once all reinforcing steel is in position, it shall be inspected and approved by the Contract Administrator before any new concrete is placed. Otherwise, the concrete may be rejected by the Contract Administrator and shall be removed by the Contractor at his/her own expense.
- (c) Clean existing concrete surfaces that will be in contact with the repair concrete to remove all deleterious substances.
  - (d) Apply bonding grout or epoxy bonding agent to all existing concrete surfaces that will be in contact with the repair concrete.
  - (e) Place concrete into forms.
  - (f) Cure in accordance with E11.5.4.

#### E11.5.3 Debris Containment

- (a) The Contractor shall ensure that all debris including, but not limited to: concrete debris, concrete cutting fluids, formwork debris, and repair materials do not enter the waterway in any way including by the bridge or culvert or adjacent roadway drainage system.

#### E11.5.4 General Curing

- (a) Hot weather curing shall be in accordance with CSA A23.1, refer to E11.5.8 for hot weather curing requirements.
- (b) Cold Weather curing shall be in accordance with CSA A23.1, refer to E11.5.7 for cold weather curing requirements.
- (c) The use of curing compound will not be allowed on concrete areas that are to receive additional concrete or waterproofing.
- (d) Unformed concrete surfaces shall be covered and kept moist by means of wet polyester blankets for seven (7) consecutive days immediately following finishing operations or otherwise approved by the Contract Administrator and shall be maintained at above 10°C for at least seven (7) consecutive days. Construction joints shall only be covered and kept saturated by means of wet polyester curing blankets for the curing period.
- (e) Unformed mortar surfaces shall be covered and kept moist by means of wet polyester blankets for three (3) consecutive days immediately following finishing operations or otherwise approved by the Contract Administrator and shall be maintained at above 10°C for at least seven (7) consecutive days. Construction joints shall only be covered and kept saturated by means of wet polyester curing blankets for the curing period.
- (f) Unformed concrete surfaces shall have curing compound applied immediately after the wet curing period.
- (g) Unformed mortar surfaces do not require application of curing compound after the wet curing period.

- (h) Concrete shall be protected from the harmful effects of sunshine, drying winds, surface dripping, or running water, vibration, and mechanical shock. Concrete shall be protected from freezing until at least twenty-four (24) hours after the end of the curing period.
- (i) Changes in temperature of the concrete shall be uniform and gradual and shall not exceed 3°C in any one hour period or 20°C in any twenty-four (24) hour period.
- (j) Care shall be exercised to ensure that the polyester curing blanket is well drained and that it is placed as soon as the surface will support it without deformation. The Contractor shall ensure that water from the polyester curing blankets does not run into areas where concrete placement and finishing operations are underway. If this occurs, concrete placement shall stop until the problem is corrected satisfactory to the Contract Administrator.

#### E11.5.5 Form Removal

- (a) All forms for concrete repairs shall remain in place for a minimum of three (3) days. The Contract Administrator must be notified at least twenty-four (24) hours prior to any form removal. The Contractor must receive approval from the Contract Administrator prior to beginning Work.
- (b) All forms for mortar repairs shall remain in place for a minimum of three (3) days. The Contract Administrator must be notified at least twenty-four (24) hours prior to any form removal. The Contractor must receive approval from the Contract Administrator prior to beginning Work.
- (c) The minimum strength of concrete and mortar in place for safe removal of soffit forms for horizontal or inclined members, as well as vertical forms shall be 20 MPa, with the added provisions that the member shall be of sufficient strength to carry safely its own weight, together with superimposed construction loads.
- (d) Field-cured test specimens, representative of the in-place concrete being stripped, may be tested to verify the concrete strength.

#### E11.5.6 Patching of Formed Surfaces

- (a) Immediately after forms have been removed, but before any repairing or surface finishing is started, the concrete surface shall be inspected by the Contract Administrator. Any repair or surface finishing started before this inspection may be rejected and required to be removed.
- (b) All formed concrete surfaces shall have bolts, ties, struts, and all other timber or metal parts not specifically required for construction purposes cut back fifty (50) millimetres from the surface before patching.
- (c) Minor surface defects caused by honeycomb, air pockets greater than five (5) millimetres in diameter, and voids left by strutting, and tie holes shall be repaired by removing the defective concrete to sound concrete, dampening the area to be patched and then applying patching mortar. A slurry grout consisting of water and cement shall be thoroughly brushed onto the area to be patched. When the slurry grout begins to lose the water sheen, the patching mortar shall be applied. It shall be struck-off slightly higher than the adjacent surface and left for one (1) hour before final finishing to permit initial shrinkage of the patching mortar and it shall be touched up until it is satisfactory to the Contract Administrator. The patch shall be cured as specified in this Specification, and the final colour shall match the surrounding concrete.
- (d) All objectionable fins, projections, offsets, streaks, or other surface imperfections shall be removed by approved means to the Contract Administrator's satisfaction. Cement washes of any kind shall not be used.

- (e) Concrete shall be cast against forms that will produce plane surfaces with no bulges, indentations, or protuberances other than those shown on the Drawings. The arrangement of panel joints shall be kept to a minimum. Panels containing worn edges, patches, or other defects that will impair the texture of concrete surfaces shall not be used. All fins on the concrete surfaces shall be removed.

#### E11.5.7 Cold Weather Concreting

- (a) The requirements of this section shall be applied to all concreting operations during cold weather; i.e., if the mean daily temperature falls below 5°C during placing or curing.
- (b) The Contract Administrator will advise the Contractor, in writing, as to the degree of heating of water and aggregates.
- (c) Supplementary equipment, as required below, shall be at the job Site if concrete is likely to be placed in cold weather.
- (d) Formwork and reinforcing steel shall be heated to at least 5°C before concrete is placed.
- (e) The temperature of the concrete shall be maintained at not less than 10°C for seven (7) days or 15°C for five (5) days or 20°C for three (3) days after placing. The concrete shall be kept above freezing temperature for at least a period of seven (7) days. In no case shall the heating be removed until the concrete has reached a minimum compressive strength, which will be specified by the Contract Administrator for Work under construction, and as determined from compressive strength tests for specimens secured under the same conditions as the concrete works in question.
- (f) Aggregates shall be heated to a temperature of not less than 20°C and not more than 65°C. Water shall be heated to a temperature between 55°C and 65°C. The temperature of the concrete at the time of placement shall be within the range specified in CSA A23.1 for the thickness of the section being placed.
- (g) When the mean daily temperature may fall below 5°C, a complete hoarding of the Work, together with supplementary heat, shall be provided.
- (h) When the ambient temperature is below -15°C, the hoarding shall be constructed so as to allow the concrete to be placed without the hoarding having to be opened. If the mixing is done outside of the hoarding, the concrete shall be placed by means of hoppers installed through the hoarding. The hoppers are to be plugged when not in use.
- (i) When the ambient temperature is equal to or above -15°C, the Contractor will be permitted to open small portions of the hoarding for a limited time to facilitate the placing of the concrete.
- (j) Before depositing any of the concrete, the Contractor shall show that enough heating equipment is available to keep the air temperature surrounding the forms within the specified range. This shall be accomplished by bringing the temperature inside of the hoarding to the specified 20°C, at least twelve (12) hours prior to the start of the concrete placing.
- (k) The Contractor shall supply all required heating apparatus and the necessary fuel. When dry heat is used, a means of maintaining atmospheric moisture shall be provided. The relative humidity within the heated enclosure shall be maintained at a minimum of forty percent (40%) during concrete placing and finishing operations. Surface moisture evaporation rates shall not exceed the limits specified in CSA A23.1. Following finishing operations, exposed concrete surfaces shall be protected from excessive drying by applying curing compound, covering the surfaces with polyethylene, or providing water curing.
- (l) Sufficient standby heating equipment must be available to allow for any sudden drop in outside temperatures and any breakdowns which may occur in the equipment.

- (m) Combustion-type heaters may be used if their exhaust gases are vented outside the enclosures and not allowed to come into contact with concrete surfaces. Fire extinguishers must be readily at hand wherever combustion-type heaters are used.
- (n) The Contractor shall keep a curing record of each concrete pour. The curing record shall include: date and location of the pour, mean daily temperature, hoarding relative humidity, temperatures above and below the concrete surface at several points, and notes regarding the type of heating, enclosure, unusual weather conditions, etc. This record shall be available for inspection by the Contract Administrator at the end of the concrete operations.

**E11.5.8 Hot Weather Concreting**

**(a) General**

- (i) The requirements of this section shall be applied during hot weather; i.e., air temperatures above 25°C during placing.
- (ii) Concrete shall be placed at as low a temperature as possible, preferably below 15°C, but not above 22°C. Aggregate stockpiles may be cooled by watersprays and sunshades.
- (iii) Ice may be substituted for a portion of the mixing water; providing it has melted by the time mixing is completed.
- (iv) Form and conveying equipment shall be kept as cool as possible before concreting, by shading them from the sun, painting their surfaces white, and/or the use of watersprays.
- (v) Sunshades and wind breaks shall be used as required during placing and finishing.
- (vi) Work shall be planned so that concrete can be placed as quickly as possible to avoid "cold joints."
- (vii) The Contract Administrator's approval is necessary before the Contractor may use admixtures, such as retardants, to delay setting or water-reducing agents to maintain workability and strength, and these must then appear in the Mix Design Statement submitted to the Contract Administrator.
- (viii) Curing shall follow immediately after the finishing operations.

**(b) Hot-Weather Curing**

- (i) When the air temperature is at or above 25°C, curing shall be accomplished by water spray or by using saturated absorptive fabric, in order to achieve cooling by evaporation. Mass concrete shall be water cured for the basic curing period when the air temperature is at or above 20°C, in order to minimize the temperature rise of the concrete.

**(c) Job Preparation**

- (i) When the air temperature is at or above 25°C, or when there is a probability of it rising to 25°C during the placing period, facilities shall be provided for protection of the concrete in place from the effects of hot and/or drying weather conditions. Under severe drying conditions, as defined in CSA A23.1 the formwork, reinforcement, and concreting equipment shall be protected from the direct rays of the sun or cooled by fogging and evaporation.

**(d) Concrete Temperature**

- (i) The temperature of the concrete as placed shall be as low as practicable and in no case greater than that shown below for the indicated size of the concrete section.

Thickness of Section (m)	Temperatures, °C	
	Minimum	Maximum
Less than 0.3	10	35
0.3 to 1.0	10	30
1.0 to 2.0	5	25

E11.5.9 Cleanup

- (a) The Contractor shall cleanup equipment and construction debris on at least a daily basis to the satisfaction of the Contract Administrator.

E11.6 Measurement and Payment

E11.6.1 Provencher Bridge Concrete Barrier Repairs

- (a) Provencher Bridge Type 1 Concrete Barrier Repairs will be measured on a unit basis and paid for at the Contract Unit Price per square metre for "Concrete Repairs – Type 1", repaired in accordance with this Specification and accepted by the Contract Administrator.

E11.6.2 Provencher Culvert Wingwall and Arch Soffit Concrete Repairs

- (a) Provencher Culvert Wingwall and Arch Soffit Type 1 Concrete Repairs will be measured on a unit basis and paid for at the Contract Unit Price per square metre for "Concrete Repairs – Type 1", repaired in accordance with this Specification and accepted by the Contract Administrator.
- (b) Provencher Culvert Wingwall Type 2 Concrete Repairs will not be measured and will be paid for at the Contract Lump Sum Price for "Concrete Repairs - Type 2" for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

**E12. ROADWAY EXPANSION JOINTS RENEWAL**

E12.1 Description

E12.1.1 This Specification covers all items related to the removal, supply and installation of the roadway expansion joint at the west end of the Provencher Bridge.

E12.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E12.2 Referenced Specifications and Drawings

E12.2.1 The latest edition and subsequent revisions of the following:

- (a) ASTM C711 – Standard Test Method for Low-Temperature Flexibility and Tenacity of One-Part, Elastomeric, Solvent-Release Type Sealants; and,
- (b) ASTM G155 – Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials.

E12.3 Materials

E12.3.1 General

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

E12.3.2 Precompressed Foam Joint Filler

- (a) Roadway expansion joint seal shall be precompressed foam joint filler and conform to the requirements of ASTM C711 and ASTM G155. An acceptable product would be EMSEAL BEJS Sticks.
- (b) The seal width shall be as indicated on the Drawings.

- (c) Sealant system shall be comprised of three (3) components:
  - (i) cellular polyurethane foam impregnated with hydrophobic one hundred percent (100%) acrylic, water-based emulsion, factory coated with highway-grade, fuel resistant silicone;
  - (ii) field-applied epoxy adhesive primer; and,
  - (iii) field-injected silicone sealant bands.
- (d) Impregnation agent to have proven non-migratory characteristics. Silicone coating to be highway-grade, low-modulus, fuel resistant silicone applied to the impregnated foam sealant at a width greater than maximum allowable joint extension and which when cured and compressed will form a bellows. Depth of seal as recommended by manufacturer. Bridge expansion joint system (BEJS) stick to be installed into manufacturer's standard field-applied epoxy adhesive.
- (e) Material shall be capable, as a dual seal, of movements of plus fifty percent (+50%) to minus fifty percent (-50%) (one hundred percent (100%) total) of nominal material size. Changes in plane and direction shall be executed in accordance with manufacturer recommendations. Transitions shall be warranted to be watertight at inside and outside corners through the full movement capabilities of the product.
- (f) All substitute candidates to be certified in writing to be free in composition of any waxes or asphalts, wax compounds, or asphalt compounds. All substitute candidates shall be certified in writing to be:
  - (i) capable of withstanding 65°C for three (3) hours while compressed down to the minimum of movement capability dimension of the basis of design product (minus fifty percent (-50%) of normal material size) without evidence of any bleeding of impregnation medium from the material; and,
  - (ii) that the same material after the heat stability test will self-expand to the maximum of movement capability dimension of the basis-of-design product (plus fifty percent (+50%) of nominal material size) within twenty-four (24) hours at room temperature 20°C.

#### E12.3.3 Low Density Polyethylene Foam

- (a) Low density polyethylene foam shall be supplied and installed to the thicknesses and extents shown on the Drawings. The maximum density of polyethylene foam shall be 30 kg•m<sup>3</sup>. An acceptable product would be Ethafoam™ 180.

#### E12.4 Construction Methods

##### E12.4.1 Removals and Cutting

- (a) Remove the existing joint seals where replacement is indicated on the Drawings.
- (b) Sawcut the roadway slabs and concrete barriers and remove concrete as shown on the Drawings.
- (c) Clean all concrete surfaces as required by the seal manufacturer's installation instructions.

##### E12.4.2 Foam Installation

- (a) Install the low density polyethylene foam in accordance with the manufacturer's recommendations.

##### E12.4.3 Seal Installation

- (a) Install the precompressed foam joint filler in accordance with the manufacturer's recommendations.

## E12.5 Measurement and Payment

- E12.5.1 Provencher Bridge Roadway Expansion Joint Renewal will not be measured and will be paid for at the Contract Lump Sum Price for "Roadway Expansion Joint Renewal" for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

## E13. GROUTED STONE RIPRAP

### E13.1 Description

- E13.1.1 This Specification covers all items related to the removal of existing grouted stone riprap and placement of new grouted stone riprap.
- E13.1.2 Grouted stone riprap shall be in accordance with CW 3615. Notwithstanding CW 3615, the following shall apply.

### E13.2 Referenced Specifications and Drawings

- E13.2.1 The latest edition and subsequent revisions of the following:
- (a) CW 3615 - Riprap

### E13.3 Removal of Grouted Stone Riprap

- (a) Remove existing grouted stone riprap as indicated on the Drawings.

### E13.4 Cold Weather Construction Method

- (a) Cold weather construction method shall be in accordance with E11.5.7.

### E13.5 Measurement and Payment

- E13.5.1 Grouted Stone Rip Rap will be paid for at the Contract Unit Price per square metre for "Grouted Stone Rip Rap" for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

## E14. CHAIN LINK FENCE REPAIRS

### E14.1 Description

- E14.1.1 This Specification covers all items related to the supply and installation of chain link fencing at the Provencher Culvert.
- E14.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.
- E14.1.3 Chain link fence repairs shall be in accordance with CW 3550. Notwithstanding CW 3550, the following shall apply.

### E14.2 Referenced Specifications and Drawings

- E14.2.1 The latest edition and subsequent revisions of the following:
- (a) CW 3550 – Chain Link and Drift Control Fence.

### E14.3 Materials

- E14.3.1 Base Plates
- (a) Base plates shall be Grade 350W.

### E14.4 Construction Method

- E14.4.1 Post Removal
- (a) Salvage existing fencing and crossbars to be reinstalled after new post installation.
  - (b) Remove the existing damaged fence posts where replacement is indicated on the Drawings.
  - (c) Complete wingwall concrete repairs in accordance with E11.
- E14.4.2 Post Installation
- (a) Install base plates as indicated on the Drawings.
  - (b) Install new posts over base plate sleeves and secure with two (2) opposing self-tapping screws.
  - (c) New posts shall be plumb and set to give correct alignment. Bending of posts to give correct alignment is not acceptable.
  - (d) Reinstall salvaged crossbars and fencing.
  - (e) Weatherproof post caps shall be securely attached to eliminate removal by hand.
- E14.5 Measurement and Payment
- E14.5.1 Provencher Culvert Chain Link Fence Repairs will not be measured and will be paid for at the Contract Lump Sum Price for "Chain Link Fence Repairs" for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

## **E15. CHEMICAL GROUT CRACK INJECTION**

- E15.1 Description
- E15.1.1 This specification covers all items related to the chemical grout crack injection repair of the Provencher Culvert Arch Soffit as specified herein.
- E15.2 Materials
- E15.2.1 General
- (a) The Contractor shall be responsible for the supply, safe storage, and handling of all materials set forth in this Specification.
  - (b) All materials supplied under this Specification shall be of a type acceptable by the Contract Administrator, and shall be subject to inspection and testing by the Contract Administrator.
- E15.2.2 Chemical Grout Injection Material
- (a) Chemical grout injection material shall be SPECTRON FLEX F1000 or equivalent as approved by the Contract Administrator, in accordance with B7.
- E15.3 Equipment
- E15.3.1 All equipment shall be as required by the manufacturer and acceptable to the Contract Administrator and shall be kept in good working order.
- E15.4 Construction Methods
- E15.4.1 Crack Injection
- (a) Inject cracks in accordance with the manufacturer recommendations.
- E15.4.2 Access
- (a) The City will provide the use of their Under Bridge Crane complete with: Travel to site; Truck and bucket operator; and, Traffic Control for up to a maximum of five (5) Working Days. The Contractor shall notify the Contract Administrator at least thirty (30) Calendar Days prior to requiring the Under Bridge Crane on site. The Contract

Administrator will coordinate the use of the Under Bridge Crane with the City acting reasonably and with consideration of the City's internal schedule for the Under Bridge Crane. Should a conflict exist between the Contractor's requested dates for the Under Bridge Crane and the City's internal Under Bridge Crane Schedule, the City's internal schedule will take precedence and the Contractor shall be responsible to provide alternative dates.

- (b) The City reserves the right to remove the Under Bridge Crane from the Site or cancel the Contractor's booking for the Under Bridge Crane at any time for emergency purposes. If the City removes the Under Bridge Crane from site, or cancels the Contractor's booking, the City shall provide alternative dates for the Contractor.
- (c) Acting reasonably and as mutually agreed between the Contractor and the City the Contractor's booking for the Under Bridge Crane may be rescheduled.
- (d) Use of the Under Bridge Crane for more than five (5) Working Days will be subject to Liquidates Damages in accordance with **Error! Reference source not found..**
- (e) Working hours for the Under Bridge Crane shall be restricted to 09:00 to 19:00.
- (f) The City's Under Bridge Crane can accommodate up to two (2) Contractor personnel including equipment in addition to the City Bucket Operator for up to a maximum total weight 272 kgs (600 lbs). The Contractor shall be responsible for ensuring personnel utilizing the Under Bridge Crane have the required Personal Protective Equipment and the required Health and Safety training including, but not limited to:
  - (i) Fall Arrest Training.
- (g) The Contractor shall provide proof of Health and Safety training to the Contract Administrator prior to the Contractor personnel entering the Under Bridge Crane.

#### E15.5 Measurement and Payment

- E15.5.1 Provencher Culvert Chemical Grout Crack Injection will be measured on a unit basis and paid for at the Contract Unit Price per linear metre for "Chemical Grout Crack Injection", repaired in accordance with this Specification and accepted by the Contract Administrator.

#### E16. LAYOUT OF ROAD WORKS

- E16.1 Further to C6 of the General Conditions for Construction, the Contract Administrator will provide reference lines and final design elevations to the Contractor at intervals and offsets deemed necessary by the Contract Administrator.
- E16.2 The Contractor shall be responsible for the layout of any additional grades required as deemed necessary by the Contractor. Grades that the Contractor is responsible for includes but is not limited to sub-grade, sub-base, and base course elevations.
- E16.3 The Contractor shall provide all required instruments and competent personnel for performing all layouts. Any Work found to be defective due to errors in layout completed by the Contractor shall be corrected at the expense of the Contractor.
- E16.4 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 their discretion.
- E16.5 The Contractor shall carefully protect and preserve all benchmarks, stakes, and other items used to convey the basic data to the Contractor 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. The Contract Administrator shall be notified at least two (2) Working Days prior to replacing any benchmarks, stakes, and other items used to convey the basic data to the Contractor.

E16.6 The Contractor shall arrange and carry on their Work so as not to conflict with the collection of any data and layout of reference lines and design elevations in anyway by the Contract Administrator. The Contractor shall adjust Work and/or remove any interference as directed by the Contract Administrator at the expense of the Contractor.

## **E17. MEDIAN CONCRETE BARRIER REPLACEMENT**

### **E17.1 Description**

E17.1.1 This Specification covers all items relating to the replacement of designated median concrete traffic barriers, the installation of new traffic barrier joint seals, and asphalt patching at the Dugald Bridge as herein specified.

E17.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

### **E17.2 Referenced Specifications and Drawings**

E17.2.1 The latest edition and subsequent revisions of the following:

- (a) ASTM C711 – Standard Test Method for Low-Temperature Flexibility and Tenacity of One-Part, Elastomeric, Solvent-Release Type Sealants;
- (b) ASTM A955 – Standard Specification for Deformed and Plain Stainless Steel Bars for Concrete Reinforcement;
- (c) ASTM G155 – Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials;
- (d) CW 3250 – Joint and Crack Maintenance; and,
- (e) CW 3410 – Asphaltic Concrete Pavement Works.

### **E17.3 Submittals**

#### **E17.3.1 Shop Drawings**

- (a) The Contractor shall submit Shop Drawings showing fabrication details of median barrier reinforcing steel in accordance with E2.

### **E17.4 Materials**

#### **E17.4.1 General**

- (a) All materials shall be in accordance with E11.3. Notwithstanding E11.3, the following shall apply.

#### **E17.4.2 Barrier Dowel Assembly**

- (a) Traffic barrier dowels shall conform to the requirements of ASTM A955. Stainless steel dowels, as shown on the Drawings, shall be a high-manganese, low-nickel, nitrogen-strengthened austenitic stainless steel. Stainless steel reinforcing shall meet or exceed the minimum requirements of ASTM A955, 300 Series, and minimum Grade 420. The dowels shall be fabricated to the details shown on the Drawings.
- (b) The plastic sleeve shall be as detailed in the Drawings.

#### **E17.4.3 Fifty (50) millimetre Precompressed Joint Sealant**

- (a) Fifty (50) millimetre barrier joint seal shall be a precompressed joint sealant and conform to the requirements of ASTM C711 and ASTM G155. An acceptable product would be EMSEAL BEJS Sticks.
- (b) The seal width shall be as indicated on the Drawings.
- (c) Sealant system shall be comprised of three (3) components:

- (i) cellular polyurethane foam impregnated with hydrophobic one hundred percent (100%) acrylic, water-based emulsion, factory coated with highway-grade, fuel resistant silicone;
  - (ii) field-applied epoxy adhesive primer; and,
  - (iii) field-injected silicone sealant bands.
- (d) Impregnation agent to have proven non-migratory characteristics. Silicone coating to be highway-grade, low-modulus, fuel resistant silicone applied to the impregnated foam sealant at a width greater than maximum allowable joint extension and which when cured and compressed will form a bellows. Depth of seal as recommended by manufacturer. BEJS foam seal to be installed into manufacturer's standard field-applied epoxy adhesive. The BEJS is to be installed recessed from the surface such that when the field-applied injection band of silicone is installed between the substrates and the foam-and-silicone-convex, the system will be (thirteen (13) millimetres) down from the surface, or flush with the barrier joint chamfer.
- (e) Material shall be capable, as a dual seal, of movements of plus fifty percent (+50%) to minus fifty percent (-50%) (one hundred percent (100%) total) of nominal material size. Changes in plane and direction shall be executed in accordance with manufacturer recommendations. Transitions shall be warranted to be watertight at inside and outside corners through the full movement capabilities of the product.
- (f) All substitute candidates to be certified in writing to be free in composition of any waxes or asphalts, wax compounds, or asphalt compounds. All substitute candidates shall be certified in writing to be:
- (i) capable of withstanding 65°C for three (3) hours while compressed down to the minimum of movement capability dimension of the basis of design product (minus fifty percent (-50%) of normal material size) without evidence of any bleeding of impregnation medium from the material; and,
  - (ii) that the same material after the heat stability test will self-expand to the maximum of movement capability dimension of the basis-of-design product (plus fifty percent (+50%) of nominal material size) within twenty-four (24) hours at room temperature 20°C.

#### E17.4.4 Nineteen (19) millimetre Precompressed Joint Sealant

- (a) Nineteen (19) millimetre barrier joint seal shall be a precured, precompressed joint sealant. An acceptable product would be EMSEAL BEJS-On-A-Reel (BOR).
- (b) The seal width shall be as indicated on the Drawings.
- (c) Sealant system shall be comprised of two (2) components:
  - (i) cellular polyurethane foam impregnated with hydrophobic one hundred percent (100%) acrylic, water-based emulsion, factory coated with highway-grade, fuel resistant silicone; and,
  - (ii) field applied silicone adhesive along with field-injected silicone sealant bands.
- (d) Impregnation agent to have proven non-migratory characteristics. Silicone coating to be highway-grade, low-modulus, fuel resistant silicone applied to the impregnated foam sealant at a width greater than maximum allowable joint extension and when cured and compressed will form a convex curve. Depth of seal as recommended by manufacturer. BEJS seal to be installed into manufacturer's standard field-applied silicone mounting beads. The BEJS is to be installed recessed from the surface such that when the field-applied injection band of silicone is installed between the substrates and the foam-and-silicone-convex, the system will be (thirteen (13) millimeters) down from the surface, or flush with the barrier joint chamfer.
- (e) Material shall be capable, as a dual seal, of movements of plus fifty percent (+50%) to minus fifty percent (-50%) (one hundred percent (100%) total) of nominal material size. Changes in plane and direction shall be executed in accordance with manufacturer recommendations. Transitions shall be warranted to be watertight at inside and outside corners through the full movement capabilities of the product.

- (f) All substitute candidates to be certified in writing to be free in composition of any waxes or asphalts, wax compounds, or asphalt compounds. All substitute candidates shall be certified in writing to be:
  - (i) capable of withstanding 65°C for three (3) hours while compressed down to the minimum of movement capability dimension of the basis of design product (minus fifty percent (-50%) of normal material size) without evidence of any bleeding of impregnation medium from the material; and,
  - (ii) the same material after the heat stability test will self-expand to the maximum of movement capability dimension of the basis-of-design product (plus fifty percent (+50%) of nominal material size) within twenty-four (24) hours at room temperature 20°C.

#### E17.4.5 Asphalt Patching Material

- (a) Asphalt patching material shall be in accordance with CW 3410 (Type 1A Asphalt Material).

#### E17.5 Equipment

- E17.5.1 All equipment shall be of a type accepted by the Contract Administrator. The equipment shall be kept in good working order, kept free from hardened concrete or foreign materials, and shall be cleaned at frequent intervals.

#### E17.6 Construction Methods

##### E17.6.1 General

- (a) All construction methods shall be in accordance with E11.5. Notwithstanding E11.5, the following shall apply.
- (b) The Contractor shall ensure that existing concrete to remain will not be damaged.

##### E17.6.2 Dugald Bridge Median Concrete Barrier Replacement

- (a) Remove existing median barrier and existing joint seals to the extents shown on the Drawings.
- (b) Core a one hundred (100) millimetre diameter hole in each approach slab as shown on the Drawings to permit inspection of substructure conditions by the Contract Administrator. Core hole to be patched after inspection has been completed.
- (c) Install dowels into predrilled holes into approach slab where indicated on the Drawings and place reinforcing steel bars as follows:
  - (i) drill holes into approach slab the diameters and depths shown on the Drawings. Drill bits shall have a diameter no larger than two (2) millimetres larger than the bar diameter;
  - (ii) holes shall be located to the correct depth and alignment as indicated on the Drawings;
  - (iii) drilling equipment shall be operated so as to ensure that no damage to the concrete results from such drilling operations. Coring of holes is not permitted. In the event that existing reinforcing steel bars are hit during the drilling operations, that hole shall be abandoned and a new hole shall be drilled nearby to the correct depth. All abandoned holes shall be filled with non-shrink grout or approved adhesive agent;
  - (iv) holes for dowels shall be blown clean with compressed air. Approved adhesive agent shall be placed in the back of the drilling hole. The dowels shall be worked back into the holes for complete coverage around the portion of the bar that extends into the hole, such that adhesive agent is squeezed from the hole;
  - (v) install reinforcing steel bars as shown on the Drawings; and,

(vi) once all reinforcing steel is in position, it shall be inspected and approved by the Contract Administrator before any new concrete is placed. Otherwise, the concrete may be rejected by the Contract Administrator and shall be removed by the Contractor at his/her own expense.

(d) Place concrete into forms.

(e) Cure in accordance with E11.5.4.

#### E17.6.3 Form Removal

(a) All barrier forms shall remain in place for a minimum of seven (7) days. The Contract Administrator must be notified at least twenty-four (24) hours prior to any form removal. The Contractor must receive approval from the Contract Administrator prior to beginning Work.

#### E17.6.4 Dugald Bridge Median Concrete Barrier Joint Replacement

(a) Clean all concrete surfaces as required by the seal manufacturer's instructions.

(b) Install the barrier precompressed foam joint seals in accordance with the manufacturer's recommendations.

#### E17.6.5 Asphalt Patching

(a) Asphalt patching to be completed in accordance with CW 3250.

#### E17.7 Measurement and Payment

E17.7.1 Dugald Bridge Median Concrete Barrier Replacement will not be measured and will be paid for at the Contract Lump Sum Price for "Median Concrete Barrier Replacement" for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.