



**THE CITY OF WINNIPEG**

# **BID OPPORTUNITY**

**BID OPPORTUNITY NO. 1042-2018**

**2019 OUTFALL RENEWAL AND REHABILITATION**

## TABLE OF CONTENTS

### PART A - BID SUBMISSION

|   |    |
|---|----|
| Form A: Bid                             | 1  |
| Form G1: Bid Bond and Agreement to Bond | 18 |

### PART B - BIDDING PROCEDURES

|   |   |
|---|---|
| B1. Contract Title                              | 1 |
| B2. Submission Deadline                         | 1 |
| B3. Site Investigation                          | 1 |
| B4. Enquiries                                   | 1 |
| B5. Confidentiality                             | 2 |
| B6. Addenda                                     | 2 |
| B7. Substitutes                                 | 2 |
| B8. Bid Components                              | 3 |
| B9. Bid   | 4 |
| B10. Prices                                     | 4 |
| B11. Disclosure                                 | 5 |
| B12. Conflict of Interest and Good Faith        | 5 |
| B13. Qualification                              | 6 |
| B14. Bid Security                               | 7 |
| B15. Opening of Bids and Release of Information | 8 |
| B16. Irrevocable Bid                            | 8 |
| B17. Withdrawal of Bids                         | 8 |
| B18. Evaluation of Bids                         | 9 |
| B19. Award of Contract                          | 9 |

### PART C - GENERAL CONDITIONS

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

### PART D - SUPPLEMENTAL CONDITIONS

#### General

|  |   |
|--|---|
| D1. General Conditions   | 1 |
| D2. Scope of Work  | 1 |
| D3. Contract Administrator                                       | 3 |
| D4. Contractor's Supervisor                                      | 3 |
| D5. Ownership of Information, Confidentiality and Non Disclosure | 3 |
| D6. Notices  | 3 |
| D7. Furnishing of Documents                                      | 4 |

#### Submissions

|                                    |   |
|------------------------------------|---|
| D8. Authority to Carry on Business | 4 |
| D9. Safe Work Plan                 | 4 |
| D10. Insurance                     | 4 |
| D11. Contract Security             | 5 |
| D12. Subcontractor List            | 5 |
| D13. Detailed Work Schedule        | 5 |

#### Schedule of Work

|  |   |
|--|---|
| D14. Expedited Shop Drawings and Utility Locates | 6 |
| D15. Commencement                                | 6 |
| D16. Substantial Performance                     | 7 |
| D17. Total Performance                           | 7 |
| D18. Liquidated Damages                          | 7 |

#### Control of Work

|  |   |
|--|---|
| D19. Job Meetings  | 7 |
| D20. Prime Contractor – The Workplace Safety and Health Act (Manitoba) | 8 |
| D21. The Workplace Safety and Health Act (Manitoba) – Qualifications   | 8 |

**Measurement and Payment**

|              |   |
|--------------|---|
| D22. Payment | 8 |
|--------------|---|

**Warranty**

|               |   |
|---------------|---|
| D23. Warranty | 8 |
|---------------|---|

|                           |   |
|---------------------------|---|
| Form H1: Performance Bond | 9 |
|---------------------------|---|

|   |    |
|---|----|
| Form H2: Labour and Material Payment Bond | 11 |
|---|----|

|                            |    |
|----------------------------|----|
| Form J: Subcontractor List | 13 |
|----------------------------|----|

**PART E - SPECIFICATIONS**

**General**

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

|                                |   |
|--------------------------------|---|
| E2. Soils Investigation Report | 1 |
|--------------------------------|---|

**General Requirements**

|                       |   |
|-----------------------|---|
| E3. Office Facilities | 2 |
|-----------------------|---|

|                         |   |
|-------------------------|---|
| E4. Truck Weight Limits | 2 |
|-------------------------|---|

|                               |   |
|-------------------------------|---|
| E5. Dangerous Work Conditions | 2 |
|-------------------------------|---|

|                                 |   |
|---------------------------------|---|
| E6. Waterway By-Law and Permits | 3 |
|---------------------------------|---|

|                                   |   |
|-----------------------------------|---|
| E7. Environmental Protection Plan | 3 |
|-----------------------------------|---|

|                   |   |
|-------------------|---|
| E8. Shop Drawings | 8 |
|-------------------|---|

|                  |   |
|------------------|---|
| E9. Flow Control | 9 |
|------------------|---|

|                         |    |
|-------------------------|----|
| E10. Channel Protection | 10 |
|-------------------------|----|

|                                       |    |
|---------------------------------------|----|
| E11. Site Development and Restoration | 10 |
|---------------------------------------|----|

|                                 |    |
|---------------------------------|----|
| E12. Installation of Silt Fence | 13 |
|---------------------------------|----|

|                   |    |
|-------------------|----|
| E13. Tree Removal | 15 |
|-------------------|----|

|                                   |    |
|-----------------------------------|----|
| E14. Protection of Existing Trees | 16 |
|-----------------------------------|----|

|                      |    |
|----------------------|----|
| E15. Rockfill Riprap | 16 |
|----------------------|----|

|                            |    |
|----------------------------|----|
| E16. Outfall Sewer Repairs | 18 |
|----------------------------|----|

|                                      |    |
|--------------------------------------|----|
| E17. Construction of Concrete Collar | 25 |
|--------------------------------------|----|

|                          |    |
|--------------------------|----|
| E18. Riverbank Regrading | 26 |
|--------------------------|----|

|                 |    |
|-----------------|----|
| E19. Geotextile | 27 |
|-----------------|----|

|  |    |
|--|----|
| E20. Native Grasses and Trees Revegetation | 29 |
|--|----|

|                     |    |
|---------------------|----|
| E21. Sewer Cleaning | 31 |
|---------------------|----|

|                       |    |
|-----------------------|----|
| E22. Sewer Inspection | 31 |
|-----------------------|----|

|  |    |
|--|----|
| E23. Cast-In-Place Concrete Construction | 32 |
|--|----|

|                                |    |
|--------------------------------|----|
| E24. Cold Weather Requirements | 33 |
|--------------------------------|----|

|                     |    |
|---------------------|----|
| E25. Grouted Riprap | 34 |
|---------------------|----|

|   |    |
|---|----|
| E26. Removal of Concrete Sand Bag Revetment | 35 |
|---|----|

|                               |    |
|-------------------------------|----|
| E27. Erosion Control Blankets | 35 |
|-------------------------------|----|

|   |    |
|---|----|
| E28. Work Practices on Asbestos Cement Pipe | 36 |
|---|----|

|   |    |
|---|----|
| E29. Supply and Installation of Temporary Shoring | 36 |
|---|----|

|                                    |    |
|------------------------------------|----|
| E30. Temporary Surface Restoration | 37 |
|------------------------------------|----|

|  |    |
|--|----|
| E31. Removal and Re-Installation of Existing Flap Gate | 38 |
|--|----|

|  |    |
|--|----|
| E32. Removal and Installation of Hand Rail | 38 |
|--|----|

|                                    |    |
|------------------------------------|----|
| E33. Lightweight Cellular Concrete | 39 |
|------------------------------------|----|

**PART F - SECURITY CLEARANCE**

|                        |   |
|------------------------|---|
| F1. Security Clearance | 1 |
|------------------------|---|

**APPENDICES**

APPENDIX A – Test Hole Log

APPENDIX B – Self Assessment

APPENDIX C – DFO Submissions

## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

B1.1 2019 OUTFALL RENEWAL AND REHABILITATION

### **B2. SUBMISSION DEADLINE**

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, December 5, 2018.

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, access to the Jae Eadie Park Outfall is restricted as a 1.5 meter tall chain link fence exists along the top of bank within Jae Eadie Park. As such, the Contract Administrator or an authorized representative will be available at the Jae Eadie Park Outfall site from 9:00 am to 10 am on November 28, 2018 to provide Bidders access to the Site. Viewing of the Jae Eadie Park Site is not mandatory.

B3.2 The Bidder may view all Sites without making an appointment.

B3.3 The Bidder is advised that a sinkhole exists at the St. Charles Outfall site. The sinkhole is shown on the Drawings, however other sinkholes may have opened up since the drawings were prepared. Caution should be taken to avoid injury when accessing these and other outfall sites.

B3.4 The Bidder is advised that continuous service must be maintained at the Valley View Outfall site throughout construction, and that a bypass plan will be required at this location in the event of a water main break or other unforeseen source of inflow into the land drainage system during construction.

B3.5 The Bidder is advised that access to the Valley View Outfall (both abandonment and new outfall site) is constrained to the City right-of-way located between 46 and 48 Valley View Drive. Bidders may not trespass on private property.

B3.6 The Bidder shall not be entitled to rely on any information or interpretation received at the Site investigation unless that information or interpretation is the Bidder's direct observation, or is provided by the Contract Administrator in writing.

### **B4. ENQUIRIES**

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

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

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

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

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

## **B5. 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 Bid Opportunity 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 Bid Opportunity, or clarifying the meaning or intent of any provision therein.

B6.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.

B6.3 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/bidopp.asp>

B6.4 The Bidder is responsible for ensuring that he/she has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.

B6.5 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B6.6 Notwithstanding B4, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D3.

## **B7. SUBSTITUTES**

B7.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.

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;
- (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 B18.

B7.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

## **B8. BID COMPONENTS**

B8.1 The Bid shall consist of the following components:

- (a) Form A: Bid;
- (b) Form B: Prices;
- (c) Form G1: Bid Bond and Agreement to Bond;

B8.2 Further to B8.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B7.

B8.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely.

B8.4 The Bid shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.

B8.4.1 Samples or other components of the Bid which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid.

- B8.5 Bidders are advised not to include any information/literature except as requested in accordance with B8.1.
- B8.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B18.1(a).
- B8.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B8.8 Bids shall be submitted to:  
The City of Winnipeg  
Corporate Finance Department  
Materials Management Division  
185 King Street, Main Floor  
Winnipeg MB R3B 1J1

## **B9. BID**

- B9.1 The Bidder shall complete Form A: Bid, making all required entries.
- B9.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/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 or more persons, each and all such persons shall identify themselves in accordance with B9.2.
- B9.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.
- B9.4 Paragraph 13 of Form A: Bid shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/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 and the corporate seal, if the corporation has one, should be affixed;
  - (d) if the Bidder is carrying on business under a name other than his/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.
- B9.5 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.

- B10.2 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) Armtec
    - (i) Manufacturing and product information
  - (b) Uponor Ltd.
    - (i) Manufacturing and product information
  - (c) Accurate HD
    - (i) Constructability review of Valley View Outfall site
  - (d) Cematrix
    - (i) Lightweight fill product information and installation

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

- B12.1 Bidders, by responding to this Bid Opportunity, declare that no Conflict of Interest currently exists, or is reasonably expected to exist in the future.
- B12.2 Conflict of Interest means any situation or circumstance where a Bidder or employee of the Bidder proposed for the Work has:
- (a) other commitments;
  - (b) relationships;
  - (c) financial interests; or
  - (d) involvement in ongoing litigation;
- that could or would be seen to:
- (i) exercise an improper influence over the objective, unbiased and impartial exercise of the independent judgment of the City with respect to the evaluation of Bids or award of the Contract; or
  - (ii) compromise, impair or be incompatible with the effective performance of a Bidder's obligations under the Contract;
- (e) has contractual or other obligations to the City that could or would be seen to have been compromised or impaired as a result of its participation in the Bid Opportunity process or the Work; or
  - (f) has knowledge of confidential information (other than confidential information disclosed by the City in the normal course of the Bid Opportunity process) of strategic and/or material relevance to the Bid Opportunity 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 Bid Opportunity 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; and
  - (b) be financially capable of carrying out the terms of the Contract; and
  - (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.
- B13.2** The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <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);
- (d) upon request of the Contract Administrator, provide the Security Clearances in accordance with PART F - ;

B13.4 Further to B13.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

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

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

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

## **B14. BID SECURITY**

B14.1 The Bidder shall provide bid security in the form of a bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in the form included in the Bid Submission (Form G1: Bid Bond and Agreement to Bond).

B14.1.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.

B14.1.2 All signatures on bid securities shall be original.

B14.1.3 The Bidder shall sign the Bid Bond.

B14.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.

B14.2 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly executed by the successful Bidder and the contract securities are furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.

B14.3 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Bid Opportunity.

## **B15. OPENING OF BIDS AND RELEASE OF INFORMATION**

B15.1 Bids will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Division, or in such other office as may be designated by the Manager of Materials.

B15.1.1 Bidders or their representatives may attend.

B15.1.2 Bids determined by the Manager of Materials, or his/her designate, to not include the bid security specified in B14 will not be read out.

B15.2 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/>

B15.3 After award of Contract, the name(s) of the successful Bidder(s), their address(es) and the Contract amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>

B15.4 The Bidder is advised that any information contained in any Bid may be released if required by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law or by City policy or procedures (which may include access by members of City Council).

B15.4.1 To the extent permitted, the City shall treat as confidential information, those aspects of a Bid Submission identified by the Bidder as such in accordance with and by reference to Part 2, Section 17 or Section 18 or Section 26 of The Freedom of Information and Protection of Privacy Act (Manitoba), as amended.

## **B16. IRREVOCABLE BID**

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

B16.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly executed and the contract securities have been furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid.

## **B17. WITHDRAWAL OF BIDS**

B17.1 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.

B17.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.

B17.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 13 of Form A: Bid, and only such person, has authority to give notice of withdrawal.

B17.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:

- (a) retain the Bid until after the Submission Deadline has elapsed;
- (b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 13 of Form A: Bid; and
- (c) if the notice has been given by any one of the persons specified in B17.1.3(b), declare the Bid withdrawn.

B17.2 A Bidder who withdraws his/her Bid after the Submission Deadline but before his/her Bid has been released or has lapsed as provided for in B16.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law, including the right to retain the Bidder's bid security.

## **B18. EVALUATION OF BIDS**

B18.1 Award of the Contract shall be based on the following bid evaluation criteria:

- (a) compliance by the Bidder with the requirements of the Bid Opportunity, 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;
- (d) economic analysis of any approved alternative pursuant to B7.

B18.2 Further to B18.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities, if the interests of the City so require.

B18.3 Further to B18.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is responsible and qualified.

B18.4 Further to B18.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.

B18.4.1 Further to B18.1(a), in the event that a unit price is not provided on Form B: Prices, the City will determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.

## **B19. AWARD OF CONTRACT**

B19.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B19.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.

B19.2.1 Without limiting the generality of B19.2, the City will have no obligation to award a Contract where:

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

**B19.3** Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B18.

**B19.3.1** Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.

## PART C - GENERAL CONDITIONS

### C0. GENERAL CONDITIONS

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

## PART D - SUPPLEMENTAL CONDITIONS

### GENERAL

#### D1. GENERAL CONDITIONS

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

#### D2. SCOPE OF WORK

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

- (a) Red River Boulevard Outfall (S-MA00000073)
  - (i) Removal and Replacement of (+/-) 34.6 m of existing 750 mm diameter CMP outfall with (+/-) 34.6 m of 750 mm diameter CMP with polymer coating
  - (ii) Construction of a new reinforced concrete collar
  - (iii) Installation of 750 mm external slip joint
  - (iv) Installation of grouted riprap
  - (v) Site restoration
- (b) Henderson Highway Outfall (S-MA40000289)
  - (i) Removal and replacement of (+/-) 3.5 m of existing 1050 mm diameter concrete and 23.6 m of existing 1200 mm diameter CMP with (+/-) 26.8 m of 1200 mm diameter CMP with polymer coating
  - (ii) Removal and replacement of manhole (SD-011)
  - (iii) Installation of (2) 1200 mm diameter internal slip joints
  - (iv) Installation of 1200 mm diameter debris grate
  - (v) Installation of rockfill riprap
  - (vi) Site restoration
- (c) Gateway Road Outfall (S-MA40003056)
  - (i) Removal and replacement of (+/-) 15.7 m of existing 1825 mm diameter CMP outfall with (+/-) 12.7 m of 2120 mm diameter SPCSP with polymer coating
  - (ii) Construction of new concrete collar
  - (iii) Installation of 2120 mm diameter debris grate
  - (iv) Installation of grouted riprap
  - (v) Installation of pipe anchors to grouted riprap
  - (vi) Site restoration
- (d) St. Charles Street Outfall (S-MA20003569)
  - (i) Removal and replacement of (+/-) 13.4 m of existing 900 mm diameter concrete and 6.0 m of existing 900 CMP with (+/-) 19.4 m of 900 mm diameter CMP with polymer coating
  - (ii) Construction of new concrete collar
  - (iii) Removal and re-installation of existing 900 mm diameter flap gate
  - (iv) Removal and replacement of handrail
  - (v) Installation of grouted riprap
  - (vi) Site restoration
- (e) Valley View Outfall (S-MA20000078)
  - (i) Installation of 46 m of 610 OD HDPE DR9 and 18.6 m of 750 mm diameter CMP with polymer coating
  - (ii) Installation of 750 mm diameter external slip joint

- (iii) Installation of HDPE expansion joint
  - (iv) Installation of 750 mm diameter debris grate
  - (v) Installation of new manhole (SD-011)
  - (vi) Installation of new manhole (SD-010)
  - (vii) Installation of rockfill riprap
  - (viii) Installation of 73.7 m of 375 diameter PVC DR35
  - (ix) Abandonment of existing 525 mm diameter concrete LDS with cement stabilized fill
  - (x) Abandonment of existing 525 mm diameter concrete outfall with lightweight cellular concrete ( $475 \text{ kg/m}^3$ )
  - (xi) Regrading of the existing riverbank with imported clean clay fill
  - (xii) Site restoration
- (f) Jae Eadie Park Outfall (S-MA20008967)
- (i) Removal and replacement of (+/-) 2.0 m of 2280 mm diameter SPCSP
  - (ii) Construction of concrete headwall
  - (iii) Installation of 2280 mm diameter debris grate
  - (iv) Installation of grouted riprap
  - (v) Installation of rockfill riprap
  - (vi) Site restoration
- (g) North Drive Outfall (S-MA60013422)
- (i) Removal and replacement of (+/-) 40 m of existing 1200 concrete and 15.3 m of existing 1200 CSP with (+/-) 54.1 m of 1400 CMP with polymer coating
  - (ii) Construct temporary clay cofferdam (as required)
  - (iii) Construction of new reinforced concrete collar
  - (iv) Installation of rockfill riprap
  - (v) Site restoration
- (h) Hindley Avenue Outfall (S-MA50018567)
- (i) Removal and replacement of (+/-) 29.9 m of existing 525 mm diameter CMP with (+/-) 30.0 m of 600 mm diameter CMP with polymer coating
  - (ii) Installation of 600 mm diameter external slip joint
  - (iii) Installation of 600 mm diameter debris grate
  - (iv) Installation of grouted riprap
  - (v) Site restoration
- (i) Bishop Grandin Outfall (S-MA70015994)
- (i) Removal and replacement of (+/-) 17.7 m of existing 800 mm diameter CMP with (+/-) 17.7 m of 800 mm diameter CMP with polymer coating
  - (ii) Installation of grouted riprap
  - (iii) Installation of 800 mm diameter debris grate
  - (iv) Site restoration
- (j) Pembina Highway Outfall (S-MA70028476)
- (i) Removal and replacement of (+/-) 65.9 m of existing 450 mm diameter CMP with (+/-) 65.9 m of 525 mm diameter CMP with polymer coating
  - (ii) Installation of 525 mm diameter external slip joint
  - (iii) Installation of river stone riprap
  - (iv) Installation of 525 diameter debris grate
  - (v) Site restoration



**D3. CONTRACT ADMINISTRATOR**

D3.1 The Contract Administrator is KGS Group, represented by:

Ray Offman, P.Eng  
Infrastructure Engineer / Project Manager

Telephone No. 204-896-1209  
Email Address roffman@ksgsgroup.com

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

**D4. CONTRACTOR'S SUPERVISOR**

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

**D5. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE**

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

D5.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.

D5.3 The following shall be confidential and shall not be disclosed by the Contractor to the media or any member of the public without the prior written authorization of the Contract Administrator;

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

D5.4 A Contractor who violates any provision of D5 may be determined to be in breach of Contract.

**D6. NOTICES**

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

D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3, D6.4, or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator identified in D3.

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

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

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

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

Facsimile No.: 204 947-9155

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

#### **D7. FURNISHING OF DOCUMENTS**

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

### **SUBMISSIONS**

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

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

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

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

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

#### **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, broad form property damage cover and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
- (b) 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 \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence.
- (c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation.

- D10.2 Deductibles shall be borne by the Contractor.
- D10.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in C4.1 for the return of the executed Contract.
- D10.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

## **D11. CONTRACT SECURITY**

- D11.1 The Contractor shall provide and maintain the performance bond and the labour and material payment bond until the expiration of the warranty period in the form of:
- (a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; and
  - (b) a labour and material payment bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H2: Labour and Material Payment Bond), in an amount equal to fifty percent (50%) of the Contract Price.
- D11.2 The Contractor shall provide the City Solicitor with the required performance and labour and material payment bonds within seven (7) Calendar Days of notification of the award of the Contract by way of letter of intent and prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.
- D11.3 The Contractor shall, as soon as practicable after entering into a contract with a Subcontractor:
- (a) give the Subcontractor written notice of the existence of the labour and material payment bond in D11.1(b); and
  - (b) post a notice of the bond and/or a copy of that bond in a conspicuous location at the Site of the Work.

## **D12. SUBCONTRACTOR LIST**

- D12.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the General Conditions for the return of the executed 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 the General Conditions 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;  
all acceptable to the Contract Administrator.
- D13.3 Further to D13.2(a), the Gantt chart shall clearly identify the start and completion dates of all of the following activities/tasks making up the Work, separated by Outfall Site:
- (a) Construction of cofferdams (where required);
  - (b) Installation of shoring (where required);
  - (c) Installations and repairs to outfall pipes (including slip joints and concrete collars); and

- (d) Restoration of Sites.

## **SCHEDULE OF WORK**

### **D14. EXPEDITED SHOP DRAWINGS AND UTILITY LOCATES**

- D14.1 Further to E8, in order to expedite Shop Drawings with critical timeliness, the lowest responsive Bidder, as outlined in B15, will be permitted, after receiving written approval from the Contract Administrator, to arrange for the preparation of Shop Drawings for the following items with critical timelines:
- (a) Polymer Coated CSP
  - (b) Slip Joints
  - (c) Debris Grates
  - (d) Trenchless Installation Method
  - (e) Flow Control Plan
  - (f) Temporary Trench Shoring (as required)
- D14.2 In order to expedite utility locates on outfall sites with critical timeliness, the lowest responsive Bidder, as outlined in B15, will be permitted, after receiving written approval from the Contract Administrator, to arrange for utility locates for the following outfall sites with critical timelines:
- (a) All Outfall Sites
- D14.3 If Award is made to the lowest responsive Bidder, then as indicated in E8.1(a)(iii), no payment for the preparation of Shop Drawings will be made.
- D14.4 If Award is made to the lowest responsive Bidder, no payment for the booking of utility locates will be made.
- D14.5 If no Contract is awarded, then the City of Winnipeg will pay the requested Bidder up to a maximum of five hundred dollars (\$500.00) for each of the requested submissions as per D14.1 for the preparation and delivery of Shop Drawings and as per D14.2 for the booking of utility locates. Delivery of the Shop Drawings to the City, booking of Utility Locates, and payment of the above mentioned amounts will constitute full and final consideration of each party to the other, and neither party will have any further liability to the other with respect to this Bid Opportunity.

### **D15. COMMENCEMENT**

- D15.1 The Contractor shall not commence any Work until he/she is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.
- D15.2 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; and
    - (vii) the Detailed Work Schedule specified in D13.
  - (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.

D15.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the letter of intent.

D15.4 The Valley View Outfall Works shall be the first site initiated as part of the Work.

#### **D16. SUBSTANTIAL PERFORMANCE**

D16.1 The Contractor shall achieve Substantial Performance by March 15, 2019.

D16.2 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.

D16.3 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.

#### **D17. TOTAL PERFORMANCE**

D17.1 The Contractor shall achieve Total Performance by June 15, 2019.

D17.2 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.

D17.3 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.

#### **D18. LIQUIDATED DAMAGES**

D18.1 If the Contractor fails to achieve, Critical Stages, Substantial Performance or Total Performance 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) Substantial Performance – one thousand eight-hundred dollars (\$1800.00);
- (b) Total Performance – eight hundred dollars (\$800.00).

D18.2 The amounts specified for liquidated damages in D18.1 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.

D18.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

### **CONTROL OF WORK**

#### **D19. JOB MEETINGS**

D19.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need

to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

D19.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

**D20. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

D20.1 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).

**D21. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS**

D21.1 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.

**MEASUREMENT AND PAYMENT**

**D22. PAYMENT**

D22.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

**WARRANTY**

**D23. WARRANTY**

D23.1 Notwithstanding C13.2, 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.

D23.1.1 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.

D23.1.2 For the purpose of contract security, the warranty period shall be one (1) year.

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

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

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

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

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

BID OPPORTUNITY NO. 1042-2018

2019 OUTFALL RENEWAL AND REHABILITATION

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

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

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

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

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

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

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

SIGNED AND SEALED  
in the presence of:

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

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

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

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

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

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



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

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

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

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

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

BID OPPORTUNITY NO. 1042-2018

2019 OUTFALL RENEWAL AND REHABILITATION

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

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

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

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

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

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

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

SIGNED AND SEALED  
in the presence of:

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

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

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

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

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

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



## PART E - SPECIFICATIONS

### GENERAL

#### E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

- E1.1 These Specifications shall apply to the Work.
- E1.2 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.2.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/Spec/Default.stm>
- E1.2.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.2.3 Further to C2.4(d), Specifications included in the Bid Opportunity shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.3 The following are applicable to the Work:

| <u>Drawing No.</u> | <u>Drawing Name/Title</u>               |
|--------------------|---|
| LD-8857            | Cover Sheet                             |
| LD-8858            | Index Page                              |
| LD-8859            | Red River Boulevard Outfall             |
| LD-8860            | Henderson Highway Outfall               |
| LD-8861            | Gateway Road Outfall                    |
| LD-8862            | St Charles Street Outfall               |
| LD-8863            | Valley View Drive Outfall (Abandonment) |
| LD-8864            | Valley View Drive Storm Sewer           |
| LD-8865            | Valley View Drive Outfall (New)         |
| LD-8866            | Jae Eadie Park Outfall                  |
| LD-8867            | North Drive Outfall                     |
| LD-8868            | Hindley Avenue Outfall                  |
| LD-8869            | Bishop Grandin Outfall                  |
| LD-8870            | Pembina Highway Outfall                 |
| LD-8871            | Miscellaneous Details – Sheet 1 of 2    |
| LD-8872            | Miscellaneous Details – Sheet 2 of 2    |

#### E2. SOILS INVESTIGATION REPORT

- E2.1 Further to C3.1,
- Geotechnical test holes have been drilled in the vicinity of the proposed Works for the Valley View Outfall to determine the character of the subsurface soil to facilitate the design of the Work. The information listed is considered accurate at the locations indicated and at the time of the investigation. However, considerable variations in the soil conditions may exist between test holes and fluctuations in ground water levels can be expected seasonally. Test hole logs are included in Appendix A.
  - Contractors are responsible for any interpretation they place on the supplied information and are expected to make such additional investigation of the soil at each of the Sites as they feel necessary to satisfy themselves.
  - Any test borings made by the Contractor shall be done in accordance with the requirements of the appropriate authority of the City of Winnipeg. Contractors shall notify the Contract Administrator prior to starting any soil boring operation.

## **GENERAL REQUIREMENTS**

### **E3. OFFICE FACILITIES**

- E3.1 Contractor shall supply one (1) office facility to be located at a Site specified by the Contract Administrator.
- E3.2 The Contractor shall relocate the office facility during construction to an alternate Site upon request of the Contract Administrator up to one (1) time. Relocation of the office facility will be considered incidental to Supply of Office Facilities, and no separate payment for relocation will be made.
- E3.3 The Contractor shall supply office facilities meeting the following requirements:
- (a) The field office shall be for the exclusive use of the Contract Administrator and City staff and will be used for weekly site meetings.
  - (b) The building shall be conveniently located near an active Work Site.
  - (c) The building shall have a minimum floor area of 25 square metres, two windows and a door entrance with a suitable lock.
  - (d) The building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between 16-25 °C.
  - (e) The building shall be adequately lighted with fluorescent fixtures and have a minimum of three wall outlets.
  - (f) The building shall be furnished with two desks, one drafting tables, table 3m X 1.2m, one stool, one two drawer legal size filing cabinet, and a minimum of 12 chairs.
  - (g) A portable toilet shall be located near the field office building. The toilet shall have a locking door.
  - (h) The field office building and the portable toilet shall be cleaned on a weekly basis immediately prior to each Site meeting. The Contract Administrator may request additional cleaning when the Contract Administrator deems it necessary.

### **E4. TRUCK WEIGHT LIMITS**

- E4.1 The City shall not pay for any portion of material which results in the vehicle exceeding the maximum gross vehicle weight allowed under The City of Winnipeg Traffic By-Law, unless such vehicle is operating under special permit.

### **E5. DANGEROUS WORK CONDITIONS**

- E5.1 Further to clause C 6.24 of the General Conditions, the Contractor shall be aware that underground chambers, manholes, and sewers are considered a confined space and shall follow the "Guidelines for confined Entry Work" as published by the Manitoba Workplace Safety and Health Division.
- E5.2 The Contractor shall be aware of the potential hazards that can be encountered in gate chambers, manholes and sewers such as explosive gases, toxic gases and oxygen deficiency.
- E5.3 The air in a confined space must be tested before entry and continuously during the time that personnel are inside the space. Equipment for continuous monitoring of gases must be explosion-proof and equipped with a visible and audible alarm. The principal tests are for oxygen deficiency, explosion range and toxic gases. Testing equipment must be calibrated in accordance with manufacturer's specifications.
- E5.4 The Contractor shall ventilate all confined spaces including underground chambers, tunnels, pipes and shafts as required and approved by the Manitoba Workplace Safety and Health Act

(the "Act"). If no ventilation is supplied, a Worker must wear a respirator or supplied air to enter the confined space.

- E5.5 Workers must wear a respirator or supplied air at all times when entering a chamber, manhole or sewer where live sewage is present.
- E5.6 The Contractor shall provide a photoionization detector (PID) on Site at all times to monitor potential hydrocarbon vapours in the confined spaces. The gas detector and safety equipment conforming to the Act shall be made available to the Contract Administrator for his/her use during inspections. In addition, the Contract Administrator shall collect discrete air samples for laboratory analysis.
- E5.7 The Contract Administrator may issue a Stop Work order to the Contractor if the above guidelines are not being followed. The Contractor shall not resume his operations until the Contract Administrator is satisfied the Contractor is following the appropriate procedures. The Contractor shall have no claim for extra time or costs due to the Stop Work order for not following these safety guidelines.

## **E6. WATERWAY BY-LAW AND PERMITS**

- E6.1 The Contractor shall note that all Works fall within 107 metres (350 feet) of the regulated summer water level of the Red River and Assiniboine River and are therefore within the jurisdiction of the Waterway By-law. The Contract Administrator will apply and arrange for payment by the City for the required Waterway Permits for the permanent Work. The Contractor shall adhere to restrictions imposed by the permit.
- E6.2 The Contractor shall be responsible to apply and pay for a Waterway Permits for all temporary Works, including construction access ramps as outlined in E11.3.
- E6.3 Under no circumstances will stockpiling of any material be permitted within 106.7 m (350 ft) of the regulated summer water level of the Assiniboine River, Red River and Seine River and or within 76.2 m (250 ft) of the regulated summer water level of Sturgeon creek.

## **E7. ENVIRONMENTAL PROTECTION PLAN**

- E7.1 The Contractor shall plan and implement the Work of this Contract strictly in accordance with the requirements of the Environmental Protection Plan as herein specified.
- E7.2 The Contractor is advised that at least the following Acts, Regulations, and By-laws apply to the Work and are available for viewing at the office of the Contract Administrator.
  - (a) Federal
    - (i) Canadian Environmental Assessment Act (CEAA) c.37
    - (ii) Transportation of Dangerous Goods Act and Regulations c.34
    - (iii) The Fisheries Act
    - (iv) Navigable Waters Protection Act
  - (b) Provincial
    - (i) The Dangerous Goods Handling and Transportation Act D12
    - (ii) The Endangered Species 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) The Public Health Act c.P210
    - (ix) The Workplace Safety and Health Act W210

- (x) And current applicable associated regulations.  
(Note: Provincial regulations updated as of September 1999)
- (c) Municipal
  - (i) The City of Winnipeg By-law No. 1/2008
  - (ii) And any other applicable Acts, Regulations, and By-Laws.

E7.3 The Contractor is advised that the following environmental protection measures apply to the Work.

- (a) Materials Handling and Storage
  - (i) Construction materials shall not be deposited or stored on riverbanks or river shorelines unless written acceptance from the Contract Administrator is received in advance.
  - (ii) Construction materials and debris shall be prevented from entering the Red River and Assiniboine River. In the event that materials and/or debris inadvertently enter the watercourse, the Contract shall be required to remove the material and restore the watercourse to its original condition.
- (b) Fuel Handling and Storage
  - (i) The Contractor shall obtain all necessary permits from Manitoba Conservation for the handling and storage of fuel products and shall provide copies to the Contract Administrator.
  - (ii) All fuel handling and storage facilities shall comply with The Dangerous Goods and Transportation Act Storage and Handling of Petroleum Products Regulation and any local land use permits.
  - (iii) Fuels, lubricants, and other potentially hazardous materials as defined in The Dangerous Goods and Transportation Act shall be stored and handled within the approved storage areas.
  - (iv) In accordance with Section 2.5 (Construction: General Guidelines) of the Manitoba Stream Crossing Guidelines for the Protection of Fish and Fish Habitat, (DFO and DNR, 1996), the Contractor shall 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 100 metres away from the high water line of the Red River. Dikes shall be designed, constructed, and maintained to retain not less than 100% of the capacity of the total number of containers or 110% of the largest container, whichever is greatest. The dikes shall be constructed of clay or similar impervious material. If this type of material is not available, the dike shall be constructed of locally available material and lined with high density polyethylene (HDPE). Furthermore, the fuel storage area(s) shall be secured by a barrier such as a high fence and gate to prevent vandalism.
  - (v) The Contractor shall ensure that all fuel storage containers are inspected daily for leaks and spillage.
  - (vi) Products transferred from the fuel storage area(s) to specific Work Sites shall not exceed the daily usage requirement.
  - (vii) 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 shall be spread on the ground to catch the fluid in the event of a leak or spill.
  - (viii) Refuelling of mobile equipment and vehicles shall take place at least 100 metres from a watercourse.
  - (ix) The area around storage Sites and fuel lines shall be distinctly marked and kept clear of snow and debris to allow for routine inspection and leak detection.
  - (x) A sufficient supply of materials, such as absorbent material and plastic oil booms, to clean up minor spills shall be stored nearby on-site. The Contractor shall ensure that additional material can be made available on short notice.
- (c) Waste Handling and Disposal

- (i) The construction area shall be kept clean and orderly at all times during and at completion of construction.
  - (ii) At no time during construction shall personal or construction waste be permitted to accumulate for more than one day at any location on the construction Site, other than at a dedicated storage area as may be approved by the Contract Administrator.
  - (iii) All resulting debris shall be deposited at a Waste Disposal Ground operating under the authority of Manitoba Regulation #150/91. Exceptions are liquid industrial and hazardous wastes which may require special disposal methods (see SC:21.4 D).
  - (iv) Indiscriminate dumping, littering, or abandonment shall not take place.
  - (v) No on-site burning of waste is permitted.
  - (vi) Waste storage areas shall not be located so as to block natural drainage.
  - (vii) Run-off from a waste storage area shall not be allowed to cause siltation of a watercourse.
  - (viii) Waste storage areas shall be left in a neat and finished appearance and/or restored to their original condition to the satisfaction of the Contract Administrator.
  - (ix) Equipment shall not be cleaned near watercourses; contaminated water from onshore cleaning operations shall not be permitted to enter watercourses.
- (d) Dangerous Goods/Hazardous Waste Handling and Disposal
- (i) Dangerous goods/hazardous wastes are identified by, and shall be handled according to, The Dangerous Goods Handling and Transportation Act and Regulations.
  - (ii) The Contractor shall be familiar with The Dangerous Goods Handling and Transportation Act and Regulations.
  - (iii) The Contractor shall have on-site staff that is 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.
  - (iv) Different waste streams shall not be mixed.
  - (v) Disposal of dangerous goods/hazardous wastes shall be at approved hazardous waste facilities.
  - (vi) Liquid hydrocarbons shall not be stored or disposed of in earthen pits on-site.
  - (vii) Used oils shall be stored in appropriate drums, or tankage until shipment to waste oil recycling centres, incinerators, or secure disposal facilities approved for such wastes.
  - (viii) Used oil filters shall be drained, placed in suitable storage containers, and buried or incinerated at approved hazardous waste treatment and disposal facilities.
  - (ix) Dangerous goods/hazardous waste storage areas shall be located at least 100 metres away from the high water line and be dyked.
  - (x) Dangerous goods/hazardous waste storage areas shall not be located so as to block natural drainage.
  - (xi) Run-off from a dangerous goods/hazardous waste storage area shall not be allowed to cause siltation of a watercourse.
  - (xii) Dangerous goods/hazardous waste storage areas shall be left in a neat and finished appearance and/or restored to their original condition to the satisfaction of the Contract Administrator.
- (e) Emergency Response
- (i) The Contractor shall ensure that due care and caution is taken to prevent spills.
  - (ii) The Contractor shall 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 1 below) to Sustainable Development, immediately after occurrence of the environmental accident, by calling the 24-hour emergency phone number (204) 945-4888. The Contract Administrator shall also be notified.



- (iii) The Contractor shall designate a qualified supervisor as the on-site emergency response co-ordinator for the project. The emergency response co-ordinator shall have the authority to redirect manpower in order to respond in the event of a spill.
- (iv) The following actions shall 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 co-ordinator:
  - (i) Notify emergency-response co-ordinator of the accident:
    - ◆ identify exact location and time of accident
    - ◆ indicate injuries, if any
    - ◆ request assistance as required by magnitude of accident (Sustainable Development 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
    - ◆ 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
    - ◆ 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 sorbet material or dry clay soil or sand
    - ◆ prevent spill material from entering waterways and utilities by diking
    - ◆ prevent spill material from entering manholes and other openings by covering with rubber spill mats or diking Resume any effective action to contain, clean up, or stop the flow of the spilled product.
  - (v) The emergency response co-ordinator shall ensure that all environmental accidents involving contaminants shall be documented and reported to Sustainable Development according to The Dangerous Goods Handling and Transportation Act Environmental Accident Report Regulation 439/87.
  - (vi) 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.
  - (vii) 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 Manitoba Environment.
  - (viii) City emergency response, 9-1-1, shall be used if other means are not available.
  - (ix) The on-site emergency response coordinator shall contact The Canadian Coast Guard, Selkirk (204) 785-6030, if the spill material reaches and is on or in the Red or Assiniboine Rivers.

**Table 1 Spills that must be reported to the Manitoba Conservation as Environmental Accidents**

| <u>Classification</u> | <u>Hazard</u> | <u>Reportable Quantity/Level</u> |
|-----------------------|---------------|----------------------------------|
| 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   |
| 5.1 | PG** I & II | Oxidizer                   | 1 kg or 1 L  |
|     | PG III      | Oxidizer                   | 50 kg or 50 L  |
| 5.2 |             | Organic Peroxide           | 1 kg or 1 L  |
| 6.1 | PG I        | Acute Toxic                | 1 kg or 1 L  |
|     | PG II & III | Acute Toxic                | 5 kg or 5 L  |
| 6.2 |             | Infectious                 | All  |
| 7   |             | Radioactive                | Any discharge or radiation level exceeding 10 mSv/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              | 50 kg<br>(except PCB mixtures)   |
| 9.1 |             | PCB Mixtures               | 500 g  |
| 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)

\*\* PG = Packing Group(s)

(f) Vegetation

- (i) Vegetation shall not be distributed without written permission of the Contract Administrator. The Contractor shall protect plants or trees which may be at risk of accidental damage. Such measures may include protective fencing or signage and shall be approved in advance by the Contractor Administrator.
- (ii) Trees damaged during construction activities shall be examined by bonded tree care professionals; viable trees damaged during construction activities shall be pruned according to good practise by bonded tree care professionals. Damaged trees which are not viable shall be replaced at the expense of the Contractor.
- (iii) Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 150 x 2400 millimetre wood planks, or suitably protected as approved by the Contract Administrator.
- (iv) Herbicides and pesticides shall not be used adjacent to any surface watercourses.
- (v) All landowners adjacent to the area of application of herbicides or pesticides shall be notified prior to the Work.
- (vi) Trees or shrubs shall not be felled into watercourses.
- (vii) Areas where vegetation is removed during clearing, construction, and decommissioning activities, shall be revegetated as soon as possible in accordance with the landscaping plans forming part of the contract, or as directed by the Contract Administrator.

(g) Red and Assiniboine Rivers Navigation Protection

Dangerous Goods/Hazardous Waste Handling and Disposal

- (a) The Red and Assiniboine Rivers are open to navigation from approximately mid-April to mid-November, annually. During this period, it will be the responsibility of the Contractor to fully ensure the safety of river users.

- (b) The Contractor shall provide, install, and maintain adequate warning signs and lighting on any structure beyond the water's edge to notify boats and other craft navigating on the Red River that construction is underway. These warnings shall meet the requirements of the City of Winnipeg Waterways Authority and of the Canadian Coast Guard.
- (c) Prior to commencing any applicable operations over the Red River, the Contractor shall provide to the Contract Administrator a copy of all necessary approvals received by the Contractor.

## **E8. SHOP DRAWINGS**

### **E8.1 Description**

- (a) This Specification shall revise, amend and supplement the requirements of CW 1110.
  - (i) 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.
  - (ii) The Contractor shall 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 Engineering review.
  - (iii) Provision of Shop Drawings will be considered incidental to the price for supply and delivery of equipment and materials.
- (b) Shop Drawings
  - (i) Original drawings are to be prepared by Contractor, Subcontractor, Supplier, Distributor, or Manufacturer, which illustrate appropriate portion of Work; showing fabrication, layout, setting or erection details as specified in appropriate sections
  - (ii) Shop drawings for the following structural components shall bear the seal of a registered Engineer in the Province of Manitoba.
    - ◆ Reinforcing steel.
    - ◆ Metal Fabrications.
- (c) Contractor's Responsibilities
  - (i) Review shop drawings, product data and samples prior to submission and stamp and sign drawings indicating conformance to the Contract requirements.
  - (ii) Verify:
    - ◆ Field Measurements
    - ◆ Field Construction Criteria
    - ◆ Catalogue numbers and similar data
  - (iii) Coordinate each submission with requirements of Work and Contract Documents. Individual shop drawings will not be reviewed until all related drawings are available.
  - (iv) Notify Contract Administrator, in writing at time of submission, of deviations from requirements of Contract Documents.
  - (v) 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.
  - (vi) Responsibility for errors and omissions in submission is not relieved by Contract Administrator's review of submittals.
  - (vii) The Contractor shall make any corrections required by the Contract Administrator and shall resubmit the required number of corrected copies of Shop Drawings. The Contractor shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections requested by the Contract Administrator on previous submission.

- (viii) After Contract Administrator's review and return of copies, distribute copies to subtrades as appropriate.
- (ix) 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.
- (d) Submission Requirements
  - (i) Schedule submissions at least 14 Calendar Days before dates reviewed submissions will be needed, and allow for a 10 Calendar Day period for review by the Contract Administrator of each individual submission and re-submission, unless noted otherwise in the Contract Documents.
  - (ii) Submit one original print and one digital PDF copy of shop drawings. The Contractor is advised that the Contract Administrator will retain the original copy and return one digital PDF copy to the Contractor
  - (iii) Accompany submissions with transmittal letter, containing:
    - ◆ Date
    - ◆ Project title and Bid Opportunity number
    - ◆ Contractor's name and address
    - ◆ Number of each shop drawing, product data and sample submitted
    - ◆ Specification Section, Title, Number and Clause
    - ◆ Drawing Number and Detail/Section Number
    - ◆ Other pertinent data
  - (iv) Submissions shall include:
    - (a) Date and revision dates.
    - (b) Project title and Bid Opportunity number.
    - (c) Name of:
      - (a) Contractor
      - (b) Subcontractor
      - (c) Supplier
      - (d) Manufacturer
      - (e) Separate detailer when pertinent
    - (d) Identification of product of material.
    - (e) Relation to adjacent structure or materials.
    - (f) Field dimensions, clearly identified as such.
    - (g) Specification section name, number and clause number or drawing number and detail/section number.
    - (h) Applicable standards, such as CSA or CGSB numbers.
    - (i) Contractor's stamp, initialed or signed, certifying review of submission, verification of field measurements and compliance with Contract Documents.
- (e) Other Considerations
  - (i) Fabrication, erection, installation or commissioning may require modifications to equipment or systems to conform to the design intent. Revise pertinent shop drawings and resubmit.
  - (ii) 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.
  - (iii) Incomplete shop drawing information will be considered as stipulated deductions for the purposes of progress payment certificates.
  - (iv) No delay or cost claims will be allowed that arise because of delays in submissions, re-submissions and review of shop drawings.

## **E9. FLOW CONTROL**

### **E9.1 Description**

- E9.1.1 During winter months land drainage and storm relief sewers can receive flow of an undetermined amount from groundwater infiltration, water main breaks, snow melt and other unforeseen sources.
- E9.1.2 Provide flow control measures to contend with and maintain flow in the storm relief sewer directed to the outfall pipe being replaced. Flow control measures shall include but not be limited to diversions, flumes and by-pass pumping.
- E9.1.3 Discharge hoses for by-pass pumping shall not be laid across vehicle or pedestrian traffic areas and must be protected from freezing during winter months. Pumping equipment if used, shall be set-up in a location and in such a way to not be a noise problem for nearby residences
- E9.1.4 **Provide a flow control plan to the Contract Administrator for review and approval before removing any existing sewer pipe.**
- E9.1.5 In the event the flow in the sewer system is expected to exceed the sewer capacity due to spring runoff, the Contract Administrator may suspend Work activities that require temporary by-pass pumping and temporary shutdown of the Site. Suspension of these activities will continue until the high flow diminishes in the sewer.
- E9.1.6 If in the opinion of the Contract Administrator suspension of Work activities that require temporary by-pass pumping and temporary shutdown of the Site may cause a delay in completion of the Work through no fault of the Contractor, the completion date of the Work may be adjusted accordingly.
- E9.2 Payment
- E9.2.1 Payment for flow control shall be included under the item "Site Development and Restoration"

## **E10. CHANNEL PROTECTION**

- E10.1 The ice surface and riverbank channel shall be cleared of construction materials prior to ice break-up. The Contractor shall clean up all materials, including but not limited to: soil, snow fence, construction debris, etc. from this construction activity. All items that will have an adverse impact on the channel shall be removed. Channel Protection shall be considered incidental to the Works of this Contract and no measurement or payment will be made for this item.

## **E11. SITE DEVELOPMENT AND RESTORATION**

- E11.1 Description
- E11.1.1 This Specification shall cover all aspects of the Site Development and Restoration Work, including but not limited to mobilization and demobilization, erection, maintenance and removal of safety fencing, swamp mats as required for access, traffic control and signage, sediment control Works, snow clearing, flow control, temporary cofferdams, protection and pruning as required of existing trees, removal of fallen trees and debris, removal and reinstallation of site furniture, office facilities, general access development, access maintenance and removal, and Site Restoration.
- E11.1.2 The Tender quantities for each Site listed on Form B: Prices include an estimated quantity of Topsoil, Seeding, and Sodding based on pipe trench installation. All Topsoil, Seeding, and Sodding beyond the quantities listed on Form B: Prices will be considered incidental to Site Development and Restoration, and no additional payment will be made for the additional quantities.
- E11.1.3 Additional Site specific works included within this specification are the:
- (a) Temporary removal, relocating, and replacing existing site furniture, fencing, temporary structures (Eg. Existing Sheds) and their associated foundations, and other obstructions within easement right-of-ways or as required for site access.

- (b) **Works and permits associated with raising and/or relocating overhead power lines and/or light standards as required to facilitate the Works.** Contact the local Manitoba Hydro Office to arrange for Manitoba Hydro Staff to lift power lines, temporarily support utilities, and/or relocate utilities as required. Only Manitoba Hydro staff will be permitted to lift power lines.

E11.2 Materials

E11.2.1 Equipment

All equipment, implements, tools and facilities used shall be of a size and type as required to complete the Work in a reasonable time, approved by the Contract Administrator. The Contractor shall keep all equipment in good Working order, and have sufficient standby equipment available at all times, as required.

E11.3 Construction Methods

E11.3.1 Site and Construction Access

- (a) The Contractor shall be responsible to develop suitable Site access. This includes but is not limited to, temporary bridging over structures, temporary removal and reinstallation of safety fencing, any landscaping and grading repairs, restoration of vegetation, etc. necessary to restore any Site and construction access areas to their pre-existing condition. Prior to commencing construction the Contractor shall submit their site access plan to the Contract Administrator for approval.
- (b) All construction access ramps from the top bank area down to the edge of the river shall be constructed by excavating to the necessary ramp grade and disposing of the material off Site. Under no circumstances will the excavated material or any additional materials be placed as fill in the ramp area. Detailed construction access ramp drawings are to be submitted to the Contract Administrator for approval a minimum seven (7) days prior to any construction activity on Site.
- (c) The Contractor is responsible for obtaining and paying for all required permits and permissions that are necessary for Site access, including a Waterways Access Permit, if required by the City of Winnipeg. Contact the Riverbank Management Contract Administrator at 986-5159 for information regarding Waterways Permits.
- (d) The locations of the Contractor's construction access ramps shall be restored to the same condition or better than it was prior to the initiation of any Work.

E11.3.2 Frozen Waterways Permit

The Contractor is responsible for obtaining a Frozen Waterway Permit for permission to Work on the river ice. Contact the City of Winnipeg Zoning and Permits Office.

E11.3.3 Diversion of Flows

- (a) Flows such as snowmelt, rainfall, a water main break, or any other flow traveling through the outfall shall be diverted during construction as specified in E9. The cost of the flow diversion is considered incidental to Site Development and Restoration.

E11.3.4 Temporary Cofferd Dam

The Contractor shall erect a temporary cofferdam to provide a safe environment to carry out the Work associated with this project. Cofferdam designs shall be submitted to the Contract Administrator for approval before construction. Where clay material is used, clay shall consist of a high plasticity with a liquid limit in excess of 50%. The clay shall be free of deleterious material such as roots, organic material, ice, snow or other unsuitable materials, and may be salvaged from the on-site excavation, as approved by the Contract Administrator. Frozen material will not be accepted. Material for the cofferdam shall be inspected and approved by the Contract Administrator before construction. Cofferdam materials shall be completely removed following construction.

E11.3.5 Vegetation Removal

Some vegetation (living trees smaller than 50 mm, fallen larger trees and sod) removal may be permitted in order to facilitate Site access. Existing vegetation shall not be removed without prior approval from the Contract Administrator. The Contractor shall load and haul any removed vegetation, and dispose of the material off Site immediately upon collection. Stockpiling shall not be permitted unless written approval has been obtained from the Contract Administrator.

#### E11.3.6 Snow and Ice Removal

Snow cover shall be cleared from the riverbank and hauled off-site prior to placement of the rock fill riprap. The methodology to clear the snow shall be subject to the approval of the Contract Administrator.

Ice at the shoreline of the River shall be broken and cleared before the placement of riprap below ice level. Care shall be taken to ensure that the ice is removed, and does not become trapped below rock fill riprap placement.

#### E11.3.7 Safety Fence

The Contractor shall erect and maintain for the duration of the project a safety fence, acceptable to the Contract Administrator, to restrict access to the Site. The fencing shall enclose the entire Site with appropriate gates or openings that are closed at the end of each Work day. Appropriate signs shall be erected to warn all recreational users of the river that an open water hazard exists. This shall include but not be limited to snowmobilers and skiers. The installed fencing shall consist of Dupont Number L70 orange plastic safety fence or approved equal in accordance with B7, with a mesh spacing of 45 mm, constructed as shown in the contract drawings. Upon completion of the Work, the fence shall be removed and disposed of off Site

#### E11.3.8 Environmental Regulations

- (a) The Contractor shall adhere to all relevant Federal and Provincial environmental regulations.
- (b) The Contractor shall plan to Work in accordance with the current environmental regulations of "Manitoba Stream Crossing Guidelines for Protection of Fish and Fish Habitat", Fisheries and Oceans, and Manitoba Natural Resources.
- (c) The Contractor shall supply, in writing, prior to commencement of Work on-site, a detailed plan for sediment control on this project.
- (d) The Contractor shall ensure that sufficient supplies of suitable spill kits are on-site to cleanup minor spills, should they occur. The Contractor shall supply the name, address and phone number of a local supplier, where additional kits are available on short notice

#### E11.3.9 General Site Cleanup and Restoration

- (a) All areas of the construction Site shall be restored to a condition at least equivalent to its original condition prior to initiation of Work. This may include, but is not necessarily limited to the Contractor's lay down area, the removal of the Contract Administrator Site trailer, and removal of all temporary fencing.

#### E11.3.10 Topsoil and Sod

- (a) Further to E.11.1.2. where topsoil and sodding is required to restore laydown areas, or similar temporary work areas, it shall be considered incidental to Site Development and Restoration. No separate payment shall be made for topsoil and sod in these areas.
- (b) Due to their current status as park/recreational land or private residential property, the primary means of restoration for existing grassy areas at the Pembina Outfall will be sod. A fraction of restoration not exceeding 25% of the total restoration area may be undertaken using topsoil and seed at these locations, or as directed by the Contract Administrator.

#### E11.4 Method of Measurement and Payment

##### Site Development and Restoration

The Site development and restoration will be measured and paid for at the Contract Lump Sum Price for "Site Development and Restoration", which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

50% of the Site Development and Restoration unit price will be paid on the first progress payment following commencement of the work on the specific Site being developed.

The remaining 50% of the Site Development and Restoration unit price will be paid subsequent to the completion of the Work and restoration and clean-up of the Site

##### E11.4.1 Topsoil and Sod

- (a) Where topsoil and sodding is required to restore laydown areas, or similar temporary work areas, it shall be considered incidental to Site Development and Restoration. No separate payment shall be made for topsoil and sod in these areas.

#### E12. INSTALLATION OF SILT FENCE

##### E12.1 Description

E12.1.1 This specification covers the erection of temporary silt fencing, which shall be installed and maintained at the locations shown on the drawings or as directed by the Contract Administrator, to control runoff and minimize the release of detrimental silt loading to watercourses.

E12.1.2 The scope of Work included in this specification is as follows:

- (a) Supply and Install temporary silt fencing at the locations as indicated on the Drawings or as directed by the Contract Administrator, in accordance with the detailed drawing provided, immediately upon completion of the riprap placement and prior to undertaking any other activities on the Site where silt fencing is required.
- (b) Maintain the silt fencing in serviceable condition throughout the entire duration of activities at the Site where silt fencing is required, including final restoration and cleanup of the construction Site.
- (c) Remove the silt fencing and restore the area where the fencing was installed, without further disturbing the area and without releasing any deleterious substances to the adjacent watercourse.

##### E12.2 Materials

##### E12.2.1 Fence Posts

- (a) Fence posts shall be 100 mm diameter untreated wood posts or 50 mm diameter steel.

##### E12.2.2 Filter Fabric

- (a) Filter Fabric Shall be a woven geotextile material specifically designed for a silt fence applications, meeting the following minimum requirements:

| Property                | Test Method | Value    |
|-------------------------|-------------|----------|
| Grab Tensile Strength   | ASTM D 4632 | 0.55 kN  |
| Grab Tensile Elongation | ASTM D 4632 | 15%      |
| Mullen Burst            | ASTM D 4786 | 2060 kPa |
| Puncture                | ASTM D 4833 | 0.285 kN |



|                             |             |                          |
|-----------------------------|-------------|--------------------------|
| Trapezoid Tear              | ASTM D 4533 | 0.285 kN                 |
| UV Resistance               | ASTM D 435  | 5 80 % @ 500 hrs         |
| Apparent Opening Size (AOS) | ASTM D 4751 | 0.60 mm                  |
| Flow Rate                   | ASTM D 4491 | 405 l/min/m <sup>2</sup> |

Acceptable Product: "Amoco 2130 Silt Fence Fabric" or approved equal in accordance with B7.

E12.2.3 Wire Mesh

- (a) Wire mesh shall be galvanized or plain metal with wire gauge = 3.0 mm, wire spacing @ 150 mm o/c.

E12.2.4 Fencing Material Fasteners

- (a) Staples or wire ties of sufficient strength and spacing to withstand 500 N (100 lbf) pull test at any point on the wire mesh.

E12.3 Construction Methods

E12.3.1 Ensure that no deleterious substances are discharged into the adjacent watercourse at any time during construction activities.

E12.3.2 Silt Fence Installation

- (a) Excavate 150 x 150 anchor trench along alignment of silt fence as indicated.
- (b) Install fence posts as indicated. Ensure that fence posts are firmly driven into undisturbed soil, or are completely and firmly backfilled if installed via auger methods. Attach wire mesh as support backing for silt fence filter fabric with fasteners as specified in E12.2.4. Attach silt fence filter fabric on top of wire mesh in similar fashion. Overlap any fence seams (wire mesh or filter fabric) by 450 mm minimum. Ensure that wire mesh and filter fabric are installed on the upslope side of the post and are fully laid in anchor trench as shown.
- (c) Install and compact impermeable excavated materials into anchor trench and slope as indicated. Compact to 95% of maximum dry density (ASTM D-698).

E12.3.3 Silt Fence Maintenance

- (a) Inspect silt fence daily, prior to starting any other construction activities. If fence posts are found loose or not upright, repair in accordance with installation procedure as specified in E12.3.2. If silt fence is found to be loose or torn, repair or replace as necessary to comply with E12.3.2.
- (b) If silt deposition at the fence is 300 mm or more in depth, carefully remove and dispose of silt offsite without disturbing silt fence.

E12.3.4 Silt Fence Removal

- (a) The silt fence shall remain in place until new vegetation growth has established on the bank, as determined by the Contract Administrator.
- (b) Upon authorization of the Contract Administrator, remove all fence posts, wire mesh, fabric, and fasteners from Site.
- (c) Restore areas disturbed in accordance with E11 without releasing any deleterious substances to the adjacent watercourse.

E12.4 Measurement and Payment

E12.4.1 The supply, placement, and removal of silt fence shall be measured on a length basis and paid for at the Contract Unit Price per lineal metre for "Silt Fence". The length to be paid for shall be the total number of metres supplied and placed in accordance with this Specification, accepted and measured by the Contract Administrator. Payment of silt fence shall be in accordance with the following payment schedule:

- (a) Sixty percent (60%) of the Contract Unit Price per lineal metre for "Silt Fence" shall be paid following supply and installation.
- (b) Forty percent (40%) of the Contract Unit Price per lineal metre for "Silt Fence" shall be paid following final removal.

E12.4.2 Removal of accumulated sediment from the silt fence is considered incidental to the Work and no separate measurement or payment will be made

### **E13. TREE REMOVAL**

#### **E13.1 Description**

E13.1.1 This specification shall cover the removal of existing trees.

E13.1.2 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.

#### **E13.2 Materials**

##### **E13.2.1 Existing Trees to be Removed**

The existing trees to be removed include, but not limited to ash, elm, cottonwood, basswood, oak, pine, maple, spruce, etc., all of which may be cut with standard chain saw equipment. The existing trees range from 50 mm to 1,000 mm diameter.

#### **E13.3 Construction Methods**

E13.3.1 Prior to commencement of the Work the Contract Administrator shall identify all trees for removal. The Contractor shall cut down only trees designated to be removed, and grub out all stumps and roots greater than 100 mm diameter. In general, the Contractor shall start at the top of the tree and remove branches or trunks not longer than 2 m. Trees are to be felled so as to land within the limits of the Works. The Contractor shall load and haul all trees, stumps, roots, logs, brush, rubbish and all other surface litter from the Site and dispose of these materials at an approved disposal Site, acceptable to the Contract Administrator.

E13.3.2 The Contractor shall take all precautions to prevent damage to structures, adjacent property and to trees and shrubs. In the event of damage, the Contractor will be held liable, and shall be required to provide appropriate restoration at his cost, to the satisfaction of the Contract Administrator.

E13.3.3 Any trees damaged during construction activities shall be examined by a bonded tree care professional and pruned as required. Damaged trees which are not viable shall be replaced by the Contractor at his own cost.

#### **E13.4 Measurement and Payment**

E13.4.1 The removal of existing trees shall be measured on a per tree basis and paid for at the Contract Unit Price per unit for the "Items of Work" listed below. The amount to be paid shall be the total number of trees removed in accordance with this specification, accepted and measured by the Contract Administrator.

Items of Work: Tree Removal

- i. 50 mm to 249 mm Diameter
- ii. 250 mm to 500 mm Diameter
- iii. Greater than 500 mm Diameter

E13.4.2 The removal of trees and brush less than 50 mm diameter is considered incidental to the Work and no separate measurement or payment will be made.

**E14. PROTECTION OF EXISTING TREES**

- E14.1 Removal of some trees will be required. The Contract Administrator will identify which trees will be removed. The Contractor shall take the following precautionary steps to avoid damage from construction activities to any existing trees not marked for removal within the limits of the construction area.
  - E14.1.1 Do not stockpile materials and soil or park vehicles and equipment within 2 metres of trees.
  - E14.1.2 Strap mature tree trunks with 25 x 150 x 2400 wood planks. Smaller trees shall be similarly protected using appropriately sized wood planks.
  - E14.1.3 Excavations shall be carried out in a manner to minimize damage to existing root systems. Where roots must be cut to facilitate an excavation they shall be neatly pruned at the face of the excavation and coated with an appropriate wound dressing to prevent infection.
  - E14.1.4 Work on Site shall be carried out in a manner to minimize damage to existing tree branches. Where damage to tree branches does occur, the Contractor shall neatly prune the damaged branch.
  - E14.1.5 American elm trees shall not be pruned between April 1st and August 1st and Siberian elm trees between April 1st and July 1st of any year under provisions of The Dutch Elm Disease Act.
- E14.2 All damage to existing trees due to construction activities shall be repaired to the requirements and satisfaction of the City of Winnipeg, Public Works Department, Forestry Branch at the Contractor's expense.
- E14.3 Costs for protection of trees shall be considered incidental to Site Development and Restoration.

**E15. ROCKFILL RIPRAP**

- E15.1 Description
  - E15.1.1 This Specification shall cover the supply and placement of rockfill riprap.
- E15.2 Materials
  - E15.2.1 The rockfill material for use as riprap shall consist of a clean free draining, sound, dense, durable, crushed rock. The material shall be free from organics, roots, silts, sand, clay, snow, ice or any other material that would detract from the strength and drainage characteristics of clean rockfill.
  - E15.2.2 Individual particles shall be shaped such that no dimension is greater than two times the smallest dimension. Flat, elongated, or platy particle shapes will not be accepted.
  - E15.2.3 Should the Contractor choose to use limestone, it shall be durable white crystalline limestone. Softer buff to yellow dolomite or dolostone will not be accepted.
  - E15.2.4 The rockfill material shall meet the following requirements:

| Parameter             | Test Method | Specified Limit |
|-----------------------|-------------|-----------------|
| Bulk Specific Gravity | ASTM C127   | 2.6 minimum     |
| Absorption            | ASTM C127   | 2.5 % maximum   |
| LA Abrasion Loss      | ASTM C131   | 32% maximum     |
| Soundness             | ASTM C88    | 13% maximum     |
| Gradation             | ASTM D5519  | See below       |

E15.2.5 Rockfill riprap shall be well graded having a full range and even distribution of sizes and shall conform to the following gradation:

| <u>Canadian Metric Sieve Size<br/>(millimeters)</u> | <u>Percent of Total Dry Weight<br/>Passing Each Sieve</u> |
|---|---|
| 450   | 100%  |
| 300   | 35-80%  |
| 100   | 20-60%  |
| 50  | 10-30%  |
| 5   | 0-5%  |

E15.3 Submittals

E15.3.1 The Contractor shall submit the proposed supplier(s) and location of quarry Sites for supply of riprap.

E15.3.2 Representative samples of the rockfill riprap submitted for material testing purposes shall be completed as specified herein.

E15.4 Quarry Sites

E15.4.1 Contractors supplying rockfill riprap shall be responsible for demonstrating that the material is of adequate quality and volume to meet the material specifications contained herein.

E15.5 Testing and Approval

E15.5.1 All materials set forth in 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 for any materials taken by the Contract Administrator for testing purposes.

E15.5.2 The Contract Administrator will visit proposed quarry Sites for inspection of the proposed rockfill material and quarry faces a minimum of fourteen (14) days prior to supply and placement of riprap.

E15.5.3 No supply and placement of riprap will be permitted prior to the Contract Administrator reviewing the source.

E15.5.4 The procedures for preparation of all rockfill samples for use in material inspection and testing shall be subject to review and acceptance by the Contract Administrator for individual tests. The samples may be obtained from crushed and processed material at the sizing necessary for specific tests if the material is deemed to be representative of the riprap that will be used, subject to the acceptance of the Contract Administrator.

E15.5.5 The testing frequency necessary to confirm the material quality will be specified at the discretion of the Contract Administrator.

E15.6 Construction Methods

E15.6.1 Rockfill riprap shall be restored over the rock columns after they are backfilled to the lines and grades shown on the drawings. Riprap shall be placed over the geotextile membrane at the location of the backfilled outfall excavation as shown on the drawings.

E15.6.2 Rockfill Riprap shall be pushed or rolled into place in such a manner that the larger rocks are uniformly distributed and the smaller rocks serve to fill the places between the larger rocks such that excessive segregation of the various particle sizes does not occur.

E15.6.3 Sufficient levelling shall be done to produce a neat and uniform surface, conforming to the shape and dimensions shown on the Drawings.

E15.6.4 The allowable fill tolerances shall be within  $\pm 50$  mm of the grades and thickness shown on the Drawings, provided positive downslope grading is achieved.

- E15.6.5 Provide a smooth uniform surface from the existing grade and new riprap when placing outside edges or transitions, as accepted by the Contract Administrator.
- E15.6.6 Temporary stockpiling of riprap along the riverbank shall not be permitted. Material shall be placed to the required lines and grade shown the Drawing immediately upon delivery to the Site.
- E15.7 Measurement and Payment
- E15.7.1 The supply and placement of rockfill riprap shall be measured on a weight basis and paid for at the Contract Unit Price for "Rockfill Riprap". The weight to be paid for shall be the total number of metric tonnes of rockfill supplied and placed in accordance with this Specification, as measured by a certified weigh scale and accepted by the Contract Administrator.
- E15.7.2 The Contractor shall provide the weigh tickets to the Contract Administrator for the material supplied to the Site at the time of delivery. No payment will be made for any weigh tickets which are not supplied at the time of delivery, or which are lost.

## **E16. OUTFALL SEWER REPAIRS**

### **E16.1 Description**

This Specification shall amend and supplement Standard Specifications CW 2130, CW 2160, and CW 3610

The Work to be done by the Contract 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 hereinafter specified.

### **E16.2 Materials**

#### **E16.2.1 Handling and Storage of Materials**

All materials shall be handled and stored in a careful and professional manner, to the satisfaction of the Contract Administrator.

#### **E16.2.2 Testing and Approval**

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 supplied for testing purposes.

#### **E16.2.3 Slip Joint**

- (a) Shop drawings shall be submitted for all slip joints. Slip joints are to be 3 mm thick and 2 m in length. The slip joint shall be installed as shown on the drawings.
- (b) Galvanizing shall be hot-dip conforming to the requirements of CSA G164-N1981, to a minimum net retention of 600g/m<sup>2</sup>. All bolts and nuts shall be galvanized steel conforming to ASTM A-325. All welding shall be fully approved by the Canadian Welding Bureau in conformance with CSA Standard W.47.1. Welding splatter and other fabricator burrs, where exposed, shall be ground off and/or field smooth, and left ready for subsequent operations. All miscellaneous metal, after fabrication, shall be hot-dip galvanized

#### **E16.2.4 HDPE Expansion Joint**

- (a) Shop drawings shall be submitted for proposed anti-bonding agent to Contract Administrator for review and approval prior to construction.

#### **E16.2.5 Galvanized Primer**

Galvanized primer for repair of damaged coating shall be zinc rich, ready mix to CGSB-1- GP-181M.

E16.2.6 Pipe Foundation Material

- (a) Where required, pipe foundation material shall be well graded 50 mm max crushed sub-base material having the following grading requirements

| Canadian Metric Sieve Size (millimeters) | Percent of Total Dry Weight Passing Each Sieve |
|--|--|
| 50                                       | 100%   |
| 5  | 25-80%   |
| 0.8                                      | 5-18%  |

E16.2.7 Bedding and Backfill Material

Sand bedding and Modified Class 2 backfill material as per CW 2030, modified to have 0.6 m of compacted excavated Site select material as opposed to the detailed 0.3 m of compacted excavated material

E16.2.8 CSP Outfall Pipe wall thickness

- (a) The CSP outfall thickness shall be as specified on the drawings.

E16.2.9 CSP Couplers and CSP Saddles

- (a) Material for CSP to CSP connections shall conform to CSA Specification CAN3-G401. Standard or dimpled with bolt and angle attachments.
- (b) Material for CSP saddle connections shall conform to CSA Specification CAN3-G401. Galvanized primer for repair of damaged coating shall be zinc rich, ready mix to CGSB-1-GP-181M.
- (c) Material for internal concrete transition Couplers shall be in accordance with CW 2160 Type B concrete.

E16.2.10 Debris Grating

- (a) Shop drawings shall be submitted for the debris gratings and shall be installed as shown on the drawings. Galvanizing shall be hot-dip conforming to requirements of CSA G164- N1981 to a minimum net retention of 600g/m<sup>2</sup>. All bolts and nuts shall be typical steel, conforming to ASTM A-320 Grade B8M. All welding shall be fully approved by the Canadian Welding Bureau in conformance with CSA Standard W47.1. Welding shall be done by currently licensed welders only. Welding splatter and other fabricator burrs, where exposed, shall be ground off and/or filed smooth, and left ready for subsequent operations. All miscellaneous metal, after fabrication, shall be hot-dip galvanized. No separate measurement will be made for hot-dip galvanizing.

E16.2.11 Concrete Headwall

- (a) Concrete mix design and steel reinforcement shall be as indicated on the Drawings and in accordance with E23 (Cast in Place Concrete Construction).
- (b) Cold weather requirements shall be in accordance with E26 (Cold Weather Requirements).

E16.2.12 Clay Plug

- (a) The impervious clay plug near the end of the outfall pipe shall consist of a high plasticity clay material, with a liquid limit in excess of 50%. The clay shall be free of deleterious material such as roots, organic material, ice, snow or other unsuitable materials, and may be salvaged from the on-site excavation, as approved by the Contract Administrator. Frozen material will not be accepted.

E16.2.13 Polymer Coated Pipe

(a) Pipe

Drainage pipe shall be Armtec Polymer Coated Trenchcoat Hel-Cor Lockseam Corrugated Steel Pipe (CSP) or approved equivalent in accordance with B7, of diameter, corrugation and wall thickness as shown on the drawings.

(b) Coupling

Coupling Systems for the pipe are to be Armtec Polymer Coated Standard Annular Corrugated Coupler, or approved equivalent in accordance with B7.

(c) HDPE Pipe to Manhole Connection

HDPE to Manhole connections shall be a flexible booted connection. Shop drawings for HDPE to Manhole connections shall be submitted to the Contract Administrator prior to construction.

(d) PVC Pipe to Manhole Connection

PVC to Manhole connections shall be in accordance with CW2130.

(e) CMP Pipe to Manhole Connection

CMP to Manhole connections shall be a 6" reinforced concrete collar in conjunction with a water stop grout ring. Shop drawings for CMP to Manhole connections shall be submitted to the Contract Administrator prior to construction.

(f) SPCSP Structural Plates

Structural Plate to be installed at the Jae Eadie Park Outfall shall match the size, thickness, material, bolts, nuts, hook bolts, galvanizing, polymer coating, and all other manufacturing components of the existing structural plate. Contractor to verify in field.

(g) Pipe Anchors

Installation of pipe anchors to grouted riprap splash pad at the Gateway Road Outfall shall be as specified on the drawings. Shop drawings shall be submitted to the Contract Administrator prior to construction.

E16.2.14 Equipment

All equipment, implements, tools and facilities used shall be of a size and type as required to complete the Work in a reasonable time, approved by the Contract Administrator. The Contractor shall keep all equipment in good Working order, and have sufficient standby equipment available at all times, as required.

E16.3 Construction Methods

E16.3.1 Trench Shoring And Excavation

- (a) Where required, trench excavations shall be dug and maintained using a wood or steel shoring, designed and sealed by a Structural Professional Engineer who is a practicing member of the Association of Professional Engineers and Geoscientists of the Province of Manitoba (APEGM). The Contractor shall provide AutoCAD shop drawings to the Contract Administrator, for review, prior to the start of excavation. Work must be completed in accordance with CW 2030, unless otherwise indicated by the Contract Administrator.
- (b) The Contractor shall take precautionary steps to prevent damage from construction activities to adjacent private property. All damage to adjacent private property caused by the Contractor's activities shall be repaired to, equal or better condition than prior to construction, as approved by the Contract Administrator. No separate measurement or payment will be made for the protection of adjacent private property.

E16.3.2 Pipe Foundation

- (a) In-situ soils shall be excavated to the trench width and subgrade elevations specified on the Drawings.

- (b) The subgrade shall be proof rolled to inspect for soft spots.
- (c) Where soft spots are observed, the subgrade shall be further sub-excavated and filled with additional compacted granular material to the depths specified by the Contract Administrator.
- (d) Separation geotextile shall be installed between granular material and the in-situ soils.
- (e) 50 mm crushed granular material shall be placed in lifts not thicker than 150mm, and compacted to 100% Standard Proctor density.

E16.3.3 Bedding

- (a) Ensure bedding is thoroughly tamped and that the pipe is uniformly supported throughout and completed in accordance with CW 2030, unless otherwise indicated by the Contract Administrator

E16.3.4 Backfill

- (a) Backfill around the pipe in lifts not thicker than 300-mm, alternating from side to side. At no time should the difference in backfill elevation on either side of the pipe be greater than 450 mm. Work must be completed in accordance with CW 2030, unless otherwise indicated by the Contract Administrator.
- (b) Backfilling above the pipe shall be in accordance with CW 2030 for Modified Class 2 backfill. The top 600-mm of backfill is to be Site select excavated material, as approved on Site by the Contract Administrator, not the standard 300 mm excavated material. The Contractor shall ensure the compaction equipment utilized, is consistent with degree of compactive effort required to achieve the specified densities, and adequately protects against overloading the pipe.

E16.3.5 Clay Plug

- (a) Construct the impervious clay plug in lifts not exceeding 150 mm, alternating from side to side. The Contractor shall achieve 100% STDD for each lift, and shall arrange for the Contract Administrator to inspect each lift of the clay plug prior to beginning the next lift.

E16.3.6 Installation of PVC

- (a) Installation of PVC pipe shall be in accordance with CW 2130

E16.3.7 Removal and Installation of CSP

- (a) CSP field cuts shall be straight circumferential cuts. Clean all ends free of burrs etc., and touch up all areas affected by Work with galvanized primer.
- (b) The Contractor shall excavate and dispose of the existing outfall piping and debris grate in accordance with the Standard Construction Specifications.
- (c) All outfall pipes shall be installed as shown on the drawings and in accordance with CW 3610.
- (d) All pipes shall be laid to the established line and grade.
- (e) The existing outfall pipes shall be temporarily removed or otherwise protected as approved by the Contract Administrator.
- (f) Work required for Supply and Installation of Outfall Pipe, where the existing pipe alignment is used, as specified on the drawings, shall include removal and disposal of the existing outfall pipe, including removal of existing debris grates, concrete collars and headwalls, slip joints, and any debris found within.
- (g) Work required for Supply and Installation of Outfall Pipe, where a new pipe alignment is used, as specified on the drawings, will not include removal and disposal of the existing outfall pipe. Removal of existing outfall pipe will be as specified on drawings and follow in accordance to E16.4.1.

E16.3.8 Connections



- (a) Provide lean mix concrete pipe bedding and backfill to the lines and grades as detailed in the contract drawings.
- (b) Slip joints are to be internal unless noted otherwise on the drawings. The receiving pipes are to be cleaned of all surface debris, including but not limited to frozen backfill, ice and internal sediment.
- (c) The slip joints are to be installed in locations as shown on the drawings and as directed by the Contract Administrator. Angle brackets are to be located at the 9:00 and 3:00 o'clock position unless approved otherwise by the Contract Administrator. Bolts are to be tightened evenly throughout the coupler.

#### E16.3.9 Polymer Coated Pipe

- (a) Polymer Coated pipe shall be installed in accordance with the manufacturer's instructions.
- (b) All pipe and couplers shall conform to CSA G401-01 "Corrugated Steel Pipe Products".
- (c) Field cutting and welding of pipe will require repairs to the polymer coating. All field welds and cuts on polymer coated pipe shall be repaired using Ranbar Tri-spec-515-7 black synthetic coating or approved equivalent in accordance with B7. Surfaces are to be clean and dry and free from grease, oil, dirt and rust. Following the repair process, the field coating must be fully cured prior to exposure to water, soil or debris.

All repairs to be in accordance with CSA G401-01, Section 5.3.

#### E16.3.10 Installation of Polymer Coated Orifice Plate

- (a) Orifice Plates shall be installed in accordance with the manufacturer's instructions and in locations as specified on the contract drawings.
- (b) Field cutting and welding of pipe will require repairs to the polymer coating. All field welds and cuts on polymer coated pipe shall be repaired using Ranbar Tri-spec-515-7 black synthetic coating or approved equivalent in accordance with B7. Surfaces are to be clean and dry and free from grease, oil, dirt and rust. Following the repair process, the field coating must be fully cured prior to exposure to water, soil or debris.

#### E16.3.11 Installation of Debris Grate

Debris Grates shall be installed as detailed and in the location shown on the contract drawings.

#### E16.3.12 Installation of Concrete Headwall

Concrete Headwalls shall be installed as detailed and in the location shown on the Drawings.

#### E16.3.13 Shop Drawings

Submit prepared shop drawings for the: CSP, polymer coated CSP, CSP bends, CMP pipe to manhole connection reinforced concrete collar, HDPE pipe to manhole connection, temporary trench shoring, slip joints, anti-bonding agent, hand rail, and debris grate details in accordance with Clause 1.5 of CW 1110, E8, and E34.

### E16.4 Method of Measurement and Payment

#### E16.4.1 Removals

- (a) Where the installation of new outfall pipe is offline of the existing pipe alignment, the removal of existing outfall pipe shall be measured on a length basis. The length to be paid for shall be the total number of linear metres of CMP, PVC or concrete pipe removed, measured from the cut point to either the next cut or end of pipe, as applicable.

- (b) No separate payment is to be made for pipe removal where the installation of pipe is an online replacement.
  - (i) The removal of existing debris grates, slip joints and existing concrete collars, excavation, pipe removal, and, where applicable, backfill, shall be included in the unit price per metre for pipe removals where the installation of new outfall pipe is offline of the existing pipe alignment.
  - (ii) Separate measure will be made for each size and class of outfall pipe.
- (c) The removal of existing manholes shall be measured on a unit basis.
  - (i) Payment for excavation, manhole removal, removal of risers, reducers, frame and cover, and backfill to grade, shall be included in the unit price for Removal of Manhole.
- (d) The removal of existing concrete headwalls shall be measured on a unit basis.
  - (i) Payment for excavation, concrete headwall removal, steel, backfill to grade, shall be included in the unit price for Removal of Existing Concrete Headwall.
- (e) Removal of existing outfall pipe, manholes, and concrete headwalls, will be paid for at the Contract Unit Price for "Items of Work" listed below, measured specified herein, which price shall be payment in full for supplying all materials and performing all operations described and all other items incidental to the Work included in this Specification.

**Items of Work:**

Removals

- a) 525 mm diameter concrete
- b) 1050 mm diameter concrete
- c) 1200 mm diameter CSP

E16.4.2

Supply and Installation of Outfall Pipe

- (a) The supply and installation of new outfall pipe shall be measured on a linear basis. The length to be paid for shall be the total number of linear meters of pipe, measured from the tie-in point to the tip of the manufactured bevelled end section, horizontally above the center of the pipe installed in accordance with this Specification and acceptable to the Contract Administrator.
- (b) Beveling the end section of pipe, where applicable, shall be considered incidental to the installation of the outfall pipe and no separate payment will be made.
- (c) Separate measurement will be made for each size and class of outfall pipe.
- (d) Supply and installation of new CSP will be paid for at the Contract Unit Price for "Items of Work" listed below, measured specified herein, which price shall be payment in full for supplying all materials and performing all operations described and all other items incidental to the Work included in this Specification.

**Items of Work:**

Supply and Installation of Outfall Pipe

- a) 525 mm diameter CMP (2.0 mm) c/w polymer coating
- b) 600 mm diameter CMP (2.0 mm) c/w polymer coating
- c) 750 mm diameter CMP (2.0 mm) c/w polymer coating
- d) 800 mm diameter CMP (2.0 mm) c/w polymer coating
- e) 900 mm diameter CMP (2.0 mm) c/w polymer coating
- f) 1200 mm diameter CMP (2.0 mm) c/w polymer coating
- g) 1400 mm diameter CMP (2.8 mm) c/w polymer coating
- h) 2120 mm SPCSP (3.0 mm) c/w polymer coating
- i) 2280 mm SPCSP (3.0 mm) c/w polymer coating
- j) 375 mm diameter SDR35 PVC

k) 610 mm OD HDPE DR9

- (e) Installation of Reinforced Concrete Collar CMP to Manhole Connection shall be included and paid for at the Contract Unit Price for "Items of Work" listed below, measured specified herein, which price shall be payment in full for supplying all materials and performing all operations described and all other items incidental to the Work included in this Specification.

**Items of Work:**

- a) Connect 525 mm diameter CMP (2.0 mm) to Manhole
- b) Connect 600 mm diameter CMP (2.0 mm) to Manhole
- c) Connect 800 mm diameter CMP (2.0 mm) to Manhole
- d) Connect 1200 mm diameter (2.0 mm) to Manhole
- e) Connect 375 mm diameter SDR35 PVC to Manhole
- f) Connect 610 mm OD HDPE DR9 to Manhole

E16.4.3 Supply and Installation of Pipe Fittings

- (a) Pipe Fitting shall be understood to include external slip joints, internal slip joints, flexible expansion joints, orifice plates, and bends.
- (b) Measurement and Payment will be on a per Unit basis for each diameter, material type and fitting type indicated on the Drawings. The units to be paid for shall be the total number of fittings installed in accordance with this Specification and acceptable to the Contract Administrator as computed from measurements made by the Contract Administrator.
- (c) The Unit Price shall include all work and materials, including modifications to the pipe on either side of the fittings, as required, to install the fittings.

**Items of Work:**

Supply and Installation of Pipe Fittings

- a) 22.5 degree bend – 375 mm diameter PVC
- b) 22.5 degree bend – 525 mm diameter CMP
- c) 525 mm diameter polymer coating External Slip Joint
- d) 600 mm diameter polymer coated External Slip Joint
- e) 750 mm diameter polymer coated External Slip Joint
- f) 1200 mm diameter polymer coated Internal Slip Joint

E16.4.4 HDPE to CMP Expansion Joint

- (a) HDPE to CMP Expansion Joint shall be paid for as a lump sum payment, which price shall be payment in full for supplying all materials and performing all operations as specified on the drawings and herein.
- (b) HDPE to CMP Expansion Joint shall include the installation of 2 meters of outfall pipe, as the 750 mm diameter CMP and 610 OD HDPE DR9 is to be overlapped by 2 meters as specified on the drawings.

E16.4.5 Clay Plug

- (a) Construction of the clay plug is considered incidental to installation of pipe. No separate payment will be made for installation of the clay plug.

E16.4.6 Supply and Installation of Debris Grate

- (a) The supply and installation of the Debris Grate shall be measured on a unit basis. The units to be paid for shall be the total number of Debris Grate installed in

accordance with this Specification and acceptable to the Contract Administrator as computed from measurements made by the Contract Administrator.

- (b) Separate measurement will be made for each size of Debris Gate.
- (c) Supply and installation of Debris Gate will be paid for at the Contract Unit Price for "Supply and Installation of Debris Gate", measured specified herein, which price shall be payment in full for performing all operations described and all other items incidental to the Work included in this Specification.

**Items of Work:**

Supply and Installation of Debris Gate

- a) 525 mm diameter Debris Gate
- b) 600 mm diameter Debris Gate
- c) 750 mm diameter Debris Gate
- d) 800 mm diameter Debris Gate
- e) 1200 mm diameter Debris Gate
- f) 1660 mm diameter Debris Gate
- g) 2120 mm diameter Debris Gate
- h) 2280 mm diameter Debris Gate

E16.4.7 Installation of Pipe Anchors

- (a) **The installation of pipe anchors into grouted riprap is considered incidental to the installation of the pipe. No separate payment will be made for installation of pipe strapping anchors.**

E16.4.8 Installation of Concrete Headwall

- (a) The installation of Concrete Headwall shall be measured on a unit basis. The units to be paid for shall be the total number of Concrete Headwall installed in accordance with this Specification and acceptable to the Contract Administrator as computed from measurements made by the Contract Administrator.
- (b) Separate measurement will be made for each size of Concrete Headwall.
- (c) Installation of Concrete Headwall will be paid for at the Contract Unit Price for "Installation of Concrete Headwall" and "Installation of Concrete Thrust Block", measured specified herein, which price shall be payment in full for performing all operations described, as shown on the Drawings, and all other items incidental to the Work included in this Specification.

**Items of Work:**

Installation of Concrete Headwall (300 mm)

**E17. CONSTRUCTION OF CONCRETE COLLAR**

E17.1 Description

- E17.1.1 All concrete work in this project, materials and construction methods, shall be according to the Drawings, Details and this specification.

E17.2 Materials

Concrete Mix Design

Concrete mix design and steel reinforcement shall be as indicated on the Drawings and in accordance with E23 (Cast in Place Concrete Construction).

E17.2.1 Cold Weather Requirements

Cold weather requirements shall be in accordance with E24 (Cold Weather Requirements).

### E17.3 Construction Methods

#### E17.3.1 Cast in place Concrete Construction

- (a) Construct cast in place concrete in accordance with CW 2160, except as supplemented, revised or amended in this specification and as indicated in the construction notes on the Drawings.
- (b) Adjust the location of reinforcing steel adjacent to openings to frame those openings in accordance with good practice, and maintain the bar spacing intent.
- (c) Do not use welded splices for reinforcing steel.
- (d) Order all wall reinforcing steel in lengths to best suit the spacing of walers so that reinforcing bars will not be bent or misformed in order to remove the walers.

#### E17.3.2 Backfill

- (a) Place and compact backfill material as indicated on the Drawings in accordance with CW 2030.
- (b) Do not place backfill material in a frozen state.
- (c) Supply heating and hoarding in accordance with CW 2160 if required to ensure material does not freeze before compaction is complete.
- (d) Notify the Contract Administrator at least one (1) full Working Day in advance of any backfilling operation. No Backfill shall be placed against concrete until approved by the Contract Administrator and in no case before field cured test cylinders show the concrete strength to be 75% of that specified.

#### E17.3.3 Grout

- (a) Mix and apply grout in accordance with the manufacturer's instructions. Consistency to be suitable for the intended application.

### E17.4 Measurement and Payment

- (a) Construction of the concrete collar will be measured on a unit basis and paid for at the Contract Unit Price for "Items of Work" listed below. Said price shall be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this specification.
- (b) Cold weather requirements shall be considered incidental to the construction of cast-in-place concrete and no measurement or payment will be made for this item.

#### **Items of Work:** Construction of Concrete Collar

- a) 750 mm diameter
- b) 900 mm diameter
- c) 1400 mm diameter
- d) 2120 mm diameter

## E18. RIVERBANK REGRADING

### E18.1 Description

E18.1.1 This Specification shall cover the riverbank regrading at the site, including excavation and reworking of excavated material, and imported impervious clay supply and placement.

E18.1.2 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 an incidental to the satisfactory performance and completion of all work as hereinafter specified.

## E18.2 Materials

E18.2.1 The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification.

### E18.2.2 Native Material to be Excavated

- (a) The materials covered in this specification consist of the in-situ overburden soils, and may include but not necessarily be limited to organic topsoil, clay, silt, sand, gravel, fill, rubble, roots, riprap, concrete blocks, etc., all of which may be excavated with standard hydraulic excavation equipment.

### E18.2.3 Clay Backfill

- (a) The impervious clay backfill to be used for riverbank regrading shall consist of a high plasticity clay material, with a liquid limit in excess of 50%. The clay shall be free of deleterious material such as roots, organic material, ice, snow or other unsuitable materials, and may be salvaged from the on-site excavation, as approved by the Contract Administrator. Frozen material will not be accepted.

## E18.3 Construction Methods

### E18.3.1 General

- (a) The riverbank regrading will be completed in the mid and upper bank portions of the bank. The limits of the riverbank regrading will be laid out in the field by the Contract Administrator.

### E18.3.2 Repair of Existing Slip Surfaces

- (a) A trench 0.6 m wide and 0.6 m deep

### E18.3.3 Native Material to be Excavated

- (a) All excavated material shall be removed off site immediately upon excavation or stockpiled as directed by the contract administrator.

### E18.3.4 Clay Backfill

- (a) The depressions within the limits of the existing mid and upper bank shall be infilled with clay backfill material. The clay backfill material shall be pushed and kneaded into place to ensure that the entire excavated volume is entirely filled with clay, and that no void spaces remain. The clay backfill shall be compacted to a minimum of 95% of the SPMDD.
- (b) Clay backfill for placement within the limits of the existing mid and upper bank shall not be stockpiled on the riverbank.

## E18.4 Measurement and Payment

### E18.4.1 Basis of Measurement

The supply and placement of the riverbank regrading will be measured on a volume basis. The volume to be paid for shall be the total number of cubic metres of "Riverbank Regrading", supplied and placed in accordance with this Specification, as measured in the field and accepted by the Contract Administrator.

### E18.4.2 Basis of Payment

The supply and placement of riverbank regrading will be paid for at the Contract Unit Price per cubic metre for the "Riverbank Regrading", measured as specified herein, which shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this Specification.

## E19. GEOTEXTILE

### E19.1 Description

E19.1.1 This Specification shall cover the supply and placement of the geotextile fabric below the rockfill riprap.

E19.2 Materials

E19.2.1 Each geotextile roll to be used shall be tagged to provide product identification for inventory and quality control purposes.

E19.2.2 Geotextile rolls shall be furnished with suitable wrapping for protection against moisture and extended exposure from the sun, and contamination from dirt, dust, and any other deleterious materials. The geotextile shall remain wrapped in a protective covering until it is used.

E19.2.3 Non-woven geotextile fabric shall meet or exceed the following requirements:

| Parameter             | Test Method | Minimum Criteria        |
|-----------------------|-------------|-------------------------|
| Grab Tensile Strength | ASTM D4632  | 900 N                   |
| Mullen Burst          | ASTM D3786  | 2600 kPa                |
| Puncture              | ASTM D4833  | 550 N                   |
| Trapezoidal Tear      | ASTM D4533  | 350 N                   |
| Apparent Opening Size | ASTM D4751  | 1.2 mm                  |
| Permittivity          | ASTM D4491  | 1.2 sec <sup>-1</sup>   |
| Flow Rate             | ASTM D4491  | 60 L/sec/m <sup>2</sup> |

E19.2.4 Suitable products shall be Amoco 4553, Layfield LP 8, Emco R080, Geotex 801, Terrafix 600R, Armtec 250, Mirafi 180 N, Trevira 011/250, or approved equivalent in accordance with B7.

E19.3 Construction Methods

E19.3.1 Geotextiles shall consist of non-woven fabric.

E19.3.2 All Work related to the geotextile storage, handling, and installation shall comply with the procedures and recommendations of the manufacturers, and as accepted by the Contract Administrator.

E19.3.3 Snow and ice shall be cleared from the riverbank in accordance with E.11.3.6 prior to placement of geotextile.

E19.3.4 The fabric shall be loosely laid in order to allow conformity to the bedding surface. Folds and wrinkles in the fabric shall be avoided. Pins, nails or weights shall be installed to hold the fabric in place such that placement of fill material will not excessively stretch or tear the fabric and seam overlaps will be maintained.

E19.3.5 The fabric shall be overlapped in a downstream direction (upstream panel overtop of downstream panel) at all joints a minimum of 600 mm. The overlap shall be pinned or secured as approved by the Contract Administrator.

E19.3.6 A minimum of 300 mm of material shall be placed over the fabric prior to equipment passage.

E19.3.7 Riprap shall be placed on the geotextile in such a manner that the geotextile is not damaged, torn, excessively stretched, or punctured.

E19.3.8 Any damaged geotextile, as identified by the Contract Administrator, shall be repaired immediately at the Contractors own cost. All fill material shall be cleared a minimum of 1 m around the damaged area. The damaged area shall be covered with a geotextile patch that shall be large enough to be sewn or overlapped a minimum of 600 mm onto the undamaged geotextile.

#### E19.4 Measurement and Payment

E19.4.1 The supply and placement of geotextile, and related Work specified herein will be measured on an area basis and paid for at the Contract Unit Price for "Geotextile". The area to be paid for shall be the total number of square metres of ground covered by geotextile, placed in accordance with this Specification, accepted and measured by the Contract Administrator.

E19.4.2 Overlap at all joints shall be considered a single layer of geotextile for measure and payment purposes.

E19.4.3 Geotextile used for repairs will be excluded from the quantity paid.

### **E20. NATIVE GRASSES AND TREES REVEGETATION**

#### E20.1 Description

This Specification shall cover the installation of native grasses and trees within the lower and mid bank areas.

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

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

#### E20.2 Materials

##### E20.2.1 Lower and Mid Bank Revegetation

###### (a) Seed Mixture

Grass seed shall consist of a Canada common native seed mix as follows:

20% Slender Wheatgrass

20% Switchgrass

20% Big Bluestem

20% Canada Wildrye

10% Fringed Brome

10% Canada Milkvetch

Grass species that may be substituted in varying percentages (no greater than 20%) as alternatives to those listed above include;

Prairie Cordgrass

Streambank Wheatgrass

Western Wheatgrass

Northern Wheatgrass

No more than (2) wheatgrass species shall be used in the mixture.

###### (b) Trees

The trees to be placed as part of the lower and mid bank revegetation shall consist of native species approximately 75 mm in diameter. The number and species of trees to be planted will be based on the number and species of trees removed during construction and will be determined by the Contract Administrator.

Tree species specific to the Site include :

Manitoba Maples

American Elm

Basswood



## Cottonwood

### E20.3 Construction Methods

#### E20.3.1 Seeding

- (a) Grass seed shall be sown at a rate of 0.5 kg per 100 square metres.
- (b) Oats shall be sown at a rate of 0.38 kg per 100 square metres.
- (c) Oats and grass seed may be mixed and sown together or they may be sown separately.

#### E20.3.2 Trees

The trees replanted in the lower and mid bank areas shall be planted in the general vicinity of where trees were removed prior to the commencement of works or as directed by the Contract Administrator.

#### E20.3.3 Maintenance of Seeded Area

Areas seeded with native grasses shall be mowed during the first growing season to control pioneering weeds and other competition. For the purposes of this project a weed is defined as any plant not included in the seed mix. Mowing should be done before the general height is 150 to 250 mm, or when the weedy foliar cover reaches 50 percent of the seeded area, or when the weed species begin to flower. The first mowing shall be set at a height of 75 mm with the following mowings to be set at a height of 100 to 200 mm. Rotary, flail, or sickle bar type mowing equipment is acceptable.

All other maintenance of seeded area shall be in accordance with

#### E20.3.4 Quality Control

##### (a) Inspection

All workmanship and all materials furnished and supplied under this Specification are subject to close and systematic inspection by the Contract Administrator including all operations from the selection of materials through the final acceptance of the specified work. The Contractor shall be wholly responsible for the control of all operations incidental thereto notwithstanding any inspection of approval that may have been previously given.

##### (b) Access

The Contract Administrator shall be afforded full access for the inspection of materials at the site to determine whether the material is being selected and placed in accordance with this Specification.

### E20.4 Method of Measurement

#### E20.4.1 Topsoil and Seeding

- (a) The supply and placement of the native grass seeding within the lower and mid bank areas will be measured on an area basis. **The maximum area to be paid for shall be the area indicated on Form B: Prices, which is based on the area to be seeded as a direct result of specified works. Topsoil and Seeding area above this quantity shall be considered incidental to E11: Site Development and Restoration.**
- (b) The formula used to calculate topsoil and seeding areas is:  $[3*(pipe\ diameter)+6] * pipe\ length$  for all excavated pipe sections, including renewals and removals.
- (c) Where installed pipe lengths vary due to field conditions or instructions from the Contract Administrator, the quantity of Topsoil and Seeding to be paid will be adjusted as appropriate.

#### E20.4.2 Tree Planting

The supply and planting of trees within the lower and mid bank areas will be measured on a unit basis for the type of tree planted. The Contractor shall be paid for the total number of trees planted as replacement of those trees removed as part of the works in accordance with this Specification and as measured by the Contract Administrator.

## E20.5 Basis of Payment

### E20.5.1 Topsoil and Seeding (Native Grass Seed Mix)

The supply and placement of the native grass seeding within the lower and mid bank areas will be paid for at the Contract Unit Price per square metre of seeding for the "Topsoil and Seeding (Native Grass Seed Mix)" measured as specified, herein, which price shall be payment in full supplying all materials and performing all operations herein described, and all other items incidental to the work included in this Specification.

### E20.5.2 Tree Planting

The supply and planting of trees within the lower and mid bank areas will be paid for at the Contract Unit Price per tree for the specific tree species listed under "Tree Planting", measured as specified herein, which price shall be payment in full for supplying all materials and performing all operations herein described, and all other items incidental to the work included in this Specification.

## E21. SEWER CLEANING

### E21.1 Description

- (a) This Specification shall amend and supplement Standard Specifications CW 2140.
- (b) A limited amount of sewer cleaning has been included in the Contract due to the unpredictable conditions of outfalls. The length of time spent on sewer cleaning shall be at the discretion of the Contract Administrator.

### E21.1.1 Construction Methods

- (c) Advise the Contract Administrator immediately when pipe material or backfill material is observed during the cleaning of a sewer. The Contract Administrator will direct one of the following operations be performed.
  - (i) Complete or attempt to complete cleaning of the sewer.
  - (ii) Suspend cleaning operations and inspect the sewer.
  - (iii) Simultaneously clean and inspect the sewer

### E21.2 Measurement and Payment

#### E21.2.1 Amend Section 4.1 of Specification CW 2140 to read:

- (b) Sewer Cleaning will be measured on a time basis and paid for at the Contract Unit Price for "Sewer Cleaning". The time to be paid will be the total number of hours of sewer cleaned in accordance with this specification, accepted and measured by the Contract Administrator.
- (c) Sewer Cleaning shall include all water supply costs, permits (D.F.O. or otherwise), cleaning, reverse set-up cleaning, dumping, travel time, tipping fees, units, flow control and whatever may be required for the cleaning of the outfall pipe.
- (d) 75% of the payment will be made upon satisfactory completion of the cleaning work. The remaining 25% of the payment will be made upon final acceptance of the sewer cleaning as determined by the review of the corresponding video inspection.

#### E21.2.2 Delete sections 4.3, 4.7 and 4.8 of specification CW 2140.

## E22. SEWER INSPECTION

### E22.1 Description

E22.1.1 This Specification shall amend and supplement Standard Specifications CW 2145.

E22.1.2 This Specification covers inspection of sewers and manholes using internal video equipment for the purposes of assessing thoroughness of cleaning, observing and recording structural and service defects and construction features and to verify new sewer construction prior to acceptance.

## E22.2 Construction Methods

### E22.2.1 Sewer Condition Coding

Sewer pipes shall be coded according to the Standard Specifications CW 2145.

### E22.2.2 Cross Sectional Measurements

The Contractor shall record cross section measurements every 5 m taken horizontally at 3:00, vertically at 12:00 and at 45 degrees at 1:00 and 4:00. Stationing should be from the upstream face of the gate chamber or manhole. The Contractor will record the cross sectional measurements on an Inspection Form provided by the Contract Administrator.

### E22.2.3 Maximum Vertical Deflection

The maximum observed vertical deflection "pinch point" in the outfall shall be recorded with its appropriate stationing.

## E22.3 Measurement and Payment

### E22.3.1 Amend Section 4.4 of specification 2145 to read

- (a) Sewer inspection will be measured on a length basis and paid for at the Contract Unit Price for "Sewer Inspection". Length to be paid for will be the total length of sewer inspected in accordance with this specification, accepted and measured by the Contract Administrator.
- (b) Cross sectional measurements and maximum vertical deflection measurements will be considered incidental to the sewer inspection
- (c) Payment will not be made until the required report submissions are accepted by the Contract Administrator.

### E22.4 Delete Section 4.6 of Specification 2145.

## **E23. CAST-IN-PLACE CONCRETE CONSTRUCTION**

### E23.1 Description

E23.1.1 This specification shall cover construction of cast-in-place concrete and shall supplement, revise and amend CW 2160.

### E23.2 Materials

#### (a) Concrete Design

- (i) Proportioning of fine aggregate, coarse aggregate, cement, and water for cast-in-place concrete shall be as follows:
  - ◆ Cement Type: HS
  - ◆ Minimum Compressive Strength @ 28 days: 30 MPa
  - ◆ Maximum coarse aggregate size: 19 mm
  - ◆ Maximum Water/Cement ratio: 0.45
  - ◆ Slump (Before Plasticizing): 80 mm +/- 30 mm
  - ◆ Slump (After Plasticizing): 150 mm +/- 30 mm
- (ii) All admixtures must be compatible and meet the following standards:
  - ◆ Air entraining agents to ASTM C260

- ◆ Chemical admixtures (water reducing) to ASTM C494
  - ◆ Type F high-range water reducing (super-plasticizing) admixture shall be used when a slump of more than 110 mm is desired.
- (b) Lean-Mix Concrete Design
- (i) Proportioning of fine aggregate, coarse aggregate, cement, and water for lean mix concrete shall be as follows:
    - ◆ Cement Type: HS
    - ◆ Minimum Compressive Strength @ 28 days: 15 MPa
    - ◆ Slump: 80 mm
    - ◆ Air Content: nil
    - ◆ Minimum Cement Content = 240 kg/m<sup>3</sup>
    - ◆ Maximum Water/Cement Ratio = 0.49
- (c) Grout
- (i) Grout shall be Sika Grout 212 or approved equal in accordance with B7.
- (d) Reinforcing Steel
- (i) Reinforcement is new deformed billet steel bar conforming to CSA G30.18 (Latest). Grade 400.
  - (ii) Unless noted otherwise, reinforcement clear concrete cover distances shall be a minimum of:
    - ◆ 75 mm for concrete cast against earth.
    - ◆ 50mm for all other concrete.
  - (iii) Reinforcing steel shall be clean, free of rust, dirt, loose scale, oil, grease or any material that could reduce bond with the concrete.
- (e) Waterstop shall be SikaSwell S-2 (Hydrophilic Polyurethane Sealant) extrudable swelling waterstop or approved equivalent in accordance with B7.

### E23.3 Measurement and Payment

- E23.3.1 Cast-in-place concrete will be considered incidental to the Work listed in individual Part E specifications and shall be included in the associated price for each applicable item. No direct measurement for payment will be made for this item.

## E24. COLD WEATHER REQUIREMENTS

### E24.1 Description

- (a) Should any concrete Work be required to be carried out when the mean daily temperature is below 5°C or anticipated to be below 5°C within the next 24 hours, cold weather requirements will be specified herein.
- (b) All freshly placed concrete shall be protected from the elements and from defacements due to construction operations.

### E24.2 Construction Methods

- (a) The following are minimum requirements for protecting concrete during and after placement during freezing weather, but mere adherence to these requirements will not relieve the Contractor of the necessity for producing concrete which has not been weakened or injured by frost of freezing, or replacing such damaged Work at no additional expense to the City;
  - (i) Before any concrete is placed, all ice, snow, and frost shall be completely removed from all formwork, and other surfaces against which concrete temperatures of such surfaces raised above 7°C for twenty-four (24) hours minimum prior to concreting. Where concrete Work is to come in contact with the earth, the surface of the earth shall be completely free of frost when concrete is placed thereon.

- (ii) Concrete aggregates and water shall be heated to not over 80°C. Concrete shall be not less than 20°C or more than 30°C in temperature when deposited. Concrete when placed during freezing weather, or if freezing is anticipated during curing period, shall be fully enclosed and the temperature of same maintained at not less than 20°C for five (5) days nor less than 5°C for an additional five (5) days.
- (iii) Heating enclosures shall be strong and wind-proof, well ventilated with heating units so located as to prevent local overheating or drying of the concrete or damage from combustion gases. Only indirect fired heaters will be accepted. Units must be vented outside the enclosure. No direct fired units will be accepted.
- (iv) The Contractor shall inform the Contract Administrator well in advance as to the methods of enclosure and frost protection he proposes to employ.

#### E24.3 Measurement and Payment

- E24.3.1 Cold weather requirements shall be considered incidental to the construction of cast-in-place concrete and no measurement or payment will be made for this item.

### **E25. GROUTED RIPRAP**

#### E25.1 Description

- E25.1.1 This Specification shall amend and supplement Standard Specification CW 3615.

#### E25.2 Materials

##### E25.2.1 Riprap

- (a) Rock for riprap shall consist of hard, dense, durable rock. The rock shall be angular crushed limestone, resistant to the action of air and water and suitable in all other respects for the purpose intended.
- (b) The stones shall range in size from 100mm to 350mm in diameter with 75% by count between 200mm and 350mm.
- (c) Crushed limestone when subjected to the Los Angeles abrasion test shall have a loss of not more than thirty-two percent (32%).
- (d) Crushed limestone when subjected to the Magnesium Sulphate Soundness test shall have a loss of not more than eighteen percent (13%).
- (e) The sample material shall be crushed to 37.5 mm maximum aggregate size and tested in accordance with ASTM C131 – Resistance to Degradation of Small size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine and ASTM C88 – Soundness of Aggregates by Use of Magnesium Sulphate.
- (f) The rock for riprap shall be approved by the Contract Administrator prior to riprap installation.

##### E25.2.2 Geotextile

- (a) Geotextile shall be as per E19

##### E25.2.3 Grout

- (a) Grout shall be as per CW 3615.

#### E25.3 Construction Methods

##### E25.3.1 Riprap

- (a) Installation of 300mm grouted riprap shall be as per Clause 9.3 of CW 3615. Total depth of concrete and riprap to be as shown on the drawings.
- (b) Riprap shall not be dropped onto the geotextile from a height greater than 300mm.
- (c) Any geotextile damaged during placement of the riprap shall be replaced as directed by the Contract Administrator at the Contractors expense.

E25.4 Measurement and Payment

E25.4.1 Grouted Riprap

- (a) As per Clauses 12.2 and 13.2 of CW 3615.

**E26. REMOVAL OF CONCRETE SAND BAG REVETMENT**

E26.1 Description

- E26.1.1 Excavation and removal of the concrete sand bag revetment at the existing outlet of the Hindley Avenue Outfall as required.

E26.2 Construction Methods

- E26.2.1 Excavation shall be in accordance with CW 2030 (Section 3.3).  
E26.2.2 All excavated materials to be removed and disposed of off site.

E26.3 Measurement and Payment

- E26.3.1 Cost for Removal of Concrete Sand Bag Revetment shall be considered incidental to the installation of CMP outfall pipe.

**E27. EROSION CONTROL BLANKETS**

E27.1 Description

- E27.1.1 This Specification shall cover the supply and placement of erosion control blankets to provide temporary erosion control in localized areas (as directed by the Contract Administrator)

E27.2 Materials

- E27.2.1 The blanket material shall consist of wheat or barley straw, coconut fibres, or other plants approved by the Contract Administrator. Acceptable products will be S32 Double Net Straw Blankets with photodegradable netting or approved alternative in accordance with B7. The blanket material shall be air dried, reasonably light in colour, and shall not be musty, mouldy, caked or otherwise of low quality. The blanket material shall be free of coarse (chaff) material and free of noxious weeds and/or seeds to prevent the introduction of weeds into previously seeded and planted areas.

E27.3 Construction Methods

E27.3.1 General

- (a) The Contractor shall supply and place erosion control blankets immediately after final grading is completed and prior to March 31.  
(b) Erosion control blankets shall be placed as directed, measured and accepted by the Contract Administrator.  
(c) Covered areas shall be inspected periodically and after runoff producing storm events. Damaged areas shall be repaired immediately as determined by the Contract Administrator. Areas requiring recovering as directed by the Contract Administrator will be re-measured and additionally paid for at the Contract Unit Price for the Work item.

E27.3.2 Installation

- (a) The erosion control blankets shall be installed as per the manufacturer's recommended procedures. Blankets shall be rolled out on smoothed out soils starting from the top of the slope. The Contractor is to start by stapling the blanket at the top of the slope in a 150 mm deep by 150mm wide trench. The trench will be backfilled and compacted so that water will flow evenly onto the blanket.

- (b) The Contractor shall roll the blankets down the slope insuring soil blanket contact. Edges are to be overlapped a minimum 50 mm with parallel blankets.
- (c) If more than one blanket is need for the run down the slope then adjoining ends must be overlapped a minimum 100 mm shingle style. Overlapped areas are to be stapled with a staggered pattern of staples.

**E27.3.3 Removal**

- (a) Immediately prior to placement of topsoil and sod and/or topsoil and seed all erosion control blankets shall be removed and disposed of off-Site.

**E27.4 Measurement and Payment**

E27.4.1 Supply, placement and removal of erosion control blankets will be measured on an area basis and paid for at the Contract Unit Price for "Erosion Control Blankets". The area to be paid for shall be the total number of square metres of ground covered by blankets, supplied and placed in accordance with this Specification, accepted and measured by the Contract Administrator.

**E28. WORK PRACTICES ON ASBESTOS CEMENT PIPE**

E28.1 Further to BC.6.28(d) the Contractor's attention is directed to the possible health dangers associated with working with asbestos-cement pipe and all work associated with existing asbestos cement pipe shall conform to the following publications:

- E28.1.1 "Guidelines for Working with Asbestos" by Manitoba Department of Labour and Immigration, Workplace Health and Safety Branch.  
<http://www.gov.mb.ca/labour/safety/publication.html>
- E28.1.2 "Work practices for Asbestos –Cement Pipe", AWWA No. M16, published by American Water Works Association. <http://www.awwa.org/>.
- E28.1.3 Recommended Work Practices for AC Pipe, 1977, published by the AC Pipe producers Association.

**E29. SUPPLY AND INSTALLATION OF TEMPORARY SHORING**

**E29.1 Description**

E29.1.1 This Specification shall cover shoring requirements for the Works where required under Manitoba Acts, Regulations, and Guidelines, or as indicated on the Drawings.

**E29.2 Construction Methods**

**E29.2.1 Excavation**

- (a) Remove excavated material from the Site immediately. Excavated material shall not be stockpiled on-Site or along river bank.
- (b) All Working areas below grade shall be kept adequately and securely supported during and after excavation until the shoring and bracing is in place to prevent loss of ground or injury to any person from falling material.

**E29.2.2 Excavation Safety Fence**

- (a) Further to Clause 3.1 of CW 1130, completely cover the excavation and provide a security fence to completely surround the excavation when unattended generally in accordance with the following.
- (b) Safety fence installed shall be as per E.11.3.7.

**E29.2.3 Shoring**

- (a) The type, strength, and amount of shoring and bracing shall be such as the nature of the ground and attendance conditions may require, taking into account property lines, existing slopes, utilities and roadways.

- (b) Shoring and bracing shall be so spaced and dimensioned as to prevent caving, loss of ground, surface settlement, or squeezing of the soil beyond the neat lines of excavation. It shall be free from defects that might impair its strength or suitability for the Work. Sheeting/shoring and bracing shall conform to the latest revisions of the "Construction Safety Act" of the Department of Labour of the Government of Manitoba and in accordance with Province of Manitoba "W210 The Workplace Safety and Health Act" and "Guidelines for Excavation Work".
- (c) Supporting design calculations as required to facilitate review of the submission for conformance with the Contract Documents.
- (d) Submit AutoCAD Shop Drawings and design calculations for the shoring/excavation system designed and sealed by a Professional Engineer registered or licensed to practice in the Province of Manitoba and experienced in the structural design of shoring systems. The designer of the shoring system shall inspect the system during construction and certify, in writing to the Contract Administrator, that construction is in conformance with the approved design.
- (e) Shoring and bracing shall be installed such that the structure size and wall thickness shown on the shop drawings can be obtained subsequent to installation of the shoring system.
- (f) Shoring and bracing shall be designed and installed to prevent settlement and damage to existing structures. In the event of damage, the Contractor will be held liable, and shall be required to provide appropriate restoration at his cost, to the satisfaction of the Contract Administrator.
- (g) Shoring and bracing shall remain in place until concrete has attained 75% of the design strength.

#### E29.2.4 Monitoring Movement of Shoring

- (a) The Contractor shall submit to the Contract Administrator a plan for monitoring the movement of trench shoring during construction a minimum of two (2) Working Days prior to the installation of trench shoring. The monitoring plan shall be performed by approved survey methods for vertical or horizontal movement of the shoring, acceptable to the Contract Administrator. Costs for monitoring shall be incidental to the installation of the temporary shoring.

#### E29.3 Measurement and Payment

- E29.3.1 All costs associated with shoring, where required for any particular outfall site, shall be incidental to the Supply and Installation of Outfall Pipe and no measurement or payment will be made.

### **E30. TEMPORARY SURFACE RESTORATION**

- E30.1 Further to clause 3.3 of CW 1130, where permanent surface restorations cannot be made due to cold weather, the Contractor shall temporarily restore surfaces as follows:

- (a) backfill and level boulevards and grassed areas to match existing surface elevations,
- (b) cap excavations in concrete pavement with a 100 millimetre thick layer of concrete for "Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310,
- (c) cap excavations in sidewalk pavement with a 50 millimetre thick layer of concrete for "Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310,
- (d) insulate temporary concrete where required during 48hr curing period,
- (e) where curb has been removed as part of the pavement cut pour temporary curb using "Concrete for Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310.
- (f) remove all temporary pavements prior to permanent restorations.

- E30.2 The Contractor shall monitor and maintain temporarily restored surfaces as required until permanent restoration is complete.



- E30.3 If, in the opinion of the Contract Administrator, temporarily restored surfaces are not being adequately maintained or were not properly constructed and pose a danger to the public, maintenance or reconstruction will be done by the City forces with no advance notification the Contractor.
- E30.4 All costs associated with the maintenance or reconstruction of temporary pavement incurred by the City shall be deducted from future payments to the Contractor.
- E30.5 Temporary surface restorations shall be measured and paid as follows:
- (a) Temporary restoration will be measured by area and paid at the Contract Unit Price for "Temporary Surface Restoration". Area to be paid for will be total area temporarily restored inspected in accordance with this Specification, accepted and measured by the Contract Administrator.
- E30.6 No measurement or payment will be made for the temporary restoration of barrier or lip curb.
- E30.7 No measurement or payment will be made for the temporary restorations of boulevards and grassed areas.
- E30.8 No measurement or payment will be made for the removal of temporary pavement prior to permanent restoration.

### **E31. REMOVAL AND RE-INSTALLATION OF EXISTING FLAP GATE**

#### **E31.1 Description**

- E31.1.1 Specification shall cover the removal and re-installation of the 900 mm diameter flap gate and all activities required for the Works related to the installation of the existing 900 mm diameter flap gate at the St Charles Outfall Site.

#### **E31.2 Construction Methods**

- E31.2.1 The Contractor shall verify that the existing flap gate is in good working order prior to removal of the flap gate.
- E31.2.2 The Contractor shall verify the existing measurements of the existing flap gate with the new outfall pipe to be installed.
- E31.2.3 The Contractor shall not damage the existing flap gate and store in a safe place throughout construction prior to re-installation.

#### **E31.3 Measurement and Payment**

- E31.3.1 Removal and re-installation of existing flap gate shall be measured and paid as a lump sum payment, which price shall be payment in full for performing all associated Works and operations specified herein and to the manufacturers specifications.
- E31.3.2 All costs associated with the removal and re-installation of existing flap gate, which includes all installation works, will be considered incidental to the Work.

### **E32. REMOVAL AND INSTALLATION OF HAND RAIL**

#### **E32.1 Description**

- E32.1.1 Specification shall cover the removal and installation of the hand rail and all activities required for the Works related to the installation of the handrail at the St Charles Outfall Site.

#### **E32.2 Construction Methods**

- E32.2.1 The Contractor shall install submit shop drawings of the hand rail prior to construction
- E32.2.2 The Contractor shall install the hand rail as specified on the Drawings.

### E32.3 Measurement and Payment

E32.3.1 Removal and installation of the hand rail shall be paid for as a lump sum payment, which price shall be payment in full for performing all operations specified herein.

E32.3.2 All costs associated with the Removal and Installation of Hand Rail, which includes all supply and installation works, will be considered incidental to the Work.

## **E33. LIGHTWEIGHT CELLULAR CONCRETE**

### E33.1 Description

E33.1.1 This Specification shall amend and supplement Standard Specifications CW2130-R12 and shall cover the abandonment of the existing 525 mm diameter concrete Valley View Outfall, including supply and all associated Works required to abandon the outfall with 475 kg/m<sup>3</sup> density lightweight cellular concrete fill.

E33.1.2 The Work to be done by the Contract under this Specification shall include 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 hereinafter specified.

### E33.2 Materials

E33.2.1 Abandonment fill material shall be Cematrix 475 kg/m<sup>3</sup> density Lightweight Cellular Concrete fill as indicated on the drawings or approved equivalent in accordance with B7.

### E33.3 Construction Methods

E33.3.1 Construction methods to be in accordance with Standard Specifications CW 2130 – R12.

#### E33.3.2 Measurement and Payment

- (a) Supply and Installation of lightweight cellular concrete will be measured on a volume basis. The volume to be paid for shall be the total number of cubic meters of material, supplied and placed in accordance with this Specification, as measured in the field and accepted by the Contract Administrator.

## PART F - SECURITY CLEARANCE

### F1. SECURITY CLEARANCE

- F1.1 Each individual proposed to perform Work under the Contract shall be required to obtain a Police Information Check from the police service having jurisdiction at his place of residence. This can be obtained from one of the following;
- (a) police service having jurisdiction at his/her place of residence; or
  - (b) BackCheck, forms to be completed can be found on the website at: <http://www.backcheck.net/> ; or
  - (c) Commissionaires (Manitoba Division), forms to be completed can be found on the website at: <https://www.commissionaires.ca/en/manitoba/home> ;or
  - (d) FASTCHECK Criminal Record & Fingerprint Specialists, forms to be completed can be found on the website at: <https://myfastcheck.com>
- F1.2 The original Police Information Check (Form P-612) will be provided by the Winnipeg Police Service to the individual applicant. The original has a validation sticker from the Winnipeg Police Service in the top right hand corner. The applicant shall:
- (a) Provide the original Police Information Check (Form P-612) to the Contract Administrator.
- F1.3 Prior to the award of Contract, and during the term of the Contract if additional or replacement individuals are proposed to perform Work, the Contractor shall supply the Contract Administrator with a Police Information Check obtained not earlier than one (1) year prior to the Submission Deadline, or a certified true copy thereof, for each individual proposed to perform the Work.
- F1.4 Any individual for whom a Police Information Check is not provided, or for whom a Police Information Check indicates any convictions or pending charges related to property offences or crimes against another person will not be permitted to perform any Work.
- F1.5 Any Police Information Check obtained thereby will be deemed valid for the duration of the Contract subject to a repeated records search as hereinafter specified.
- F1.6 Notwithstanding the foregoing, at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated Police Information Check. Any individual who fails to provide a satisfactory Police Information Check as a result of a repeated Police Information Check will not be permitted to continue to perform any Work.