



**THE CITY OF WINNIPEG**

# **TENDER**

**TENDER NO. 779-2020**

**RIVERBANK STABILIZATION ALONG LYNDALE DRIVE – BIRCHDALE AVE TO  
CLAREMONT AVE**

## TABLE OF CONTENTS

### PART A - BID SUBMISSION

- Form A: Bid/Proposal
- Form B: Prices
- Form G1: Bid Bond and Agreement to Bond

### PART B - BIDDING PROCEDURES

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

### PART C - GENERAL CONDITIONS

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

### PART D - SUPPLEMENTAL CONDITIONS

#### General

D1. General Conditions	1
D2. Form of Contract Documents	1
D3. Scope of Work	1
D4. Contract Administrator	2
D5. Contractor's Supervisor	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	6
D13. Equipment List	6
D14. Detailed Work Schedule	6

#### Schedule of Work

D15. Commencement	7
D16. Restricted Work Hours	7
D17. Work By Others	7
D18. Sequence of Work	8
D19. Critical Stages	8
D20. Substantial Performance	9
D21. Total Performance	9
D22. Liquidated Damages	9
D23. COVID-19 Schedule Delays	10

D24. Scheduled Maintenance	10
<b>Control of Work</b>	
D25. Job Meetings	11
D26. Prime Contractor – The Workplace Safety and Health Act (Manitoba)	11
D27. The Workplace Safety and Health Act (Manitoba) – Qualifications	11
D28. Layout of Work	11
<b>Measurement and Payment</b>	
D29. Payment	11
D30. Damage to Existing Structures and Property	11
D31. Protection of Heritage Resources	12
<b>Warranty</b>	
D32. Warranty	12
<b>Third Party Agreements</b>	
D33. Funding and/or Contribution Agreement Obligations	12
Form H1: Performance Bond	14
Form H2: Labour and Material Payment Bond	16
Form J: Subcontractor List	18
Form K: Equipment	19

## **PART E - SPECIFICATIONS**

### **General**

E1. Applicable Specifications and Drawings	1
E2. Mobilization and Demobilization	1
E3. Background Reports	2
E4. Waterway Permit	2
E5. Office Facilities	2
E6. Protection of Riverbank Instrumentation	3
E7. Protection of Existing Trees	3
E8. Traffic Control	6
E9. Traffic Management	6
E10. Refuse and Recycling Collection	7
E11. Pedestrian Safety	7
E12. Water Obtained From the City	8
E13. Surface Restorations	8
E14. Site Development	8
E15. Silt Fence	11
E16. Erosion and Sediment Control	13
E17. Rockfill Columns	14
E18. Rockfill Ribs	17
E19. Riverbank Grading	18
E20. Planting Medium & Finished Grading	19
E21. Erosion Control Blanket	21
E22. Trees, Shrubs & Groundcover Plantings	22
E23. Landscape Maintenance	26
E24. Installation of Street Lighting and Associated Works	28

### **Appendix 'A' - Background Reports**

### **Appendix 'B' – Manitoba Hydro Street Lighting Standards**

### **Appendix 'C' – Safe Excavation and Safety Watch Guidelines**

### **Appendix 'D' – GELCAP Kit**

### **Appendix 'E' – Electric and/or Natural Gas Facilities Locate**

### **Appendix 'F' – Manitoba Hydro Job Plan- Engineering and Construction**

### **Appendix 'G' – Manitoba Hydro Network Commissioning Report**

## **PART B - BIDDING PROCEDURES**

### **B1. CONTRACT TITLE**

B1.1 RIVERBANK STABILIZATION ALONG LYNDALE DRIVE – BIRCHDALE AVE TO CLAREMONT AVE

### **B2. SUBMISSION DEADLINE**

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, November 27, 2020.

B2.2 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

### **B3. ENQUIRIES**

B3.1 All enquiries shall be directed to the Contract Administrator identified in D4.1.

B3.2 If the Bidder finds errors, discrepancies or omissions in the Tender, or is unsure of the meaning or intent of any provision therein, the Bidder shall notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.

B3.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Tender will be provided by the Contract Administrator to all Bidders by issuing an addendum.

B3.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Tender will be provided by the Contract Administrator only to the Bidder who made the enquiry.

B3.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B3 unless that response or interpretation is provided by the Contract Administrator in writing.

B3.6 Any enquiries concerning submitting through MERX should be addressed to:  
MERX Customer Support  
Phone: 1-800-964-6379  
Email: merx@merx.com

### **B4. CONFIDENTIALITY**

B4.1 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.

B4.2 The Bidder shall not make any statement of fact or opinion regarding any aspect of the Tender to the media or any member of the public without the prior written authorization of the Contract Administrator.

## **B5. ADDENDA**

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

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

B5.3 Addenda will be available on the MERX website at [www.merx.com](http://www.merx.com).

B5.4 The Bidder is responsible for ensuring that he/she has received all addenda and is advised to check the MERX website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.

B5.5 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid/Proposal. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B5.6 Notwithstanding B3, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D4.

## **B6. SUBSTITUTES**

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

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

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

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

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

- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/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.
- B6.6 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.
- B6.6.1 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.
- B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.
- B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his/her Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B17.
- B6.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

## **B7. BID COMPONENTS**

- B7.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
  - (b) Form B: Prices;
  - (c) Form G1: Bid Bond and Agreement to Bond.
- B7.2 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.
- B7.3 The Bid shall be submitted electronically through MERX at [www.merx.com](http://www.merx.com).
- B7.3.1 Bids will **only** be accepted electronically through MERX.
- B7.4 Bidders are advised that inclusion of terms and conditions inconsistent with the Tender document, including the General Conditions, will be evaluated in accordance with B17.1(a).

## **B8. BID**

- B8.1 The Bidder shall complete Form A: Bid/Proposal, making all required entries.
- B8.2 Paragraph 2 of Form A: Bid/Proposal 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.
- B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.

- B8.3 In Paragraph 3 of Form A: Bid/Proposal, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.
- B8.4 Paragraph 13 of Form A: Bid/Proposal shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, it shall be signed by the Bidder;
  - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
  - (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers;
  - (d) if the Bidder is carrying on business under a name other than his/her own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- B8.4.1 The name and official capacity of all individuals signing Form A: Bid/Proposal should be entered below such signatures.
- B8.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.
- B9. PRICES**
- B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B9.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.
- B9.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.
- B9.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).
- B9.5 The Bidder shall enter the Total Bid Price from Form B: Prices into the Total Bid Price field in MERX.
- B9.5.1 Bidders are advised that the calculation indicated in B17.4 will prevail over the Total Bid Price entered in MERX.
- B9.6 Form B: Prices is organized into Parts: Part 1 of the Work and Part 2 of the Work. Bidders shall provide a total price for each Part and, on the summary sheet, a Total Bid Price consisting of the sum of prices for Part 1 and Part 2.
- B10. DISCLOSURE**
- B10.1 Persons provided information or services with respect to this Work. In the City's opinion, Various 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.
- B10.2 The Persons are:
- (a) N/A

**B11. CONFLICT OF INTEREST AND GOOD FAITH**

- B11.1 Further to C3.2, Bidders, by responding to this Tender, declare that no Conflict of Interest currently exists, or is reasonably expected to exist in the future.
- B11.2 Conflict of Interest means any situation or circumstance where a Bidder or employee of the Bidder proposed for the Work has:
- (a) other commitments;
  - (b) relationships;
  - (c) financial interests; or
  - (d) involvement in ongoing litigation;
- that could or would be seen to:
- (i) exercise an improper influence over the objective, unbiased and impartial exercise of the independent judgment of the City with respect to the evaluation of Bids or award of the Contract; or
  - (ii) compromise, impair or be incompatible with the effective performance of a Bidder's obligations under the Contract;
- (e) has contractual or other obligations to the City that could or would be seen to have been compromised or impaired as a result of its participation in the Tender process or the Work; or
- (f) has knowledge of confidential information (other than confidential information disclosed by the City in the normal course of the Tender process) of strategic and/or material relevance to the Tender process or to the Work that is not available to other bidders and that could or would be seen to give that Bidder an unfair competitive advantage.
- B11.3 In connection with its Bid, each entity identified in B11.2 shall:
- (a) avoid any perceived, potential or actual Conflict of Interest in relation to the procurement process and the Work;
  - (b) upon discovering any perceived, potential or actual Conflict of Interest at any time during the Tender process, promptly disclose a detailed description of the Conflict of Interest to the City in a written statement to the Contract Administrator; and
  - (c) provide the City with the proposed means to avoid or mitigate, to the greatest extent practicable, any perceived, potential or actual Conflict of Interest and shall submit any additional information to the City that the City considers necessary to properly assess the perceived, potential or actual Conflict of Interest.
- B11.4 Without limiting B11.3, 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.
- B11.5 Without limiting B11.3, 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 B11.4 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.

B11.6 The final determination of whether a perceived, potential or actual Conflict of Interest exists shall be made by the City, in its sole discretion.

## **B12. QUALIFICATION**

B12.1 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.

B12.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <https://www.winnipeg.ca/matmgt/Templates/files/debar.pdf>

B12.3 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);

B12.4 Further to B12.3(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/>.

B12.5 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.

B12.6 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.

### **B13. BID SECURITY**

B13.1 The Bidder shall include in its Bid Submission bid security in the form of a digital 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 Form G1: Bid Bond and Agreement to Bond, available on The City of Winnipeg, Corporate Finance, Materials Management Division website at <https://www.winnipeg.ca/MatMgt/templates/files/eBidsecurity.pdf>.

B13.2 Bid security shall be submitted in a digital format meeting the following criteria:

- (a) The version submitted by the Bidder must have valid digital signatures and seals;
- (b) The version submitted by the Bidder must be verifiable by the City with respect to the totality and wholeness of the bond form, including: the content; all digital signatures and digital seals; with the surety company, or an approved verification service provider of the surety company.
- (c) The version submitted must be viewable, printable and storable in standard electronic file formats compatible with the City, and in a single file. Allowable formats include pdf.
- (d) The verification may be conducted by the City immediately or at any time during the life of the bond and at the discretion of the City with no requirement for passwords or fees.
- (e) The results of the verification must provide a clear, immediate and printable indication of pass or fail regarding B13.2(a).

B13.3 Bonds failing the verification process will not be considered to be valid and the bid shall be determined to be non-responsive in accordance with B17.1(a).

B13.4 Bonds passing the verification process will be treated as original and authentic.

B13.4.1 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.

B13.5 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 formed with 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.

B13.6 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Tender.

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

B14.1 Bids will not be opened publicly.

B14.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the MERX website at [www.merx.com](http://www.merx.com).

B14.3 After award of Contract, the name(s) of the successful Bidder(s) and their Contract amount(s) will be available on the MERX website at [www.merx.com](http://www.merx.com).

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

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

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

B15.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid/Proposal.

B15.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly formed 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/Proposal.

#### **B16. WITHDRAWAL OF BIDS**

B16.1 A Bidder may withdraw his/her Bid without penalty prior to the Submission Deadline.

#### **B17. EVALUATION OF BIDS**

B17.1 Award of the Contract shall be based on the following bid evaluation criteria:

- (a) compliance by the Bidder with the requirements of the Tender, or acceptable deviation therefrom (pass/fail);
- (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B12 (pass/fail);
- (c) Total Bid Price;

- (d) economic analysis of any approved alternative pursuant to B6.
- B17.2 Further to B17.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities, if the interests of the City so require.
- B17.2.1 Any bid with an apparent imbalance between the unit prices in Part 1 and Part 2 and Part 3 may be determined to be non-responsive and rejected by the Award Authority in its sole discretion, acting reasonably.
- B17.3 Further to B17.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is qualified.
- B17.4 Further to B17.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.
- B17.4.1 Further to B17.1(a), in the event that a unit price is not provided on Form B: Prices, the City may determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.
- B17.4.2 Bidders are advised that the calculation indicated in B17.4 will prevail over the Total Bid Price entered in MERX.

## **B18. AWARD OF CONTRACT**

- B18.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B18.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be qualified, and the Bids are determined to be responsive.
- B18.2.1 Without limiting the generality of B18.2, the City will have no obligation to award a Contract where:
- (a) the prices exceed the available City funds for the Work;
  - (b) the prices are materially in excess of the prices received for similar work in the past;
  - (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;
  - (d) only one Bid is received; or
  - (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.
- B18.3 Where an award of Contract is made by the City, the award shall be made to the qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B17.
- B18.3.1 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.
- B18.4 As noted in D3 and identified in Form B: Prices, the Work of Part 2 will be contingent upon the Province approving funding for the Work. If sufficient funding for Part 2 Work is not approved by the Province the City shall have the right to eliminate all or any portion of Part 2 Work in accordance with D2.
- B18.5 As noted in D3 and identified in Form B: Prices, the Work of Part 3 will be contingent upon Manitoba Hydro approving funding for the Work. If sufficient funding for Part 3 Work is not approved by Manitoba Hydro the City shall have the right to eliminate all or any portion of Part 3 Work in accordance with D2.

## PART C - GENERAL CONDITIONS

### C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for Construction* (Revision 2020-01-31) 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 Tender to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for Construction*.

## **PART D - SUPPLEMENTAL CONDITIONS**

### **GENERAL**

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

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

#### **D2. FORM OF CONTRACT DOCUMENTS**

D2.1 Notwithstanding C4.1(c) and C4.4, the Contract Documents will be provided to the Contractor electronically and there will be no requirement for execution and return to the City by the Contractor. Accordingly, the provisions under C4.4(a) and C4.4(b) are no longer applicable.

#### **D3. SCOPE OF WORK**

D3.1 The Work to be done under the Contract shall consist of three parts:

- (a) Part 1 – City Funded Work
- (b) Part 2 – Provincially Funded Work.
- (c) Part 3 – Manitoba Hydro Funded Work

##### **Part 1 – Confirmed Provincially Funded Work**

D3.2 Part 1 – Confirmed Provincially Funded Work shall consist of:

- (a) Riverbank Stabilization Works
  - (i) Construction of temporary access ramp(s) and working platform;
  - (ii) Drilling of rockfill column shafts;
  - (iii) Supply, placement and compaction of rockfill for rockfill columns
  - (iv) Excavation of rockfill ribs
  - (v) Supply, placement and compaction of rockfill for rockfill ribs;
  - (vi) Removal of temporary access ramp(s) and reshaping of riverbank;

##### **Part 2 –Work Contingent on Provincial Funding**

D3.3 Part 2 – Provincially Funded Work shall consist of:

- (a) Riverbank Grading
  - (i) Pathway Embankment Construction
  - (ii) Riverbank Grading
  - (iii) Supply and Placement of topsoil (planting medium)
  - (iv) Supply and Installation of Erosion Control Blanket
- (b) Road and Pathway Works
  - (i) Removal of existing asphalt pavement and curbs.
  - (ii) Barrier curb and gutter renewal (150 mm curb height).
  - (iii) Placement of base course material on roadway
  - (iv) Placement of asphalt pavement for roadway (Type 1A, 100 mm thick (2 lifts))
  - (v) Placement of separation/ filtration geotextile fabric, subbase material, Class B geogrid and base course for pathway.
  - (vi) Adjustment of existing manhole frame and covers
  - (vii) Placement of asphalt pavement for pathway (Type 1A, 75 mm thick (1 lift)).

(c) Large Caliper Tree Plantings

**Part 3 –Work Contingent on Manitoba Hydro Funding**

D3.4 Part 3 – Manitoba Hydro Funded Work shall consist of:

(a) Streetlighting and Associated Works

- (i) Installation of temporary overhead feeds
- (ii) Removal of existing street lighting poles
- (iii) Installation of concrete bases
- (iv) Installation of new street lighting cables (trenching and/or boring) and poles (including connections)

D3.5 The City currently has no approved funding in the Capital Budget for Part 2 of the Work, but is anticipating receiving notification about funding from the Province of Manitoba by late December 2020. Part 2 of the Work is contingent upon the Province approving sufficient funding.

D3.5.1 Further to C7.1, if notice of sufficient Provincial funding is not received, the City shall have the right to eliminate all or any portion of Part 2, and the Contract Price will be reduced accordingly.

D3.5.2 Further to C7.5, C7.5.1, and C7.6, a reduction in the Contract Price pursuant to D3.5.1 shall not be considered in calculating the aggregate reduction in the Contract Price for purposes of C7.5.

D3.5.3 If all or any portion of Part 2 is eliminated pursuant to D3.5.1, the time periods stipulated in D20 for Substantial Performance of the Work and in D21 for Total Performance of the Work will be reduced proportionally by the Contract Administrator acting reasonably.

D3.6 The City currently has no approved funding in the Capital Budget for Part 3 of the Work, but is anticipating receiving notification about funding from Manitoba Hydro by late December 2020. Part 3 of the Work is contingent upon Manitoba Hydro approving sufficient funding.

D3.6.1 Further to C7.1, if notice of sufficient Manitoba Hydro funding is not received, the City shall have the right to eliminate all or any portion of Part 3, and the Contract Price will be reduced accordingly.

D3.6.2 Further to C7.5, C7.5.1, and C7.6, a reduction in the Contract Price pursuant to D3.6.1 shall not be considered in calculating the aggregate reduction in the Contract Price for purposes of C7.5.

D3.6.3 If all or any portion of Part 3 is eliminated pursuant to D3.6.1, the time periods stipulated in D20 for Substantial Performance of the Work and in D21 for Total Performance of the Work will be reduced proportionally by the Contract Administrator acting reasonably.

**D4. CONTRACT ADMINISTRATOR**

D4.1 The Contract Administrator is TREK Geotechnical Inc., represented by:

Michael Van Helden, P.Eng.  
Senior Geotechnical Engineer

Telephone No. 204 975 9433

Email Address [mvanhelden@trekgeotechnical.ca](mailto:mvanhelden@trekgeotechnical.ca)

D4.2 At the pre-construction meeting, Michael Van Helden, P.Eng. will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

**D5. CONTRACTOR'S SUPERVISOR**

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

D5.2 At least two (2) Business Days prior to the commencement of any Work on the site, the Contractor shall provide the Contract Administrator with a phone number where the supervisor identified in D5.1 or an alternate can be contacted twenty-four (24) hours a day to respond to an emergency.

**D6. NOTICES**

D6.1 Except as provided for in C22.4, 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/Proposal.

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 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator identified in D4.

D6.3 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following facsimile number:

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

## **D7. FURNISHING OF DOCUMENTS**

- D7.1 Upon award of the Contract, the Contractor will be provided with 'issued for construction' Contract Documents electronically, including Drawings in PDF format only.

## **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 Documents, if applicable.
- D9.2 The Safe Work Plan shall be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/safety/default.stm>
- D9.3 Notwithstanding B12.4 at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated COR Certificate or Annual Letter of good Standing. A Contractor, who fails to provide a satisfactory COR Certificate or Annual Letter of good Standing, will not be permitted to continue to perform any Work.

### **D10. INSURANCE**

- D10.1 The Contractor shall provide and maintain the following insurance coverage until Total Performance unless otherwise stated below:
- (a) Wrap up liability insurance, in the amount of at least two million five hundred dollars (\$2,500,000.00) inclusive, written in the joint names of the City, the Contractor, all subcontractors, consultants and sub-consultants involved in the Project. Such policy shall include a cross-liability clause, contractual liability, unlicensed motor vehicle liability, non-owned automobile liability, broad form property damage cover and products and completed operations. Manitoba its Ministers, officers, servants, employees and agents shall be added as additional insureds. Such policy to remain in place at all times during the performance of the Work and shall include 24 months completed operations which will commence after Total Performance;
  - (b) Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the 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;
  - (d) Contractor's pollution liability Insurance in the amount of at least one million dollars (\$1,000,000.00) per occurrence including clean up costs, and transported cargo as a result of pollution conditions arising from the Contractor's operations and completed operations. Such policy shall name the City and Manitoba as an additional insureds.

- D10.2 Deductibles shall be borne by the Contractor.
- D10.3 All policies shall be taken out with insurers duly licensed to carry on business in the Province of Manitoba.
- D10.4 The Contractor shall provide the City Solicitor with a certificate(s) of insurance for both the City and Manitoba, 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 the C4.1 for the return of the executed Contract Documents, as applicable.
- D10.5 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.
- D11.1.1 Where the contract security is a performance bond, it may be submitted in hard copy or digital format. If submitted in digital format the contract security must meet the following criteria:
- (a) the version submitted by the Contractor must have valid digital signatures and seals;
  - (b) the version submitted by the Contractor must be verifiable by the City with respect to the totality and wholeness of the bond form, including: the content; all digital signatures and digital seals; with the surety company, or an approved verification service provider of the surety company.
  - (c) the version submitted must be viewable, printable and storable in standard electronic file formats compatible with the City, and in a single file. Allowable formats include pdf.
  - (d) the verification may be conducted by the City immediately or at any time during the life of the bond and at the discretion of the City with no requirement for passwords or fees.
  - (e) the results of the verification must provide a clear, immediate and printable indication of pass or fail regarding D11.1(b).
- D11.1.2 Digital bonds failing the verification process will not be considered to be valid and may be determined to be an event of default in accordance with C18.1. If a digital bond fails the verification process, the Contractor may provide a replacement bond (in hard copy or digital format) within seven (7) Calendar Days of the City's request or within such greater period of time as the City in its discretion, exercised reasonably, allows.
- D11.1.3 Digital bonds passing the verification process will be treated as original and authentic.

- 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 an award letter 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 Documents, if applicable.
- 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 or prior to a pre-construction meeting, or 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 C4.1 for the return of the executed Contract Documents, if applicable.

## **D13. EQUIPMENT LIST**

- D13.1 The Contractor shall provide the Contract Administrator with a complete list of the equipment which the Contractor proposes to utilize (Form K: Equipment List) at or prior to a pre-construction meeting, or 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 C4.1 for the return of the executed Contract Documents, if applicable.

## **D14. DETAILED WORK SCHEDULE**

- D14.1 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 Documents, as applicable.
- D14.2 If, prior to submitting the Detailed Work Schedule, the Contractor does not receive notification pursuant to D15.4 that all or some portion of Part 2 and/or 3 of the Work may be commenced, he/she shall complete the Detailed Work Schedule for only Part 1 of the Work assuming that, if all of Part 2 is eliminated, the time periods stipulated in D20 for Substantial Performance of the Work and in D21 for Total Performance of the Work will be reduced reasonably by the Contract Administrator.
- D14.3 If, after submitting the Detailed Work Schedule, the Contractor receives notification that all or any portion of Parts 2 or 3 of the Work may be commenced, he/she shall submit a revised Detailed Work Schedule no later than two (2) Business Days from receipt of the notification.
- D14.4 The detailed work schedule shall consist of the following:
- (a) a critical path method (C.P.M.) schedule for the Work;
  - (b) a Gantt chart for the Work based on the C.P.M. schedule; and
- all acceptable to the Contract Administrator.

D14.5 Further to D14.4(b), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

## **SCHEDULE OF WORK**

### **D15. COMMENCEMENT**

D15.1 The Contractor shall not commence any Work until he/she is in receipt of an award letter 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 twenty-four (24) hour emergency response phone number specified in D5.2.
  - (iv) the Safe Work Plan specified in D9;
  - (v) evidence of the insurance specified in D10;
  - (vi) the contract security specified in D10.1;
  - (vii) the subcontractor list specified in D12;
  - (viii) the equipment list specified in D13; and
  - (ix) the detailed work schedule specified in D14.
- (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 award letter.

D15.4 The Contractor shall not commence Part 2 of the Work as described in D3 and identified in Form B: Prices, unless he/she has received notification from the Contract Administrator that the City has received notice of sufficient funding from the Province.

D15.5 The Contractor shall not commence Part 3 of the Work as described in D3 and identified in Form B: Prices, unless he/she has received notification from the Contract Administrator that the City has received notice of sufficient funding from the Manitoba Hydro.

D15.6 The City intends to award this Contract by December 23, 2020.

D15.6.1 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

### **D16. RESTRICTED WORK HOURS**

D16.1 Further to clause 3.10 of CW 1130, the Contractor shall require written permission forty-eight (48) hours in advance from the Contract Administrator for any work to be performed between 2000 hours and 0700 hours, or on Saturdays, Sundays, Statutory Holidays and or Civic Holidays.

### **D17. WORK BY OTHERS**

D17.1 Work by others on or near the Site will include but not necessarily be limited to:

- (a) Manitoba Hydro – inspection of street lighting work;

- (b) City of Winnipeg Naturalist Services – grass seed placement and planting of shrubs and small diameter trees on riverbank;
- (c) Contract Administrator – Instrumentation monitoring, repair and/ or installation of new riverbank instrumentation;

## **D18. SEQUENCE OF WORK**

D18.1 Further to C6.1, the sequence of work shall be as follows:

D18.1.1 The Work shall be divided into three stages. Each stage is further subdivided into major items of work.

- (a) **Stage I – Riverbank Stabilization Works**
  - (i) Site Development
  - (ii) Rockfill Columns
  - (iii) Rockfill Ribs
- (b) **Stage II – Pathway Construction and Associated Works**
  - (i) Embankment Construction
  - (ii) Street Light Relocation
  - (iii) Pathway Construction
- (c) **Stage III – Site Restoration Works**
  - (i) Site Restoration

D18.1.2 Maintain the existing street lighting on Lyndale Drive at all times until the proposed street lighting is complete. Any damage caused to the existing street lighting shall be repaired at the Contractor's own cost

D18.1.3 Commence rockfill column installation at the downstream end of the project site, proceeding in an upstream direction, unless otherwise approved by the Contract Administrator.

D18.1.4 No roadworks shall commence on Lyndale Drive until June 20, 2021 due to the potential Manitoba Marathon.

D18.1.5 Riverbank grading and placement of topsoil shall be complete prior to construction of asphalt pathways and roadway curb and pavement repairs.

D18.1.6 Following installation of topsoil on riverbank, the Contractor shall allow the City of Winnipeg to proceed with seeding and planting of shrubs and trees.

## **D19. CRITICAL STAGES**

D19.1 The Contractor shall achieve Critical Stages of the Work in accordance with the following requirements:

- (a) "Riverbank Stabilization" as defined in D3.2(a) must be complete by March 10, 2021.
- (b) "Road and Pathway Works" as defined in D3.3(a) must be complete by July 15, 2021.

D19.2 When the Contractor considers the Work associated with the Critical Stages to be completed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Completion. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.

D19.3 The date on which the Critical Stages have been accepted by the Contract Administrator as being completed to the requirements of the Contract is the date on which completion of the Critical Stage has been achieved.

## **D20. SUBSTANTIAL PERFORMANCE**

D20.1 The Contractor shall achieve Substantial Performance by September 1, 2021.

D20.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.

D20.3 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.

## **D21. TOTAL PERFORMANCE**

D21.1 The Contractor shall achieve Total Performance by September 30, 2021.

D21.2 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 re-inspected.

D21.3 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.

## **D22. LIQUIDATED DAMAGES**

D22.1 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 Calendar Day for each and every Calendar Day following the days fixed herein for same during which such failure continues:

- (a) "Riverbank Stabilization" D19.1(a) – three thousand dollars (\$3,000)
- (b) "Road and Pathway Works" D19.1(b) – three thousand dollars (\$3,000)
- (c) Substantial Performance – three thousand dollars (\$3,000)
- (d) Total Performance – one thousand dollars (\$1,000)

D22.2 The amounts specified for liquidated damages in D22.1 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.

D22.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

### **D23. COVID-19 SCHEDULE DELAYS**

D23.1 The City acknowledges that the schedule for this Contract may be impacted by the COVID-19 pandemic. Commencement and progress of the Work shall be performed by the Contractor with due consideration to the health and safety of workers and the public, directives from health authorities and various levels of government and in close consultation with the Contract Administrator.

D23.2 If the Contractor is delayed in the performance of the Work by reason of the COVID-19 pandemic, the Work schedule may be adjusted by a period of time equal to the time lost due to such delay and costs related to such delay will be determined as identified herein.

D23.3 A minimum of seven (7) Calendar Days prior to the commencement of Work, the Contractor shall declare whether COVID-19 will affect the start date. The Contractor shall provide sufficient evidence that the delay is directly related to COVID-19, including but not limited to evidence related to availability of staff, availability of Material or work by others.

D23.4 For any delay related to COVID-19 and identified after Work has commenced, the Contractor shall within seven (7) Calendar Days of becoming aware of the anticipated delay declare the additional delay and shall provide sufficient evidence as indicated in D23.3. Failure to provide this notice will result in no additional time delays being considered by the City.

D23.5 The Work schedule, including the durations identified in D19 to D21 where applicable, will be adjusted to reflect delays accepted by the Contract Administrator. No additional payment will be made for adjustment of schedules except where seasonal work, not previously identified in the Contract, is carried over to the following construction season.

D23.6 Where Work not previously identified is being carried over solely as a result of delays related to COVID-19, as confirmed by the Contract Administrator, the cost of temporary works to maintain the Work in a safe manner until Work recommences, will be considered by the Contract Administrator. Where the Work is carried over only partially due to COVID-19, a partial consideration of the cost of temporary works will be considered by the Contract Administrator.

D23.7 Any time or cost implications as a result of COVID-19 and in accordance with the above, as confirmed by the Contract Administrator, shall be documented in accordance with C7.

### **D24. SCHEDULED MAINTENANCE**

D24.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

- (a) Reflective Crack Sealing during one year warranty as specified in CW3250;
- (b) Sodding as specified in CW3510;
- (c) Trees, shrubs and groundcover plantings as specified in E22;
- (d) Landscape maintenance as specified in E22.

- D24.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

## **CONTROL OF WORK**

### **D25. JOB MEETINGS**

- D25.1 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.
- D25.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

### **D26. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)**

- D26.1 Further to C6.26, 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).

### **D27. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS**

- D27.1 Further to B12.4, 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 B12.4.

### **D28. LAYOUT OF WORK**

- D28.1 Further to C6, the Contract Administrator shall layout the Work.
- D28.2 The Contractor shall carefully protect and preserve all benchmarks, stakes, and other items of the basic data supplied by the Contract Administrator. Any such benchmarks or stakes removed or destroyed by the Contractor, without the consent of the Contract Administrator, shall be replaced by the Contract Administrator at the expense of the Contractor.

## **MEASUREMENT AND PAYMENT**

### **D29. PAYMENT**

- D29.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

### **D30. DAMAGE TO EXISTING STRUCTURES AND PROPERTY**

- D30.1 Further to Section 3.13 of CW 1130 of the General Requirements, special care will be taken to avoid damage to existing adjacent structures and properties during the course of Work.
- D30.2 Any damage caused by the Contractor or his Subcontractors to the adjacent structure properties shall be promptly repaired by the Contractor at his own expense to the satisfaction of the Contract Administrator.

### **D31. PROTECTION OF HERITAGE RESOURCES**

- D31.1 The Contractor shall inform the Contract Administrator of any materials, items or conditions discovered during the course of the Work that could be of historical or archaeological significance.
- D31.2 The Contractor is advised that there may be temporary delays in construction to provide the Archaeologist an opportunity to evaluate and document conditions of possible archaeological significance. In this event, every effort shall be taken to minimize the impacts on the Contractor's operations.
- D31.3 The Contractor shall cooperate fully with the Contract Administrator and the Archaeologist by promptly reporting any unusual conditions encountered during construction and assisting in the evaluation and documentation of archaeological information.

### **WARRANTY**

#### **D32. WARRANTY**

- D32.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) year thereafter, except where longer warranty periods are specified in the respective Specification sections, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.
- D32.1.1 For the purpose of contract security, the warranty period shall be one (1) year.
- D32.2 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 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.
- D32.2.1 In such case, the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

### **THIRD PARTY AGREEMENTS**

#### **D33. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS**

- D33.1 Funding for the Work of the Contract is being provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada and accordingly, as required by the applicable funding agreements, the following terms and conditions shall apply.
- D33.2 For the purposes of D33:
- (a) **"Government of Canada"** includes the authorized officials, auditors, and representatives of the Government of Canada; and
  - (b) **"Government of Manitoba"** includes the authorized officials, auditors, and representatives of the Government of Manitoba.
- D33.3 Indemnification By Contractor
- D33.3.1 In addition to the indemnity obligations outlined in C17 of the General Conditions for Construction, the Contractor agrees to indemnify and save harmless the Government of Canada and the Government of Manitoba and each of their respective Ministers, officers, servants, employees, and agents from and against all claims and demands, losses, costs, damages, actions, suit or other proceedings brought or pursued in any manner in respect of any matter caused by the Contractor or arising from this Contract or the Work, or from the goods or services provided or required to be provided by the Contractor, except those

resulting from the negligence of any of the Government of Canada's or the Government of Manitoba's Ministers, officers, servants, employees, or agents, as the case may be.

#### D33.4 Records Retention and Audits

D33.4.1 The Contractor shall maintain and preserve accurate and complete records in respect of this Contract and the Work, including all accounting records, financial documents, copies of contracts with other parties and other records relating to this Contract and the Work during the term of the Contract and for at least six (6) years after Total Performance. Those records bearing original signatures or professional seals or stamps must be preserved in paper form; other records may be retained in electronic form.

D33.4.2 In addition to the record keeping and inspection obligations outlined in C6 of the General Conditions for Construction, the Contractor shall keep available for inspection and audit at all reasonable times while this Contract is in effect and until at least six (6) years after Total Performance, all records, documents, and contracts referred to in D33.4.1 for inspection, copying and audit by the City of Winnipeg, the Government of Manitoba and/or the Government of Canada and their respective representatives and auditors, and to produce them on demand; to provide reasonable facilities for such inspections, copying and audits, to provide copies of and extracts from such records, documents, or contracts upon request by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada and their respective representatives and auditors, and to promptly provide such other information and explanations as may be reasonably requested by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada from time-to-time.

#### D33.5 Other Obligations

D33.5.1 The Contractor consents to the City providing a copy of the Contract Documents to the Government of Manitoba and/or the Government of Canada upon request from either entity.

D33.5.2 If the Lobbyists Registration Act (Manitoba) applies to the Contractor, the Contractor represents and warrants that it has filed a return and is registered and in full compliance with the obligations of that Act, and covenants that it will continue to comply for the duration of this Contract.

D33.5.3 The Contractor shall comply with all applicable legislation and standards, whether federal, provincial, or municipal, including (without limitation) labour, environmental, and human rights laws, in the course of providing the Work.

D33.5.4 The Contractor shall properly account for the Work provided under this Contract and payment received in this respect, prepared in accordance with generally accepted accounting principles in effect in Canada, including those principles and standards approved or recommended from time-to-time by the Chartered Professional Accountants of Canada or the Public Sector Accounting Board, as applicable, applied on a consistent basis.

D33.5.5 The Contractor represents and warrants that no current or former public servant or public office holder, to whom the Value and Ethics Code for the Public Sector, the Policy on Conflict of Interest and Post Employment, or the Conflict of Interest Act applies, shall derive direct benefit from this Contract, including any employment, payments, or gifts, unless the provision or receipt of such benefits is in compliance with such codes and the legislation.

D33.5.6 The Contractor represents and warrants that no member of the House of Commons or of the Senate of Canada or of the Legislative Assembly of Manitoba is a shareholder, director or officer of the Contractor or of a Subcontractor, and that no such member is entitled to any benefits arising from this Contract or from a contract with the Contractor or a Subcontractor concerning the Work.

**FORM H1: PERFORMANCE BOND**  
(See D10.1)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

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

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

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

TENDER NO. 779-2020

RIVERBANK STABILIZATION ALONG LYNDAL DRIVE – BIRCHDALE AVE TO CLAREMONT AVE  
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 D10.1)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

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

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

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

TENDER NO. 779-2020

RIVERBANK STABILIZATION ALONG LYNDAL DRIVE – BIRCHDALE AVE TO CLAREMONT AVE

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
  - (i) 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;

- (ii) 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;
  - (iii) 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)



**FORM K: EQUIPMENT**  
(See D13)

RIVERBANK STABILIZATION ALONG LYNDALE DRIVE – BIRCHDALE AVE TO CLAREMONT AVE

<p><b>1. Category/type: Rockfill Column Drill Rig(s)</b></p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p><b>2. Category/type: Rockfill Column Vibratory Compaction Equipment</b></p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p><b>3. Category/type: Rockfill Rib Excavation and Compaction Equipment</b></p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>

**FORM K: EQUIPMENT**  
(See D13)

RIVERBANK STABILIZATION ALONG LYNDALE DRIVE – BIRCHDALE AVE TO CLAREMONT AVE

<p><b>4. Category/type:</b></p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p><b>5. Category/type:</b></p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p><b>6. Category/type:</b></p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>

## PART E - SPECIFICATIONS

### GENERAL

#### E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

- E1.1 These Specifications shall apply to the Work.
- E1.2 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.
- E1.2.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/Spec/Default.stm>
- E1.2.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.
- E1.2.3 Further to C2.4(d), Specifications included in the Tender shall govern over *The City of Winnipeg Standard Construction Specifications*.
- E1.3 Bidders are reminded that requests for approval of substitutes as an approved equal or an approved alternative shall be made in accordance with B6. In every instance where a brand name or design specification is used, the City will also consider approved equals and/or approved alternatives in accordance with B6.
- E1.4 The following are applicable to the Work:

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
PPD-WAT-779-2020-00-R0	Cover Sheet and Location Plan	A1
<u>Existing Conditions</u>		
PPD-WAT-779-2020-01-R0	Birchdale Avenue to Lawndale Avenue	A1
PPD-WAT-779-2020-02-R0	Lawndale Avenue to Ferndale Avenue	A1
PPD-WAT-779-2020-03-R0	Ferndale Avenue to Claremont Avenue	A1
<u>Riverbank Stabilization</u>		
PPD-WAT-779-2020-04-R0	Riverbank Stabilization Works – General Layout	A1
PPD-WAT-779-2020-05-R0	Riverbank Stabilization – Work Platform Layout and Profiles	A1
PPD-WAT-779-2020-06-R0	Riverbank Stabilization – Temporary Access and Work Platform	A1
PPD-WAT-779-2020-07-R0	Riverbank Stabilization – Plan and Sections	A1
PPD-WAT-779-2020-08-R0	Riverbank Stabilization – Plan and Sections	A1
PPD-WAT-779-2020-09-R0	Riverbank Stabilization – Plan and Sections	A1
<u>Road and Pathway Works</u>		
PPD-WAT-779-2020-10-R0	Birchdale Ave to STA 0+695	A1
PPD-WAT-779-2020-11-R0	STA 0+695 to STA 0+830	A1
PPD-WAT-779-2020-12-R0	STA 0+830 to Claremont Ave	A1
<u>Riverbank Revegetation</u>		
PPD-WAT-779-2020-13-R0	Revegetation Layout	A1

#### E2. MOBILIZATION AND DEMOBILIZATION

- E2.1 Description
- E2.1.1 This Specification shall cover all operations relating to the mobilization and demobilization of the contractor to the site, as specified herein
- E2.1.2 The Work to be done by the Contractor under this specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all

things necessary for and incidental to the satisfactory performance and completion of all works as hereinafter specified.

## E2.2 Materials

E2.2.1 The Contractor shall be responsible for the supply, safe storage and handling of all materials as set forth in this specification.

## E2.3 Construction Methods

E2.3.1 The Contractor shall obtain written permission from private property owners for any use of private property. A copy of written permission shall be provided to the Contract Administrator prior us of the property in question.

E2.3.2 The Contractor's Site supervisor is required to carry at all times a cellular telephone, with voice mail.

E2.3.3 This section also includes travel and accommodation, set-up and demobilization of site offices, storage conveniences and other temporary facilities, construction plant, and other items not required to form part of the permanent works and not covered by other prices.

## E2.4 Measurement and Payment

E2.4.1 Mobilization and demobilization will be paid for on a Lump Sum basis under "Mobilization and Demobilization," which price will be payment in full for supplying all materials and performing all operations herein described and all other items incidental to the Work included in this Specification and accepted by the Contract Administrator.

E2.4.2 Mobilization and demobilization will be paid for at a percentage of the Contract Lump Sum Price for "Mobilization and Demobilization" specified as follows:

- (a) 50% when the Contract Administrator is satisfied that construction has commenced;
- (b) 40% when Substantial Performance has been met;
- (c) 10% when Total Performance has been met.

## E3. BACKGROUND REPORTS

E3.1 Further to C3.1, a geotechnical report, including test hole logs, and a hydrologic / hydraulic report are provided to aid the Contractor's evaluation of the existing soil conditions and river hydraulics. The reports are contained in Appendix 'A'.

## E4. WATERWAY PERMIT

E4.1 All Works fall within 107 metres of the regulated summer water level of the Red River and therefore, a Waterways Permit is required. The Contract Administrator will obtain the required Waterway Permits for the Work detailed herein. The Contractor shall make themselves aware of and adhere to all conditions imposed by the permit.

E4.2 Under no circumstances will stockpiling of any material be permitted within 107 metres of the regulated summer water level of the Red River without the approval of the Contract Administrator.

## E5. OFFICE FACILITIES

E5.1 The Contractor shall supply office facilities meeting the following requirements:

- (a) The field office shall be for the exclusive use of the Contract Administrator.
- (b) The building shall be conveniently located near the site of the Work.
- (c) The building shall have a minimum floor area of 20 square metres, a height of 2.4 m with two windows for cross ventilation 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 either 16-18°C or 24-25°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 one desk, table 3m x 1.2m, one four drawer legal size filing cabinet and a minimum of 8 chairs.
- (g) A portable toilet shall be located near the field office building. The toilet shall have a locking door and be for the exclusive use of the Contract Administrator and other personnel from the City.
- (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 he/she deems it necessary. The Contractor shall be responsible for all installation and removal costs, all operating costs, and the general maintenance of the office facilities.

E5.2 The office facilities will be provided from the date of the commencement of the Work to the date of Total Performance.

E5.3 Measurement and Payment

- (a) Office facilities shall be considered incidental to Mobilization and Demobilization and no additional measurement payments will be made for work described in this specification.

## **E6. PROTECTION OF RIVERBANK INSTRUMENTATION**

E6.1 The Contractor is advised that geotechnical instrumentation are present at the locations shown on the Drawings. During the course of the Work, the Contract Administrator may have additional instrumentation installed to monitor riverbank performance.

E6.2 The Contractor shall take necessary precautions to prevent damage to the existing or any newly installed geotechnical instrumentation as a result of their Work.

E6.3 The Contractor shall facilitate any work by others necessary to modify existing instrumentation, to maintain operation of the instrumentation or to install new instrumentation.

E6.4 The Contractor shall repair or replace instrumentation damaged as a result of his Work at no cost to the City, including fees for supervision of instrumentation installation by the Contract Administrator.

E6.5 The Contractor is advised that monitoring of geotechnical instrumentation will be undertaken by the Contract Administrator during construction. Every effort will be made to schedule monitoring to avoid interruptions of the Contractor's work activities, however it may be necessary to temporarily suspend operation of equipment to reduce ground vibrations during monitoring.

E6.6 Measurement and Payment

- (a) Protection of riverbank instrumentation shall be considered incidental to Mobilization and Demobilization and no additional measurement payments will be made for work described in this specification.

## **E7. PROTECTION OF EXISTING TREES**

E7.1 Description

- (a) This Specification shall cover all operations relating to the protection of existing riverbank and boulevard trees during construction.
- (b) The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all

other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

**E7.2 Construction Methods**

**E7.2.1** Field-verify the presumed limits of work indicated on the Drawings, and flag all trees that require pruning or removal to facilitate the Work, subject to the Contract Administrator’s approval. Overhanging branches in the work zone shall only be pruned if they interfere with the Work. No trees may be removed or pruned without written approval from the Contract Administrator.

**E7.2.2** Trees within or adjacent to a construction area that are not approved for removal by the Contract Administrator must be protected during construction by means of a barrier surrounding a “Tree Protection Zone” (TPZ) as outlined in this specification.

**E7.2.3** Activities which are likely to injure or destroy the tree are not permitted within the TPZ.

**E7.2.4** Tree pruning or root pruning of City of Winnipeg owned trees may only be done by a Contractor approved by the project’s certified arborist or Urban Forestry Branch.

**E7.2.5** No objects may be attached to trees protected by City of Winnipeg by-laws without written authorization by the City of Winnipeg.

**E7.2.6** No City of Winnipeg tree or tree protected by a City of Winnipeg by-law may be removed without the written permission of the City of Winnipeg.

**E7.2.7 Tree Protection Zone**

Table 1 shows the minimum distance for determining a Tree Protection Zone (TPZ). Minimum protection distances are to be measured from the outside edge of the tree base toward the drip line, and may be limited by an existing paved surface, provided that surface remains intact through the construction period.

Some site conditions may dictate the need for a smaller TPZ. The City of Winnipeg Urban Forestry Branch must be notified in these instances to determine if a smaller TPZ is acceptable in the specific circumstance and advise of any additional tree protection or removal requirements.

**Table 1 – Tree Protection Zones**

Trunk Diameter at Breast Ht. (DBH)	Minimum Protection Distance Required
<10 cm	2.0m
11-40cm	2.4m
41-50cm	3.0m
51-60cm	3.6m
61-70cm	4.2m
71-80cm	4.8m
81-90cm	5.4m
91-100cm+	6.0m

**E7.2.8 Tree Protection Barriers**

(a) Tree protection barriers shall be erected around trees to be protected to keep crowns and branching structure clear from contact by equipment, materials, and activities; to preserve roots and soil condition in an intact and non-compacted state; and to identify the Tree Protection Zone in which no soil disturbance is permitted and activities are restricted, unless otherwise approved by the Contract Administrator.

(b) The required barrier is a 1.2 m high orange plastic web snow fencing on 50 mm x 100 mm frame or as directed by the City of Winnipeg Urban Forestry Branch in accordance with the City of Winnipeg Protection of Existing Tree Specifications. The barrier can be lowered around branches lower than 1.2 m. The barrier location can be adjusted to align with curbs and edges at clear path of travel zones.

- (c) Tree strapping material shall be installed on individual trees, in accordance with CW1140, where Work will be completed within the TPZ.
- (d) Tree protection barriers shall be erected prior to the commencement of any construction or grading activities on the site and are to remain in place throughout the entire duration of any adjacent work. The Contractor shall notify the City of Winnipeg prior to commencing any construction activities to confirm that the tree protection barriers are in place. Tree protection barriers shall be removed prior to the spring freshet and re-established in areas of future adjacent work following recession of high river levels.
- (e) All supports and bracing used to safely secure the barrier shall be located outside the TPZ and shall minimize damage to roots.
- (f) No grade change, storage of materials or equipment is permitted within the Tree Protection Zone. The tree protection barrier must not be removed without the written authorization of the City of Winnipeg.

E7.2.9 The Contractor shall take the following precautionary steps to prevent damage to existing trees:

- (a) Material shall not be stockpiled or vehicle and equipment parked on boulevards within 2 metres of trees.
- (b) Where authorized, operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the Work. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.
- (c) Take precautions to ensure tree limbs overhanging the Site are not damaged by construction equipment. Contact the Forestry Branch for consultation on pruning of overhanging or damaged limbs and branches and other unanticipated problems with trees during construction of the Works.

E7.2.10 Root Protection, Cutting and Care

- (a) Avoid cutting roots. If root cutting appears to be necessary, obtain approval from the Contract Administrator before proceeding. If required and approved, root pruning must be performed under the direction of the Forestry Branch.
- (b) Cut roots cleanly with sharp, sterilized hand tools to promote quick wound closure and regeneration.
- (c) Minimize damage by avoiding excavation during hot, dry weather.
- (d) Keep protected plants well watered before and after digging.
- (e) Cover exposed roots with approved temporary root cover material such as soil, mulch, or damp burlap immediately after exposure. Temporary root covers shall be kept damp as long as they are in place.

E7.2.11 American elm trees are not to 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.

E7.2.12 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the Forestry Branch. Damages must be repaired by an individual with a Manitoba Arborist licence or by the Forestry Branch.

E7.2.13 The Forestry Branch will remove and replace any trees deemed to have died or that are dying due to damage from carelessness during construction. Removal and compensation costs will be determined by size, market price of the largest transplantable tree of same or different species and may include appraised value of existing tree as determined by current

International Society of Arboriculture evaluation procedure presently used by Forestry Branch in conjunction with City Claims Branch. Estimated compensation of a 250mm and 600mm diameter American elm on a boulevard will be approximately \$4,700.00 and \$27,000.00 respectively.

**E7.3 Measurement and Payment**

- (a) Tree protection shall be considered incidental to Mobilization and Demobilization and no additional measurement payments will be made for work described in this specification.
- (b) Forestry compensation arising from damage or destruction of trees that are not approved for removal will be assessed by the Forestry Branch and shall be deducted from the Contractor's progress claims.

**E8. TRAFFIC CONTROL**

**E8.1 Further to clauses 3.6, 3.7 and 3.8 of CW 1130:**

- (a) Where directed by the Contract Administrator, the Contractor shall construct and maintain temporary asphalt ramps to alleviate vertical pavement obstructions such as manholes and planing drop-offs to the satisfaction of the Contract Administrator. Payment shall be in accordance with CW3410.
- (b) In accordance with the Manual of Temporary Traffic Control on City Streets (MTTC), the Contractor ("Construction Agency" in the manual) shall be responsible for placing, maintaining and removing the appropriate temporary traffic control devices as specified by the MTTC or by the Traffic Management Branch of the City of Winnipeg Public Works Department. The Contractor shall bear all costs associated with the placement of temporary traffic control devices by their own forces or subcontractor.

**E8.2 Notwithstanding E8.1, in accordance with the MTTC, the Contract Administrator shall make arrangements with the Traffic Services Branch of the City of Winnipeg to place, maintain, and remove all regulatory signs and traffic control devices authorized and/or required by the Traffic Management Branch in the following situations:**

- (a) Parking restrictions,
- (b) Stopping restrictions,
- (c) Turn restrictions,
- (d) Diamond lane removal,
- (e) Full or directional closures on a Regional Street,
- (f) Traffic routed across a median,
- (g) Full or directional closure of a non-regional street where there is a requirement for regulatory signs (turn restrictions, bus stop relocations, etc.) to implement the closure.
- (h) Approved Designated Construction Zones with a temporary posted speed limit reduction. Traffic Services will be responsible for placing all of the advance signs and 'Construction Ends' (TC-4) signs. The Contractor is still responsible for all other temporary traffic control including but not limited to barricades, barrels and tall cones.

**E8.2.1 An exception to E8.2 is the 'KEEP RIGHT/KEEP LEFT' sign (RB-25 / RB-25L) which shall be supplied, installed, and maintained by the Contractor at their own expense.**

**E8.2.2 Further to E8.2, where the Contract Administrator has determined that the services of the Traffic Services Branch are required, the City shall bear the costs associated with the placement of temporary traffic control devices by the Traffic Services Branch of the City of Winnipeg in connection with the works undertaken by the Contractor.**

**E9. TRAFFIC MANAGEMENT**

**E9.1 Further to clause 3.7 of CW 1130:**

- (a) Lyndale Drive may be closed to all traffic between, but not including, Birchdale Avenue and Monck Avenue. The Contractor shall sign the street "Road Closed" with reflectorized light barricades in accordance with the Manual of Temporary Traffic Control. This closure may remain in place from commencement until Total Performance, but shall be removed during prolonged periods (1 week or more) of non-working time (for example after the first Critical Stage).
- (b) Lawndale Avenue may be closed to all traffic from Lyndale Drive to the south side of the driveway access to 433 Lyndale Drive. Ferndale Avenue may be closed to all traffic from Lyndale Drive to the south side of the Lyndale Drive back alley. Claremont Avenue may be closed to all traffic from Lyndale Drive to the south side of the driveway access to 475 Lyndale Drive. The Contractor shall sign the streets "Road Closed" with reflectorized light barricades in accordance with the Manual of Temporary Traffic Control.
- (c) Should the contractor be unable to maintain pedestrian or vehicular access to a residence or business, they shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.
- (d) Pedestrian and ambulance/emergency vehicle access shall be maintained at all times.
- (e) Flag persons shall be provided as necessary to maintain the flow of traffic during certain work operations.

#### E9.2 Measurement and Payment

- (a) Traffic management shall be considered incidental to Mobilization and Demobilization and no additional measurement payments will be made for work described in this specification.

### **E10. REFUSE AND RECYCLING COLLECTION**

E10.1 While access to refuse and/or recycling collection vehicles is restricted, on collection day(s) the Contractor shall move all of the affected property owners refuse and/or recycling materials to a nearby common area, prior to an established time, in accordance with E10.2 to permit the normal collection vehicles to collect the materials. Immediately following recycling collection the Contractor shall return recycling receptacles to the addresses marked on the receptacles.

E10.2 Collection Schedule for Lyndale Drive is Tuesday (A).

E10.3 No measurement or payment will be made for the work associated with this specification.

### **E11. PEDESTRIAN SAFETY**

E11.1 During the project, the following measures shall be implemented by the Contractor:

- (a) Close the south sidewalk of Lyndale Drive to pedestrian traffic between, but not including, Birchdale Avenue and Monck Avenue. The Contractor shall sign the sidewalk "Sidewalk Closed" with reflectorized light barricades. Pedestrian traffic from the south sidewalk shall be diverted to the north gutter of Lyndale Drive using a continuous row of reflectorized light barricades extending from the sidewalk to the north gutter. This closure may remain in place from commencement until Total Performance, but shall be removed during prolonged periods (1 week or more) of non-working time (for example after the first Critical Stage).
- (b) Establish a 2 m wide pedestrian corridor along the north gutter of Lyndale Drive throughout the duration of the road closure. The corridor shall be delineated with tall cones spaced at approximately 6 m intervals. The sidewalks of Lawndale Avenue, Ferndale Avenue and Monck Avenue shall be kept open. The Contractor shall place a "Sidewalk Closed" sign and reflectorized light barricade where the cross-street sidewalks meet the delineated pedestrian corridor along Lyndale Drive.

- E11.2 The pedestrian corridor described in E11.1 shall be cleared of snow by the Contractor when required.
- E11.3 Install and maintain a temporary snow fence around any excavations, steep drop-offs, access ramps or other conditions hazardous to pedestrians.
- E11.4 Place a fence and appropriate signs as required for pedestrian safety during non- working hours to discourage public access to the Site.
- E11.5 Pedestrian safety will be considered incidental to Mobilization and Demobilization and no additional measurement or payment will be made for work described in this specification.

## **E12. WATER OBTAINED FROM THE CITY**

- E12.1 Further to clause 3.7 of CW 1120, the Contractor shall pay for all costs, including sewer charges, associated with obtaining water from the City in accordance with the Waterworks and Sewer By-laws.

## **E13. SURFACE RESTORATIONS**

- E13.1 Further to clause 3.3 of CW 1130, when Total Performance is not achieved in the year the Contract is commenced, the Contractor shall temporarily repair any Work commenced and not completed to the satisfaction of the Contract Administrator. The Contractor shall maintain the temporary repairs in a safe condition as determined by the Contract Administrator until permanent repairs are completed. The Contractor shall bear all costs associated with temporary repairs and their maintenance.

## **E14. SITE DEVELOPMENT**

### **E14.1 Description**

- E14.1.1 This Specification shall cover the following Site development items:

- (a) Construction of temporary access ramps and working platforms to undertake riverbank stabilization works.
- (b) Removal of existing trees, shrubs, temporary access ramps and working platforms prior to the spring freshet.
- (c) Re-establishment of temporary access as required to undertake work for riverbank grading, pathway construction and site restoration works.
- (d) Final removal of temporary access ramps and working platforms and regrading as shown on the Drawings.

- E14.1.2 The work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

### **E14.2 Submittals**

#### **E14.2.1 Site Access Plan**

- (a) A pre-approved site access plan is shown on the Drawings, which the Contractor may submit as their own along with any proposed modifications to the plan.
- (b) At least five (5) days prior to commencement of construction, submit a Site Access Plan for acceptance by the Contract Administrator to facilitate installation of riverbank stabilization works (rockfill columns and rockfill ribs). The Site Access Plan shall be sufficient to satisfy the Contract Administrator that the proposed access ramps and working platform will be in accordance with this Specification and will not adversely impact riverbank stability for the duration of the project. Acceptance of the Site Access Plan shall not diminish the Contractor's responsibility for development and

maintenance of site access, and adherence to the conditions of the City of Winnipeg Waterway Permit.

- (c) The Site Access Plan shall include a plan view layout, typical cross-sections, and sequencing of any access ramps from the top of the bank area onto the riverbank and any working platforms. Cuts and fills shall also be clearly shown in plan and cross-section. Any access to remain in place over the spring freshet shall be clearly identified.
- (d) As the work proceeds, provide any changes to the Site Access Plan to the Contract Administrator for review and acceptance prior to modifying the access works.

### E14.3 Materials

#### E14.3.1 Fill Material

- (a) The Contractor shall be responsible for supplying imported clean fill or granular materials, or other materials that the Contractor may deem suitable for its operations, for construction and maintenance of access ramps and working platforms. Any native soil excavated to offset imported fill materials shall be hauled and disposed off-site immediately.
- (b) Rockfill used for granular surfacing of working platforms and ramps may be accepted by the Contract Administrator for backfilling of rockfill columns or ribs, if the materials satisfy the specifications for rockfill as per E17.2.2 and E18.2

### E14.4 Construction Methods

#### E14.4.1 Site Access Development

The Contractor shall be responsible to develop and maintain suitable Site access. This includes but is not limited to, temporary bridging over structures, temporary removal and reinstallation of safety fencing, removal of existing trees and shrubs as shown on the Drawings, any landscaping and grading repairs necessary to restore any Site and construction access areas to their pre-existing topography, as accepted by the Contract Administrator.

- (a) An acceptable Site Access Plan is shown on the Drawings for riverbank stabilization works, which the Contractor may submit as their own. All temporary working platforms shall be constructed as shown on the Drawings. All ramps shall be constructed by balance of cut and fill within the extent of each ramp. Placement of net fill (if required) for temporary access ramps may only occur once rockfill columns downslope of the ramp have been constructed, as accepted by the Contract Administrator. Net ramp fill is defined as any additional fill necessary (beyond a balanced cut and fill within the extent of the ramp) to construct the access ramps.
- (b) The Site Access Plan shown on the Drawings assumes the sequence of work shown on the Drawings.
- (c) The Contractor may propose modifications to the acceptable Site Access Plan shown on the Drawings in which case the Contract Administrator may require that detailed construction access drawings be submitted for review and acceptance a minimum five (5) business days prior to any construction activity on Site. The Contractor shall retain a geotechnical engineer, at no cost to the City, to prepare the drawings and confirm the proposed modifications will not adversely impact riverbank stability.
- (d) The Contractor's Site access routes shall minimize tree removal. Any required tree removal shall be performed in accordance with E5.3. Potential modifications to the rockfill column layout that may reduce impacts to existing trees will be reviewed with the Contractor at the onset of construction.

#### E14.4.2 Waterways Permit for Temporary Access Works

- (a) The temporary access ramps and working platforms shown on the Drawings and described herein will be included in the Work covered under the Waterway Permit application for the Project. Any modifications to the limits or grades proposed by the

Contractor may require an application for a new or amended permit. Contact Kendall Thiessen, Ph. D., P.Eng., Riverbank Management Engineer, at 986-5159 for information regarding Waterways Permits.

- (b) Other than the original Waterway Permit for the Project paid for by the City of Winnipeg described in E14.4.2(a), the Contractor is responsible for obtaining and paying for all required permits and permissions that are necessary for Site Development, including any additional Waterways Permits from the City of Winnipeg.

#### E14.4.3 Protection of Existing Infrastructure

The Contractor shall be responsible for protection of existing infrastructure at the Site including above ground and buried infrastructure.

- (a) The Contractor is responsible to obtain any required utility clearances prior to commencement of the Works. Any damaged infrastructure shall be repaired at the Contractor's expense.

#### E14.4.4 Vegetation and Debris Removal

- (a) Existing vegetation shall not be removed without prior approval from the Contract Administrator. The Contractor shall load and haul off-site any removed vegetation and existing debris (e.g. deadfall), as well as debris deposited by the river, as required to undertake the work, and dispose of the material off Site immediately upon collection. Stockpiling of vegetation or debris is not be permitted except as permitted by the Contract Administrator.
- (b) Remove trees and shrubs as specified on the Drawings, in accordance with E5.3 and immediately dispose of off-site.
- (c) Tree stumps will be ground out to a depth of 150 mm below the normal surface level including all surface roots. Immediately after grinding each stump, the grindings must be removed from the work area.
- (d) Before commencement of any Work, consult with the Contract Administrator regarding which trees are designated to be removed. The Contractor shall cut down only trees and shrubs designated for removal.

#### E14.4.5 Snow Removal

Snow cover shall be cleared from the riverbank work areas and may be stockpiled on top of existing riprap above the winter ice level. All snow clearing and stockpile locations shall be subject to the acceptance of the Contract Administrator. Snow cleared from the street and upper bank areas shall be removed off-site or stockpiled at locations approved by the Contract Administrator.

#### E14.4.6 Safety Fence

Erect and maintain a safety fence for the duration of the project, to restrict access to the Site. The fence 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 site that a hazard exists. Fence construction on the riverbank shall consist of orange plastic safety fence with a minimum height of 1.2 metres supported by posts driven into the ground. The wood posts shall be sized and capable of maintaining the safety fence upright, regardless of conditions. Upon completion of the work, all fence materials shall be removed and disposed off-site.

#### E14.4.7 Stockpiling

- (a) The rate at which materials are delivered to the Site shall be controlled to minimize stockpiling and handling.
- (b) All stockpile locations shall be subject to prior approval by the Contract Administrator.
- (c) No more than 100 tonnes of material shall be placed in individual stockpiles on the working platforms where rockfill columns have not been installed and compacted. Larger stockpiles above completed rockfill columns or pre-existing rockfill ribs may be

approved by the Contract Administrator based on a review of their location relative to overall bank stability.

- (d) Stockpiles shall be removed from the working platform overnight unless placed on top of backfilled columns or pre-existing rockfill ribs.
- (e) Stockpiled material shall be handled and maintained in a manner that prevents contamination with other soils and materials, debris, and snow. Contaminated material shall be removed and replaced at the Contractor's expense.
- (f) Prevent release of fine grain sediments into the river.

#### E14.4.8 Site Access Restoration

- (a) Remove the access ramp(s) and working platform upon completion of riverbank stabilization works by reshaping to the original (pre-construction) riverbank grades shown on the Drawings.
- (b) Upon Substantial Completion, restore all riverbank areas disturbed by construction to original (pre-construction) conditions.

#### E14.5 Measurement and Payment

E14.5.1 Constructing, maintaining and removal of the access ramps and working platforms shall not be measured. This item of work shall be paid for at the Contract Lump Sum Price for "Site Development", which price shall be payment in full for supplying all materials and performing all operations herein described and all of the items incidental to the work included in this Specification and accepted by the Contract Administrator.

E14.5.2 Site Development will be paid for at a percentage of the Contract Lump Sum Price for "Site Development", specified as follows:

- (a) 40% when the Contract Administrator is satisfied that site development is complete for the commencement of slope stabilization works;
- (b) 30% when the Contract Administrator is satisfied that temporary access ramps and working platforms are removed following completion of slope stabilization works;
- (c) 30% when Substantial Performance has been met.

E14.5.3 Supply and placement of any imported fill or granular surfacing materials required for construction or maintenance of the temporary access ramps and working platforms shall be considered incidental to "Site Development" and no separate measurement or payment will be made.

E14.5.4 Hauling and disposal of surplus excavated materials shall be considered incidental to "Site Development" and no separate measurement or payment will be made.

E14.5.5 Removal and disposal of existing trees, shrubs and debris shall be considered incidental to "Site Development" and no separate measurement or payment will be made.

### **E15. SILT FENCE**

#### E15.1 Description

E15.1.1 This specification covers the erection of temporary silt fencing, which shall be installed and maintained at the locations shown on the Drawings to control runoff and minimize the release of detrimental silt loading to watercourses.

E15.1.2 The Scope of the work included in this specification is as follows:

- (a) Supply and Install temporary silt fencing at the locations as indicated on the Drawings, 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 clean-up 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.

## E15.2 Materials

### E15.2.1 Fence Posts

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

### E15.2.2 Filter Fabric

- (a) Filter Fabric shall be woven geotextile material specifically designed for a silt fence application, 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	0285 kN

Property	Test Method	Value
Trapezoid Tear	ASTM D 4533	0285 kN
UV Resistance	ASTM D 435	580%@500 hrs.
Apparent Opening Size	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.

### E15.2.3 Wire Mesh

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

### E15.2.4 Fencing Material Fasteners

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

## E15.3 Construction Methods

### E15.3.1 Ensure that no deleterious substances are discharged into the adjacent watercourse at any time during construction activities.

### E15.3.2 Silt Fence Installation

- (a) Excavate 150 x 150 anchor trench along alignment of silt fence as indicated. Note that riprap may be present in areas of anchor trench installation.
- (b) 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. 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.

- (c) Install and compact impermeable excavated materials into anchor trench and slope as indicated. Compact to 95% of maximum dry density (ASTM D-698).

E15.3.3 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. If silt fence is found to be loose or torn, repair or replace as necessary to comply with this Specification.
- (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.

E15.3.4 Silt Fence Removal

- (a) The silt fence shall remain in place until the erosion control blanket has been installed, as determined by the Contract Administrator, and shall be removed prior to the spring freshet.
- (b) Upon authorization of the Contract Administrator, remove all fence posts, wire mesh, fabric, and fasteners from Site.
- (c) Restore area disturbed without releasing any deleterious substances to the river.

E15.4 Measurement and Payment

- E15.4.1 No separate measurement or payment shall be made for silt fence supplied, installed and maintained under this Specification. This Work shall be incidental to "Site Development".

**E16. EROSION AND SEDIMENT CONTROL**

- E16.1 This Specification covers the supply, implementation and maintenance of erosion control measures during construction and not specifically covered in E15 to control the release of sediments into the river during and following construction.

- E16.2 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials equipment, tools, supplies, and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E16.3 Materials

- E16.3.1 Maintain a supply of erosion control products such as erosion control blankets, silt fencing, straw bales or mulch on Site at all times suitable for trapping and preventing sediments from entering the river during construction.

E16.4 Construction Methods

E16.4.1 Construction

- (a) Plan and carry out all Work in a manner that will mitigate the potential for the release of sediments into the river.
- (b) Sediment control measures shall satisfy the applicable requirements of Fisheries and Oceans Canada.
- (c) Monitor the Work and implement appropriate sediment control measures as Site conditions warrant. Such measures may include installation of silt fences, straw bales or other measure as required in the event that there is runoff from the Site.
- (d) Upon completion of the construction Work, remove from site all surplus or waste materials, and materials containing fine-grained sediments.

E16.5 Measurement and Payment

- E16.5.1 No separate measurement or payment shall be made for erosion control measures supplied, installed and maintained under this Specification. This Work shall be incidental to "Site Development".

## E17. ROCKFILL COLUMNS

E17.1 This Specification shall cover excavation, backfilling and densification of the rockfill columns. The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

### E17.2 Materials

#### E17.2.1 General

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

#### E17.2.2 Rockfill

- (a) Rockfill shall consist of sound, dense, durable crushed limestone, with the following physical properties:
- (i) minimum bulk specific gravity of 2.6 (ASTM C127),
  - (ii) maximum Los Angeles abrasion loss of 35% (ASTM C131),
  - (iii) maximum soundness loss of 18% (ASTM C88)
  - (iv) maximum absorption of 2.5% (ASTM C127),
  - (v) maximum moisture content of 3 percent by weight (ASTM D2216-98).
  - (vi) gradation as follows:

<b>Gradation Requirements 150 mm Crushed Rockfill</b>	
Canadian Metric Sieve Size (mm)	Percent of Total Dry Weight Passing Each Sieve
200	100
150	90-100
75	40-75
25	10-30
5	0-12
0.075	0-5

#### E17.2.3 Clay Cap

- (a) The clay cap at the top of the rockfill columns shall consist of high plasticity clay material with a liquid limit exceeding 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 shall not be used.

### E17.3 Submittals

E17.3.1 Submit the proposed supplier(s) and location of quarry sites for supply of the crushed rockfill and confirm that sufficient quantity of specified rock is available at least ten (10) business days prior to the commencement of supply of rockfill.

E17.3.2 Supply a representative sample of 150 mm crushed rockfill at least ten (10) business days prior to the commencement of construction of rockfill columns or rockfill ribs. The sample shall be delivered to TREK Geotechnical's laboratory at 1712 St. James Street at the Contractor's own expense.

E17.3.3 Supply representative test results at least ten (10) business days prior to the supply of rockfill to the site, demonstrating that the rockfill material to be supplied is of adequate quality and gradation to satisfy the material specification contained herein.

#### E17.4 Testing and Approval

E17.4.1 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 the supply and delivery of any materials for testing purposes.

E17.4.2 The Contract Administrator may visit proposed quarry sites for inspection of the proposed crushed rockfill and quarry faces prior to supply and placement of material.

E17.4.3 Only material from a source approved by the Contract Administration shall be used for the Work.

E17.4.4 Material sampling methods shall be subject to acceptance by the Contract Administrator.

E17.4.5 Supply a representative sample of 150 mm crushed rockfill once for every 1,000 tonnes of materials delivered to Site, to be delivered to TREK Geotechnical's laboratory at 1712 St. James Street at the Contractor's own expense.

#### E17.5 Construction Methods

##### E17.5.1 Drilling and Backfilling of Rockfill Columns Shafts

- (a) The rockfill column shafts shall be excavated by drill rig augers to the depth necessary to achieve 1.0 m penetration into dense till. Note that the dense till contact elevation may vary and the depth of excavation may differ from that shown on the Drawings. The extent of riprap may vary from the extent shown on the Drawings and riprap may be present below existing grade.
- (b) Auger cuttings shall be removed from the riverbank upon excavation and disposed of off-site.
- (c) Any deleterious or sloughed material shall be removed from the rockfill column shaft prior to backfilling.
- (d) Complete backfilling of each rockfill column immediately upon completion of excavation and in any case before commencing excavation of adjacent rockfill columns.

##### E17.5.2 Erosion and Sediment Control

- (a) Water displaced during backfilling shall be managed such that it will not cause soil erosion or introduce sediment directly into the river.

##### E17.5.3 Deep Sleeving

- (a) Install deep sleeving as required to control sloughing and caving of the shafts.
- (b) Measurement for payment will only be made for deep sleeving required to advance and maintain an open hole during the excavating, backfilling and compacting procedures, as approved by the Contract Administrator.

##### E17.5.4 Densification

- (a) Densification of rockfill shall be achieved using vibratory densification equipment capable of penetrating the entire depth of the rockfill in the column shaft.
- (b) Compacting the rockfill with drill augers, free fall of a weight or a backhoe bucket shall not be accepted.
- (c) The densification method shall achieve a relative increase in density of 15% after initial placement of the rockfill, as determined by measuring the vertical drop in rockfill.
- (d) The method and procedure of densification shall be reviewed by the Contract Administrator for acceptance.

E17.5.5 Contaminated Rockfill

- (a) Where rockfill becomes contaminated during construction of the rockfill columns, the Contractor shall promptly advise the Contract Administrator.
- (b) Where rockfill has become contaminated due to the Contractor's method of operation, negligence, or failure to backfill in a timely manner, the contaminated material shall be rejected and shall be weighed prior to disposal for deduction from the total weight of crushed limestone measured for payment.

E17.5.6 Clay Cap

- (a) The rockfill columns shall be sealed with a clay cap as shown on the Drawings.
- (b) Clay shall be placed within the rockfill column shaft and compacted by mechanical means to eliminate any voids.

E17.6 Measurement and Payment

E17.6.1 Drilling 2.1 m Diameter Rockfill Column Shafts

- (a) Drilling 2.1 m diameter rockfill column shafts shall be measured and paid for on a vertical length basis. The length to be paid shall be the total length in vertical metres (v.m) of "Drill Rockfill Column Shafts," completed in accordance with this Specification as measured below the working platform elevation shown on the Drawings and accepted by the Contract Administrator. No additional payment will be made for additional drilling quantities associated with alternate working platform elevations.

E17.6.2 Deep Sleeving Rockfill Column Shafts

- (a) Deep sleeving shall be measured and paid for on a vertical length basis. The length to be paid shall be the total length in vertical metres of "Deep Sleeving Rockfill Columns Shafts", completed in accordance with this Specification as measured below the working platform elevation shown on the Drawings and accepted by the Contract Administrator.
- (b) No measurement for payment will be made for sleeving above the working platform elevation shown on the Drawings.
- (c) No additional measurement for payment will be made for oversizing shafts to install sleeving. Such additional excavation shall be incidental to the cost for sleeving.
- (d) No additional measurement for payment will be made for installing over-sized sleeves.
- (e) No additional measurement for payment will be made for installing more than one diameter of sleeve in a shaft. The length of sleeving in this case shall be measured as the total length of shaft sleeved.
- (f) Vibratory withdrawal of deep sleeving may be used to compact rockfill columns, where the sleeving extends through the entire depth of the column. Where sleeving is used for this purpose but is not required to control sloughing and caving of the shafts, the cost of sleeving shall be considered incidental to the cost for "Supply, Place and Compact Crushed Rockfill for Rockfill Columns".

E17.6.3 Supply, Place and Compact Crushed Rockfill for Rockfill Columns

- (a) Rockfill for the rockfill columns shall be measured and paid for on a weight basis. The weight to be paid shall be the total weight in tonnes of "Supply and Compact Rockfill for Rockfill Columns" supplied and placed in accordance with this Specification, measured by truck weight scale tickets as accepted by the Contract Administrator.
- (b) The Contractor shall supply all truck weight scale tickets to the Contract Administrator at the end of each work day.
- (c) Crushed rockfill or other imported materials required to maintain working surfaces on Site shall not be included in the measurement for payment of rockfill.

E17.6.4 Clay Cap

- (a) Supply and placement of clay for the clay cap (whether imported or salvaged from on site materials) shall be incidental to the price for "Supply and Compact Crushed Rockfill for Rockfill Columns".

## **E18. ROCKFILL RIBS**

E18.1 This Specification shall cover excavation, backfilling and densification of the rockfill ribs. The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

E18.2 All requirements of E17.2, E17.3 and E17.4 shall apply to rockfill ribs.

### **E18.3 Construction Methods**

#### **E18.3.1 Trench Excavation**

- (a) Trench excavation shall be completed to the lines and grades as shown on the Drawings.
- (b) Any deleterious or sloughed material at the base of the excavation or during backfilling shall be removed prior to further backfilling.
- (c) The excavation side slopes shall be cut as near vertical as possible.
- (d) Prevent water from entering or accumulating in the excavation.
- (e) Excavated material shall be salvaged on site for reused as clay cap, as approved by the Contract Administrator, or otherwise shall be hauled and disposed of off site.

#### **E18.3.2 Backfilling and Compaction**

- (a) Complete backfilling of each rockfill rib immediately upon completion of excavation and in any case before commencing excavation of adjacent rockfill ribs.
- (b) Placement of rockfill shall be in maximum lift thicknesses (prior to compaction) of 400 mm, if compacted using a hoe-pack. If a direct-insertion vibratory probe is to be used for compaction, the rib may be backfilled in full prior to compaction. The equipment and methods proposed to place and compact rockfill shall be subject to acceptance by the Contractor Administrator.
- (c) Rockfill compaction proposed for construction shall be sufficient to achieve a minimum increase in density of 15% over uncompacted rockfill. The degree of compaction will be determined by measurement of the volume of backfill material before and after compaction for each lift.

#### **E18.3.3 Contaminated Rockfill**

- (a) Where rockfill becomes contaminated during construction of the rockfill ribs, the Contractor shall promptly advise the Contract Administrator.
- (b) Where rockfill has become contaminated due to the Contractor's method of operation, negligence, or failure to backfill in a timely manner, the contaminated material shall be rejected, removed from the rockfill rib, and shall be weighed prior to disposal for deduction from the total weight of crushed limestone measured for payment.

#### **E18.3.4 Clay Cap**

- (a) The rockfill ribs shall be sealed with clay cap as shown on the Drawings.
- (b) The clay shall be placed and compacted by mechanical means to eliminate any voids.

### **E18.4 Measurement and Payment**

#### **E18.4.1 Excavation and Disposal**

- (a) Excavation and disposal of excavated material shall be incidental to the price for "Rockfill Rib Construction".

**E18.4.2 Rockfill Rib Construction**

- (a) Rockfill rib construction shall be measured on a weight basis and paid for at the Contract Unit Price per tonne for "Rockfill Rib Construction" for the total number of tonnes of rockfill measured by truck weight scale tickets, constructed in accordance with this specification as accepted by the Contract Administrator.
- (b) The Contractor shall supply all truck weight scale tickets to the Contract Administrator at the end of each work day.
- (c) Crushed rockfill or other imported materials required to maintain working surfaces on Site shall not be included in the measurement for payment of rockfill.

**E18.4.3 Clay Cap**

- (a) Supply and placement of clay for the clay cap (whether imported or salvaged from on site materials) shall be incidental to the price for "Rockfill Rib Construction".

**E19. RIVERBANK GRADING**

**E19.1 Description**

**E19.1.1** This Specification shall cover the grading of the riverbank to the final grades shown on the Drawings.

**E19.1.2** 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 hereinafter specified.

**E19.1.3 Materials**

- (a) Suitable fill required to raise grades as part of Riverbank Grading shall consist of high plasticity clay material with a liquid limit exceeding 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.

**E19.2 Construction Methods**

**E19.2.1 Riverbank Grading**

- (a) Riverbank grading will be understood to mean excavation or backfilling (including compaction) so that the riverbank geometry is at rough finished grade, ready for site restoration works or temporary erosion control products.
- (b) Riverbank grading will be understood to extend from the back of the south curb on Lyndale Drive to the extent of any cuts or fills associated with the upper-bank pathway embankments.
- (c) Strip native topsoil from proposed subgrade areas of embankment fill placement, and haul and dispose of off-site.
- (d) Grade riverbank as shown on the Drawings or as directed by the Contract Administrator. Benching of existing ground shall be considered incidental to the Work.
- (e) Place and compact suitable backfill material as approved by the Contract Administrator to meet the final grade requirements.
- (f) Compact backfill materials to a minimum of 95% Standard Proctor Maximum Dry Density.
- (g) Unsuitable fill material encountered shall be disposed of in accordance with CW 1130 and considered incidental to the Work.

**E19.3 Measurement and Payment**

- E19.3.1 Excavation, hauling and disposal of unsuitable site material, (including topsoil stripping) will be measured on a volume basis and paid at the contract unit price for "Excavation and Disposal of Unsuitable Materials". The volume to be paid for shall be the total number of cubic metres that are excavated in accordance with this Specification acceptable to the Contract Administrator, as computed from measurements made by the Contract Administrator. No payment will be made for material removed outside of the limits of excavation. The volume of the various types of excavation shall be as measured in its original position, and as determined by the method of Average End Areas.
- E19.3.2 Excavation, placement and compaction of suitable site material will be measured on a volume basis and paid at the contract unit price for "Excavation and Placement of Suitable Site Fill". The volume to be paid for shall be the total number of cubic metres compacted in place in accordance with this Specification acceptable to the Contract Administrator, as computed from cross-sections taken by the Contract Administrator using the method of Average End Areas. No payment will be made for material placed outside of the limits of placement as directed by the Contract Administrator.
- E19.3.3 Supply, placement and compaction of imported fill material will be measured on a volume basis and paid at the contract unit price for "Supply and Placement of Imported Fill". The volume to be paid for shall be the total number of cubic metres compacted in place in accordance with this Specification acceptable to the Contract Administrator, as computed from cross-sections taken by the Contract Administrator using the method of Average End Areas. No payment will be made for material placed outside of the limits of placement as directed by the Contract Administrator.

## **E20. PLANTING MEDIUM & FINISHED GRADING**

### **E20.1 Description**

- E20.1.1 Provide all labour, materials, methods, equipment and accessories for the supply and installation of planting medium in tree pits and bank revegetation areas.

### **E20.2 References**

- E20.2.1 Agriculture and Agri-Food Canada  
.1 The Canadian System of Soil Classification, Third Edition, 1998.
- E20.2.2 Canadian Council of Ministers of the Environment (CCME) Guidelines.
- E20.2.3 The City of Winnipeg Standard Construction Specifications  
.1 CW 1130 – Site Requirements  
.2 CW 3540 – Topsoil and Finish Grading for Establishment of Turf Areas

### **E20.3 Submittals**

- E20.3.1 Submit 0.5kg sample of topsoil to National Testing Laboratory, or approved alternate, and indicate present use and intended use. Prepare and ship sample in accordance with Provincial regulations and testing laboratory requirements.
- E20.3.2 Submit two (2) copies of soil analysis and recommendations for corrections to Contract Administrator.

### **E20.4 Quality Assurance**

- E20.4.1 Inform Contract Administrator of proposed source of materials to be supplied and provide a sample for review by Contract Administrator prior to installation.
- E20.4.2 Testing of planting medium to be carried out and paid for by Contractor. Prepare and ship planting medium samples to approved laboratory in accordance with Provincial regulations and laboratory requirements, indicating intended use on each sample.

E20.4.3 Test planting medium for nutrients N, P, K, micronutrients, soluble salt content, pH value and OM (organic matter).

E20.4.4 Acceptance of planting medium is subject to an inspection of material and confirmation of test results. Do not commence soft landscaping work until Contract Administrator has accepted planting medium.

E20.5 Delivery, Storage and Handling

E20.5.1 Store materials in a dry area, protected from freezing, sedimentation and contamination.

E20.5.2 Deliver and store fertilizer in waterproof bags labeled with weight, analysis and name of manufacturer.

E20.6 Materials

E20.6.1 Planting Medium: In accordance with CW 3540 for topsoil except organic matter to be in the range of 5-10%.

E20.6.2 Peatmoss: deliver from partially decomposed fibrous or cellular stems and leaves of species of sphagnum mosses. Elastic and homogeneous, brown in colour. Free of wood and deleterious material that could prohibit growth. Shredded particle minimum size: 5 mm.

E20.6.3 Sand: hard fine silica sand, well washed and free of impurities, chemical or organic matter. Coarse texture, and to the following gradation:

<u>Particle Size (mm)</u>	<u>% Passing through Screen</u>
2.0	100%
1.0	95 to 100%
0.5	80 to 100%
0.25	0 to 30%
0.15	0 to 8%
0.075	0 to 1%

E20.6.4 Fertilizer: Synthetic start-up slow release fertilizer with a N-P-K analysis of 12-36-15 ratio at a rate of 4 kg per 100 m<sup>2</sup> which is 8 pounds per 100 sq ft.

E20.7 Construction Method

E20.7.1 Subsoil Preparation

(a) Prior to placing topsoil in revegetation areas, scarify subsoil across the slope to a depth of 150 mm.

E20.7.2 Planting Medium Placement

(a) Obtain approval of subsoil scarification and rough grading of revegetation areas prior to placing planting medium.

(b) Place planting medium in uniform layers over unfrozen sub-grade, to the depth indicated on the Drawings.

(c) Eliminate rough spots and low areas, Prepare a loose, friable bed, boot firm and level.

E20.7.3 Soil Amendments

(a) Apply lime, sulphur, or other soil amendment at a rate determined and recommended from planting medium sample test.

(b) Mix soil amendment well into full depth topsoil prior to application of fertilizer.

E20.7.4 Finished Grading

(a) Per CW3540.

(b) Fine grade entire soil area to elevations as indicated on the Drawings. Eliminate rough spots and low areas. Leave surfaces smooth, uniform and firm against foot printing with a fine loose texture.

## E20.8 Surplus Material

E20.8.1 Dispose of unused planting medium off Site in accordance with CW1130.

## E20.9 Cleaning

E20.9.1 Perform cleaning to remove accumulated environmental dirt from all paved surfaces of building faces. Remove surplus materials, rubbish, tools and equipment barriers.

## E20.10 Measurement and Payment

E20.10.1 Supply and placement of planting medium in tree wells will not be measured. This item of Work shall be considered incidental to the cost of "Supply and Installation of Trees" performed in accordance with this Specification and accepted by the Contract Administrator.

E20.10.2 Supply and placement of planting medium in revegetation areas shall be measured on an area basis. Planting medium will be paid for at the Contract Unit Price per square metre for "Supply and Place Planting Medium in Revegetation Areas" for the total number of square metres measured and accepted by the Contract Administrator.

(a) The area measured and paid for "Supply and Place Planting Medium in Revegetation Areas" shall be the horizontal area measured in plan view

E20.10.3 Finish grading and disposal of excess material shall be considered incidental to the Work.

## E21. EROSION CONTROL BLANKET

### E21.1 Description

E21.1.1 This Specification shall cover supply and installation of erosion control blankets on exposed soils on sloping areas of access ramps, and other areas disturbed during construction.

E21.1.2 The Work to be done under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies and all other things necessary for and incidental to the satisfactory performance and completion of all Work hereinafter specified.

### E21.2 Materials

#### E21.2.1 Erosion Control Blanket (ECB)

- (a) Erosion control blanket shall be machine produced 100% coconut fibre matrix with a functional longevity of up to 12 to 36 months.
- (b) The blanket shall be of consistent thickness with the coconut fibres evenly distributed over the entire area at a minimum of  $0.27 \pm$  kg of coconut fibre/m<sup>2</sup>.
- (c) Biodegradable reinforcement netting on both sides manufactured from heavy weight cotton or jute fibre thread. (1.47 kg/100m of thread). The mesh dimension shall be a 16 x 16 mm sewn together on 38 mm centres.
- (d) Approved products are:
  - (i) Erosion Control Blanket C32BD;
  - (ii) North American Green C125BN
- (e) The Contractor shall submit all manufacturers' product specifications and recommended installation methods for the proposed erosion control blankets.

### E21.3 Construction Methods

#### E21.3.1 Erosion Control Blanket (ECB) shall be installed:

- (a) over exposed, sloping, unvegetated areas of the riverbank following completion of temporary access removal on the riverbank and prior to rising river levels in the spring.

- (b) Over sloping areas of topsoil and seed placement, following completion of site restoration works.

#### E21.3.2 ECB Installation

- (a) The Contractor shall follow the manufacturer's recommended installation procedure, as well as the following requirements.
- (b) Roll blanket out in direction of river flow.
- (c) Securely fasten blanket against soil surface with a staggered staple pattern as per the manufacturer's recommendations and as accepted by the Contract Administrator.
- (d) At blanket edges overlap upstream blanket over downstream blanket by a minimum of 150 mm and secure overlaps with a double row of staples, staggered 100 mm (maximum) apart.
- (e) Install a double row of staples staggered at 100 mm apart and 100 mm on centre over the entire width blanketed area at 10 m intervals.
- (f) The upstream edge of the blanket shall be secured in a 150 mm deep by 150 mm wide trench and anchored with staples at a maximum of 300 cm spacing. The trench shall be backfilled with compacted clay.

#### E21.3.3 ECB Maintenance

- (a) The areas covered with ECB shall be regularly inspected, and in particular after severe rainfall, or flooding events to check for blanket separation or breakage until the end of the warranty period or until vegetation growth has been established.
- (b) Any damage or poorly performing areas shall be replaced/repared immediately. Regrading of the slope by manual labour methods may be required in the event of rill or gully erosion.

### E21.4 Measurement and Payment

#### E21.4.1 Erosion Control Blanket

- (a) Erosion Control Blanket and related Work specified herein will be measured on an area basis and paid for at the Contract Unit Price for "Supply and Install Erosion Control Blanket", completed in accordance with this Specification, and as accepted by the Contract Administrator.
- (b) Areas requiring replacement as directed by the Contract Administrator will be re-measured and additionally paid for at the Contract Unit Price for the Work item. The Contractor shall be compensated for replacing ECB only if the damage occurred as a result of conditions beyond their control, such as severe run-off, or from ice or floating debris. The Contractor shall not be compensated for replacing or repairing ECB damaged as a result of faulty materials, installation methods, or the Contractor's own operations.

## E22. TREES, SHRUBS & GROUNDCOVER PLANTINGS

### E22.1 Description

- E22.1.1 Provide all labour, materials, methods, equipment and accessories for the supply and installation of trees.

### E22.2 References

- E22.2.1 Agriculture and Agri-Food Canada (AAFC)
  - (a) Plant Hardiness Zones in Canada-2000.
- E22.2.2 Canadian Nursery Landscape Association (CNLA)
  - (a) Plant Canadian Standards for Nursery Stock-2001.
- E22.2.3 Department of Justice Canada (JUS)

- (a) Plant Canadian Environmental Protection Act (CEPA), 1999, c. 33.
  - (b) Transport of Dangerous Goods Act (TDGA), 1992, c.34.
- E22.2.4 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
- (a) Materials Safety Data Sheets (MSDS).
- E22.3 Submittals
- E22.3.1 Submit product data for:
- (a) Fertilizer.
- E22.4 Source Quality Control
- E22.4.1 Obtain approval from Contract Administrator of plant material at source.
- E22.4.2 Notify Contract Administrator of source of material at least seven (7) days in advance of shipment. No work under this Section is to proceed without approval.
- E22.4.3 Acceptance of plant material at source does not prevent rejection on Site prior to or after planting operations.
- E22.4.4 Plant material imported from other nations will not be accepted.
- E22.4.5 Bare root plant material will not be accepted.
- E22.5 Storage and Protection
- E22.5.1 Coordinate the shipping of plants and excavation of holes to ensure minimum time lapse between digging and planting.
- E22.5.2 Protect plant material from frost, excessive heat, wind and sun prior to delivery.
- E22.5.3 Protect plant material from damage during transportation:
- (a) When delivery distance is less than 30 km and vehicle travels at speeds under 80 km/h, tie tarpaulins around plants or over vehicle box.
  - (b) When delivery distance exceeds 30 km or vehicle travels at speeds over 80 km/h, use enclosed vehicle where practical.
  - (c) Protect foliage and rootballs using anti-desiccants and tarpaulins, where use of enclosed vehicle is impractical due to size and weight of plant material.
- E22.5.4 Protect stored plant material from frost, wind and sun as follows:
- (a) For pots and containers, maintain moisture level in containers.
  - (b) For balled and burlapped and wire basket rootballs, place to protect branches from damage. Maintain moisture level in root zones.
- E22.5.5 Remove broken and damaged roots with sharp pruning shears. Make clean cut and cover cuts over 20mm (3/4") diameter with wound dressing.
- E22.5.6 Keep roots moist and protect from sun and wind. Heel-in trees that cannot be planted immediately in shaded areas and water well.
- E22.6 Scheduling
- E22.6.1 Order plant material as soon as possible after award of contract to ensure plant availability. Request substitutes as required.
- E22.6.2 Provide Contract Administrator a written schedule fourteen (14) days in advance of shipment of plant material. Schedule to include: quantity and type of plant material, shipping dates, arrival dates on Site, and planting dates.
- E22.7 Warranty of Nursery Stock
- E22.7.1 For all plant material a warranty period of two (2) calendar years is required.

E22.7.2 During the warranty period, upon written notification from the Contract Administrator, the Contractor warrants to replace and replant any nursery stock found dead and/or in poor condition as soon as possible thereafter, without cost to The City. "Poor Condition" shall be interpreted as meaning nursery stock on which branches are dead or dying or have not shown satisfactory growth in leaves. Exempted is nursery stock damaged by accidental causes or vandalism, if directed by the Contract Administrator, this stock shall be replaced at the cost of The City.

E22.7.3 End-of-Warranty inspection will be conducted by Contract Administrator.

E22.7.4 Contract Administrator reserves the right to extend Contractor's warranty responsibilities for an additional one (1) year if, at end of initial warranty period, leaf development and growth is not sufficient to ensure future survival.

## E22.8 Replacements

E22.8.1 All required replacements shall be by plants of at least the same size and species as specified and shall be supplied and planted in accordance with the original Drawings and Specifications or applicable Site Instructions.

E22.8.2 Should the replaced plant material not survive, the Contractor will be responsible to replace it a third time and guarantee it for a period equal to the original warranty period unless it is determined that unique Site conditions or inadequate maintenance causes the death of plants.

## E22.9 Materials

### E22.10 Plant Material

- (a) Type of root preparation, sizing, grading and quality: comply to Canadian Standards for Nursery Stock.
- (b) Source of plant material: grown in Zone 3 only in accordance with Plant Hardiness Zones in Canada.
- (c) Plant material must be planted in zone indicated as appropriate for its species.
- (d) Plant material free of disease, insects, defects or injuries and structurally sound with strong fibrous root system.
- (e) Substitutions to plant material as indicated on planting plan are not permitted unless written approval has been obtained as to type, variety and size. Plant substitutions must be of similar species and of equal size as those originally specified.
- (f) Refer to Plant Specification List on the Drawings for species, quantities, size and quality of plant materials.

### E22.11 Water

- (a) Water free of impurities that would hinder plant growth. The Contractor shall provide water, so that all costs to provide water for the watering operation and all associated costs shall be borne by the Contractor. These costs may include hydrant permit and meter rental fees.
- (b) Further to clause 3.7 of CW 1120, the Contractor shall pay for all costs associated with obtaining water in accordance with the Waterworks By-law. Sewer charges will not be assessed for water obtained from a hydrant.

E22.12 Planting Medium: as per E19.

E22.13 Tree Tie: biodegradable or polyethylene fabric strapping min. 30mm wide.

E22.14 Tree Stakes: 76mm dia. x 2440mm ht. wooden stakes.

E22.15 Tree Protection: Plastic, 13 mm ø, nylon reinforced garden hose over guy wire.

E22.16 Fertilizer: synthetic start-up slow release fertilizer with a N-P-K analysis of 12-36-15 ratio at a rate of 4 kg per 100 m<sup>2</sup> which is 8 pounds per 100 sq ft.

E22.17 Construction Methods

E22.18 Planting Time and Workmanship

- (a) Plant only under conditions that are conducive to sustaining good health and physical condition of plants.
- (b) Provide planting schedule. Extended planting operations over a long period of time using a limited crew will not be accepted.

E22.19 Pre-Planting Preparation

E22.19.1 Obtain approval from Contract Administrator of finish grading, and planting medium installation prior to commencing Work in this section.

E22.19.2 Ensure plant material is acceptable to the Contract Administrator.

E22.19.3 Remove damaged roots and branches from plant material with sharp clean equipment treating wounds as necessary to maintain plant health.

E22.19.4 Apply anti-desiccant to deciduous trees in leaf in accordance with manufacturer's instructions.

E22.20 Plant Material Layout

E22.20.1 For individual trees:

- (a) Stake out locations of all trees and obtain approval from Contract Administrator prior to excavating tree pits.
- (b) Excavate tree pits to depths and widths indicated on the Drawings with a backhoe unless other methods are indicated or approved.
- (c) Remove rocks, roots, debris and toxic material from the tree pit.
- (d) Scarify sides of planting hole.
- (e) Protect excavations from freezing. Remove any water which enters the excavations prior to planting. Notify the Contract Administrator if water source is groundwater,
- (f) If the planting location contains a stump with a diameter less than 15cm it shall be removed.

E22.20.2 Planting

- (a) For jute burlap rootballs, cut away top one third of wrapping and wire basket without damaging rootball. Do not pull burlap or rope from under rootball.
- (b) For container stock or rootballs in non-degradable wrapping, remove entire container or wrapping without damaging rootball. Loosen rootball to encourage bonding with planting medium and subgrade.
- (c) Plant vertically in locations as indicated. Orient plant material to give best appearance in relation to structure, roads and walks.
- (d) Backfill soil in 150 mm (6") lifts. Tamp each lift to eliminate air pockets. When two thirds of depth of planting pit has been backfilled, fill remaining space with water. After water has penetrated into soil, backfill to finish grade.
- (e) Form watering saucer as indicated on the Drawings.
- (f) Water plant material thoroughly. Report persistent ponding in planting areas to the Contract Administrator immediately.
- (g) After soil settlement has occurred, fill with soil to finish grade.
- (h) Dispose of burlap, wire and container material off Site.

### E22.21 Tree Supports

E22.21.1 Install tree supports as indicated on the Drawings taking care not to damage or puncture underground utilities.

E22.21.2 Use double stake tree support for deciduous trees:

- (a) Place first stake on prevailing wind side of tree trunk.
- (b) Drive stakes minimum 150mm into undisturbed soil beneath bottom of roots. Ensure stakes are secure, vertical and unsplit.
- (c) Install tree tie 1500mm above grade.

### E22.22 Pruning

E22.22.1 Undertake corrective pruning after planting to eliminate torn and broken branches. Do not damage lead branches or remove smaller twigs along main branches. Do not prune to compensate for root loss. Pruning shall be performed by a certified arborist or tree professional.

### E22.23 Maintenance

E22.24 Maintain plant material from date of planting to the end of the warranty period. Refer to Landscape Maintenance Specification.

### E22.25 Measurement and Payment

E22.25.1 Supply and installation of trees will be measured on a unit basis and will be paid for at the Contract Unit Price per unit for the following items of work, measured as specified herein, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification.

Items of Work:

- (a) Manitoba Maple
- (b) American Elm
- (c) Basswood
- (d) Cottonwood (male)
- (e) Peachleaf Willow

## **E23. LANDSCAPE MAINTENANCE**

### E23.1 Description

E23.1.1 Provide all labour, materials, methods, equipment and accessories for the maintenance of trees following acceptance of the plant material to start warranty.

E23.1.2 In general, the Work shall include:

- (a) Fertilizing
- (b) Watering
- (c) Weed Control
- (d) Pest and disease Control
- (e) Winter Preparation

E23.1.3 Maintenance shall be performed on an as required basis.

### E23.2 Maintenance and Warranty Period

E23.2.1 Maintenance shall occur between the date of installation and up to a period of two (2) years from date landscaped areas are accepted to start warranty. The warranty period for plant materials will be coincidental to the maintenance period.

E23.2.2 Thirty days after the planting installation has been completed, the Contract Administrator shall perform an inspection of the plant material to determine if the plant material is acceptable to start warranty.

### E23.3 Materials and Equipment

E23.3.1 Materials shall conform to the requirements of related Specification sections.

E23.3.2 Provide all equipment to properly execute Work. Maintain such equipment in a workable, safe condition while in use during this project.

E23.3.3 Contract Administrator shall review equipment to be used to execute Work prior to execution.

### E23.4 Method

#### E23.4.1 General

- (a) Provide watering service within 24 hours, weeding services within 48 hours of the request by the Contract Administrator. Monitor the Site and advise the Contract Administrator of conditions that might void the Contractor's warranty responsibilities.
- (b) The Contractor shall maintain a log noting times, dates, equipment used, and quantity of materials used and areas treated for each maintenance application. Forms shall be provided by Contract Administrator. Submit log to Contract Administrator upon request. Contractor shall notify Contract Administrator of the exact time Contractor proposes to commence each application.
- (c) Schedule operations in accordance with growth, health, weather conditions, and use of Site.
- (d) Perform each operation continuously and completely within a reasonable time period.
- (e) Store equipment and materials off Site.
- (f) Collect and dispose of debris or excess material on the day the maintenance is undertaken.

#### E23.4.2 Maintenance of Trees:

- (a) Fertilizing: Apply fertilizer only at frequency, ratio and rates as recommended by manufacturer. Water immediately after fertilizing. Apply fertilizer no later than May 30th of each maintenance year.
- (b) Watering: Apply water as required to supplement rainfall and to maintain optimum growing conditions. In general, water once a week to achieve rates as indicated. Allow soil to adequately dry between watering to prevent over saturation without creating water stress. Subject to the above-noted requirements, the Contractor must water at least once a week between May 1st and October 15th inclusive. A complete record is to be kept of each series of waterings for all planted trees noting location and date of watering. This record is to be given to the Contract Administrator when requested. Apply 40 litres of water per 25 mm calliper per application using a deep root feeder or low pressure open flow nozzle and hose. The water stream must not gouge the soil and mulch.
- (c) Weed Control: Inspect and undertake weed control weekly during the first year of maintenance and monthly during the second year. By hand, remove all weeds with their roots from tree pits and tree beds and dispose of off Site. When weeding operation is complete, replace and rake displaced mulch to its original condition.
- (d) Pests and Diseases: Obtain written approval of Contract Administrator prior to using any pesticide. Control pests and disease through pruning or application of pesticides. Use species specific pesticides where possible. Use only pesticides of low mammalian toxicity. Strictly follow manufacturer's written instructions.
- (e) Pruning: The Contractor shall provide a person with a Manitoba Arborists Certificate for each work crew or Work Site. Prune as required to remove dead, broken or damaged limbs. Prune back to healthy growth while maintaining balanced crown

shape. Employ clean sharp tools. Make cuts smooth and flush with outer edge of branch collar near the main stem or branch. Cuts must be smooth and sloping to prevent accumulation of water on cut. Do not leave little stumps (“horns”) on trunks or main branches. Prune according to accepted horticultural practices as outline in “The Pruning Manual”, Publication No. 1505-1977 by Agriculture Canada.

- (f) Winter Preparation: Ensure adequate moisture in tree root zones prior to freeze-up.

#### E23.5 Measurement and Payment

E23.5.1 Landscape maintenance shall be paid for on a lump sum basis for the items of work listed below. Price shall be payment in full for supplying all material and performing all operations herein described and all other items incidental to the Work included in this Specification.

Items of Work:

- (i) Landscape Maintenance Year 1
- (ii) Landscape Maintenance Year 2

### E24. INSTALLATION OF STREET LIGHTING AND ASSOCIATED WORKS

#### E24.1 DEFINITIONS

LIMITS OF APPROACH means the shortest distance that is permissible between live high voltage (>750 volts) conductors or apparatus and any part of a worker's body, material or tools being handled, or equipment operated.

MANITOBA HYDRO CENTRAL STORES means Manitoba Hydro's Waverley Service and Reclaim Centre - 1840 Chevrier Blvd - Winnipeg, Manitoba

OVERHEAD FEED means an electrical supply via an overhead conductor connected between streetlight standards. Typically strung between standards on a temporary basis.

OVERHEAD SOURCE means an electrical supply from Manitoba Hydro's system. (Typically an overhead conductor from a wooden distribution pole or a DIP/RISER located on a wooden distribution pole.)

RECLAIM material means existing material that has been removed from Manitoba Hydro's system and to be returned to Manitoba Hydro.

SCRAP material means existing material that has been removed from Manitoba Hydro's system and to be recycled/disposed of by the Contractor.

SURPLUS material means new material that has been requisitioned by the Contractor and not incorporated into the work at the end of the Contract.

WORK CLEARANCE means an ELECTRICAL AND/OR NATURAL GAS FACILITIES LOCATE form (see SAMPLE ONLY included as Appendix E) issued by each of Manitoba Hydro's Customer Service Centre (CSC) affected to permit work to commence (Permit to work).

#### E24.2 DESCRIPTION

E24.2.1 The work shall consist of the supply of all supervision, labour, materials (except as indicated under MATERIAL SUPPLIED BY MANITOBA HYDRO below) insurance, tools, backfill and equipment (and their maintenance), transportation, fuel, oil, meals and lodging, mobilization and de-mobilization, and warranty of workmanship as required to install and remove temporary Overhead Feeds, remove existing street light poles as required, install new street light poles and associated underground cables/conduits, all in accordance with the requirements specified in the tender documents.

#### E24.3 WORK LOCATIONS

E24.3.1 The proposed street light installation and removals are shown on construction drawings and are as follows:

- (i) Lyndale Drive from Birchdale Avenue to Claremont Avenue

#### E24.4 COORDINATION OF WORK

E24.4.1 The Contractor shall provide a minimum of ten (10) working days notice to Manitoba Hydro prior to the start of construction. The work shall be conducted and coordinated with Manitoba Hydro in a manner to ensure street lighting is maintained at all times for the duration of the work. The construction drawings provide the Proposed Sequence of Construction.

E24.4.2 The Contractor shall obtain Work Clearance from Manitoba Hydro's Customer Service Centre(s) (CSC) affected prior to the work commencing. No additional compensation shall be paid to the Contractor for delays obtaining Work Clearance for any reason.

E24.4.3 Manitoba Hydro's CSC will provide the Limits of Approach applicable to the Contractor on the Work Clearance form.

#### E24.5 ORIENTATION

E24.5.1 Prior to the commencement of the proposed work, the Contractor's crew foremen, electricians, and other key personnel shall attend one (1) day of orientation provided by Manitoba Hydro for various operations such as cable handling, cable splicing/termination, installation of street light poles, concrete bases, luminaires and various other construction standards and procedures. The Contractor will be responsible for all costs associated with personnel salaries, travel, sustenance and overheads, etc., during training.

#### E24.6 PRE-CONSTRUCTION MEETING

E24.6.1 Prior to the commencement of the work, the Contractor shall attend a pre-construction meeting with Manitoba Hydro. The agenda for this meeting shall include but not be limited to the following:

- (b) Reference the Contractor's Safe work Procedures;
- (c) Prime Contractor;
- (d) materials;
- (e) sequence of construction;
- (f) communication plan;
- (g) any training requirements & qualifications;
- (h) Drawing and Project review;
- (i) a review of the Contractor's proposed work schedule; and
- (j) any and all other topics of clarification that the Contractor and the Contract Administrator may wish to discuss.

E24.6.2 The Contractor's cost to attend this pre-construction meeting shall be incorporated into the unit prices for the work.

#### E24.7 QUALIFICATIONS AND CERTIFICATION

E24.7.1 The Contractor's Crew Foreman, installers and other key Contractor's Personnel shall possess the necessary certification, licensing, training, experience and familiarity with safety rules, procedures and hazards relating to the work. Journeyman Power Line Technician (PLT), Journeyman Lineman, Journeyman Cableman or Journeyman Electricians shall be required to perform portions of this work.

E24.7.2 Journeyman Power Line Technician (PLT), Journeyman Cableman and Journeyman Lineman are also required to possess a "Limited Specialized Trade Licence – 'M-P' Licence – Power Line" issued by the Province of Manitoba.

E24.7.3 Manitoba “Safe work” Bulletin M&E010 dated January 5, 2011 regarding Electrician Licenses discusses the requirements for a “Limited Specialized Trade Licence – ‘M-P’ Licence – Power Line”.

For more information contact:  
Manitoba Hydro  
Mechanical and Engineering Branch  
500-401 York Avenue  
Winnipeg, Manitoba R3C 0P8  
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E24.7.4 Licensed Journeyman Electricians or Journeyman PLT or Journeyman Cableman or Journeyman Lineman ARE REQUIRED for all cable handling operations included but not limited to: disconnecting cables in the handhole, installation and removal of temporary overhead feeds, installation and connection of ground rods, streetlight cable splices, termination of streetlight cables in handholds and at luminaires. The Contractor shall employ sufficient qualified personnel on its crews to conform to the Electrician’s Licensing Act. The Contractor shall be prepared to provide proof of licences to Manitoba Hydro upon request.

E24.7.5 The Contractor shall assess the hazards associated with the work and have documented Safe work Procedures to perform the work. It is the Contractor’s responsibility to train employees on these procedures. The Contractor shall be prepared to provide proof of training to Manitoba Hydro upon request.

#### E24.8 REFERENCED STANDARD CONSTRUCTION SPECIFICATIONS

E24.8.1 In addition to these Specifications, the work to be performed by the Contractor relative to the installation and/or replacement of street lighting poles, concrete bases and associated cabling shall be in accordance with the following:

- (b) Manitoba Hydro 66kV and Below Standards;
- (c) CSA C22.3 No. 7 (latest edition);
- (d) Canadian Electrical Code (CEC) Part 1 (latest edition); and
- (e) Any other applicable codes
- (f) (collectively, the “Standards”)

E24.8.2 Revisions and updates to the Manitoba Hydro 66kV and Below Standards are issued periodically and the latest issued version of the Standard will apply. For the convenience of the Contractor for bidding purposes, excerpts of the Manitoba Hydro 66kV and Below Standards have been included as Appendix B.

E24.8.3 In some cases, Municipal, Provincial or Federal laws or this Technical Specification may be more stringent than the CSA Standards. Whenever conflict exists, the Contractor shall comply with the most stringent requirements applicable at the place of the work.

#### E24.9 TOOLS, EQUIPMENT AND MATERIALS

E24.9.1 The Contractor shall be required to provide all tools and equipment required for performing the specified tasks. Equipment shall be in good operating condition, shall be properly maintained using original equipment manufacturer replacement parts and shall be provided with letters of testing/inspection from the manufacturer when requested. Where the equipment is provided as a kit with multiple parts and tools, the kit shall be complete with all parts required to perform the designed task. Contractor fabricated tools or equipment will not be accepted for use.

E24.9.2 The Contractor shall obtain the following specific Electrical Equipment including but not limited to:

- (b) Compression tool or tools and associated dies to perform compressions to a maximum size of 1/0 Al (MD-6 compression tools shall not be used).
- (c) Approved compression tools are:

Manufacture	Type	Model No.	Range
Burndy	In-line, battery	PATMD68-14V	350 Kcmil AL
Cembre	In-line, battery	B54Y (06V081E)	4/0 AWG AL
Burndy	Pistol, battery	BUR PAT60018V	350 Kcmil AL

E24.9.3 Dies shall be of the type shown in Standard CD210-21 and CD 210-24 only, must have identical markings, and compression tool die must match die number stamped on connector.

- (d) Modiewark Model #4444 or Fluke 1AC-II Volt Alert potential Indicator
- (e) Voltage meter – Fluke model #T3C
- (f) Insulated wire cutters – used for cutting cable ends square.

E24.9.4 Alternative equipment manufacturers may be considered upon request by the Contractor and shall be approved for use by Manitoba Hydro prior to use.

E24.9.5 Manitoba Hydro may reject any tools or equipment that do not appear to be in good condition or fail to successfully provide the required function.

#### E24.10 MATERIAL SUPPLIED BY MANITOBA HYDRO

E24.10.1 Manitoba Hydro shall supply all street light poles, concrete bases, breakaway bases, luminaires, street light arms, ground rods, compression sleeves, grommets, nuts, electrical cables, conduits, relays, cable guards, Gel-caps and all other materials noted in the Standards. The Contractor shall sign receipts indicating the location on which the materials are to be used. The material shall be picked up by the contractor from the following locations:

E24.10.2 Manitoba Hydro Central Stores (contact personnel will be provided to the successful contractor).

E24.10.3 Materials requested will be supplied to the Contractor by Manitoba Hydro upon presentation of Manitoba Hydro's Stores Material Order Form. The Contractor shall assume all responsibilities for the loading, unloading, transportation, proper handling, secure storage and working of the materials and shall make replacements at its own expense in case any material is damaged, stolen or lost due to improper handling, storage or poor workmanship.

E24.10.4 The Contractor shall, at the time of materials release, check and confirm the quantity of materials. Shortages, discrepancies, or damages to materials shall be immediately reported in writing to Manitoba Hydro.

E24.10.5 After commencing performance of the work, the Contractor shall continually monitor all material required for the timely completion of the work and shall report additional material requirements to Manitoba Hydro a minimum of 72 hours prior to materials being required to perform the work. No additional compensation shall be paid as a result of delays due to material shortages where additional material requirements were not reported a minimum of 72 hours prior to being required for the work on an active project.

#### E24.11 MATERIAL SUPPLIED BY CONTRACTOR

E24.11.1 The Contractor shall be responsible to furnish gravel, sand, ¾" down limestone, ¼" down limestone, protective hose (i.e. typically 2" fire hose), duct seal and pit-run material for backfilling around street light poles and around cables as per the Standards. The cost of furnishing the above listed materials shall be incorporated into the unit prices for the work.

#### E24.12 SURPLUS, RECLAIM AND SCRAP MATERIAL

E24.12.1 Upon completion of the work, the Contractor shall, at its own expense, deliver to Manitoba Hydro Central Stores, all Surplus materials furnished by Manitoba Hydro and not used in the work, regardless of the location of said material at that time.

E24.12.2 In addition, the Contractor shall, at its own expense, deliver to Manitoba Hydro Central Stores all Reclaim materials from the work specifically HPS luminaires. Manitoba Hydro shall be responsible for the proper disposal of Reclaim HPS luminaires. The HPS bulb shall remain installed and unbroken in the Reclaim luminaire. The Contractor shall handle the Reclaim luminaires with care and shall avoid breaking the bulb or refractor.

E24.12.3 Manitoba Hydro's preference is to recycle as much Scrap Material as practicable. The Contractor is responsible to remove the Scrap Material, transport to the recycler or Manitoba Hydro approved disposal site, pay for any disposal fees and may retain any recycling value.

#### E24.13 DE-ENERGIZATION AND LOCKOUT

E24.13.1 **Manitoba Hydro** - Where a standard is supplied from an Overhead Source, Manitoba Hydro's staff shall be responsible to disconnect and isolate the street light standard or standards between the standard and Overhead Source. Some street light standards may be temporarily fed from an Overhead Source. This Overhead Source shall be disconnected and removed by Manitoba Hydro staff prior to commencing with the work. The streetlight circuits will not be Locked Out by Manitoba Hydro.

E24.13.2 **The Contractor** - The Contractor shall assess the hazards associated with the work and employ its own Safe Work Procedure for the work to be performed. The Contractor's Safe Work Procedure shall include provisions that the street light circuits will not be Locked Out by Manitoba Hydro. The Contractor's Safe Work Procedure shall achieve Lock Out or techniques equivalent to Lock Out.

E24.13.3 The Contractor shall complete a job planning form (an example is included as Appendix F) on a daily basis before any work commences and provide Manitoba Hydro with copies of the job plans if requested.

#### E24.14 TEMPORARY OVERHEAD FEEDS

E24.14.1 Manitoba Hydro in consultation with the Contractor will determine if temporary lighting will be provided by the existing street lights or from the new street lights.

E24.14.2 When using the existing poles for temporary lighting, Manitoba Hydro shall remove an Overhead Source in accordance with DE-ENERGIZATION AND LOCKOUT section above, prior to the Contractor installing a #4 duplex overhead conductor between the existing poles. The #4 duplex overhead conductor will normally be attached to the tenon of the davit arm near the luminaire with a pre-form grip. Older poles may require a spool insulator be attached to the pole using a pre-form grip to support the #4 duplex overhead conductor. A short length of 2C/#12 copper conductor is connected to the terminals of the luminaire brought out and connected to the #4 duplex overhead conductor. The final span to the Overhead Source shall be installed by Manitoba Hydro.

E24.14.3 When using the new poles for temporary lighting, the Contractor shall install the new bases, poles and #4 duplex overhead conductor. The #4 duplex overhead conductor will be attached to the tenon of the davit arm near the luminaire with a pre-form grip. A short length of 2C/#12 copper conductor is connected to the terminals of the luminaire brought out and connected to the #4 duplex overhead conductor. The final span to the Overhead Source shall be installed by Manitoba Hydro.

E24.14.4 All material used to provide the temporary overhead feed shall be returned to Manitoba Hydro. Care shall be taken to coil and tag Reclaim conductor for reuse. If used, insulators shall be handled carefully to prevent breakage.

#### E24.15 SAFE EXCAVATION

E24.15.1 The work shall be performed in accordance with the requirements of Manitoba Hydro's Safe Excavation and Safety Watch Guidelines (latest revision) included as Appendix C and Manitoba Workplace Safety and Health Regulation 217 latest revision.

#### E24.16 SAFE HANDLING

E24.16.1 The Contractor shall apply handling techniques in accordance with Manitoba Workplace Health and Safety Regulation 217 (latest revision).

#### E24.17 ELECTRIC CABLES AND CONDUITS

- (a) The Contractor shall use diligent care and proper equipment in handling of all cables, so as not to injure the jacket and avoid gouging, kinking, scratching or abrading the cables. If any material is damaged to any extent, the Contractor shall repair the damages at its own expense, in a manner approved by Manitoba Hydro or will be charged the full cost of the damaged items.
- (b) Cable reels shall not be dropped and must be handled and placed/stored in an upright position at all times and shall not be laid flat for any purpose or reason. Cable reels shall be adequately supported on hard surface to prevent the reel from sinking into the ground that can cause undue stress on the cables. Cable reels should be inspected for damages prior to use. If a cable reel is found to be defective, such defect shall be reported immediately to Manitoba Hydro.
- (c) The Contractor shall place all material and string the cables in such a manner as to cause the least interference with normal use of the land, street or roadway. All material shall be unloaded in a manner to preserve its condition, prevent loss and/or theft and permit easy access for Manitoba Hydro's inspection.
- (d) The Contractor shall provide Manitoba Hydro's inspector sufficient opportunity, in the sole discretion of Manitoba Hydro, to inspect the work.

#### E24.18 PRECAST CONCRETE BASES

E24.18.1 The Contractor shall handle, store, transport and unload the precast concrete bases in a manner to prevent damage to the threaded bolts and conduit casing.

E24.18.2 Precast Concrete Bases are extremely heavy. Approximate weight of pre-cast concrete bases are found in the Standards. The Contractor shall only use equipment rated for such weight.

#### E24.19 STREET LIGHT POLES AND ARMS

E24.19.1 The Contractor shall handle, store, transport, and provide proper load securement for the poles and arms in a manner to prevent damage.

#### E24.20 LUMINAIRES

E24.20.1 The Contractor shall handle, store, transport and unload the luminaires in their original packaging and in a manner to prevent damage.

#### E24.21 SMALL MATERIAL

E24.21.1 Photo electric cells, shorting caps, shims, nut covers and associated supplies shall be kept in a suitable warehouse provided by the Contractor at its own expense. Photo electric cells shall be transported and stored in such a manner as to prevent breakage.

#### E24.22 CARE OF MATERIALS

E24.22.1 The Contractor shall assume all responsibilities of all the materials and shall replace, at its own expense, any materials damaged, stolen or lost due to improper handling or poor workmanship.

#### E24.23 WIRE AND CABLE REEL STORAGE

E24.23.1 Cable reels shall be stored with the flanges upright and resting on a hard surface. At temporary storage sites where the soil may be soft, preservative-treated plywood sheets may be used to keep the flanges from sinking into the ground.

E24.23.2 If cable reels must be pancaked or stored on their side in vertical racks, do not lift the reel by the top flange. Spacers (two 2 X 4s placed wide side up) should be placed under the bottom flange and between the reels in order to create a space to insert the forks and lift the reels without damaging the cable.

#### E24.24 REEL HANDLING

E24.24.1 When off-loading reels from a truck, reels shall be lowered using a hydraulic gate, hoist or forklift truck. When a reel is rolled from one point to another, care must be taken to see that the reel does not straddle objects such as rocks, pipes, curbs or wooden blocks which could damage the cable or protective covering. A reel should always be rolled on hard surfaces to avoid sinkage and in the opposite direction to the cable wraps to ensure that the reel is rolled in such a direction as to tighten the cable on the reel.

E24.24.2 When using a hoist, install a mandrel through the reel arbour hole and attach a sling. Use a spreader bar approximately 6 inches longer than the overall reel width placed between the sling ends just above the reel flanges. This will prevent bending of the reel flanges and damage to the cable.

E24.24.3 If a forklift is used to move a reel, the reel is to be approached from the flange side. Position the forks such that the reel is lifted by both reel flanges. The lift forks shall not contact the cable.

E24.24.4 Returnable reels shall be returned promptly to Manitoba Hydro Central Stores and in no case later than three (3) days after the completion of the work unless otherwise mutually agreed between the Contractor and Manitoba Hydro.

#### E24.25 PRESSURIZED WATER/VACUUM EXCAVATION

E24.25.1 Pressurized water/vacuum excavation (PW/VE) shall be used to daylight all buried utilities and structures where excavation by other mechanical means would be expected to provide a physical risk to that utility or structure.

E24.25.2 The work shall be performed in accordance with the requirements of Manitoba Hydro's Safe Excavation and Safety Watch Guidelines (latest revision) included as Appendix C.

#### E24.26 REMOVAL STREET LIGHT POLE FROM EXISTING BASE

E24.26.1 This shall include all work required to remove a street light pole from an existing base as set forth in this Technical Specification. The pole may be on an existing precast concrete base, steel power installed screw base or poured in place concrete base.

E24.26.2 The Contractor shall furnish all labour, supplies and materials (except as indicated in the Section "MATERIAL SUPPLIED BY MANITOBA HYDRO") necessary for the removal of the street light pole from the existing base. Care shall be taken to preserve the luminaire. The luminaire shall be reinstalled on the new street light pole or returned to Manitoba Hydro's stores as instructed by the Manitoba Hydro.

E24.26.3 The Contractor shall be responsible to transport all Surplus and Reclaim materials to Manitoba Hydro Central Stores and transport and dispose of all Scrap material as set forth in this Specification.

#### E24.27 REMOVAL OF BASE AND DIRECT BURIED STREET LIGHT POLE

E24.27.1 This shall include all excavation, whether by auger, pressurized water/vacuum excavation, by hand, or by other methods which may be necessary to remove a base or direct buried street light pole. The base may be poured in place concrete, steel power installed or precast concrete.

E24.27.2 The Contractor shall be responsible to transport all Surplus and Reclaim materials to Manitoba Hydro Central Stores and transport and dispose of all Scrap material as set forth in this Specification.

E24.27.3 The Contractor is responsible to supply all backfill material as specified in the Standards and carry out all backfill, compacting and leveling of all excavations and voids for removed bases and direct buried street light poles so as to be ready for top soil and seed or sod or as directed by Manitoba Hydro.

#### E24.28 INSTALLATION OF FOUNDATION - CONCRETE BASE

E24.28.1 This shall include all excavation, whether by auger, pressurized water/vacuum excavation, by hand, or by other methods which may be necessary to replace or install a concrete base as set forth in this Specification.

E24.28.2 The Contractor shall furnish all labour, supplies and material (except as indicated in the Section "MATERIAL SUPPLIED BY MANITOBA HYDRO") necessary to install a new or replace a concrete base. Excavation for the precast concrete base shall be to a diameter and depth specified in Standard CD 300-6. All excess material is to be removed by the Contractor.

E24.28.3 The concrete base shall be set on a bed of ¾" down limestone. The concrete base backfill material shall be compacted in lifts no more than 150 mm. Backfill material shall be ¾" down limestone. Compacting of backfill material shall be done using a hydraulic tamper. Alternative tamping methods shall be approved by Manitoba Hydro. Underground cables entering the concrete base shall be protected by a length of protective hose supplied by the Contractor and a layer of sand surrounding the cables to protect it from the limestone. The concrete base shall be installed level in all 4 directions. Final grade must be established prior to installing the concrete bases.

E24.28.4 The completed backfill shall be at least equal in compaction to undisturbed soil, as required by the Municipal authorities or elsewhere in this Specification. The Contractor shall level all excavations.

E24.28.5 Should settlement occur in the excavation and cause a depression in the surface, the Contractor shall repair the surface. Placing of additional backfill material due to settlement shall be at the Contractor's expense.

E24.28.6 The concrete base shall be oriented in the proper direction to allow the easy entrance of the underground cables into the plastic pipe preinstalled in the concrete base. Care shall be taken to prevent damage to the insulation or jacket of the conductors. The cable shall be left long enough to extend one (1) metre beyond the top of the hand hole.

#### E24.29 BASE MOUNTED STREET LIGHT POLES

E24.29.1 This shall include all work required to install the street light pole on the concrete base as set forth in this Specification.

E24.29.2 The Contractor shall furnish all labour, supplies and material (except as indicated in the Section "MATERIAL SUPPLIED BY MANITOBA HYDRO") necessary for the installation of the pole (straight shaft or davit) on the concrete base.

E24.29.3 Unless otherwise specified on the construction drawings, the Contractor shall orient the poles so that the hand hole is on the left side of the pole when viewed from the road. A worker should be able to see oncoming traffic when working in the hand hole.

E24.29.4 The Contractor shall level the street light pole in all 4 directions. Leveling shims may be used.

E24.29.5 Tightening of bolts shall be performed in a manner that brings the surfaces up evenly. All nuts shall be tightened and torqued in accordance with Standard CD 300-9. The Contractor shall install the nut covers included with the pole.

E24.29.6 Unless otherwise specified, excess underground cable and 2C-12 wire shall be left inside the hand hole with the hand hole cover loosely installed.

E24.29.7 Existing street light poles may have street signs attached. The Contractor shall remove the signs from the existing pole and temporarily reattach the signs to the new pole. The Contractor shall notify Manitoba Hydro of the location where the signs have been removed.

#### E24.30 LUMINAIRES AND ASSOCIATED WIRING

E24.30.1 The Contractor shall furnish labour, supplies and material (except as indicated in the Section "MATERIAL SUPPLIED BY MANITOBA HYDRO") necessary to install the luminaire and associated wiring. Unless otherwise specified, the luminaire shall be installed with a tilt of zero (0) degrees. The Contractor shall install a length of 2 conductor No. 12 gauge (2C-12) wire from the terminals of the luminaire, through the arm (if applicable), down the pole to the hand hole. One (1) metre of 2C-12 wire shall be left at the hand hole. Impact equipment (air or electric) shall not be used to tighten luminaire mounting bolts. The Contractor shall be liable for damage due to over tightening.

E24.30.2 The Contractor shall verify the luminaire voltage matches the source voltage as shown on the construction drawings. If luminaire voltage does not match the source voltage, the Contractor shall re-wire the luminaire in accordance with the wiring diagram provided.  
NOTE: Not applicable for LED luminaires.

E24.30.3 As specified on the construction drawings, the luminaire will require either a photo electric cell (PEC) or shorting cap installed. When installing the PEC the eye shall be oriented north. The Contractor shall also install the appropriate wattage bulb in the luminaire.  
NOTE: Bulb installation not applicable for LED luminaires.

#### E24.31 BREAK AWAY BASES

E24.31.1 Break away bases shall be installed in accordance with Standard CD 300-10. The height of the concrete base above grade shall not exceed 50mm. The surface of the concrete base shall be flat and level. A reaction plate shall be installed between the concrete base and the break-away base.

E24.31.2 The Contractor shall torque the couplers in accordance with Standard CD 300-10. Impact tools shall not be used to tighten or torque couplers or nuts associated with a break away base.

#### E24.32 SPLICING/CONNECTING CABLES

E24.32.1 The electric cable shall be spliced/terminated as per Standards CD 215-12, CD 215-13, CD 310-1, CD 310-4, CD 310-9 and CD 310-10 with the exception that the Contractor will use a GELCAP-SL-2/0 splice kit (See Appendix D). Termination in the hand hole may include the installation of an inline fuse holder.

E24.32.2 The Contractor shall furnish all labour, supplies and material (except as indicated in the Section "MATERIAL SUPPLIED BY MANITOBA HYDRO") necessary to splice/terminate the street light conductor(s).

#### E24.33 EXCAVATION

E24.33.1 The Contractor shall furnish all labour, supplies and material (except as indicated in the Section "MATERIAL SUPPLIED BY MANITOBA HYDRO") necessary for the completion and maintenance of grade and line of the street light cables and conduit including water control if found to be necessary. The trench shall be graded to conform to the street light cables and conduit so that the street light cables and conduit rest firmly on a smooth surface throughout its length. All stones or other objects which, in the opinion of Manitoba Hydro might damage the street light cable jacket and conduit shall be removed. Where the presence of rock or other condition prevent a satisfactory bed for the cables, 150 mm of well-tamped, clean soil or ¼" down crushed limestone shall be placed in the bottom of the trench. In this case, the spoil bank from trenching operations shall not be allowed to fall into the trench or mix with the soil to be used in backfilling the trench. Loose debris or foreign matter and the spoil bank shall be placed so as not to hinder drainage, damage property, or obstruct traffic.

E24.33.2 Trenches shall be dug to such a depth that will provide a minimum cover of 600 mm from final grade in sodded areas and 1000 mm in roadways in accordance with Standard CD 305-1.

#### E24.34 LAYING CABLES

E24.34.1 Cables are to be lowered in the trench in an orderly fashion so as to maintain a consistent path and straight alignment. All cables shall be lowered in a continuous run (NO SPLICING) and in accordance with the construction drawings; and shall maintain the necessary separation, where required. All cables shall be of continuous runs and capped and sealed if they are not being installed in the pole at that time. Cables shall not be dragged over paved surfaces.

E24.34.2 Once a cable is cut its ends must be sealed immediately with an approved and appropriately sized, heat shrink or cold shrink sealing cap to prevent moisture ingress unless the cable is being installed in the pole at that time.

E24.34.3 During the removal of the cable, the reels shall be placed on jacks, stands or trailers with a bar through the arbour holes which will allow the reel to be turned easily, and the cable to be paid out. Cables can be paid out from the bottom or the top of the reel. Cable in coils shall be handled in a similar manner. This can be achieved by supporting the coil in a vertical plane and rotating it by hand as the cable is carefully uncoiled. The cable shall never be pulled over the flange of a reel, or pulled off the side of a coil, since this will introduce a twist in the cable.

E24.34.4 During installation, under no circumstance is the cable to be subjected to a bending radius tighter than that detailed in the Standards.

E24.34.5 Where specified in the Standards or on the construction drawings, the Contractor shall install the street light cable in a conduit.

#### E24.35 INSTALLING CONDUIT AND CABLE BY BORING (HORIZONTAL DIRECTIONAL DRILLING)

E24.35.1 The Contractor shall dig the approaches and openings necessary to install boring equipment, and the boring equipment used shall be of such a nature as to minimize the opening size required. The boring equipment shall produce a straight hole without unnecessary dips or bends. The bore hole shall be only slightly larger than the outside diameter of the conduits or cables to minimize possible settlement. Cables and conduits shall be pulled in with pulling eyes or using a kellum grip in a manner so as to guard against damage.

E24.35.2 During construction as the drill bit crosses each existing facility a lookout shall be assigned by the Contractor to visually confirm the drill bit is maintaining a minimum 300 mm clearance from the existing facility all in accordance with Manitoba Hydro Safe Excavation and Safety Watch Guidelines (latest revision) included as Appendix C. Maximum pulling tensions on any streetlight cable shall be limited to 2.9 kN/0.65 kips.

E24.35.3 Drilling fluids and associated waste materials shall be disposed of in a manner that minimizes environmental effects.

E24.35.4 The Contractor shall properly compact the backfill material and will be responsible for placing additional material should settlement occur for the duration of the warranty period.

#### E24.36 BURIED UTILITY CROSSINGS

E24.36.1 All buried obstructions are not necessarily shown on the reference drawings and the locations of those indicated are approximate only.

E24.36.2 The Contractor shall determine the location of all buried obstructions and shall notify the appropriate authorities and obtain all necessary permits prior to excavation, trenching and directional drilling near or across such obstructions. All buried obstructions where the new buried cable route crosses other utilities including but not limited to gas, water, sewer, telephone and electric lines shall be exposed as per each utilities guidelines by the Contractor, including the use of Pressurized Water/Vacuum Equipment (PW/VE) where

necessary. Should any damage occur to such lines during the course of the work, the Contractor shall be responsible for the damage and the costs of repairs to buried obstructions caused by its operations and shall fully indemnify the City of Winnipeg and Manitoba Hydro from and against all claims arising out of such damage. Manitoba Hydro Safe Excavation and Safety Watch Guidelines (latest revision) included as Appendix C shall be followed when crossing natural gas pipelines and electrical cables by the directional boring method.

- E24.36.3 The PW/VE technique, used to expose underground plant in certain conditions, must be performed in accordance with each utility's requirements, including but not limited to Manitoba Hydro, Manitoba Telecom Services, Shaw Cable, etc. PW/VE costs that the Contractor will incur during the work must be factored into the Contractor's bid prices. The Contractor shall not be entitled to extra compensation for the use of PW/VE on the work.
- E24.36.4 The Contractor shall be responsible to supply all backfill material and carry out all backfill, compacting and leveling of all excavations so as to be ready for topsoil and seed or sod or as directed by Manitoba Hydro.

#### E24.37 BENDING CABLES/CONDUITS AND INSTALLATION INTO STANDARDS

- E24.37.1 It is desired to reduce to a minimum the required number of bends and to lay the cables/conduits to conform to the contour of the ground and maintain a normal covering. This shall be accomplished by cutting the trench slightly deeper in approaches to road crossings and drainage ditches. It is intended that the Contractor shall eliminate unnecessary bending by operating the trenching machine at various depths rather than by finishing grading the trench by hand whenever practical.
- E24.37.2 Sharp bends of the cables/conduits shall be avoided at all times. All bends shall meet the requirements set out in this Specification. If excessive bending was exerted on any cable, the cable shall be replaced at the Contractor's cost. During installation, under no circumstance is the cable to be subjected to a bending radius tighter than that detailed in the Standards. At street light poles the Contractor shall install the ends of the cables into the plastic pipe preinstalled in the concrete base. Care shall be taken to prevent damage to the insulation or jacket of the conductors. Underground cables entering the concrete base shall be protected by a length of protective hose supplied by the Contractor and by a layer of sand surrounding the cables to protect it from the limestone. The cable shall be left long enough to extend one (1) metre beyond the hand hole. The street light cable in the trench shall be installed in conduit for mechanical protection and the ends sealed with duct seal supplied by the Contractor. Care shall be taken to prevent damaging the cable where it exits the conduit. The conduit shall only be installed into the concrete base if conduit sizes make it practicable.
- E24.37.3 Unless otherwise directed, excess underground cable and 2C-12 wire shall be left inside the hand hole with the hand hole cover loosely installed.

#### E24.38 BACKFILL

- E24.38.1 All backfilling material within 300 mm of the cables/conduits shall be clean, free of sod, vegetation, organic material, stones or other debris, and of a consistency as to not create significant voids or air spaces around the cables/conduits. Other backfilling material shall be free of stones greater than 150 mm on their maximum dimension. Where cinders or very acid soil are encountered or where gravel or incompressible fill is required by Municipal authorities, ¼" down crushed limestone shall be placed all around the cables for a depth of at least 300 mm. The completed backfill shall be at least equal in compaction to undisturbed soil or as directed by Manitoba Hydro. Backfill material is to be placed and compacted in lifts not exceeding 300 mm. All excess material is to be removed by the Contractor.
- E24.38.2 Tamping or flushing methods must be used where necessary to give the required compaction. Where tamping is used, hand tampers shall be used to at least 300 mm above the cable before machine tamping may be used. The Contractor shall level all excavations so as to be ready for topsoil and seed or sod or as directed by the Manitoba Hydro. Should

settlement occur in the excavation and cause a depression in the surface, the Contractor shall repair the surface to the satisfaction of the Manitoba Hydro at the Contractor's cost.

- E24.38.3 Excavations remaining where poles have been removed shall be backfilled with spoil, pit run gravel or ¾" down limestone and compacted in lifts of 150mm as directed by Manitoba Hydro. The top 300 mm of the excavation shall be backfilled with topsoil.
- E24.38.4 Excavations remaining where utility crossings have been exposed shall be backfilled with sand or clean spoil and compacted in lifts of 150mm. The top 300 mm of the excavation shall be backfilled with topsoil.
- E24.38.5 Backfill of all excavations shall be in accordance with City of Winnipeg Standard Construction Specification CW 2030 (latest revision), to the satisfaction of the authority having jurisdiction and Manitoba Hydro.

#### E24.39 DEFECTIVE WORK & WARRANTY

- E24.39.1 If any portion of the work fails to comply with the requirements of this Specification, fails within the Warranty period, or if the final tests prove or indicate the existence of any fault or defect in the work, or any part thereof, Manitoba Hydro may forthwith re-execute or make good the faulty or defective work or alter the same to make it comply with requirements of the Specification at the Contractor's expense. Manitoba Hydro shall give the Contractor notice together with particulars of such failure, fault or defect, Manitoba Hydro's cost to re-execute or make good the faulty or defective work and the Cost shall be deducted from the Contract.
- E24.39.2 At the completion of the work for each location, Manitoba Hydro shall prepare and issue a Network Commissioning Report, a sample of which is included as Appendix G, to the Contractor. The Network Commissioning Report shall be dated indicating the commencement of the Warranty period for the work performed at the location.

#### E24.40 AS-BUILT DRAWING

- E24.40.1 The Contractor shall provide an as-built drawing or mark-up drawing to Manitoba Hydro which accurately displays the "as-built" location of the buried street light cables, conduits and street light poles.

#### E24.41 MEASUREMENT AND PAYMENT

- E24.41.1 Removal of 25' to 35' street light pole and precast, poured in place concrete, steel power installed base or direct buried including davit arm, luminaire and appurtenances.
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Removal of 25' to 35' street light pole and precast, poured in place concrete, steel power installed base or direct buried including davit arm, luminaire and appurtenances". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including removal of the pole, base, luminaire, appurtenances, use of pressurized water/vacuum excavation, transportation of Reclaim, Surplus and Scrap material, payment of associated disposal fees and all other items incidental to the work included in the Specification.
- E24.41.2 Removal of 45' street light pole and precast, poured in place concrete, steel power installed base or direct buried including davit arm, luminaire and appurtenances
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Removal of 45' street light pole and precast, poured in place concrete, steel power installed base or direct buried including davit arm, luminaire and appurtenances". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including removal of the pole, base, luminaire, appurtenances, use of pressurized water/vacuum excavation, transportation of Reclaim, Surplus and Scrap material, payment of associated disposal fees and all other items incidental to the work included in the Specification.

- E24.41.3 Installation of Conduit and #4 AL C/N or 1/0 AL Triplex Streetlight Cable in Conduit by Open Trench Method
- (a) This pay item will be measured on a linear metre basis and paid for at the Contract Unit Price per linear metre for "Installation of Conduit and #4 AL C/N or 1/0 AL Triplex streetlight cable in Conduit by open trench method." The number of meters to be paid for at the Contract Unit Price shall be measured and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of the conduit, pulling cable into the conduit, backfilling the trench, buried utility crossings, use of pressurized water/vacuum excavation and all other items incidental to the work included in the Specification.
- E24.41.4 Installation of 50 mm Conduit by Boring Method complete with Cable Insertion (#4 AL C/N or 1/0 AL Triplex)
- (a) This pay item will be measured on a linear metre basis and paid for at the Contract Unit Price per linear metre for "Installation of 50 mm conduit or conduits by boring method complete with cable insertion (#4 AL C/N or 1/0 AL Triplex)." The number of meters to be paid for at the Contract Unit Price shall be measured and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of 50mm conduit or conduits by boring method, inserting the #4 AL C/N or 1/0 AL Triplex streetlight cable into the conduit(s), buried utility crossings, use of pressurized water/vacuum excavation and all other items incidental to the work included in the Specification.
- E24.41.5 Installation of cable (#4 AL C/N or 1/0 AL Triplex) by boring method.
- (a) This pay item will be measured on a linear metre basis and paid for at the Contract Unit Price per linear metre for "Installation of cable(s) (#4 AL C/N or 1/0 AL Triplex) by boring method." The number of meters to be paid for at the Contract Unit Price shall be measured and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of the cable or cables by boring method, buried utility crossings, use of pressurized water/vacuum excavation and all other items incidental to the work included in the Specification.
- E24.41.6 Installation of 25'/35' Pole, Davit Arm and Precast Concrete Base Including Luminaire and Appurtenances
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Installation of 25'/35' pole, davit arm and precast concrete base including luminaire and appurtenances." The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of the pole, davit arm, base, luminaire, appurtenances, placing the cable(s) into the base, use of pressurized water/vacuum excavation and all other items incidental to the work included in the Specification.
- E24.41.7 Installation of 45' Pole, Davit Arm and Precast Concrete Base Including Luminaire and Appurtenances
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Installation of 45' pole, davit arm and precast concrete base including luminaire and appurtenances." The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of the pole, davit arm, base, luminaire, appurtenances, placing the cable(s) into the base, use of pressurized water/vacuum excavation and all other items incidental to the work included in the Specification.
- E24.41.8 Installation of One (1) 10' Ground Rod at Every Third Street Light, at the End of a Street Light Circuit or Anywhere Else as Shown on the Design Drawings. Trench #4 Ground Wire up to 1 m From Rod Location to New Street Light and Connect (Hammerlock) to Top of Ground Rod

- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Installation of one (1) 10' ground rod at every third street light, at the end of a street light circuit or anywhere else as shown on the design drawings. Trench #4 ground wire up to 1 m from rod location to new street light and connect (hammerlock) to top of the ground rod." The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including install one (1) 10' ground rod, trench the #4 ground wire to the new streetlight pole, connect (hammerlock) ground wire to rod and all other items incidental to the work included in the Specification.
- E24.41.9 Installation of Lower 3 m of Cable Guard, Ground Lug, Cable Up Pole, and First 3 M Section of Ground Rod Per Standard CD 315-5
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Install/lower 3 m of Cable Guard, ground lug, cable up pole, and first 3 m section of ground rod per Standard CD 315-5". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installing the lower section of cable guard, ground lug, ground rod, coiling cable(s) up the pole and all other items incidental to the work included in the Specification.
- E24.41.10 Installation and Connection of Externally-Mounted Relay and PEC Per Standards CD 315-12 and CD 315-13
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Installation and connection of externally-mounted relay and PEC per Standards CD 315-12 and CD 315-13". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including mounting the relay, PEC, wiring as per the schematic and all other items incidental to the work included in the Specification.
- E24.41.11 Termination of 2/C #12 Copper Conductor to Street Light Cables Per Standard CD310-4, CD310-9 or CD310-10
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Terminate 2/C #12 copper conductor to street light cables per Standard CD310-4, CD310-9 or CD310-10". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including connection of the 2/C # 12 copper conductor to the #4 C/N or 1/0 Al Triplex cable(s) using a GELCAP-SL-2/0 splice kit and all other items incidental to the work included in the Specification.
- E24.41.12 Splicing #4 AL C/N or 2 Single Conductor Street Light Cables
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Splicing #4 Al C/N or 2 single conductor street light cables". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including splicing the #4 AL C/N or 2 single conductor cables in accordance with Standard CD 215- 12 and CD 215-13 and all other items incidental to the work included in the Specification.
- E24.41.13 Splicing 1/0 AL Triplex Cable or 3 Single Conductor Street Light Cables
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Splicing 1/0 AL triplex cable or 3 single conductor street light cables". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including splicing the 1/0 Al triplex cable or set of 3 single conductor cables in accordance with Standard CD 215-12 and CD 215-13 and all other items incidental to the work included in the Specification.

- E24.41.14 Installation of Break-Away Base and Reaction Plate on Base-Mounted Poles up to 35'
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Installation of break-away base and reaction plate on base mounted poles up to 35". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of the reaction plate, break-away base and all other items incidental to the work included in the Specification.
- E24.41.15 Installation of Overhead Span of #4 Duplex Between New or Existing Streetlight Poles and Connect Luminaire to Provide Temporary Overhead Feed
- (a) This pay item will be measured on per span basis and paid for at the Contract Unit Price per span for "Installation of Overhead Span of #4 duplex Between New or Existing Streetlight Poles and Connect Luminaire to Provide Temporary Overhead Feed". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including attachment of the #4 duplex overhead conductor using a perform grip (c/w spool insulator(s) to davit arm if necessary), sagging conductor, connection of luminaire using 2C#12 copper conductor and all other items incidental to the work included in the Specification.
- E24.41.16 Removal of Overhead Span of #4 Duplex Between New or Existing Streetlight Poles to Remove Temporary Overhead Feed
- (a) This pay item will be measured on a per span basis and paid for at the Contract Unit Price per span for "Removal of Overhead Span of #4 duplex Between New or Existing Streetlight Poles to Remove Temporary Overhead Feed". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by the Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including removal of the #4 duplex overhead conductor, spool insulator(s) and all other items incidental to the work included in the Specification.
- E24.41.17 Expose Underground Cable Entrance of Existing Streetlight Pole and Install New Streetlight Cable(s).
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Expose Underground Cable Entrance of Existing Streetlight Pole and Install New Streetlight Cable(s)". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including excavation and exposure of the underground cable entrance by any means necessary including use of pressurized water/vacuum excavation, installation of the new streetlight cables(s), backfill, compaction and all other items incidental to the work included in the Specification

# **APPENDIX 'A'**

## **BACKGROUND REPORTS**

## **APPENDIX 'B'**

# **MANITOBA HYDRO STREET LIGHTING STANDARDS**

# **APPENDIX 'C'**

## **SAFE EXCAVATION AND SAFETY WATCH GUIDELINES**

# **APPENDIX 'D' – GELCAP KIT**

**APPENDIX 'E'**

**ELECTRIC AND/OR NATURAL GAS  
FACILITIES LOCATE**

## **APPENDIX 'F'**

# **MANITOBA HYDRO JOB PLAN- ENGINEERING AND CONSTRUCTION**

## **APPENDIX 'G'**

# **MANITOBA HYDRO NETWORK COMMISSIONING REPORT**