



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 6-2018

**CITY OF WINNIPEG DOWNTOWN BIKE LANE SYSTEM AND STREET
IMPROVEMENT, 2018-2019 PAVEMENT RENEWALS**

TABLE OF CONTENTS

PART A - BID SUBMISSION

Form A: Bid	1
Form B: Prices	4
Form G1: Bid Bond and Agreement to Bond	27
Form G2: Irrevocable Standby Letter of Credit and Undertaking	29

PART B - BIDDING PROCEDURES

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

PART C - GENERAL CONDITIONS

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

PART D - SUPPLEMENTAL CONDITIONS

General

D1. General Conditions	1
D2. Scope of Work	1
D3. Contract Administrator	2
D4. Contractor's Supervisor	3
D5. Ownership of Information, Confidentiality and Non Disclosure	3
D6. Notices	3
D7. Furnishing of Documents	4

Submissions

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

Schedule of Work

D14. Commencement	6
D15. Working Days	7
D16. Restricted Work Hours	7
D17. Work By Others	7
D18. Sequence of Work	8
D19. Critical Stages	9
D20. Substantial Performance	10
D21. Total Performance	10
D22. Liquidated Damages	10

D23. Scheduled Maintenance	11
Control of Work	
D24. Job Meetings	11
D25. Prime Contractor – The Workplace Safety and Health Act (Manitoba)	11
D26. The Workplace Safety and Health Act (Manitoba) – Qualifications	11
Measurement and Payment	
D27. Payment	11
Warranty	
D28. Warranty	11
Form H1: Performance Bond	13
Form H2: Irrevocable Standby Letter of Credit	15
Form J: Subcontractor List	17

PART E - SPECIFICATIONS

General	
E1. Applicable Specifications and Drawings	1
E2. Geotechnical Report	2
E3. Office Facilities	2
E4. Traffic Control	3
E5. Traffic Management	3
E6. Refuse and Recycling Collection	7
E7. Pedestrian Safety	7
E8. Water Obtained From the City	7
E9. Surface Restorations	7
E10. Infrastructure Signs	8
E11. Supply and Installation of Pavement Repair Fabric	8
E12. Hydro Excavation	9
E13. Insulation of Existing Watermains at Catch Pits and Catchbasins	10
E14. Supply and Install Watermain and Water Service Insulation	10
E15. Existing Street Car Track Bedding	11
E16. Catch Basin Flow Restrictors	12
E17. Sawcutting	13
E18. Teraspan	13
E19. Adjustment of Manitoba Hydro Manhole Frames/MTS Manhole Frames	14
E20. Green Bike Lane Treatment	15
E21. Pedestrian Light Fixture	16
E22. Polyposts	16
E23. Powder Coat	17
E24. Refurbishment of Stittsville Lights	20
E25. Removal of Precast Concrete Traffic Barriers	23
E26. Sidewalk Removal at Areaways	23
E27. Supply and Installation of Bollards	24
E28. Construction in Close Proximity to Large Diameter Watermain	25
E29. Business Information Signs	26
E30. Protection Of Existing Trees	26
E31. Tree Removal	27
E32. Removal of Existing Interlocking Paving Stones	27
E33. Installation of Interlocking Paving Stones	27
E34. Tree Vaults	29
E35. Planting Medium & Finished Grading	32
E36. Site Amenities	34
E37. Remove and Reinstall Bike Hoops	35
E38. Exterior Metal Fabrication	36
E39. Trees	38
E40. Long Term Scheduled Maintenance of Plant Material	43
E41. Plant Material Warranty	45
E42. Salt Tolerant Grass Seeding	46

E43. Work Near High Pressure Gas Main	47
E44. Temporary Traffic Control Signage	47
E45. Installation of Conduit	47
E46. Removal of Existing Planter	48
E47. Installation of Asphalt Speed Bumps	48

Appendix 'A' - Geotechnical Report

Appendix 'B' – Manitoba Hydro Precast Base Details

Appendix 'C' – Work Near High Pressure Natural Gas Main

PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 CITY OF WINNIPEG DOWNTOWN BIKE LANE SYSTEM AND STREET IMPROVEMENT, 2018-2019 PAVEMENT RENEWALS

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, March 29, 2018.

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

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

B3. ENQUIRIES

B3.1 All enquiries shall be directed to the Contract Administrator identified in D3.1.

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

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

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

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

B4. 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 Bid Opportunity 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 Bid Opportunity, or clarifying the meaning or intent of any provision therein.

- B5.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.
- B5.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/bidopp.asp>
- B5.2.2 The Bidder is responsible for ensuring that he/she has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B5.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B6. SUBSTITUTES

- B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
 - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
 - (c) identify any anticipated cost or time savings that may be associated with the substitute;
 - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
 - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/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 B16.
- 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, hard copy;
 - (c) Bid Security
 - (i) Form G1: Bid Bond and Agreement to Bond, or
Form G2: Irrevocable Standby Letter of Credit and Undertaking, or
a certified cheque or draft;
- B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.
- B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely.
- B7.4 The Bid shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.
- B7.4.1 Samples or other components of the Bid which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid.
- B7.4.2 A hard copy of Form B: Prices must be submitted with the Bid. If there is any discrepancy between the Adobe PDF version of Form B: Prices and the Microsoft Excel version of Form B: Prices, the PDF version shall take precedence.
- B7.5 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.
- B7.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B16.1(a).
- B7.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B7.8 Bids shall be submitted to:
- The City of Winnipeg
Corporate Finance Department
Materials Management Division
185 King Street, Main Floor
Winnipeg MB R3B 1J1

B8. BID

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

- B8.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/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, 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 shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, it shall be signed by the Bidder;
 - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
 - (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, shall be affixed;
 - (d) if the Bidder is carrying on business under a name other than his/her own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- B8.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.
- B8.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

B9. PRICES

- B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B9.1.1 For the convenience of Bidders, and pursuant to B7.4.2 and B16.4.2, an electronic spreadsheet Form B: Prices in Microsoft Excel (.xls) format is available along with the Adobe PDF documents for this Bid Opportunity on the Bid Opportunities page at the Materials Management Division website at <http://www.winnipeg.ca/matmgt/>
- 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 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 Various Persons provided information or services with respect to this Work. In the City's opinion, this relationship or association does not create a conflict of interest because of this full disclosure. Where applicable, additional material available as a result of contact with these Persons is listed below.

B10.2 The Persons are:

- (a) N/A

B11. QUALIFICATION

B11.1 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.

B11.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

B11.3 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);

B11.4 Further to B11.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

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

B11.5 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.

B11.6 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.

B12. BID SECURITY

B12.1 The Bidder shall provide bid security in the form of:

- (a) a bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in the form included in the Bid Submission (Form G1: Bid Bond and Agreement to Bond); or
- (b) an irrevocable standby letter of credit, in the amount of at least ten percent (10%) of the Total Bid Price, and undertaking issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form included in the Bid Submission (Form G2: Irrevocable Standby Letter of Credit and Undertaking); or
- (c) a certified cheque or draft payable to "The City of Winnipeg", in the amount of at least fifty percent (50%) of the Total Bid Price, drawn on a bank or other financial institution registered to conduct business in Manitoba.

B12.1.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.

B12.1.2 All signatures on bid securities shall be original.

B12.1.3 The Bidder shall sign the Bid Bond.

B12.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.

B12.2 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly executed by the successful Bidder and the performance security furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.

B12.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B12.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.

B12.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.

B12.3 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Bid Opportunity.

B13. OPENING OF BIDS AND RELEASE OF INFORMATION

B13.1 Bids will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Division, or in such other office as may be designated by the Manager of Materials.

B13.1.1 Bidders or their representatives may attend.

B13.1.2 Bids determined by the Manager of Materials, or his/her designate, to not include the bid security specified in B12 will not be read out.

- B13.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>
- B13.3 After award of Contract, the name(s) of the successful Bidder(s), their address(es) and the Contract amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>
- B13.4 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).
- B13.4.1 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.

B14. IRREVOCABLE BID

- B14.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.
- B14.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly executed and the performance security furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid.

B15. WITHDRAWAL OF BIDS

- B15.1 A Bidder may withdraw his/her Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.
- B15.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.
- B15.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 13 of Form A: Bid, and only such person, has authority to give notice of withdrawal.
- B15.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:
- (a) retain the Bid until after the Submission Deadline has elapsed;
 - (b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 13 of Form A: Bid; and
 - (c) if the notice has been given by any one of the persons specified in B15.1.3(b), declare the Bid withdrawn.
- B15.2 A Bidder who withdraws his/her Bid after the Submission Deadline but before his/her Bid has been released or has lapsed as provided for in B14.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law, including the right to retain the Bidder's bid security.

B16. EVALUATION OF BIDS

- B16.1 Award of the Contract shall be based on the following bid evaluation criteria:
- (a) compliance by the Bidder with the requirements of the Bid Opportunity, or acceptable deviation therefrom (pass/fail);
 - (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B11 (pass/fail);
 - (c) Total Bid Price;
 - (d) economic analysis of any approved alternative pursuant to B6.
- B16.2 Further to B16.1(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.
- B16.2.1 Any bid with an apparent imbalance between the unit prices in Part 1 and Part 2 may be determined to be non-responsive and rejected by the Award Authority in its sole discretion, acting reasonably.
- B16.3 Further to B16.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is responsible and qualified.
- B16.4 Further to B16.1(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.
- B16.4.1 Further to B16.1(a), in the event that a unit price is not provided on Form B: Prices, the City will determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.
- B16.4.2 The electronic Form B: Prices and the formulas imbedded in that spreadsheet are only provided for the convenience of Bidders. The City makes no representations or warranties as to the correctness of the imbedded formulas. It is the Bidder's responsibility to ensure the extensions of the unit prices and the sum of Total Bid Price performed as a function of the formulas within the electronic Form B: Prices are correct.

B17. AWARD OF CONTRACT

- B17.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B17.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.
- B17.2.1 Without limiting the generality of B17.2, 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.
- B17.3 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B16.

- B17.3.1** 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.
- B17.4** As noted in D2 and identified in Form B: Prices, the Work of Part 2 will be contingent upon the Winnipeg Police Service approving funding for the Work. If sufficient funding for Part 2 Work is not approved by the Winnipeg Police Service, the City shall have the right to eliminate all or any portion of Part 2 Work in accordance with D2 with no compensation to the Bidder.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

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

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

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

- (a) Pavement Reconstruction and Streetscaping
 - (i) Notre Dame Avenue from Adelaide Street to Portage Avenue
 - (ii) Geometric Improvements: Arthur Street and McDermot Avenue Intersection
 - (iii) Garry Street from Notre Dame Avenue to Portage Avenue
- (b) Pavement Rehabilitation and Streetscaping
 - (i) Garry Street from Portage Avenue to Assiniboine
- (c) Mill and Fill and Related Work
 - (i) Princess Street from William Avenue to Donald Street

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

Part 1 – City Funded Work

- (a) Pavement Reconstruction and Streetscaping
 - (i) Remove existing pavement
 - (ii) Remove existing concrete street car bedding and wood ties
 - (iii) Excavation
 - (iv) Installation of subdrains
 - (v) Insulation of water services (as required)
 - (vi) Compaction of existing sub-grade
 - (vii) Installation of curb and gutter inlets, catchbasins, catchpits and connection pipe
 - (viii) Insulation of catchbasins and catchpits (as required)
 - (ix) Connection to existing sewer
 - (x) Connection to existing manhole and existing services
 - (xi) Placement of non-woven geotextile fabric (include geogrid as applicable)
 - (xii) Placement of sub-base and base course materials
 - (xiii) Adjustment of existing manholes
 - (xiv) Construction of 230mm plain dowelled concrete pavement utilizing hand-placed methods c/w 180mm separate barrier curb and monolithic concrete median
 - (xv) Complete curb renewal at intersections beyond reconstruction limits (as required)
 - (xvi) Construction of 230mm plain dowelled concrete pavement at all side street connections
 - (xvii) Construction of 200mm reinforced concrete pavement (back lanes/private driveways/approaches/geometric improvements)
 - (xviii) Construct concrete median
 - (xix) Remove existing concrete/paving stone sidewalk
 - (xx) Construct concrete tree vaults complete with planting medium
 - (xxi) Construct new 100mm concrete sidewalk c/w paving stone band and detectable surface warning tiles

- (xxii) Supply and placement of Holland paving stones
 - (xxiii) Supply and installation of amenities (bike racks, tree grates, etc.)
 - (xxiv) Removal of existing tree and placement of new trees
 - (xxv) Boulevard restoration
- (b) Pavement Rehabilitation and Streetscaping
- (i) Planing existing asphalt pavement
 - (ii) Full depth concrete repairs of existing joints and slabs
 - (iii) Renewal of existing curbs in gutter lanes
 - (iv) Replacement of existing catch basins and catch basin leads
 - (v) Adjustment of catch basins, sewer manholes, appurtenances, and utility manholes
 - (vi) Renewal of existing sidewalk
 - (vii) Installation of detectable warning tiles
 - (viii) Placement of asphalt overlay (Type 1A, average thickness 85 mm)
 - (ix) Construct concrete tree vaults complete with planting medium
 - (x) Construct new 100mm concrete sidewalk c/w paving stone band and detectable surface warning tiles
 - (xi) Supply and placement of Holland paving stones
 - (xii) Supply and installation of amenities (bike racks, tree grates, etc.)
 - (xiii) Removal of existing tree and placement of new trees
 - (xiv) Boulevard restoration
- (c) Mill and Fill and Related Work
- (i) Milling existing asphaltic pavement overlay
 - (ii) Renewal of curbs
 - (iii) Full depth patches of existing slabs
 - (iv) Construct asphalt overlay (Type 1A 50mm average thickness)
 - (v) Renewal and regrading of existing Paving Stone sidewalks
 - (vi) Geometric improvements
 - (vii) Hydrant relocation

Part 2 – Winnipeg Police Service Building Bollards

- (a) Removal of Existing Traffic Barriers and Delivery to City Yard
- (b) Removal of Sidewalk
- (c) Supply and Installation of Bollards
- (d) Sidewalk Restoration

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is AECOM Canada Ltd., represented by:

Thomas Findlay, P. Eng.
Transportation Engineer

Telephone No. 204 928-8438

Email Address Thomas.findlay@aecom.com

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

D3.3 Bids Submissions must be submitted to the address in B7.

D4. CONTRACTOR'S SUPERVISOR

- D4.1 At the pre-construction meeting, the Contractor shall identify his/her designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.
- D4.2 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 D4.1 or an alternate can be contacted twenty-four (24) hours a day to respond to an emergency.

D5. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE

- D5.1 The Contract, all deliverables produced or developed, and information provided to or acquired by the Contractor are the property of the City and shall not be appropriated for the Contractors own use, or for the use of any third party.
- D5.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.
- D5.3 The following shall be confidential and shall not be disclosed by the Contractor to the media or any member of the public without the prior written authorization of the Contract Administrator;
- (a) information provided to the Contractor by the City or acquired by the Contractor during the course of the Work;
 - (b) the Contract, all deliverables produced or developed; and
 - (c) any statement of fact or opinion regarding any aspect of the Contract.
- D5.4 A Contractor who violates any provision of D5 may be determined to be in breach of Contract.

D6. NOTICES

- D6.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.
- D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3 D6.4 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the email address identified in D3.1.
- D6.3 Notwithstanding C21, all notices of appeal to the Chief Administrative Officer shall be sent to the attention of the Chief Financial Officer at the following:
- The City of Winnipeg
Attn: Chief Financial Officer
Office of the Chief Administrative Officer
Susan A. Thompson Building
2nd Floor, 510 Main Street
Winnipeg MB R3B 1B9
- D6.4 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following facsimile number:
- The City of Winnipeg
Legal Services Department
Attn: Director of Legal Services
Facsimile No.: 204-947-9155

D6.5 Bids Submissions must not be submitted to this facsimile number. Bids must be submitted in accordance with B7.

D7. FURNISHING OF DOCUMENTS

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

SUBMISSIONS

D8. AUTHORITY TO CARRY ON BUSINESS

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

D9. SAFE WORK PLAN

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

D9.2 The Safe Work Plan 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>

D10. INSURANCE

D10.1 The Contractor shall provide and maintain the following insurance coverage:

- (a) commercial general liability insurance, in the amount of at least five million dollars (\$5,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability, broad form property damage cover and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
- (b) 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 supplies and/or materials intended to enter into and form part of any installation;
- (d) an all risks property insurance policy to cover all machinery, equipment and tools that may be owned, rented, leased or borrowed to be used in conjunction with the scope of Work.

D10.2 Deductibles shall be borne by the Contractor.

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

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

D11. PERFORMANCE SECURITY

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

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

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

D11.2 If the bid security provided in his/her Bid was not a certified cheque or draft pursuant to B12.1(c), the Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of letter of intent and prior to the commencement of any Work on the Site and in no event later than the date specified in the C4.1 for the return of the executed Contract.

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.

D13. DETAILED WORK SCHEDULE

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

D13.2 If, prior to submitting the Detailed Work Schedule, the Contractor does not receive notification pursuant to D14.4 that all or some portion of Part 2 of the Work may be commenced, he/she shall complete Form L: Detailed Work Schedule for only Part 1 of the Work assuming that, if all of Part 2 is eliminated, the time periods stipulated in D19.1 for Substantial Performance of the Work and in D21 for Total Performance of the Work will be reduced by Five (5) Working Days

D13.3 If, after submitting the Detailed Work Schedule, the Contractor receives notification that all or any portion of Part 2 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.

D13.4 The detailed work schedule shall consist of the following:

- (a) a critical path method (C.P.M.) schedule for the Work; and
- (b) a Gantt chart for the Work based on the C.P.M. schedule;

all acceptable to the Contract Administrator.

- D13.5 Further to D13.4(a), the C.P.M. schedule shall clearly identify the start and completion dates of all of the following activities/tasks making up the Work as well as showing those activities/tasks on the critical path:
- (a) Commencement Date
 - (b) Substantial Performance Date
 - (c) Total Performance Date
 - (d) Milestone Dates for Critical Stages of the Work
 - (e) Interim Milestone Dates for Commencement and Completion of the Various Construction Phases
- D13.6 Further to D13.4(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

D14. COMMENCEMENT

- D14.1 The Contractor shall not commence any Work until he/she is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.
- D14.2 The Contractor shall not commence any Work on the Site until:
- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D8;
 - (ii) evidence of the workers compensation coverage specified in C6.15;
 - (iii) the twenty-four (24) hour emergency response phone number specified in D4.2.
 - (iv) the Safe Work Plan specified in D9;
 - (v) evidence of the insurance specified in D10;
 - (vi) the performance security specified in D11;
 - (vii) the subcontractor list specified in D12; and
 - (viii) the detailed work schedule specified in D13.
 - (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.
- D14.3 The Contractor shall not commence the Work on the Site before May 4, 2018 and shall commence the Work on Site no later than May 11, 2018 for the Phase I 2018 Construction Works and shall not commence the Work on the Site before May 3, 2019 and shall commence the Work on Site no later than May 10, 2019 for the Phase II 2019 Construction Works, as directed by the Contract Administrator and weather permitting.
- D14.4 The Contractor shall not order any materials related to Part 2 of the Work or commence Part 2 of the Work as described in D2 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 Winnipeg Police Service.
- D14.5 The City intends to award this Contract by May 1, 2018.
- D14.5.1 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.

D15. WORKING DAYS

D15.1 Further to C1.1(jj);

D15.1.1 The Contract Administrator will determine daily if a Working Day has elapsed and will record his/her assessment. On a weekly basis the Contract Administrator will provide the Contractor with a record of the Working Days assessed for the preceding week. The Contractor shall sign each report signifying that he/she agrees with the Contract Administrator's determination of the Working Days assessed for the report period.

D15.1.2 Work done to restore the Site to a condition suitable for Work, shall not be considered "work" as defined in the definition of a Working Day.

D15.1.3 When the Work includes two or more major types of Work that can be performed under different atmospheric conditions, the Contract Administrator shall consider all major types of Work in determining whether the Contractor was able to work in assessing Working Days.

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) City of Winnipeg – Transit Department – removal and relocation of bus stops;
- (b) City of Winnipeg – Traffic Signals Department – removal and installation of traffic signals and pedestrian crossing poles at Arthur Street/McDermot Avenue intersection, Arthur Street/Notre Dame Avenue intersection, Ellice Avenue/Garry Street intersection, Bannatyne Avenue/Princess Street intersection, Broadway Avenue/Garry Street intersection, Donald Street/Princess Street/Smith Street/Notre Dame Avenue intersection, Garry Street/Graham Avenue intersection, Garry Street/Portage Avenue intersection, Garry Street/York Avenue intersection, King Street/Notre Dame Avenue intersection, McDermot Avenue/Princess Street intersection, Princess Street/William Avenue intersection;
- (c) City of Winnipeg – Traffic Service Department – miscellaneous sign removal and installation and line painting;
- (d) Manitoba Hydro Gas Division – lowering and/or rock wrapping of underground main and services as required;
- (e) Manitoba Hydro Street Lighting – removal of existing overhead poles, installation of new street lights on Notre Dame Avenue from Princess Street to Portage Avenue and Garry Street from Ellice Avenue to Assiniboine Avenue, and installation of conduit and associated wiring; installation of bases for Stittsville lights on Notre Dame Avenue from Princess Street to Portage Avenue and pedestrian level lighting on Garry Street from Ellice Avenue to Assiniboine Avenue;
- (f) Winnipeg Parking Authority – removal and re-installation of parking pay stations;
- (g) Watermain Renewal Contract on Albert Street from Notre Dame Avenue to McDermot Avenue – Contact Ray Offman (KGS Group) at (204)896-1209;
- (h) City of Winnipeg – Geomatics Branch – various works on survey monuments.
- (i) Manitoba Hydro Underground Power – adjustment of manhole(s) frames and covers as required;
- (j) MTS – adjustment of manhole(s) frames as required and rebuilding of two manhole roofs;
- (k) Benchmark Advertising – Removal and replacement of garbage and recycling containers;

- (l) Canada Post – Removal and replacement of mailboxes;
- (m) SkyCity Centre Construction 2019 Construction – Contact Bill Nairn (Dillon Consulting) at (204)453-2301;
- (n) 235 Notre Dame Areaway abandonment (estimated to be complete April 13, 2018) - Contact Zeb Medeiros (JC Paving Ltd.) at (204)798-1805;
- (o) McDermot/Bannatyne Bike Lane Construction – Contact Kevin Rae (AECOM) at (204)928-8430;
- (p) Donald Street Pavement Reconstruction – Contact Dom Pereira (Borland Construction) at (204)255-6444;
- (q) TeraSpan Networks Inc. Directional Drilling – Contact TeraSpan Networks Inc. (604)684-8711;
- (r) Potential areaway work by property owner at 259 Portage Avenue adjacent to Garry Street.

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 2 Phases. Each Phase shall be subdivided into project locations and stages. Some stages are further subdivided into substages. Phase I of the work is to be completed during the 2018 construction season and Phase II of the work is to be completed during the 2019 construction season.

D18.2 Part I – City Funded Work

D18.2.1 Phase I – 2018 Construction Works

- (a) Project Location – Princess Street Mill and Fill from Notre Dame Avenue to William Avenue as described in D2.
 - (i) Divided into 3 stages, see CT-02 for details, each stage must be completed before commencing the next.
- (b) Project Location – Notre Dame Avenue Reconstruction from Adelaide Street to Portage Avenue as described in D2.
 - (i) Divided into 2 stages, see CT-03 and CT-04 for details, each stage must be completed before commencing the next.
 - (ii) Stage 1 is divided into 3 sub stages Stage 1A, Stage 1B and Stage 1C, each substage must be completed before commencing the next. Garry Street Reconstruction from Notre Dame Avenue to Portage Avenue to be completed concurrently with Notre Dame Avenue Stage 1.
 - (iii) Stage 2 is divided into 2 sub stages Stage 2A and Stage 2B, each substage must be completed before commencing the next. Complete Geometric Improvements at Notre Dame Avenue and McDermot Avenue during this Stage.
 - (iv) Stage 1C and Stage 2B may be delayed until end of Phase 1 or until Phase 2 depending on the completion of the St. Charles Area Hotel areaway repair (235 Notre Dame Avenue), see D17 for details. No work to commence on Stage 1C or Stage 2B until failed areaway at 235 Notre Dame Avenue is repaired by Owner.
- (c) Project Location – Garry Street Reconstruction from Notre Dame Avenue to Portage Avenue as described in D2.
 - (i) Divided into 2 stages, see CT-05 for details, each stage must be completed before commencing the next. To be completed concurrently with Notre Dame Avenue Stage 1.
- (d) Project Location – Arthur Street Geometric Improvements from Notre Dame Avenue to McDermot Avenue as described in D2.

- (i) Divided into 2 stages, see CT-05 for details, each stage must be completed before commencing the next.
- D18.2.2 Due to traffic staging, Stage 1 of the Princess Street Mill and Fill, Stage 1A of the Notre Dame Reconstruction and the Donald Street Reconstruction as described in D17 need to be completed concurrently.
- D18.2.3 Due to traffic staging, Stage 1 and 2 of the Garry Street Reconstruction and Stage 1A and 1B of the Notre Dame Avenue Reconstruction need to be completed concurrently.
- D18.2.4 Due to traffic staging, Stage 2 and 3 of the Princess Street Mill and Fill and Stage 1B of the Notre Dame Reconstruction need to be completed concurrently.
- D18.2.5 Stage 1C of the Notre Dame Avenue Reconstruction could be delayed until the end of Phase I, if the area way construction described in D17 has not been completed by the time the Work associated with Substage 1B has been accepted by the Contract Administrator as being completed.
 - (a) Further to D18.2.2, Stage 1C and Stage 2B of the Notre Dame Avenue Reconstruction could be delayed until Phase II if the areaway construction described in D17 has not been completed by the time the Work associated with Substage 2A has been accepted by the Contract Administrator as being completed.
- D18.2.6 **Phase II – 2019 Construction Works**
 - (a) Project Location – Garry Street Rehabilitation from Portage Avenue to Assiniboine Avenue as described in D2.
 - (i) Divided into 2 stages, see CT-06, CT-07, CT-08 and CT-09 for details.
 - (b) Project Location – Notre Dame Avenue Reconstruction as described in D2.
 - (i) Stage 1C and Stage 2B of the Notre Dame Avenue Reconstruction could be delayed until Phase II, if the areaway construction described in D17 has not been completed by the time the Work associated with Substage 2A has been accepted by the Contract Administrator as being completed.
- D18.2.7 At the request of the Contractor work on Phase II will be allowed to commence immediately following the completion of Phase I, pending the completion of all required Work By Others as described in D17 and written permission from the Contract Administrator.
- D18.3 Part II – Supply and Installation of Winnipeg Police Service Bollards.
- D18.3.1 Part II of the Work is to be completed simultaneously with Phase II-Stage I of the Project during the 2019 construction season.

D19. CRITICAL STAGES

- D19.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:
 - (a) Princess Street Mill and Fill - from Notre Dame to McDermot as described in D2 and D18 shall be total performed within twenty (20) consecutive Working Days of the commencement of the Work as specified in D14.
 - (b) Phase I - as described in D2 and D18 shall be total performed within ninety-five (95) consecutive Working Days of the commencement of the Work as specified in D14 and in accordance with D18.
- D19.2 When the Contractor considers the Work associated with the Princess Street Mill and Fill or Phase I 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 Princess Street Mill and Fill or Phase I Work has been accepted by the Contract Administrator as being completed to the requirements of the Contract is the date on which completion of the Princess Street Mill and Fill or Phase I critical Stages has been achieved.

D20. SUBSTANTIAL PERFORMANCE

D20.1 The Contractor shall achieve Substantial Performance within One Hundred and Eighty (180) consecutive Working Days of the commencement of the Work as specified in D14.

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 within One Hundred and Eighty-Five (185) consecutive Working Days of the commencement of the Work as specified in D14.

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 Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:

- (a) Princess Street Mill and Fill – Five Thousand dollars (\$5,000.00);
- (b) Phase I – Five Thousand dollars (\$5,000.00);
- (c) Substantial Performance – Five Thousand dollars (\$5,000.00);
- (d) Total Performance – One Thousand Five Hundred dollars (\$1,500.00).

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. SCHEDULED MAINTENANCE

- D23.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:
- (a) Reflective Crack Maintenance as specified in CW 3250;
 - (b) General Maintenance of Plant Material as specified in E40;
 - (c) Sod & Seed Maintenance as specified in CW 3510.
- D23.2 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

D24. JOB MEETINGS

- D24.1 Regular weekly job meetings will be held at 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.
- D24.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

D25. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

- D25.1 Further to C6.24, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

D26. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS

- D26.1 Further to B11.4, 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 B11.4.

MEASUREMENT AND PAYMENT

D27. PAYMENT

- D27.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D28. WARRANTY

- D28.1 Notwithstanding C13.2, the warranty period for the Phase I Works shall begin on the date that Phase I is accepted as complete by the Contract Administrator and shall expire one (1) year thereafter for the Princess Mill and Fill , and two (2) years thereafter for pavement

reconstruction works, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

- D28.2 Notwithstanding C13.2, the warranty period for the Phase II Works and Part II shall begin on the date that Phase II and Part II is accepted as complete by the Contract Administrator and shall expire one (1) year thereafter Phase II and Part II works, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.
- D28.3 Notwithstanding C13.2, the warranty period for the Green Pavement Marking Paint shall begin on the date that the Green Pavement Marking Paint is accepted as complete by the Contract Administrator and shall expire two (2) years thereafter, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

FORM H1: PERFORMANCE BOND
(See D11)

KNOW ALL MEN BY THESE PRESENTS THAT

_____ ,
(hereinafter called the "Principal"), and

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

_____ dollars (\$ _____ ._____)

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

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

BID OPPORTUNITY NO. 6-2018

CITY OF WINNIPEG DOWNTOWN BIKE LANE SYSTEM AND STREET IMPROVEMENT, 2018-2019
PAVEMENT RENEWALS

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: IRREVOCABLE STANDBY LETTER OF CREDIT
(PERFORMANCE SECURITY)**
(See D11)

(Date)

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

RE: PERFORMANCE SECURITY – BID OPPORTUNITY NO. 6-2018

CITY OF WINNIPEG DOWNTOWN BIKE LANE SYSTEM AND STREET IMPROVEMENT, 2018-2019
PAVEMENT RENEWALS

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

(Name of Contractor)

(Address of Contractor)

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

_____ Canadian dollars.

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

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

Partial drawings are permitted.

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

(Address)

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

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

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

(Date)

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

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

This credit is subject to the Uniform Customs and Practice for Documentary Credit (2007 Revision), International Chamber of Commerce Publication Number 600.

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

FORM J: SUBCONTRACTOR LIST
 (See D12)

CITY OF WINNIPEG DOWNTOWN BIKE LANE SYSTEM AND STREET IMPROVEMENT, 2018-2019
 PAVEMENT RENEWALS

<u>Portion of the Work</u>	<u>Name</u>	<u>Address</u>
<i>SURFACE WORKS:</i>		
<i>Supply of Materials:</i>		
Concrete		
Asphalt		
Base Course & Sub-Base		
Sod		
Geotextile Fabrics		
Street Lighting		
<i>Installation/Placement:</i>		
Concrete		
Asphalt		
Base Course & Sub-Base		
Sod		
Street Lighting		
Joint Sealant		
<i>UNDERGROUND WORKS:</i>		
<i>Supply of Materials:</i>		
Sewer Service Pipe/Drainage Pipe		
Subdrains		
Catchbasins/Catch Pits		
Frames & Covers		
<i>Installation/Placement:</i>		
Catchbasins/Catch Pits		

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

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

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
P-3495-00	Cover Page and Location Plan	A1
P-3495-01	General Arrangement, Construction Phasing and Drawing Index	A1
P-3495-02	Princess Street – Stages 1-3	A1
P-3495-03	Notre Dame Avenue – Stage 1	A1
P-3495-04	Notre Dame Avenue – Stage 2	A1
P-3495-05	Garry Street North – Stages 1 & 2	A1
P-3495-06	Garry Street South – Stage 1	A1
P-3495-07	Garry Street South – Stage 1	A1
P-3495-08	Garry Street South – Stage 2	A1
P-3495-09	Garry Street South – Stage 2	A1
P-3495-10	Princess and Arthur Street – Notre Dame Avenue to William Avenue	A1
P-3495-11	Notre Dame Avenue – Adelaide Street to Portage Avenue	A1
P-3495-12	Garry Street – Notre Dame Avenue to Station 0+380	A1
P-3495-13	Garry Street – Station 0+380 to Station 0+860	A1
P-3495-14	Garry Street – Station 0+860 to Assiniboine Avenue	A1
P-3495-15	Princess Street	A1
P-3495-16	Notre Dame Avenue – Adelaide Street to Station 0+125	A1
P-3495-17	Notre Dame Avenue – Station 0+125 to Station 0+235	A1
P-3495-18	Notre Dame Avenue – Station 0+235 to Station 0+340	A1
P-3495-19	Notre Dame Avenue – Station 0+340 to Portage Avenue	A1
P-3495-20	Garry Street – Notre Dame Avenue to Portage Avenue	A1
P-3495-21	Garry Street – Portage Avenue to Station 0+120	A1
P-3495-22	Garry Street – Station 0+120 to Station 0+240	A1
P-3495-23	Garry Street – Station 0+240 to Station 0+360	A1
P-3495-24	Garry Street – Station 0+360 to Station 0+470	A1
P-3495-25	Garry Street – Station 0+470 to Station 0+580	A1
P-3495-26	Garry Street – Station 0+580 to Station 0+690	A1
P-3495-27	Garry Street – Station 0+690 to Station 0+800	A1
P-3495-28	Garry Street – Station 0+800 to Station 0+910	A1
P-3495-29	Garry Street – Station 0+910 to Assiniboine Avenue	A1
P-3495-30	Princess Street – Notre Dame Avenue to William Avenue	A1
P-3495-31	Arthur Street – Notre Dame Avenue to McDermot Avenue	A1
P-3495-32	Notre Dame Avenue – Adelaide Street to Portage Avenue	A1
P-3495-33	Garry Street – Notre Dame Avenue to Station 0+380	A1

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
P-3495-34	Garry Street – Station 0+380 to Station 0+860	A1
P-3495-35	Garry Street – Station 0+860 to Assiniboine Avenue	A1
P-3495-36	Garry Street – Graham Avenue to St. Mary Avenue	A1
P-3495-37	St. Mary Avenue – Garry Street to Smith Street	A1
P-3495-38	Princess and Arthur Street – Notre Dame Avenue to William Avenue	A1
P-3495-39	Notre Dame Avenue – Adelaide Street to Portage Avenue	A1
P-3495-40	Garry Street – Notre Dame Avenue to Station 0+380	A1
P-3495-41	Garry Street – Station 0+380 to Station 0+860	A1
P-3495-42	Garry Street – Station 0+860 to Assiniboine Avenue	A1
P-3495-43	Details – 1	A1
P-3495-44	Details – 2	A1
P-3495-45	Details – 3	A1

E2. GEOTECHNICAL REPORT

E2.1 Further to C3.1, the geotechnical report is provided to aid the Contractor's evaluation of the pavement structure and/or existing soil conditions. The geotechnical report is contained in Appendix 'A'.

E3. OFFICE FACILITIES

E3.1 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 25 square metres, a height of 2.4m 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 two desks, a table 3m x 1.2m, and a minimum of 12 chairs.
- (g) A portable toilet shall be located near the field office building. The toilet shall have a locking door 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.

E3.2 The Contractor shall be responsible for all installation and removal costs, all operating costs, and the general maintenance of the office facilities.

E3.3 The office facilities will be provided from the date of the commencement of the Work to the date of Total Performance.

E3.4 On a one time basis, where directed by the Contract Administrator, the Contractor shall relocate the office facilities to a location more convenient for the remaining Work.

E4. TRAFFIC CONTROL

E4.1 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.

E4.2 Notwithstanding E4.1, 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.

E4.2.1 An exception to E4.2 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.

E4.2.2 Further to E4.2, 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.

E5. TRAFFIC MANAGEMENT

E5.1 Further to clause 3.7 of CW 1130:

- (a) Single lane closures on intersecting and/or adjoining Regional Streets shall only be permitted during non-peak periods when required for construction activities when approved by the Traffic Management Branch. Storage/parking of materials, equipment or vehicles is not permitted on Regional Streets or any side streets at any time unless approved by the Contract Administrator, in consultation with the Traffic Management Branch. Construction vehicles and materials parked and/or stored within the construction area or on private property require written permission from the property owner or Contract Administrator.

E5.1.1 During Phase I (Stage 1) - Princess Street Mill and Fill from Notre Dame Avenue to William Avenue maintain a minimum of one lane of traffic southbound and maintain cycling corridor in its current location along the east curb with poly posts along the work side of the cycling corridor, including during paving and milling operations. When no work is being performed on site, non-essential lane closures will not be permitted. Phase I (Stage 1) - Princess Street is required to be completed simultaneously with Phase I (Stage 1) Notre Dame

Avenue Stage 1A and simultaneously with the Donald Street Reconstruction as discussed in D17. See drawing CT-02 for additional staging details.

- E5.1.2 During Phase I (Stage 2) - Princess Street Mill and Fill from Notre Dame Avenue to William Avenue maintain a minimum of two lanes of traffic southbound and maintain cycling corridor in its current location along the east curb with poly posts along the work side of the corridor, including during paving and milling operations. When no work is being performed on site, non-essential lane closures will not be permitted. Princess Street Stage 2 is required to be completed simultaneously with Notre Dame Avenue Stage 1B and after the completion of the Donald Street Reconstruction as discussed in D17. See drawing CT-02 for additional staging details.
- E5.1.3 During Phase I (Stage 3) - Princess Street Mill and Fill from Notre Dame Avenue to William Avenue maintain a minimum of two lanes of traffic southbound and maintain cycling corridor along the east side of the lanes of traffic with poly posts along both sides of the 1.5m wide corridor, including during paving and milling operations. When no work is being performed on site, non-essential lane closures will not be permitted. Princess Street Stage 3 is required to be completed simultaneously with Notre Dame Avenue Stage 1B. See drawing CT-02 for additional staging details.
- E5.1.4 During Phase I (Stage 1A) – Notre Dame Avenue Reconstruction from Adelaide Street to Portage Avenue maintain a minimum of two lanes of traffic westbound on Notre Dame Avenue, extend closure across Portage intersection onto Fort Street as per “Manual of Temporary Traffic Control on City Streets – City of Winnipeg” requirements. Maintain the existing bike lane along the north curb from Portage Avenue to Arthur Street as per existing painted sharrows. Maintain 2 lanes of southbound traffic in the east half of the Princess Street and Notre Dame Avenue intersection. Stage construction of the Notre Dame Avenue and King Street intersection to maintain a minimum of 2 lanes of traffic on King Street northbound. Maintain a minimum of 1 lane for left turns off of Smith Street northbound onto Notre Dame Avenue westbound. Maintain left turns off of Notre Dame Avenue westbound onto Donald Street. Maintain truck traffic for right turns off of westbound Portage Avenue onto westbound Notre Dame Avenue. When no work is being performed on site, non-essential lane closures will not be permitted. Left turns off Albert Street southbound to Garry Street will not be permitted during Stage 1A, 1B or 1C. Phase I (Stage 1A) is required to be completed simultaneously with the Donald Street Reconstruction as discussed in D17. See drawing CT-03 for additional staging details.
- E5.1.5 During Phase I (Stage 1B) – Notre Dame Avenue Reconstruction from Adelaide Street to Portage Avenue maintain a minimum of two lanes of traffic westbound on Notre Dame Avenue, extend closure across Portage intersection onto Fort Street as per “Manual of Temporary Traffic Control on City Streets – City of Winnipeg” requirements. Maintain the existing bike lane along the north curb from Portage Avenue to Arthur Street as per existing painted sharrows. Maintain 2 lanes of southbound traffic in the west half of the Princess Street and Notre Dame Avenue intersection. Maintain a minimum of 1 lane for left turns off of Smith Street northbound onto Notre Dame Avenue westbound. Maintain left turns off of Notre Dame Avenue westbound onto Donald Street. Maintain truck traffic for right turns off of westbound Portage Avenue onto westbound Notre Dame Avenue. When no work is being performed on site, non-essential lane closures will not be permitted. Left turns off Albert Street southbound to Garry Street will not be permitted during Stage 1A, 1B or 1C. Phase I (Stage 1B) cannot commence until the completion of the Donald Street Reconstruction as discussed in D17. See drawing CT-03 for additional staging details.
- E5.1.6 During Phase I (Stage 1C) – Notre Dame Avenue Reconstruction from Adelaide Street to Portage Avenue maintain a minimum of two lanes of traffic westbound on Notre Dame Avenue, extend closure across Portage intersection onto Fort Street as per “Manual of Temporary Traffic Control on City Streets – City of Winnipeg” requirements. Maintain the existing bike lane along the north curb from Portage Avenue to Arthur Street as per existing painted sharrows. Maintain 2 lanes of southbound traffic in the Princess Street and Notre Dame Avenue intersection. Maintain a minimum of 2 lane for left turns off of Smith Street northbound onto Notre Dame Avenue. Maintain left turns off of Notre Dame

Avenue westbound onto Donald Street. Re-route truck traffic turning right off of southbound Portage Avenue onto westbound Notre Dame Avenue to Smith Street. When no work is being performed on site, non-essential lane closures will not be permitted. Left turns off Albert Street southbound to Garry Street will not be permitted during Stag1A, 1B or 1C. Phase I (Stage 1C) cannot commence until the completion of the areaway construction at 235 Notre Dame Avenue as discussed in D17. See drawing CT-03 for additional staging details.

- E5.1.7 During Phase I (Stage 2A) – Notre Dame Avenue Reconstruction from Adelaide Street to Portage Avenue maintain a minimum of two lanes of traffic westbound on Notre Dame Avenue, extend closure across Portage intersection onto Fort Street as per “Manual of Temporary Traffic Control on City Streets – City of Winnipeg” requirements. Maintain temporary bike lane along sidewalk and south curb from Portage Avenue to Albert Street. Stage construction of the Princess Street and Notre Dame intersection to maintain right turns off of southbound Princess Street onto westbound Notre Dame Avenue and a minimum of 2 lanes of southbound vehicle traffic and 1 lane of bicycle traffic, across Notre Dame Avenue. Stage construction of the Notre Dame Avenue and King Street intersection to maintain a minimum of 2 lanes of traffic on King Street northbound. Stage construction of Arthur Street and Notre Dame Avenue intersection to maintain a minimum of 1 lane for left turns off of Arthur Street southbound onto Garry Street and 1 lane for right turns off of southbound Arthur Street onto westbound Notre Dame Avenue. Re-route truck traffic turning right off of southbound Portage Avenue onto westbound Notre Dame Avenue to Smith Street. When no work is being performed on site, non-essential lane closures will not be permitted. See drawing CT-04 for additional staging details.
- E5.1.8 During Phase I (Stage 2B) – Notre Dame Avenue Reconstruction from Adelaide Street to Portage Avenue maintain a minimum of two lanes of traffic westbound on Notre Dame Avenue, extend closure across Portage intersection onto Fort Street as per “Manual of Temporary Traffic Control on City Streets – City of Winnipeg” requirements. Maintain temporary bike lane along sidewalk and south curb from Portage Avenue to Albert Street. Stage construction of the Albert Street and Notre Dame intersection to maintain vehicle and cyclist access to Albert Street. Re-route truck traffic turning right off of southbound Portage Avenue onto westbound Notre Dame Avenue to Smith Street. When no work is being performed on site, non-essential lane closures will not be permitted. See drawing CT-04 for additional staging details.
- E5.1.9 During Phase I (Stage 2A) – Garry Street from Portage Avenue to Notre Dame Avenue maintain a minimum of 2 lanes of southbound traffic on the east half of Donald Street. Maintain 1 lane of traffic for right turns from eastbound Ellice Avenue to Donald Street. Westbound Ellice Avenue will be closed from Notre Dame Avenue to Smith Street. Traffic from Notre Dame Avenue eastbound to Garry Street will be restricted. When no work is being performed on site, non-essential lane closures will not be permitted. See drawing CT-05 for additional staging details.
- E5.1.10 During Phase I (Stage 2B) – Garry Street from Portage Avenue to Notre Dame Avenue maintain a minimum of 2 lanes of southbound traffic on the west half of Donald Street. Maintain 1 lane of traffic for right turns from eastbound Ellice Avenue to Donald Street. Westbound Ellice Avenue will be closed from Notre Dame Avenue to Smith Street. Traffic from Notre Dame Avenue eastbound to Garry Street will be restricted. When no work is being performed on site, non-essential lane closures will not be permitted. See drawing CT-05 for additional staging details.
- E5.1.11 During Phase II (Stage 1) Garry Street Rehabilitation from Portage Avenue to Assiniboine Avenue maintain 1 lane of traffic southbound and maintain a 2.0 m temporary bike lane along the east curb protected from vehicle traffic by polyposts. Stage construction of the Garry Street and St. Mary Avenue intersection to maintain 2 lanes of vehicle traffic and 1 lane of bicycle traffic on westbound St. Mary Avenue. Stage construction of the Garry Street and York Avenue intersection to maintain 2 lanes of vehicle traffic eastbound York Avenue. Stage construction of Garry Street and Broadway Avenue intersection to maintain 2 lanes of eastbound traffic and 2 lanes of westbound traffic at all times. When no work is

being performed on site, non-essential lane closures will not be permitted. See drawing CT-06 and CT-07 for additional staging details.

- E5.1.12 During Phase II (Stage 2) Garry Street Rehabilitation from Portage Avenue to Assiniboine Avenue maintain 1 lane of traffic southbound and maintain a 2.0 m temporary bike lane along the west curb protected from vehicle traffic by polyposts. Stage construction of the Garry Street and St. Mary Avenue intersection to maintain 2 lanes of vehicle traffic and 1 lane of bicycle traffic on westbound St. Mary Avenue. Stage construction of the Garry Street and York Avenue intersection to maintain 2 lanes of vehicle traffic eastbound York Avenue. Stage construction of Garry Street and Broadway Avenue intersection to maintain 2 lanes of eastbound traffic and 2 lanes of westbound traffic at all times. When no work is being performed on site, non-essential lane closures will not be permitted. See drawing CT-08 and CT-09 for additional staging details.
- E5.1.13 Intersecting local street, median opening and private approach access shall be maintained at all times. Stage construction of all private approaches to maintain access at all times. Traffic on intersecting regional/collector streets shall be maintained at all times unless planing/paving operations require temporary complete closures. Temporary complete closures shall be no longer than 10 minutes during asphalt planing/paving operations and shall be completed during off peak hours.
- E5.1.14 Flag persons may be necessary to maintain the flow of traffic during certain work operations.
- E5.1.15 Should the Contractor be unable to maintain pedestrian or vehicular access to a residence or business, he/she shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.
- E5.1.16 During Phase I work on Princess Street from William Avenue to Notre Dame Avenue longitudinal pedestrian traffic must be maintained on the east and west side at all times. One pedestrian crossing in the east-west direction and one pedestrian crossing in the north-south direction must be maintained at all times at the Princess Street/William Avenue intersection, Princess Street/Bannatyne Avenue intersection and Princess Street/McDermot Avenue intersection. Access to business or building entrances must be maintained at all times, construct temporary ramps during sidewalk construction as required.
- E5.1.17 During Phase I work on Notre Dame Avenue from Adelaide Street to Portage Avenue longitudinal pedestrian traffic must be maintained on the north and south side at all times. One pedestrian crossing in the east-west direction and one pedestrian crossing in the north-south direction must be maintained at all times at the Notre Dame Avenue/Princess Street/Donald Street intersection, Notre Dame Avenue/King Street intersection, Notre Dame Avenue/Arthur Street intersection and Notre Dame Avenue/Garry Street intersection. One pedestrian crossing in the east-west direction must be maintained at all times at the Notre Dame Avenue/Smith Street intersection and the Notre Dame Avenue/Albert Street intersection. A temporary pedestrian corridor must be maintained in the gutter lane to accommodate pedestrian traffic during sidewalk construction. The pedestrian corridor must be protected with polyposts and be a minimum of 3.0m wide with access to business or building entrances maintained at all times, construct temporary ramps as required.
- E5.1.18 During Phase II work on Garry Street from Portage Avenue to Assiniboine Avenue longitudinal pedestrian traffic must be maintained on the east and west side at all times. One pedestrian crossing in the east-west direction and one pedestrian crossing in the north-south direction must be maintained at all times at the Garry Street/Graham Avenue intersection, Garry Street/St. Mary Avenue intersection, Garry Street/York Avenue intersection and Garry Street/Broadway Avenue Boulevard. A temporary pedestrian corridor must be maintained in the gutter lane to accommodate pedestrian traffic during sidewalk construction. The pedestrian corridor must be protected with polyposts and be a

minimum of 3.0m wide with access to business or building entrances maintained at all times, construct temporary ramps as required.

E5.1.19 Loading zones must be maintained when construction staging allows, as determined by the Contract Administrator.

E5.1.20 Ambulance/emergency vehicle access must be maintained at all times.

E6. REFUSE AND RECYCLING COLLECTION

E6.1 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 E6.3 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.

E6.2 Contractor to coordinate back lane access with private collections.

E6.3 Collection Schedule:

Princess Street – William Avenue to Notre Dame Avenue, Notre Dame Avenue – Adelaide Street to Portage Avenue, Garry Street – Notre Dame Avenue to Assiniboine Avenue.

Collection Day(s): **Thursday**

Collection Time: **7 am to 6**

Common Collection Area: **Back lane**

Princess Street – William Avenue to Notre Dame Avenue, Notre Dame Avenue – Adelaide Street to Portage Avenue, Garry Street – Notre Dame Avenue to Assiniboine Avenue.

Collection Day(s): **Varies, Private Collection**

Collection Time: **Varies**

Common Collection Area: **Back lane**

E6.4 No measurement or payment will be made for the work associated with this specification.

E7. PEDESTRIAN SAFETY

E7.1 During the project, Notre Dame Avenue from Princess Street to Portage Avenue and Garry Street from Notre Dame Avenue to Assiniboine Avenue, a temporary snow fence shall be installed along the edge of the excavation. The Contractor shall be responsible for maintaining the snow fence in a proper working condition. No measurement for payment shall be made for this work.

E8. WATER OBTAINED FROM THE CITY

E8.1 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.

E9. SURFACE RESTORATIONS

E9.1 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.

E10. INFRASTRUCTURE SIGNS

- E10.1 The Contractor shall obtain infrastructure signs from the Traffic Services Sign Shop at 421 Osborne Street. The Contractor shall mount each sign securely to a rigid backing material approved by the Contract Administrator. The Contractor shall fasten each sign to a suitable support and erect and maintain one sign at each street as directed by the Contract Administrator. When the Contract Administrator considers the Work on the street complete, the Contractor shall remove and dispose of the signs and supports. No measurement for payment will be made for performing all operations herein described and all other items incidental to the work described

E11. SUPPLY AND INSTALLATION OF PAVEMENT REPAIR FABRIC

DESCRIPTION

E11.1 General

- E11.1.1 This specification covers the supply and installation of pavement repair fabric.

E11.1.2 Referenced Standard Construction

- (a) CW 3130 – Supply and Installation of Geotextile Fabrics.

MATERIALS

E11.2 Storage and Handling

- E11.2.1 Store and handle material in accordance with Section 2 of CW 3130.

E11.3 Pavement Repair Fabric

- E11.3.1 Pavement repair fabric will be Glas Grid Road Reinforcement Mesh - Style 8501.

CONSTRUCTION METHODS

E11.4 General

- E11.4.1 Install pavement repair fabric at random locations as directed by the Contract Administrator.

- E11.4.2 The extent of the placement limits and quantities required will be determined by the Contract Administrator and provided 48 hours prior to the placement of asphalt.

- E11.4.3 Proceed with installation upon completion and acceptance of the asphalt levelling course.

- E11.4.4 Install fabric in accordance with the manufacturer's specifications and recommendations.

- E11.4.5 Only construction equipment required to place the final asphalt surface course will be allowed to travel on the exposed fabric.

- E11.4.6 Replace damaged or improperly placed fabric.

- E11.4.7 Ensure temperature of the asphalt material does not exceed the melting point of the fabric.

MEASUREMENT AND PAYMENT

E11.5 Pavement Repair Fabric

- E11.5.1 The supply and installation of the pavement repair fabric will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Pavement Repair Fabric". The area to be paid for will be the total number of square metres of pavement repair fabric supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

E12. HYDRO EXCAVATION

DESCRIPTION

E12.1 General

E12.1.1 This specification shall cover the removal of earthen material immediately adjacent to underground utilities infrastructure such as gas lines, gas services and areaways by means of high pressure water spray, and the recovery of evacuated material by vacuum type means or equivalent method as approved by the Contract Administrator.

E12.1.2 This specification shall also cover Hydro excavation around existing trees in tree pit applications for the work under E34Tree Vaults.

E12.2 Equipment

E12.2.1 Hydro excavation unit shall be capable of maintaining a minimum working pressure of 10,000 psi, at a rate of flow of 10 to 12 gallons per minute. Unit should be adjustable, so as to provide adequate pressure to remove earthen material identified by the Contract Administrator.

E12.2.2 Spray head shall be equipped with a rotating type nozzle, in order to provide a wider path of cut.

CONSTRUCTION METHODS

E12.3 Hydro-Removal of Earthen Material

E12.3.1 Earthen material adjacent to utility entity shall be sprayed with high pressure water so as to remove all such material identified by the Contract Administrator.

E12.3.2 Earthen material adjacent to tree roots for tree well construction shall be sprayed with controlled pressure water so as to not cause damage to the tree. The contractor must make arrangements to have personnel for City Forestry present during Hydro Excavation for tree well construction.

E12.4 Recovery of Excavated Material

E12.4.1 The recovery of excavated material shall be done using vacuum type method, or other type method as approved by the Contract Administrator.

E12.4.2 The recovery of material shall follow immediately behind the excavation, to avoid excavated areas from filling with excavated material.

E12.4.3 The use of mechanical sweepers will not be allowed.

E12.4.4 Dispose of material in accordance with Section 3.4 of CW 1130.

E12.5 Backfill of Hydro Excavated Hole

E12.5.1 The Contractor shall be responsible for the backfill of the hydro excavated hole upon the completion of the Work described herein, to the approval of the Contract Administrator.

MEASUREMENT AND PAYMENT

E12.6 Hydro Excavation

E12.6.1 Hydro Excavation of earthen material will be measured on an hourly basis and paid for at the Contract Unit Price per hour for "Hydro Excavation". The hours to be paid for will be the total number of hours of Hydro Excavation in accordance with this specification, accepted and measured by the Contract Administrator. Travel to and from the Site will not be accounted for in the payment of this item.

E13. INSULATION OF EXISTING WATERMAINS AT CATCH PITS AND CATCHBASINS

DESCRIPTION

E13.1 General

E13.1.1 This Specification covers all operations relating to the insulation of watermains where a catch pit and/or catchbasins will be installed in the vicinity of existing watermain.

E13.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

CONSTRUCTION METHODS

E13.2 Further to CW 2110-R11 and SD-018, the Contractor shall modify the insulation to accommodate the installation of the catch pits and/or catchbasins in the vicinity of existing watermains as per the details shown on the Drawings.

MEASUREMENT AND PAYMENT

E13.3 Catch Pit Insulation

E13.3.1 Catch Pit/Catchbasin Insulation will be measured on a unit basis and paid for at the Contract Unit Price per each for "Catch Pit and Catchbasin Insulation", which price shall be payment in full for the supplying all materials and for completing all operations herein described and all other items incidental to the work included in this Specification, accepted and measured by the Contract Administrator.

E14. SUPPLY AND INSTALL WATERMAIN AND WATER SERVICE INSULATION

DESCRIPTION

E14.1 Notwithstanding 3.12 of CW 2110, this specification covers the supply and installation of insulation in roadway excavations over watermains and water services.

E14.2 Referenced Standard Construction Specifications

(a) CW 2030 – Excavation Bedding and Backfill

(b) CW 3110 – Sub –grade, Sub-base and Base Course Construction

E14.3 Referenced Standard Details

(a) SD-018 - Watermain and Water Service Insulation

MATERIALS

E14.4 Acceptable insulation is:

(a) Extruded Polystyrene rigid foam insulation – Type 4, 4" in thickness.

DOW - Roofmate or Highload 40

Owen's Corning - Foamular 350 or Foamular 400.

2" X 48" X 96", 2" X 24" X 96, 4" X 24" X 96",

E14.5 Sand Bedding:

(a) In accordance with CW 2030.

CONSTRUCTION METHODS

E14.6 Prior to the installation of any sub-base material or geotextile material, locate all existing water services.

- E14.7 Further to SD-018, where directed by the Contract Administrator, excavate the sub-grade to allow the top of the insulation to be installed flush with the surrounding sub-grade. Install the insulation on a level surface centered over the located watermain or water service for the full width of the roadway excavation. Install sand bedding if required to level the surface.
- E14.8 Stockpile and dispose of excavated material in accordance with CW 3110.
- E14.9 Thickness of insulation is 100mm (4"). If using 50mm (2") panels two (2) layers are required. Total width of insulation to be as directed by the Contract Administrator. Place sufficient full width panels to meet or exceed the specified width.
- E14.10 Place insulation panels adjacent to each other over the specified area with no gaps between panels and less than 15mm of elevation difference along the adjoined edges. Where 2" thick panels are being used, offset the top layer to prevent the panel joints from aligning with the joints in the lower layer.
- E14.11 Use full panels of insulation where possible. Where necessary cut insulation panels to obtain coverage to specified lengths. Insulation pieces shall be a minimum of dimension of 300 mm in width or length.
- E14.12 Take appropriate measures to ensure panels are not displaced when installing geotextiles and during backfilling operations.

MEASUREMENT AND PAYMENT

- E14.13 Watermain and Water Service Insulation shall be measured on an area basis and paid for at the Contract Unit Price per square metre of "Watermain and Water Service Insulation". The area to be paid for shall be the total square meters of watermain and water service insulation supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.
- E14.14 Excavation of the roadway subgrade in accordance with E14.7 and locating existing water services in accordance with E14.6 will not be measured for payment and will be included in the payment for "Watermain and Water Service Insulation".

E15. EXISTING STREET CAR TRACK BEDDING

DESCRIPTION

- E15.1 General
- E15.1.1 This Specification covers the removal of existing street car track bedding including rails on Notre Dame Avenue from Princess Street to Portage Avenue and Garry Street from Portage Avenue to Ellice Avenue within the project limits.
- E15.2 Definitions
- E15.2.1 Street Car Track Bedding – The concrete bedding, including wooden ties and rails, for the street car tracks previously located down Donald Street. The concrete bedding is estimated to be approximately 2.7 metres wide by 0.6 metres thick.
- E15.3 Referenced Standard Construction Specifications
- E15.3.1 CW 1130 – Work Site Requirements.

CONSTRUCTION METHODS

- E15.4 Removal of Existing Street Car Track Bedding
- E15.4.1 Remove the existing concrete bedding by demolishing, loading, hauling and disposing of the existing concrete bedding, including rails and ties and any other materials encountered from the site.

E15.5 Dispose of the removed bedding in accordance with Section 3.4 of CW 1130.

MEASUREMENT AND PAYMENT

E15.6 Removal of Existing Street Car Track Bedding

E15.6.1 Removal of Existing Street Car Track Bedding shall be measured on a cubic metre basis. basis and paid for at the Contract Unit Price for "Removal of Existing Street Car Track bedding", which price shall be payment in full for completing all operations herein described and all other items incidental to the work included in this Specification, accepted and measured by the Contract Administrator.

E16. CATCH BASIN FLOW RESTRICTORS

DESCRIPTION

E16.1 General

E16.1.1 The work included in this specification includes the supply and installation of PVC flow restrictors in new catch basins.

REFERENCED SPECIFICATIONS

E16.2 City of Winnipeg Standard Construction Specifications

E16.2.1 CW 2130 – Gravity Sewers

E16.2.2 CW 2160 – Concrete Underground Structure and Works

MATERIALS

E16.3 Flow restrictors

E16.3.1 PVC SDR35 piping in accordance with City of Winnipeg Standard No. AT-4.2.2.10: Extruded Polyvinyl Chloride (PVC) Connection Sewer Pipe in Diameters 150 mm (6") and 200 mm (8").

E16.4 Grout

E16.4.1 Grout in accordance with CW 2160 – Concrete Underground Structure and Works

CONSTRUCTION METHODS

E16.5 Installation

E16.5.1 Cut sewer piping of the specified diameter to 300 mm in length square to the pipe. The restrictor pipe shall not include the pipe bell.

E16.5.2 File each cut end smooth.

E16.5.3 Coat inside of the catch basin lead and outside of the restrictor pipe with an approved cementing agent and coat with sand prior to grouting.

E16.5.4 Insert the restrictor pipe into the catch basin pipe and grout in place, maintaining the restrictor pipe centered in the catch basin lead. Grout on the outlet end of the restrictor pipe shall be square to the pipe.

MEASUREMENT AND PAYMENT

E16.6 Catch Basin Flow Restrictors

E16.6.1 Supply and installation of Catch Basin Flow Restrictors will be measured on a unit basis and paid for at the Contract Unit Price for " Catch Basin Flow Restrictors", for each catch basin flow restrictor acceptably installed, which price shall be payment in full for supplying

all materials and for completing all operations herein described and all other items incidental to the work included in this Specification.

E17. SAWCUTTING

DESCRIPTION

- E17.1 Further to CW 3240-R8, the Contractor will be required to sawcut the existing concrete sidewalk full depth as follows:
- E17.1.1 At the back of sidewalk along the face of the existing buildings so as not to damage the face of the buildings during removal.
 - E17.1.2 The Contractor shall exercise extreme caution when sawcutting sidewalks to avoid damage to any underlying areaways as per E26.
 - E17.1.3 In the event of damage to any buildings by the Contractor, the Contractor shall immediately notify the Contract Administrator and make all repairs or replacements necessary, at his own expense, to the satisfaction of the Contract Administrator and the Owner of the building.

MEASUREMENT AND PAYMENT

- E17.2 All costs in connection with the above sawcutting are incidental and shall be included in the Contract Unit Price for "Miscellaneous Concrete Slab Removal, i) 100 mm Sidewalk (includes paving stone)".

E18. TERASPAN

DESCRIPTION

- E18.1 There is a TeraSpan communication cable installed on the east side of Donald Street in the sidewalk. It is the responsibility of the Contractor to obtain utility locates and mark out the exact location of the cable within the limits of work. When reconstruction is in the vicinity of the TeraSpan cable, the cable must be extricated from the existing sidewalk, paving stones, or roadway and buried in the underlying base course prior to placement of the new sidewalk or concrete pavement.
- E18.2 The cable cannot be taken out of service and shall not be damaged.
- E18.3 TeraSpan representative shall be onsite during the concrete removal. Contractor shall notify TeraSpan two (2) weeks prior to concrete removal.
- E18.4 Contact Information:
(a) TeraSpan Networks Inc.
(604)684-8711

CONSTRUCTION METHODS

- E18.5 Where the cable is in a paving stone field, remove the adjacent paving stones by hand prior to removing the concrete. Sawcut the existing sidewalk/pavement 150 mm on either side of the cable. Break and remove concrete outside of the sawcuts as per CW 3110.
- E18.6 Concrete in between the sawcuts shall be hand removed, ensuring no damage occurs to the cable.
- E18.7 Construct 100 mm wide by 100 mm deep trench in the existing base course. Construct trench along the same alignment as the original install.
- E18.8 Place 50 mm of base course material in the trench. Install cable including tracer wire.

- E18.9 Cover remainder of trench with base course material and tamp with hand tools. Do not mechanically compact.
- E18.10 If any cable is exposed overnight or when Contractor is not onsite, the area shall be barricaded.
- E18.11 Contractor to protect newly buried cable until sidewalk and pavement is restored.

MEASUREMENT AND PAYMENT

- E18.12 No measurement or payment will be made for this item.

E19. ADJUSTMENT OF MANITOBA HYDRO MANHOLE FRAMES/MTS MANHOLE FRAMES

DESCRIPTION

E19.1 General

- E19.1.1 This specification covers the adjustment of Manitoba Hydro manholes/MTS manhole frames which works include but are not limited to removing the existing frame, making any required changes to the structure to accommodate new frame installation, reinstalling the existing frame or installing a new frame and cover and constructing any required temporary asphalt ramps.
- E19.1.2 Pavement removal and replacement will be in accordance with Specifications CW 3100 and CW 3230.
- E19.1.3 The Contractor is to provide a minimum 48 hour notice to Manitoba Hydro/MTS and the Contract Administrator prior to undertaking any of the proposed works on the utility manholes.
- E19.1.4 The Contractor to make arrangements through Manitoba Hydro/MTS for watch personnel to be present during construction of the required works to the utility manholes.
- E19.1.5 Referenced Standard Construction Specifications
 - (a) CW 3110 – Sub-Grade, Sub-Base and Base Course Construction;
 - (b) CW 3230 – Full-Depth Patching of Existing Slabs and Joints.

MATERIALS

E19.2 Manhole Frames, Covers and Riser Rings

- E19.2.1 Utility manhole frames and covers shall be provided by Manitoba Hydro/MTS.

CONSTRUCTION METHODS

E19.3 Removal of Existing Pavement

- E19.3.1 Remove complete concrete slab surrounding utility manhole in accordance with Specification CW 3110.
- E19.3.2 Removal procedures to be done in a manner not to damage utility manhole structure.

E19.4 Removal of Manhole Frame and Cover

- E19.4.1 Remove the required concrete embedding the frame and remove the frame and cover. Hydro Watch personnel to approve construction method prior to proceeding. The Contractor is to provide opportunity for Hydro/MTS to collect the old frame and cover if applicable, otherwise the old frame and covers are to be disposed of off-site as directed by the Contract Administrator.

E19.5 Installation of New Frame and Cover

- E19.5.1 Install new or existing frame and cover as specified herein and or on the drawings, if applicable. Existing frames identified as being in good condition are to be reused.

E19.5.2 The Contractor shall set the frame and cover to the proposed grade utilizing shims and a form inside the manhole frame to prevent concrete from spilling into the interior of the manhole and produce a neat finished surface inside the frame. The Contractor shall then pour concrete around the outside of the frame to secure it to the manhole.

E19.6 Construct temporary asphalt ramp

E19.6.1 Where required for re-opening lane to traffic, construct temporary asphalt ramp to the grades as noted on the drawings and as directed by the Contract Administrator.

MEASUREMENT AND PAYMENT

E19.7 Adjustment of Manitoba Hydro Manhole Frame/MTS Frame

E19.7.1 Adjustment of Hydro manhole/MTS manhole frames and covers will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Adjustment of Manitoba Hydro Frame and Cover" and "Adjustment of MTS Frame and Covers". The number of units to be paid for will be the total number of manhole frames c/w covers adjusted/installed in accordance with this specification, accepted and measured by the Contract Administrator.

E19.8 Concrete Pavement removal and replacement will be measured and paid for in accordance with Specification CW 3230.

E20. GREEN BIKE LANE TREATMENT

DESCRIPTION

E20.1 General

E20.1.1 This Specification covers all operations relating to the supply and installation of green bike lane treatment at cycling corridor conflict points, as noted on the drawings.

E20.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labor, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

MATERIALS

E20.2 Green Bike Lane Treatment

E20.2.1 The Green Bike Lane Treatment shall be Cycle Grip MMAX by Ennis-Flint color to be EF Bike Lane Green or equivalent, in accordance with B6 as approved by the Contract Administrator. A link to the manufacturer's specifications is provided: www.ennisflintamericas.com/downloads/dl/file/id/83/product/945/product_data_sheet_cycle_gripmmax.pdf.

SUBMITTALS

E20.3 Prior to construction submit the following to the Contract Administrator

E20.3.1 Material data sheets for the product proposed to be supplied and installed.

CONSTRUCTION METHODS

E20.4 Surface Preparation

E20.4.1 Surface Preparation to be in accordance with Manufacturer's instructions.

E20.5 Masking

E20.5.1 Masking of the edges of all green bike lane treatment areas to be in accordance with Manufacturer's instructions.

E20.6 Paint Mixing

E20.6.1 Mix paint in accordance with manufacturer's instructions.

E20.7 Installation of Green Bike Lane Treatment

E20.7.1 Install Green Bike Lane Treatment in accordance with Manufacturer's instructions.

E20.7.2 Any damage done to the Green Bike Lane Treatment prior to completion of each marking area shall be rectified at the Contractor's expense.

MEASUREMENT AND PAYMENT

E20.7.3 Supply and Installation of Green Bike Lane Treatment shall be measured on an area basis and will be paid for at the contract Unit Price per square metre for "Supply and Installation of Green Bike Lane Treatment" supplied and installed in accordance with this specification and accepted and measured by the Contract Administrator.

E21. PEDESTRIAN LIGHT FIXTURE

DESCRIPTION

E21.1 General

E21.1.1 This Specification covers all operations relating to the supply of pedestrian light fixtures for mounting on decorative light fixture poles by Manitoba Hydro.

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

MATERIALS

E21.2 Pedestrian Light Fixture

E21.2.1 Pedestrian Light Fixture to be Selux Astro 1 light fixture part number AST1-R3-1-LG4500-30-18-SV-120 silver in color, or equivalent in accordance with B6 as approved by the Contract Administrator. A link to the manufacturers' specifications is provided: www.selux.us/fileadmin/us/exterior/Spec_Sheet/Astro/AST_ss.pdf.

SUBMITTALS

E21.3 Prior to construction, submit the following to the Contract Administrator.

E21.3.1 Shop drawings for the light fixture proposed to be supplied.

CONSTRUCTION METHODS

E21.4 Supply of Pedestrian Light Fixture

E21.4.1 The Contractor shall obtain the pedestrian light fixtures and deliver to a location designated by Manitoba Hydro for later installation on the decorative poles on Garry Street.

MEASUREMENT AND PAYMENT

E21.4.2 Supply of Pedestrian Light Fixtures shall be measured on a unit basis and will be paid for at the contract Unit Price for the number of "Supply of Pedestrian Light Fixtures" supplied in accordance with this specification and accepted and measured by the Contract Administrator.

E22. POLYPOSTS

DESCRIPTION

E22.1 General

- E22.1.1 This Specification covers all operations relating to the supply and installation of permanent surface mount polyposts for delineation of cycling corridors.
- E22.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labor, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

MATERIALS

E22.2 Polyposts

- E22.2.1 Polyposts shall be PEXCO, Flexi-Guide, FG 300, Model EFX White in color, or equivalent in accordance with B6 as approved by the Contract Administrator. A link to the manufacturer's website is provided: www.pexco.com/media/2333/fg-300-post-overview-lorezpdf.pdf.

SUBMITTALS

- E22.3 Prior to construction, submit the following to the Contract Administrator.
- E22.3.1 Shop drawings for the type of polypost proposed to be supplied and installed.

CONSTRUCTION METHODS

E22.4 Surface Preparation

- E22.4.1 Surface Preparation to be in accordance with Manufacturer's instructions.

E22.5 Installation

- E22.5.1 Installation of Polyposts to be in accordance with Manufacturer's instructions and at the locations shown on the drawings.

MEASUREMENT AND PAYMENT

- E22.5.2 Supply and Installation of Polyposts shall be measured on a unit basis and will be paid for at the contract Unit Price for the number of "Supply and Installation of Polyposts" supplied and installed in accordance with this specification and accepted and measured by the Contract Administrator.

E23. POWDER COAT

DESCRIPTION

E23.1 General

- E23.1.1 This Specification covers all operations relating to the preparation of surfaces and application of powder coat using approved conventional methods for the refurbishment of the Stittsville decorative light standards on Notre Dame Avenue.
- E23.1.2 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.

MATERIALS

- E23.1 Cleaning System

- E23.1.1 The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification. All materials supplied under this Specification shall be subject to inspection and acceptance by the Contract Administrator.
- E23.1.2 The Cleaning system shall be the following, or accepted alternative by Contract Administrator in accordance with B6. Cleaning systems shall be applied in accordance with the manufacturer's specifications, and to the satisfaction of the Contract Administrator.
- E23.1.3 Cleaning System
(a) DEOXIDINE 7150, PARCO PRECLEAN 2960 and PARCO SPRAY WAND 101.
- E23.2 Powder Coat System
- E23.2.1 The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification. All materials supplied under this Specification shall be subject to inspection and acceptance by the Contract Administrator.
- E23.2.2 The Powder coating system shall be the following, or accepted alternative by Contract Administrator in accordance with B6. Powder coating system shall be applied in accordance with the manufacturer's specifications, and to the satisfaction of the Contract Administrator.
- E23.2.3 Powder Coating - two-coat system
(a) Sherwin Williams Powdura Epoxy Powder Coating EAS6C0000 Gray a primer and Sherwin Williams Powdura Super Durable Polyester TGIC Powder Coating, DBT8-00006 Black Tex Powder Coating as top coat.
- E23.3 Powder Coating Color
- E23.3.1 Each coat of a different colour must be approved by the Contract Administrator.
- E23.3.2 Powder coating color shall be as follows:
(a) The Stittsville Decorative Light Standards: Color shall be Black.
- E23.3.3 Mixing and application shall be in strict accordance with manufacturer's written instructions.

CONSTRUCTION METHODS

- E23.4 Preparation of Metal Surfaces
- E23.4.1 Clean all surfaces by removing paint, rust, mill scale, welding slag, dirt, oil, grease and other foreign substances by sand blasting cleaning in accordance with manufacturer instructions.
- E23.4.2 Remove all salts and surface contaminants by water blasting or steam cleaning prior to dry abrasive blasting.
- E23.4.3 When cleaning by air blasting with sand, provide adequate separators and traps to remove detrimental amounts of water and oil from compressed air before reaching nozzle. Remove traces of blast products from surface and from pockets and corners by brushing with clean brushes, by blowing with clean compressed air, or by vacuum cleaning. Do not damage partially or completed work adjacent to area being cleaned.
- E23.4.4 Abrasives used in shop cleaning shall be free of chlorides and other contaminants which could affect the coating being applied, and shall produce the anchor pattern required by the coating system.
- E23.4.5 Following abrasive blasting clean the surfaces with a mixture of DEOXIDINE 7150, PARCO PRECLEAN 2960 and water mixed in accordance with manufacturer's instructions.
- E23.4.6 Following the above cleaning use high pressure water rinse at a minimum of 176 degrees F @ 2000 psi.

- E23.4.7 Following the high pressure water rinse apply PARCO SPRAY WAND 101 in accordance with Manufacturer's instructions. Followed by a final fresh water rinse at a minimum 176 degrees F @ 3000 psi.
- E23.5 Protection of Adjacent Properties and Public
- E23.5.1 Protect adjacent properties, landscaping, and public, including vehicles, from any damage due to operations.
- E23.6 Protection of the Environment
- E23.6.1 The containment system's purpose is to prevent the debris generated during surface preparation from entering into the environment and to facilitate the controlled collection of debris for disposal.
- E23.6.2 When abrasive blast cleaning is used to clean and prepare the steel surfaces, the Contractor shall contain the abrasive particles, and debris resulting from the operation.
- E23.6.3 The containment system includes but is not limited to, such articles as cover panels, screens, tarps, scaffolds, supports, shrouds and ground sheets used to enclose the entire work area or a paint removal tool.
- E23.6.4 The materials used for screens shall be of a commercial brand designed specifically for the purpose of containing and facilitating collection of blasting and painting debris. If woven screens are used, the material shall contain no more than 15% voids with a mesh opening not exceeding 20 mils (500 microns).
- E23.7 Protection of Surfaces
- E23.7.1 Apply primer or powder coat as soon as possible after surface has been cleaned and before deterioration of surface occurs.
- E23.7.2 In the event that rusting occurs after completion of surface preparation, clean surfaces again.
- E23.7.3 Prevent contamination of cleaned surfaces by sand, grit, salts, acids, alkali, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Must remove such contaminants from surface to the satisfaction of the Contract Administrator and apply the powder coat immediately.
- E23.7.4 Protect cleaned and freshly painted surfaces from excessive dust produced by traffic, and from dust, sand and grit produced by blasting operation at no extra cost.
- E23.7.5 Chemical pre-treatment of bare metal surfaces shall not be permitted.
- E23.8 Powder coating thicknesses
- E23.8.1 Two coats system with a thickness as directed by coating manufacturer's instructions for exterior applications, including the thickness of the primer. Provide proof of thickness for acceptance by the Contract Administrator.
- E23.8.2 Do not exceed maximum thickness recommended by coating manufacturer.
- E23.9 Applying the powder coating
- E23.9.1 The application of the powder coating shall be as per manufacturer instruction.
- E23.9.2 To maximum extent possible apply each coat as a continuous film of uniform thickness, free of pores.
- E23.9.3 Application:
- (a) Provide and maintain equipment that is suitable for intended purpose, capable of properly applying the specified powder coat product.
 - (b) Provide traps or separators to remove oil and water from compressed air and drain periodically during operations.

- (c) Keep powder coating ingredients properly mixed.
- (d) Apply powder coating in a uniform layer, as per manufacturer instructions.

E23.10 Inspection and Quality Control

- E23.10.1 The Contractor shall provide access to the Work for inspection and testing purposes.
- E23.10.2 Areas found to be deficient with respect to preparation of surfaces and/or powder coating shall be corrected and made good by the Contractor, at his cost, to the satisfaction of the Contract Administrator.
- E23.10.3 Any newly powder coated surfaces will be considered to lack uniformity, continuity and soundness, and will be rejected, if any of the following defects are apparent.
 - (a) Runs, sags, holidays or shadowing caused by inefficient application methods.
 - (b) Evidence of poor coverage at bolts, plate edges, lap joints, crevices, pockets, corners and re-entrant angles.
 - (c) Surfaces which have been struck, scraped, spotted by rain or otherwise damaged.
 - (d) Surfaces which exhibit an objectionable texture such as orange peel, mud cracking, fish eyes, etc.
 - (e) Surfaces damaged by over spray.

E23.11 Test Data

- E23.11.1 The coating company shall provide proof in the form of the manufacturer's datasheets that the powder coating being used conforms to the test results and quality characteristics as per manufacturer's test data requirements.

E23.12 Fabrication Guarantee

- E23.12.1 Guarantee
 - (a) The powder coating applicator shall provide a written guarantee stating that the powder coating will perform satisfactorily in regards to powder coat retention and color fading for a period of 2 year from the date of Issuance of Acceptance Certificate. The supplier shall state that they have reviewed the installation procedures and that the Fabricator was present on site and that the installation was done in accordance with the Fabricator's recommendations. The Fabricator shall guarantee the reapplication of the powder coating system at no cost in the event that the powder coatings do not perform satisfactory within the 2 year warranty period.

MEASUREMENT AND PAYMENT

- E23.12.2 Powder coat will be included in the "Items of Work" listed here below and no separate payment will be made.
 - (a) Items of Work
 - (i) Removal and refurbishment of Stittsville Lights
 - (ii) Removal, Refurbishment and Reinstallation of Stittsville Lights

E24. REFURBISHMENT OF STITTSVILLE LIGHTS

DESCRIPTION

E24.1 General

- E24.1.1 This Specification covers all operations relating to the removal, refurbishment and reinstallation of the existing Stittsville decorative light standards on Notre Dame Avenue.
- E24.1.2 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.

E24.2 Reference Standards

- E24.2.1 Perform work in accordance with the requirements of the latest issue of the following specifications and standards:
- (a) Electrical Wiring to be in accordance with the Canadian Electrical Code, latest edition with Local Amendments.
 - (b) Powder Coating to be completed in accordance with Specification E23.

MATERIALS

E24.3 Globes and Rings

- E24.3.1 The Contractor shall supply and install new globes on the Stittsville Lights after re-installation. The number and type of globes and rings shall be as follows:
- (a) 44 - SPA-ER 104 C P F c/w Aluminum Neck ring LP98006 or equivalent in accordance with B6 as approved by the Contract Administrator.
 - (b) 11 - SPA-ER 105 C P F c/w Aluminum Neck ring LP98008 or equivalent in accordance with B6 as approved by the Contract Administrator.

E24.4 Electrical Wiring, Sockets and Bulbs

- E24.4.1 Electrical Wiring for the decorative light standards shall be #12 RW90 or #12 T90 black, white and green conductor.
- E24.4.2 Light Sockets shall be Etlion-Daniel SC-246A 600V 4K or equivalent in accordance with B6 as approved by the Contract Administrator.

E24.5 Powder Coating

- E24.5.1 Powder Coating material to be supplied in accordance with Specification E23.

E24.6 Adaptor Plates

- E24.6.1 The Adaptor Plates shall be manufactured using CAN/CSA G40.21 Grade 300W Steel, thickness and diameter to match the thickness and diameter of the existing adaptor plates.
- E24.6.2 The Adaptor plates shall be manufactured with mounting studs using weld-able threaded rod to ASTM A307, diameter to match the diameter of the studs on the existing adaptor plates. The number of mounting studs shall match the number of anchor points on the Stittsville light standards, the studs shall be welded to the adaptor plates. The adaptor plates shall also have holes drilled for mounting to the precast Hydro bases. The diameter of the holes shall be such that the mounting studs in the precast base pass freely through the holes. The Contractor shall verify the bolt pattern on the precast Manitoba Hydro base as per the attached detail.
- E24.6.3 The adaptor plates shall be hot dip galvanized to ASTM 123/123A, following manufacture.

E24.7 Mounting/Assembly Hardware

- E24.7.1 The Contractor shall supply all new galvanized assembly hardware (including but not limited to nuts, bolts and washers), for re-assembly of the refurbished Stittsville lights and mounting of the refurbished light standards to the new precast concrete bases.

SUBMITTALS

- E24.8 Prior to construction, submit the following to the Contract Administrator.

- E24.8.1 Shop drawings for adaptor plates proposed to be supplied and installed on the new Hydro bases prior to re-installation of the Stittsville lights, signed and sealed by a professional engineer licensed to practice in the Province of Manitoba.

CONSTRUCTION METHODS

E24.9 Removal of Stittsville Lights and Bases

- E24.9.1 Remove the existing Stittsville lights and refurbish, coordinate removal with Manitoba Hydro to ensure the existing lights have been de-energized.
- E24.9.2 The Contractor shall be responsible for removal of the all existing Stittsville bases in their entirety.
- E24.9.3 The two Stittsville lights on the south side of Notre Dame west of Portage Avenue will be removed, refurbished and returned to the City yard at 1277 Pacific Avenue.

E24.10 Refurbishment of Stittsville Light Standards

- E24.10.1 The Contractor shall disassemble the Stittsville Light standards, remove existing wiring, light sockets and globes in preparation for the powder coating process.
- E24.10.2 The Contractor shall deliver the appropriate Stittsville light standard components to a qualified powder coating specialist.
- E24.10.3 The Stittsville light standards shall be refinished by Powder Coating in accordance with specification E23.

E24.11 Re-Assembly and Re-Wiring of Stittsville Lights

- E24.11.1 Once the Stittsville light standard components have been refinished the Contractor shall re-assemble and rewire the lights standards including; new galvanized assembly hardware, new conductor and light sockets. New conductor to extend from the sockets to the base of the standard and to be of sufficient additional length (300 mm minimum) to allow for splicing into wiring installed by Manitoba Hydro.

E24.12 Adaptor Plates

- E24.12.1 The Contractor shall install the adaptor plates consistent with Appendix B drawings on the new precast concrete bases, followed by installation of the refurbished Stittsville light standards in the adaptor plates. The Contractor shall coordinate the re-installation of the Stittsville lights with Manitoba Hydro.

E24.13 Re - Installation of Stittsville Lights

- E24.13.1 Once the refurbishment of the Stittsville Light standards is complete re-install the lights on the adaptor plates on the new concrete bases. Manitoba Hydro will install the new concrete bases and wiring between bases. Contractor to coordinate re-installation of lights with Manitoba Hydro.
- E24.13.2 Any damage done to the refurbished light standards during re-installation shall be rectified at the Contractor's expense.

E24.14 Installation of New Globes and Bulbs

- E24.14.1 Once Manitoba Hydro has completed re-wiring of the standards and installation of new bulbs, install new globes and rings. New globes and rings will be installed on the two lights to be refurbished and returned to the City.

MEASUREMENT AND PAYMENT

- E24.14.2 Removal, Refurbishment and Reinstallation of Stittsville Lights shall be measured on a unit basis and will be paid for at the contract Unit Price for "Removal, Refurbishment and Reinstallation of Stittsville Lights" for each Stittsville light removed, refurbished, accepted and re-installed on the new concrete bases. Removal of existing bases, powder coating and supply and installation of conductor, light sockets, adaptor plates and assembly/mounting hardware and supply and installation of new globes will be included in the "Removal, Refurbishment and Reinstallation of Stittsville Lights" and no separate payment will be made.

- E24.14.3 Removal and Refurbishment of Stittsville Lights shall be measured on a unit basis and will be paid for at the contract Unit Price for "Removal and Refurbishment of Stittsville Lights" for each Stittsville light removed, refurbished and delivered to the City yard.

E25. REMOVAL OF PRECAST CONCRETE TRAFFIC BARRIERS

DESCRIPTION

E25.1 General

- E25.1.1 This Specification covers all operations relating to the removal of existing precast concrete traffic barriers on Garry Street and St. Mary Avenue at the Winnipeg Police Building.
- E25.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labor, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

MATERIALS

E25.2 Precast Traffic Barriers

- E25.2.1 The precast traffic barriers are precast concrete jersey barriers which are approximately 3.0 m long by 0.45 m wide by 0.9 m high. Each barrier has two lifting holes cast into them. The number of traffic barriers to be removed is 51.

CONSTRUCTION METHODS

E25.3 Barrier Removal

- E25.3.1 The Contractor shall carefully load the barriers and transport them to the City Bridge yard at 960 Thomas Avenue. The Contractor shall then offload the barriers at the City yard. The Contractor shall be responsible for providing all equipment and incidental materials required for loading, transporting and offloading the barriers at the City yard. Should the Contractor damage any of the barriers they shall be replaced at their expense.
- E25.3.2 The Contractor shall contact Mr. Mike Terleski at 204-794-8510 a minimum of 24 hours prior to delivery of the barriers to the City yard.

MEASUREMENT AND PAYMENT

- E25.3.3 Removal of Precast Traffic Barriers shall be measured on a Lump Sum basis and will be paid for at the contract Unit Price for "Removal of Precast Concrete Traffic Barriers" for the loading, hauling and offloading of barriers in accordance with this specification and accepted and measured by the Contract Administrator.

E26. SIDEWALK REMOVAL AT AREAWAYS

- E26.1 Further to CW 3235-R9 the Contractor is advised that at various locations throughout the project there are sections of building basements called "Areaways" that extend into the City right of way, or may be present behind back of sidewalk. AECOM has located "areaways" using historical as-built drawings, ground penetrating radar and hydro excavation to confirm location as much as possible. Known areaways are shown on the drawings, however there may be additional areaways below the sidewalks for which no record information exists. As a result, the Contractor shall exercise extreme caution when removing all sidewalks and will use methods for removal to prevent damage to any underlying areaways. All costs associated with additional effort required to remove sidewalk shall be included in Miscellaneous Slab Removal 100 Concrete Sidewalk and no additional payment shall be made.
- E26.2 The Contractor shall expose all know areaways early in the project in order to verify areaway location, to allow for proper protection of areaways and prevent damage.

E26.3 Should the Contractor damage an areaway roof during sidewalk removal, the repair and restoration of the areaway roof shall be completed at the Contractor's expense.

E27. SUPPLY AND INSTALLATION OF BOLLARDS

DESCRIPTION

E27.1 General

E27.1.1 This Specification covers all operations relating to the supply and installation of permanent security bollards in the sidewalk at the Winnipeg Police building on Garry Street and St. Mary Avenue.

E27.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labor, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

MATERIALS

E27.2 Bollards

E27.2.1 Bollards supplied and installed shall meet the requirements of the US State Department and US Defense Department K12 rating (or ASTM F2656/F2656M M30/P1) rating (or better). Permanent stainless steel covers shall also be supplied for installation over the bollards.

SUBMITTALS

E27.3 Prior to construction, submit the following to the Contract Administrator

E27.3.1 Shop drawings for the each type of Bollard proposed to be supplied and installed as well as shop drawings for all foundations, signed and sealed by a professional engineer licensed to practice in the Province of Manitoba.

CONSTRUCTION METHODS

E27.4 Installation

E27.4.1 The bollards shall be installed at the locations shown on the drawings for the type of bollard indicated. The bollards and foundations shall be installed/constructed in accordance with the manufacturer's instructions.

E27.4.2 Type A Shallow Mount bollards shall have foundations not more than 600 mm deep and the top of the foundation shall be below the bottom of the sidewalk.

E27.4.3 Type B Deep Mount bollards shall have foundation not more than 850 mm wide and the top of the foundation shall be flush with the surrounding sidewalk.

E27.4.4 For Type B bollards the foundation shall be anchored to the surrounding sidewalk with 10M deformed bars, 300 mm long spaced 600 mm on centre, if longitudinal a strip foundation is used.

MEASUREMENT AND PAYMENT

E27.4.5 Supply and Installation of Bollards shall be measured on a unit basis and will be paid for at the contract Unit Price for "Items of Work" listed here below. The number of bollards to be paid for shall be the number supplied and installed, including foundations and stainless steel covers, in accordance with this specification and accepted and measured by the Contract Administrator.

Items of Work:

Supply and Installation of Bollards

- (i) Type A Shallow Mount
- (ii) Type B Deep Mount

E28. CONSTRUCTION IN CLOSE PROXIMITY TO LARGE DIAMETER WATERMAIN

E28.1 Contractors carrying out pavement construction or working in close proximity to the Large Diameter Watermain shall meet the following conditions and technical requirements:

E28.1.1 Pre-Work, Planning and General Execution

- (a) No work shall commence at the site until the construction method statement has been approved, a pre-construction meeting has been held, and the Large Diameter Watermain location has been clearly delineated in the field including centreline alignment, outside limits of the pipe and top elevation of the pipe.
- (b) The Contractor shall ensure that all work crew members understand and observe the requirements of this specification. Prior to commencement of onsite work, the Contractor shall jointly conduct an orientation meeting with the Contract Administrator and with all superintendents, foremen and heavy equipment operators to make all workers on site fully cognizant of the limitations of altered loading on the Large Diameter Watermain and ramifications of inadvertent damage to the Large Diameter Watermain and the constraints associated with work in close proximity to the Large Diameter Watermain.
- (c) For transverse crossings of the Large Diameter Watermain in support of the pavement construction activities, designate crossing locations just beyond the construction site and confine equipment crossing the Large Diameter Watermain at those locations. Reduce equipment speeds to levels that minimize impact loadings.
- (d) For construction work activities either longitudinally or transverse to the alignment of the Large Diameter Watermain, work only with the equipment and in the manner stipulated in the approved construction method statement and the requirements noted herein.
- (e) Subgrade, subbase and base course construction shall be kept in a rut free condition at all times. Construction equipment is prohibited from crossing the Large Diameter Watermain if the grade is insufficient to support the equipment without rutting.
- (f) Granular material, construction material, soil or other material shall not be stockpiled on the Large Diameter Watermain or within 5 metres of the Large Diameter Watermain centreline.
- (g) Stage construction such that the Large Diameter Watermain is not subjected to significant asymmetrical loading at any time.
- (h) Where work is in proximity to the Large Diameter Watermain, utilize construction practices and procedures that do not impart excessive vibration loads on the Large Diameter Watermain or that would cause settlement of the subgrade below the Large Diameter Watermain.

E28.1.2 Demolition and Excavation

- (a) Concrete demolition and removal within 3 metres horizontally of the Large Diameter Watermain shall be completed by saw cutting and removal, or use of hand held jackhammers. Use of machine mounted concrete breakers above the Large Diameter Watermain shall not be permitted.
- (b) Where there is less than 2.5 metres of cover over the Large Diameter Watermain, offset the excavator or excavation equipment from the Large Diameter Watermain, a minimum of 2.5 metres from the Large Diameter Watermain centerline, to carry out excavation.
- (c) Where there is less than 1.6 metres of earth cover over the Large Diameter Watermain and further excavation is required either adjacent to or over the Large Diameter Watermain, utilize only smooth edged excavation buckets, soft excavation or hand excavation techniques.

- (d) Excavated materials intended for reuse shall not be dumped directly on the Large Diameter Watermain but shall be carefully bladed into place.

E28.1.3 Subgrade Construction

- (a) Subgrade compaction shall be limited to static compaction methods.
- (b) Stage work activities to minimize the timer period that unprotected subgrade is exposed to the environment and protect the subgrade against the impacts of adverse weather if subbase/base course construction activities are not sequential with excavation.

E28.1.4 Subbase and Base Course Construction

- (a) Subbase or base course materials shall not be dumped directly on top of the Large Diameter Watermain but shall be carefully bladed into place.
- (b) Subbase compaction shall be either carried out by static methods without vibration or with smaller equipment such as hand held plate packers or smaller roller equipment.

E29. BUSINESS INFORMATION SIGNS

- E29.1 Further to Specification E10, the Contractor is advised that they will be required to supply and install business information signs at the upstream end of each block under construction, that identify the names of each of the business within that block. Signs shall be supplied and installed for each side of the street under construction with the names of business on that side of the street.
- E29.2 The signs shall be a minimum of 1.22m x 2.44 m (4 feet x 4 feet) mounted with the longest dimension vertical with sufficient support and ballast so as not to be blown over. The signs shall have a white background, with each business name stenciled in black lettering of sufficient size to be read at a distance of 10m.
- E29.3 The supply, erection, removal and disposal of the signs shall be incidental to the supply and installation of temporary construction signage and no further measurement or payment shall be made.

E30. PROTECTION OF EXISTING TREES

- E30.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing boulevard trees within the limits of the construction area:
 - (a) The Contractor shall not stockpile materials and soil or park vehicles and equipment on boulevards within 2 metres of trees.
 - (b) Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 100 x 2400 mm wood planks, or suitably protected as approved by the Contract Administrator.
 - (c) Excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of 1.5 times the diameter (measured in inches), with the outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned at the face of excavation in a manner that will leave a neat, clean root end.
 - (d) Operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.
 - (e) Work on-site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.

E30.2 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his/her designate.

E30.3 No separate measurement or payment will be made for the protection of trees.

E30.4 Except as required in clause E30.1(c) and E30.1(e), Elm trees shall not be pruned at any time between April 1 and July 31.

E31. TREE REMOVAL

E31.1 Further to CW 3010 - Clearing and Grubbing, tree removal including the roots shall be measured on a unit basis for the number of trees (larger than 75 mm in diameter) removed in accordance with CW 3010. Payment shall be at the Contract Unit Price bid for "Tree Removal" measured as specified herein for the total number of trees removed in accordance with this Specification, accepted and measured by the Contract Administrator.

E31.2 The Contractor shall identify trees that may be affected by Work and inform the Contract Administrator of trees that need to be removed. No trees shall be removed from the project without written approval from the Contract Administrator.

E32. REMOVAL OF EXISTING INTERLOCKING PAVING STONES

DESCRIPTION

E32.1 General

E32.1.1 This specification shall supplement the City of Winnipeg Standard Construction Specification CW 3330 and shall cover all operations related to the removal and stockpiling of existing interlocking paving stones for reinstallation.

CONSTRUCTION METHODS

E32.2 Removal of existing interlocking paving stones (concrete pavers and clay pavers) for stockpiling shall include: removal of paving stones and base course material as required; disposal of base course material and unusable paving stones; and stockpiling of paving stones in an area approved by the Contract Administrator.

MEASUREMENT AND PAYMENT

E32.2.1 Removal and stockpiling of existing interlocking paving stones will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Removal and Stockpiling of Existing Paving Stones". The area to be paid will be the total number of square metres removed and stockpiled in accordance with this specification, accepted and measured by the Contract Administrator.

E33. INSTALLATION OF INTERLOCKING PAVING STONES

DESCRIPTION

E33.1 General

E33.1.1 This Specification covers all operations relating to the installation of stockpiled concrete pavers and stockpiled clay pavers and supply and installation of concrete pavers and clay pavers in formed blockouts, as indicated on the drawings.

E33.1.2 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.

- E33.1.3 This specification shall supplement and amend the City of Winnipeg Standard Construction Specification CW 3330 "Installation of Interlocking Paving Stones".
- E33.1.4 Referenced Standard Construction Specifications.
- (a) CW 3330 – Installation of Interlocking Paving Stones.
 - (b) CW 3335 – Installation of Interlocking Paving Stones on a Lean Concrete Base.
- E33.1.5 Referenced Standard Detail
- (a) SD-240A – Interlocking Paving Stone Detail for Medians and Private Approaches.
 - (b) SD-240B – Interlocking Paving Stone Detail on Lean Concrete Base.

SUBMITTALS

- E33.2 Prior to construction, submit the following to the Contract Administrator;
- E33.2.1 The Contractor shall supply concrete paver and clay paver samples to the Contract Administrator for approval prior to installation.

MATERIALS

- E33.3 Interlocking Paving Stones.
- E33.3.1 Stockpiled pavers.
- (a) Concrete pavers.
 - (b) Clay pavers.
- E33.3.2 Precast concrete paving stones (concrete pavers) shall be 105 x 210 x 60 mm Holland Stone; Charcoal colour.
- (a) Concrete pavers shall conform to the requirements of CAN3-A231.2, Precast Concrete Pavers.
 - (b) Further to CAN3-A231.2.6.1.1, where concrete pavers are shipped for installation before the pavers are twenty-eight (28) days old, the average compressive strength of these pavers at the time of delivery to the work site shall be not less than 40 MPa.
- E33.3.3 Clay interlocking paving stones (clay pavers) shall be 92 x 194 x 57mm Dark Ironspot; Endicott Brick Pavers, or equal as approved by the Contract Administrator, in accordance with B6.
- (a) Supplied by Alsip Brick, (contact Ralph Kendall, phone 204-667-3330).

CONSTRUCTION METHODS

- E33.4 The Contractor to verify the exact dimensions of pavers prior to construction of blockouts in concrete sidewalk.
- E33.5 Install blockouts in concrete sidewalk and as specified on Drawings.
- E33.6 Install bedding sand to a minimum of 13mm as specified on the drawings and to CW3330 standard.
- E33.7 Installation of stockpiled concrete pavers and stockpiled clay pavers.
- (a) Patterns and colours of stockpiled pavers to match existing patterns and colours in each location that the pavers are removed as indicated on the drawings. Review with Contract Administrator prior to formwork and installation.
 - (b) Remove existing adjacent pavers as required to ensure that pavers do not require cutting to tie into adjoining interlocking paving stone pattern. Review with Contract Administrator prior to installation.

MEASUREMENT AND PAYMENT

E33.8 Installation of Stockpiled Pavers

E33.8.1 Installation of stockpiled concrete pavers and stockpiled clay pavers will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Reinstallation of Stockpiled Pavers". The area to be paid will be the total number of square metres stockpiled and reinstalled in accordance with this specification, accepted and measured by the Contract Administrator.

E33.9 Supply and Installation of Interlocking Paving Stones

E33.9.1 The supply and installation of concrete pavers and clay pavers will be measured on an area basis and paid for at the Contract Unit Price per square metre as follows:

- (a) Concrete Pavers
- (b) Clay Pavers

E33.9.2 The area to be paid will be the total number of square metres supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator

E34. TREE VAULTS

DESCRIPTION

E34.1 This Specification covers the installation of cast-in-place concrete tree vaults with tree grates, precast concrete vault covers and related excavation, tree vault sub drainage, geotextile, planting medium, wood and granite mulch for all new tree installations and for existing trees indicated on the drawings.

SUBMITTALS

E34.2 Prior to construction, submit the following to the Contract Administrator;

E34.2.1 Shop drawing for vault covers to be stamped by an Engineer registered to practice in the Province of Manitoba.

E34.2.2 Mulch samples to the Contract Administrator for approval prior to installation.

- (a) A wood chip mulch sample. Minimum sample size to be 1 kg.
- (b) A granite mulch sample. Minimum sample size to be 2.5 kg.

E34.3 Prior to installation, arrange for inspection and approval of the following materials by the Contract Administrator:

E34.3.1 One (1) precast concrete vault cover.

MATERIALS

E34.4 Granular drainage material in accordance with specification CW 3120 – Installation of Sub Drains.

E34.5 Drainage pipe: 150 mm dia. Perforated PVC pipe.

E34.6 Non-woven geotextile to CW 3120.

E34.7 Concrete materials and accessories in accordance with CW 3310 – Portland Cement Concrete Pavement Works.

E34.8 Reinforcing steel for tree vault curbing construction to be in accordance with CW 3310.

E34.9 Precast Concrete Vault Cover

E34.9.1 150 mm reinforced precast concrete vault cover, medium sandblast finish, to accommodate AASHTO HS-20 loading, including 4-19 mm plastic lift rings and 4-19 mm PVC pipe SCH 40 bottom, drilled thru.

- E34.9.2 Available from Barkman Concrete Ltd. Ph. Anthony Militano at 204-667-3310, or equal as approved by the Contract Administrator, in accordance with B6.
- E34.10 Tree Grates to be CORONA Heel-Proof Tree Grate, 1.2 x 1.2 m (4' x 4') SQUARE with 400mm (16") tree opening as manufactured by Iron Age Designs, or equal as approved by the Contract Administrator, in accordance with B6.
- (a) Tree grate material to be cast iron and manufactured to 'Load Class C'. All tree grate castings shall be manufactured true to pattern and component parts, and shall fit together in a satisfactory manner.
 - (b) Finish: Grates are to be supplied in raw state.
- E34.11 Tree Guards to be two piece ID M1 - 400mm (16") diameter x 1.5m (60") height as manufactured by Iron Age Designs, or equal as approved by the Contract Administrator, in accordance with B6. Finish to be galvanized steel.
- E34.12 Wood Chip Mulch: shall be chipped ash, maple, poplar, birch and other deciduous trees. Mulch shall be chipped to sizes ranging from 50mm to 75mm. Mulch may contain stringy twigs and seed, free of non-organic material, wood preservatives or diseased wood. The mulch shall contain no more than 5% of the following materials in total: soil, sawdust, peatmoss, coniferous wood and needles.
- E34.13 Black Granite Mulch: shall be 20 to 40 mm granite mulch, black in colour. The material shall be free of organic and inorganic debris.

CONSTRUCTION METHODS

- E34.14 The Contractor to ensure that all buried utilities and services are located and, if necessary, protected and exposed prior to any excavation in accordance to CW 1120.
- E34.15 Obtain approval of the tree grate with frame mock-up from Contract Administrator prior to construction of tree vaults. Refer to Exterior Metal Fabrication Specification.
- E34.16 Excavate tree vaults to the dimensions and depth shown on the Drawings. Hydro Excavating in the area of the existing underground utilities and existing trees. Ensure base of tree pit slopes to drain toward perforated drainage pipe (min 1.0% slope).
- E34.17 Hydro-excavate around existing tree pit to extend it to the dimensions shown on the drawing in accordance with E12. The Contractor is to make arrangements for City of Winnipeg Forestry personnel to be on site during hydro-excavation to ensure exposure of tree roots is acceptable.
- E34.18 Clear excavation of all construction debris, trash, rubble and any foreign material. Excavate and remove oil spills and other soil contamination sufficiently to remove the harmful material. Fill over excavations with approved fill and compact to the required subgrade compaction.
- E34.19 All excavated material shall be disposed of offsite in accordance with CW 1130.
- E34.20 Backfill between roadway base and tree vault edge with compacted granular where required.
- E34.21 Install 200 mm depth granular drainage material with drainage pipe in accordance with specification CW 3120, and as shown on the Drawings. Ensure pipe has minimum 25 mm cover of drainage course above and below. Tie drainage pipe into nearest catch basin (min 0.25% slope).
- E34.22 Construct cast-in-place concrete tree vault in accordance with the Drawings.
- E34.23 Cover drainage course and sides of tree vault with geotextile in accordance with specification CW 3120 and as shown on the Drawings.
- E34.24 Backfill with street tree planting medium compacting sufficiently to provide good soil consistency for tree planting and to minimize settlement.

- E34.25 Plant trees in locations as per the Drawings. Ensure the tree trunk is centred on opening of tree covers. After tree planning, ensure that the finished soil level is 75mm below finished grade of sidewalk at trees to accommodate black granite mulch and 25 mm below bottom edge of tree vault cover.
- E34.26 Install vault covers and tree grates on tree vault thickened edge. Remove debris from lip and/or grind down concrete as required to ensure vault covers do not wobble and are flush with adjacent surfaces.
- E34.27 Install tree guards on all NEW tree planting with tree grates as per manufacturers specifications.
- E34.28 Wood Chip Mulch: supply and install 75 mm deep deciduous wood chip mulch in all tree wells as shown on the Construction Drawings. Wood chip mulch to be pulled away from trunks of all trees.
- E34.29 Black Granite Mulch: supply and install 75 mm deep black granite mulch in tree well locations and levels as shown on the Construction Drawings.

MEASUREMENT AND PAYMENT

E34.30 Tree Vaults

- E34.30.1 Construction of Tree Vaults will be measured on an area basis and paid for at the Contract Unit Price per square meter for "Tree Vault" which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the Work included in this Specification. The area to be paid for shall be the total number of square meters constructed in accordance with this Specification acceptable to the Contract Administration, as computed from measurements made by the Contract Administrator.
- E34.30.2 No separate measurement or payment will be made for drainage course, drain lines, geotextile and rootbarrier. All work is incidental to tree vault construction.

E34.31 Tree Vault Covers

- E34.31.1 Tree vault covers will be measured and paid for on a unit basis at the Contract Unit Price under "Supply and Install Tree Vault Covers" for:
- (a) "Vault Cover A",
 - (b) "Vault Cover B",
 - (c) "Vault Cover C"
- Which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the Work included in this Specification. The number to be paid for shall be the total number installed in accordance with this Specification acceptable to the Contract Administrator.

E34.32 Tree Grates

- E34.32.1 Tree grates will be measured and paid for on a unit basis at the Contract Unit Price for "Supply and Install Tree Grate" for:
- (a) "1.2 x 1.2"
- Which price shall be payment in full for supply of all materials and performing all operations herein described and for all other items incidental to the Work included in this Specification. The number to be paid for shall be the total number installed in accordance with this Specification acceptable to the Contract Administrator.

E34.33 Tree Guards

- E34.33.1 Tree guards will be measured and paid for on a unit basis at the Contract Unit Price for "Supply and Install Tree Guard" which price shall be payment in full for supply of all

materials and performing all operations herein described and for all other items incidental to the Work included in this Specification. The number to be paid for shall be the total number installed in accordance with this Specification acceptable to the Contract Administrator.

E34.34 Hydro Excavation

E34.34.1 Hydro excavation will be measured and paid for in accordance with E12 Hydro Excavation.

E34.35 Mulch

E34.35.1 Supply and installation of mulch shall be made on an unit basis and paid for at the Contract Unit Price per square metre placed at the specified depth for:

- (a) "Wood Chip Mulch" and
- (b) "Black Granite Mulch"

In which payment shall be considered compensation in full for the supply of all materials and the performing of all operations necessary to complete the Work as specified including any items incidental to the Work of this specification.

E35. PLANTING MEDIUM & FINISHED GRADING

DESCRIPTION

E35.1 This Specification covers the supply and installation of planting medium in tree vaults.

REFERENCES

E35.2 Agriculture and Agri-Food Canada

E35.2.1 The Canadian System of Soil Classification, Third Edition, 1998.

E35.3 Canadian Council of Ministers of the Environment (CCME) Guidelines.

E35.4 The City of Winnipeg Standard Construction Specifications CW 1130 and CW 3540.

SUBMITTALS

E35.5 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.

E35.6 Submit two (2) copies of soil analysis and recommendations for corrections to Contract Administrator.

QUALITY ASSURANCE

E35.7 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.

E35.8 Test planting medium for nutrients N, P, K, micronutrients, soluble salt content, pH value and OM (organic matter).

E35.9 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.

DELIVERY, STORAGE AND HANDLING

E35.10 Store materials in a dry area, protected from freezing, sedimentation and contamination.

E35.11 Deliver and store fertilizer in waterproof bags labeled with weight, analysis and name of manufacturer.

MATERIALS

E35.12 Planting Medium Soil Mix

E35.12.1 Planting Medium: In accordance with CW 3540 for topsoil except organic matter to be in the range of 5-10%.

E35.12.2 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.

E35.12.3 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%
0.75	0 to 1%

E35.12.4 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 sq.m. (8 pounds per 100 sq. ft).

CONSTRUCTION METHODS

E35.13 Excavation

E35.13.1 Excavate tree vaults by hand unless otherwise directed by Contract Administrator. Dispose of all rock, clay soils and other deleterious materials off Site.

- (a) Protect bottom of excavations against freezing.
- (b) Remove water that has entered the excavated tree pit prior to planting. Notify Contract Administrator if water source is groundwater.
- (c) Verify and obtain approval by Contract Administrator of tree vaults with geotextile prior to compacted soil mound and planting medium placement

E35.13.2 Planting Medium Placement

- (a) Place planting medium in uniform layers over approved, unfrozen sub-grade, to the depth indicated on the Drawings.
- (b) Eliminate rough spots and low areas, Prepare a loose, friable bed, boot firm and level

E35.13.3 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

E35.13.4 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

SURPLUS MATERIAL

E35.14 Dispose of unused planting medium off Site in accordance with CW1130.

CLEANING

- E35.15 Perform cleaning to remove accumulated environmental dirt from all paved surfaces of building faces. Remove surplus materials, rubbish, tools and equipment barriers

MEASUREMENT AND PAYMENT

- E35.16 Supply and installation of planting medium will be measured on a volume basis and paid for at the Contract Unit Price per cubic metre for "Supply and Install Planting Medium". The volume to be paid will be the total number of cubic metres installed in accordance with this specification, accepted and measured by the Contract Administrator

E36. SITE AMENITIES

DESCRIPTION

E36.1 General

- E36.1.1 This Specification covers all operations relating to the supply and installation of bicycle racks and metal benches.
- E36.1.2 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.

SUBMITTALS

- E36.2 Contractor shall submit shop drawing for review by Contract Administrator prior to purchase and installation.

MATERIALS

E36.3 General

- E36.3.1 The Contractor shall be responsible for the supply, safe storage, handling and installation of all materials set forth in this Specification. All materials supplied under this Specification shall be subject to inspection and acceptance by the Contract Administrator.

E36.4 Site Amenities and Accessories:

E36.4.1 Metal Bench

- (a) Metal bench to be all metal Moraine (MHT6), powder coated square steel tubing, colour Silver/Black Texture length 1.83 m (6 ft), as manufactured by Vista Furnishings or equal as approved by the Contract Administrator, in accordance with B6:

Murray Lord
Ph: 204-979-7972 or email murray.colcat@mymts.net

E36.4.2 Bicycle Rack

- (a) Bicycle rack to be Hoop Bike Rack AL-HOOP-CLR – 800 mm (34") height, finish to be brushed Aluminum, clear coated, as manufactured by Rackworks, or equal as approved by the Contract Administrator, in accordance with B6:

Rackworks (Woodcock Cycle Works)
433 St. Mary's Road Winnipeg, MB R2M 3K7
Ph: 204-955-5221

E36.4.3 Accessories

- (a) All mounting accessories to be stainless steel and tamper proof.

CONSTRUCTION METHODS

E36.5 Metal Bench

E36.5.1 Surface mount metal bench on concrete pad as indicated on the Construction Drawings. Follow manufacturer's instructions for surface mounting of bench.

E36.5.2 Ensure all bicycle racks and benches are level during and after installation.

E36.6 Bicycle Rack

E36.6.1 Surface mount bicycle rack on concrete pad as indicated on the Construction Drawings. Follow manufacturer's instructions for surface mounting of bicycle racks.

MEASUREMENT AND PAYMENT

E36.7 Metal Bench

E36.7.1 Metal benches will be measured on a unit basis and paid for at the Contract Unit Prices per each for "Supply and Install Metal Bench", which price shall be payment in full for supplying and installing all materials and for completing all operations herein described and all other items incidental to the work included in this Specification, accepted and measured by the Contract Administrator.

E36.8 Bicycle Rack

E36.8.1 Bicycle racks will be measured on a unit basis and paid for at the Contract Unit Prices per each for "Supply and Install Bicycle Rack", which price shall be payment in full for supplying and installing all materials and for completing all operations herein described and all other items incidental to the work included in this Specification, accepted and measured by the Contract Administrator.

E37. REMOVE AND REINSTALL BIKE HOOPS

DESCRIPTION

E37.1 General

E37.1.1 This specification covers the removal, salvaging and re-installation of existing bicycle hoops along Garry Street and Notre Dame Avenue.

CONSTRUCTION METHODS

E37.2 Removal and Salvage of Bicycle Hoops

E37.2.1 Existing bicycle hoops designated for removal to facilitate construction shall be carefully removed and salvaged. All components and all hardware shall be salvaged for reuse and stockpiled at locations designated by the Contractor Administrator.

E37.2.2 In the event of damage to any materials by the Contractor, the Contractor shall immediately notify the Contract Administrator and make all repairs or replacements necessary, at his own expense, to the satisfaction of the Contract Administrator. In no case shall the Contractor reinstall a damaged component.

E37.3 Re-Installation of Salvaged Bicycle Hoops

E37.3.1 Re-Install salvaged bicycle hoops to the satisfaction of the Contract Administrator.

MEASUREMENT AND PAYMENT

E37.4 Remove and Reinstall Salvaged Bicycle Hoops

E37.4.1 The removal and reinstall of bicycle hoops shall be measured on a unit basis and paid for at the Contract Unit Price for "Salvage and Reinstall Bicycle Hoop", which payment shall be

considered compensation in full for performing of all operations necessary to complete the Work as specified including any items incidental to the Work of this specification.

E38. EXTERIOR METAL FABRICATION

DESCRIPTION

E38.1 General

E38.1.1 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 for the fabrication and installation of galvanized tree grate frames.

E38.2 References

E38.2.1 American Society for Testing and Materials International, (ASTM)

- (a) ASTM A53/A53M-02, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
- (b) ASTM A269-02, Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
- (c) ASTM A307-02, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

E38.2.2 Canadian Standards Association, (CSA International)

- (a) CAN/CSA-G40.20/G40.21-98, General Requirements for Rolled or Welded Structural Quality Steel.
- (b) CAN/CSA-G164-M93 (R1998), Hot Dip Galvanized or Irregularly Shaped Articles, or latest.
- (c) CAN/CSA-S16.1-01, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
- (d) CSA W59-1989, R2001, Welded Steel Construction, Metal Arc Welding, Imperial Version.

MATERIALS

E38.3 Tree Grate Frame

E38.3.1 Frame: 112 mm x 76 mm x 6 mm thk. Steel tube.

E38.3.2 Lip: 9 mm thk. Steel flat bar.

E38.3.3 Free Standing Support:

- (a) 112 mm x 112 mm x 6 mm thk. Steel tube; and
- (b) 6 mm flat bar plate.

E38.3.4 All components to be hot-dip galvanized following assembly.

E38.4 Accessories

E38.4.1 Welding materials:

- (a) CSA W59.

E38.4.2 Welding electrodes:

- (a) CSA W48 Series.

SUBMITTALS

E38.5 Submit shop drawing for tree grate frame:

- E38.5.1 Shop drawing to clearly indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number and size of anchors, supports, reinforcement, details and accessories.
- E38.5.2 Indicate and list hardware and miscellaneous items.
- E38.5.3 Provide templates, patterns, fixing diagrams as required.
- E38.5.4 Indicate related, adjacent materials, and connections.
- E38.6 Submit mock-up of one tree grate with galvanized frame fully assembled for review and approval by the Contract Administrator.

DELIVERY, STORAGE AND HANDLING

- E38.7 Deliver materials to site, suitably packaged. Do not deliver materials long before they are required on site or cause any delays to scheduling.
- E38.8 Store materials in a dry location off the ground, and prevent damage.
- E38.9 Materials that have been damaged or deemed unfit for use during delivery or storage shall be immediately replaced at no cost.

SITE CONDITIONS

- E38.10 Make a careful examination of the site and structures and investigate all matters relating to the nature of the work to be undertaken, the means of access and egress, the rights and interests which may be interfered with during the construction of the Work.
- E38.11 Report any discrepancies or omissions to the Contract Administrator, who will issue written clarification. Oral interpretations or instructions are not acceptable.

CONSTRUCTION METHODS

- E38.12 Review and understand the tree grate dimensions and details.
- E38.13 Obtain approval of shop drawings and mock-up prior to fabrication.
- E38.14 Have a tree grate on hand prior to fabrication. Tree grate shall sit flush with top of frame lip. Know thickness of hot-dipped galvanization material to ensure that tree grate is flush with top of lip following galvanization.
- E38.15 Lip shall sit flush with adjacent surfaces. Adjust height of frame steel tube as required to make flush.
- E38.16 Fabricate work square, true, straight and accurate to required sizes, with joints closely fitted and properly secured.
- E38.17 Do welding work in accordance with CSA W59.
- E38.18 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.
- E38.19 De-grease and de-bur all sharp edges in the shop left behind after fabrication is complete, prior to galvanization.
- E38.20 Hot-dip galvanize after fabrication. No touch-up, welding, drilling or grinding will be accepted after galvanization.

INSTALLATION

- E38.21 Erect metal work square, plumb, straight and true, accurately fitted, with tight joints and intersections.

E38.22 Install tree grate frame on tree vault thickened edge. Remove debris from lip and/or grind down concrete as required to ensure tree grate frames do not wobble and are flush with adjacent surfaces.

ACCEPTANCE

E38.23 Work will be accepted only if it is erected true to the Drawings and conforms to the approved shop drawings and mock-up.

MEASUREMENT AND PAYMENT

E38.24 Tree grate frames

E38.24.1 Supply and installation of tree grate frames shall be measured on a unit basis and paid for at the Contract Unit Price for "Supply and Install of Tree Grate Frame" for:

- (a) "1.2 x 1.2 Frame",
- (b) "1.2 x 1.8 Frame"

Which payment shall be considered compensation in full for the supply of all materials and the performing of all operations necessary to complete the Work as specified including any items incidental to the Work of this Specification.

E39. TREES

DESCRIPTION

E39.1 General

E39.1.1 This specification covers all operations relating to the supply and installation of nursery-grown trees in areas indicated on the Drawings, including preparation, digging, transport and planting, and maintenance.

E39.1.2 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.

E39.2 Nomenclature

E39.2.1 Nomenclature of specified nursery stock shall conform to the International Code of Nomenclature for Cultivated Plants and shall be in accordance with the approved scientific names given in the latest edition of Standardized Plant Names. The names of varieties not named therein are generally in conformity with the names accepted in the nursery trade.

E39.3 Source Quality Control

E39.3.1 All nursery stock supplied shall be nursery grown and of species and sizes as indicated on the Drawings. Nursery stock shall be No. 1 Grade material in accordance with the current edition of Landscape Canada's (CNTA) "Guide Specifications for Nursery Stock".

E39.3.2 Any nursery stock dug from native stands, wood lots, orchards, or neglected nurseries, which have not received proper cultural maintenance, shall be designated as "collected plants". The use of "collected plants" will not be permitted unless approved by the Contract Administrator.

E39.3.3 The Contractor shall notify Contract Administrator of source of plant material at least seven (7) days in advance of shipment.

E39.3.4 Acceptance of plant material at source does not prevent rejection of same plant material on site prior to or after planting operations.

E39.3.5 Imported plant material must be accompanied with necessary permits and import licenses. Conform to federal and provincial regulations.

E39.4 Shipment and Pre-Planting Care

- E39.4.1 Coordinate shipping of plants and excavation of holes to ensure minimum time lapse between digging and planting.
- E39.4.2 Tie branches of trees securely and protect plant material against abrasion, exposure and extreme temperature change during transit. Avoid binding of planting stock with rope or wire, which would damage bark, break branches or destroy natural shape of plant. Give full support to root balls, especially of large trees, during lifting.
- E39.4.3 Cover plant foliage with tarpaulin, and protect bare roots by means of dampened straw, peat, saw dust or other acceptable material to prevent loss of moisture during transit and storage.
- E39.4.4 Remove broken and damaged roots with sharp pruning shears. Make clean cut and cover cuts over 50 mm diameter with wound dressing.
- E39.4.5 Keep roots moist and protect from sun and wind. Heel-in trees that cannot be planted immediately in shaded areas; water well.

E39.5 Replacement

- E39.5.1 During the first two (2) years following completion of planting operations, remove from site any plants that have died or failed to grow satisfactorily, as determined by the Contract Administrator. As an example, plant material installed in 2017 that has failed to grow satisfactorily and has not been replaced by October 31, 2018, would be required to be replaced in the spring of 2019.

MATERIALS

E39.6 General

- E39.6.1 The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification. All materials supplied under this Specification shall be subject to inspection and acceptance by the Contract Administrator.

E39.7 Water

- E39.7.1 Water shall be potable and free of minerals that may be detrimental to plant growth.

E39.8 Fertilizer

- E39.8.1 Fertilizer shall be slow release organic. Fertilizer shall contain N-P-K in ratio as recommended by soil test results from an approved agricultural soil testing laboratory.

E39.9 Trunk Protection and Tree Support

- E39.9.1 Tree protection shall be a 100 x 600 mm long section of plastic weeping tile material.

E39.10 Root Ball Burlap

- E39.10.1 Root ball burlap shall be 150 g Hessian burlap.

E39.11 Anti-desiccant

- E39.11.1 Anti-desiccant shall be wax-like emulsion to provide film over plant surfaces reducing evaporation but permeable enough to permit transpiration.

E39.12 Plant Material

- E39.12.1 All plant material specified for this project shall be containerized and/or ball and burlap nursery stock. All plants shall be from the Winnipeg area and the Oak-Aspen Forest Eco-region.

- E39.12.2 Comply with latest edition of the "Guide Specification for Nursery Stock", produced by Landscape Canada (CNTA), referring to quality, size and development of nursery-grown plant material and root balls.
- E39.12.3 Nursery stock shall be No. 1 grade trees, shrubs and vines.
- E39.12.4 All plant material shall be measured when branches are in their natural position. Height and spread dimensions specified in the Plant List on the Drawings refer to the main body of the plant, and not from branch tip to root base or from branch tip to branch tip. Where trees are measured by calliper (cal.), reference is made to the diameter of the trunk measured at 300 mm above ground as the tree stands properly planted in the nursery.
- E39.12.5 All containerized whips and herbaceous plant material shall have a minimum of one full year's growth. Roots shall be healthy, reaching the sides of the containers, and developed such that the root ball can be kept intact during transplanting. Roots shall not encircle each other to the extent of inhibiting plant growth.
- E39.12.6 All trees shall have one, only, sturdy, reasonably straight and vertical trunk, and a well-balanced crown with fully developed leader, unless designated "multi-stem". All evergreens shall be symmetrically grown and branched from ground level, up.
- E39.12.7 Use trees, shrubs and groundcovers with structurally sound, strong fibrous root systems, and free of disease, insects, defects or injuries, including rodent damage, sun scald, frost cracks, abrasions or scars to the bark. Plants must have been root pruned regularly, but not later than one growing season prior to arrival on site.
- E39.12.8 All parts of the plants shall be moist and show live, green cambium tissue when cut.
- E39.12.9 At least one (1) plant of each variety supplied shall bear a tag showing both the botanical and common name of the plant.
- E39.13 Additional Plant Material Qualifications:
- E39.13.1 Imported Plant Material
- (a) Plant material obtained from areas with milder climatic conditions from those of site acceptable only when moved to site prior to the breaking of buds in their original location and heeled-in in a protected area or placed in cold storage until conditions suitable for planting. Obtain Contract Administrator's approval to use imported plant material.
- E39.13.2 Cold Storage
- (a) Approval required for plant material that has been held in cold storage.
- E39.13.3 Container-Grown Stock
- (a) Acceptable if containers large enough for root development. Trees and shrubs must have grown in container for minimum of one growing season but not longer than two. Root system must be able to hold soil when removed from container. Plants that have become root bound are not acceptable. Container stock must have been fertilized with slow releasing fertilizer.
- E39.13.4 Balled and Burlapped Plant Material
- (a) Deciduous trees in excess of 3 m height must have been dug with large firm ball. Root balls must include 75% of fibrous and feeder root system. This excludes use of native trees grown in light sandy or rocky soil. Secure root balls with burlap, heavy twine and rope. For large trees: wrap ball in double layer of burlap and drum lace with minimum 10 mm diameter rope. Protect root balls against sudden changes in temperature and exposure to heavy rainfall.
- E39.13.5 Tree Spade Dug Material
- (a) Obtain approval of the Contract Administrator for digging plant material with mechanized digging equipment, hydraulic spade or clam-shell type. This type of digging is typically not acceptable for boulevard tree plantings. Dig root balls to satisfy

Landscape Canada (CNTA) standards. Lift root ball from hole, place in wire basket designed for purpose, line with burlap. Tie basket to ball with heavy rope. Take care not to injure trunk of tree with wire basket ties or rope.

E39.13.6 Substitutions

- (a) Substitutions to plant material as indicated on the Plant List will not be permitted unless written approval has been obtained as to type, variety and size prior to award of Contract. Plant substitutions must be of similar species and of equal size to those originally specified.

CONSTRUCTION METHODS

E39.14 General

E39.14.1 Workmanship

- (a) The Contractor shall stake out location of trees as per the Drawings. Obtain Contract Administrator's approval prior to excavating.
- (b) The Contractor shall obtain clearances from all utilities, with respect to underground lines located in the areas to be excavated, prior to commencing planting operations.
- (c) The Contractor shall apply anti-desiccant in accordance with material manufacturer's instructions.
- (d) The Contractor shall coordinate planting operations; keep the site clean and planting holes drained, and immediately remove soil or debris spilled onto pavement.

E39.14.2 Planting Time

- (a) Trees growing in containers/ball and burlap may be planted throughout growing season.
- (b) Plant only under conditions that are conducive to health and physical conditions of plants.
- (c) The Contractor shall provide the Contract Administrator with a planting schedule at least two weeks prior to planting operations. Extending planting operations over long period using limited crew will not be accepted.

E39.14.3 Excavations

- (a) Trees: excavate to depth such that the top of the root ball is even with existing grade, with a surface width of two times the diameter of the root ball. Backfill around trees with planting soil mixture.
- (b) The sides of all tree pits shall be scarified to the depth of one shovel blade.
- (c) Provide drainage for planting holes in heavy soil if natural drainage does not exist. Have method approved.
- (d) Protect the bottoms of excavations against freezing.
- (e) Remove water that enters excavations prior to planting. Ensure source of water is not ground water.

E39.14.4 Planting

- (a) Trees shall be placed on undisturbed soil and to a depth equal to that at which they were originally growing at the nursery.
- (b) Plant trees vertically, with roots placed straight out in hole. Orient plant material to give best appearance in relation to structures, roads and walkways.
- (c) Place plant material to depth equal to depth they were originally growing in nursery or in locations collected.
- (d) Ball and burlap root balls: loosen burlap and cut away minimum top 1/3 without disturbing root ball. Do not pull burlap or rope from under root ball. With container

stock, remove entire container without disturbing root ball. Non-biodegradable wrappings must be removed.

- (e) Tamp planting soil mixture around root system in layers of 150 mm eliminating air voids. Frozen or saturated planting soil is unacceptable. When 2/3 of planting soil has been placed, fill hole with water. After water has been completely penetrated into soil, complete backfilling.
- (f) Excavate 200 mm depth an additional 600 mm beyond planting pits around the perimeter of all tree planting pits, and fill with planting soil mixture.
- (g) Construct 75 mm deep saucers around the outer edge of planting pits to assist with maintenance watering.
- (h) When planting is completed apply slow release organic fertilizer at minimum rate of 12 kg/100 m for shrub beds or 50 g/mm of calliper for trees, or as recommended by the soil analysis. Mix fertilizer thoroughly with top layer of planting soil and water in well.

E39.14.5 Pruning

- (a) Prune trees after planting, as indicated. Postpone pruning of those trees where heavy bleeding may occur, until in full leaf. Employ clean sharp tools and make cuts flush with main branch, smooth and sloping as to prevent accumulation of water. Remove projecting stumps on trunks or main branches. Remove dead and injured branches and branches that rub causing damage to bark. Trim trees and shrubs without changing their natural shape. Do not damage lead branches or remove smaller twigs along main branches.

E39.14.6 Standards

- (a) All roots shall be cleanly cut; split roots are not acceptable.
- (b) Branches and trunks shall be tied and protected; broken or abraded branches or trunks are not acceptable.
- (c) Planting shall be protected from drying conditions; desiccated material not acceptable.
- (d) All plants shall be free of insects and disease: galls, blight and other manifestations of insect infestation or disease not acceptable.

E39.15 Maintenance

E39.15.1 Watering

- (a) Plant material shall be watered once a week for first four weeks following installation, and once every second week, thereafter. Ensure adequate moisture in root zone at freeze-up.

E39.15.2 Weeding

- (a) Keep tree saucers weed-free by manually removing weeds during the maintenance period.

E39.15.3 Insects and Diseases

- (a) Spray plants to combat pests and diseases. Use organic chemical insecticides approved by Agriculture Canada.

E39.15.4 Adjustments

- (a) Make adjustments requested by the Contract Administrator, including straightening trees, tightening guy wires and removing tree stakes.

E39.15.5 Maintenance Period

- (a) Maintain plant material for a period of two years following acceptance to start maintenance period of planting operations, as determined by the Contract Administrator.

MEASUREMENT AND PAYMENT

E39.16 Trees

E39.16.1 Supply and installation of trees will be measured on a unit price basis for each tree listed in the "Plant Material List", which price shall be payment in full for supplying all materials and for completing all operations herein described and all other items incidental to the work included in this Specification, accepted and measured by the Contract Administrator.

E39.17 Fertilizer

E39.17.1 Supply and installation of fertilizer for plant material will be considered incidental to the Works of this Specification. No measurement and payment will be made for this Item of Work.

E40. LONG TERM SCHEDULED MAINTENANCE OF PLANT MATERIAL

DESCRIPTION

E40.1 This specification covers all operations relating to the maintenance of plant material following acceptance of the Work by the Contract Administrator.

E40.1.1 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.

E40.2 MATERIALS

E40.3 General

E40.3.1 The Contractor shall be responsible for the supply, safe storage and handling of all materials set forth in this Specification. All materials supplied under this Specification shall be subject to inspection and acceptance by the Contract Administrator.

E40.4 The Contractor shall provide all necessary materials and equipment including: additional topsoil, soil ameliorates, mulches, fertilizers and pesticides, and pruning tools, water trucks, hoses, water metres and any other items necessary for the maintenance of the areas indicated in this specification.

CONSTRUCTION METHODS

E40.5 Provision of Maintenance Personnel

E40.5.1 The Contractor shall provide all necessary personnel for the ongoing maintenance operations.

E40.6 Capability of Personnel

E40.6.1 Maintenance personnel should have at least one year of experience in arboriculture/maintenance and should be under the direction of a foreman, in all cases, with not less than five years of experience with similar maintenance operations.

E40.6.2 The maintenance foreman shall be familiar with plant identification.

E40.7 Maintenance Period

E40.7.1 Maintain plantings for a period of two (2) years from the completion of the Maintenance for Establishment period, as determined by the Contract Administrator. Note: Completion shall not occur after October 30, or before May 15 of any year.

E40.8 Maintenance Schedule

E40.8.1 Provide the Contract Administrator a Schedule of Proposed Maintenance Activities for the two-year scheduled maintenance period, based on the requirements outlined herein. The

scheduled maintenance period shall not commence until the schedule has been reviewed by the Contract Administrator.

E40.9 Recording Maintenance Operations

E40.9.1 The Contractor shall provide a detailed maintenance log, including but not limited to the following: hours of labour undertaken, number of personnel employed and equipment used. The log will itemize watering, spraying and any other maintenance work. Contractor shall submit logs monthly at regularly scheduled meetings with the Contract Administrator. Maintenance log will be included in payment for the maintenance work

E40.10 Traffic

E40.10.1 Do not conduct maintenance operations during peak traffic periods (Monday to Friday from 07:00 to 09:00 and from 15:30 to 17:30).

E40.11 Maintenance of Trees

E40.11.1 Maintain trees as indicated in Trees Specification - maintenance clause.

E40.11.2 Watering Trees

- (a) Newly planted trees require water to become established; however, watering too often can kill a plant. During the summer, if temperatures are fairly high and there has been no rainfall, water approximately once a week.
- (b) Contractor shall determine the need for watering by taking soil tests weekly with a one-inch auger. Take a test sample from both the planting soil and from the tree root balls by drilling to a minimum depth of 600 mm. The soil shall contain enough moisture to hold together when compressed in the hand, but shall not be muddy.
- (c) Testing shall be undertaken at a minimum of 10 sites per week at a minimum of 10m between sites. The installed plant material and bioengineering shall not be allowed to dry out to the detriment of the viability of the plant material. Contractor shall monitor and submit lots to the Contract Administrator monthly. Contractor shall water-in plant material works in late fall during the scheduled maintenance period.

E40.11.3 Fertilizing, Pruning and Spraying Deciduous Trees

- (a) Because of the specialized nature of such operations, employ a qualified local arborist.

E40.11.4 Pruning Deciduous Trees

- (a) Prune in accordance with Trees Specification - pruning clause by thinning out unnecessary limbs or portions of limbs and by cutting back the terminal growth. Cut with pruning shears and with handsaws for limb-wood. When cutting the terminal growth, make the cuts one-quarter inch above the bud or lead twig. Where an entire limb is removed, make the cuts flush with the main stem or trunk.

E40.11.5 Cultivation

- (a) Cultivate only as required to reconstruct planting beds or tree saucers, or to remove significant weed growth.
- (b) Do not cultivate around plants with a shovel or spade. The tendency is to penetrate too deeply and cause root injury. Cultivate with a hoe or similar tool. When using a hoe never penetrate soil more than 50 mm. Maintain natural elevation of the surrounding area when cultivating. Create a gentle saucer to contain water around the tree root zone.
- (c) Avoid pyramiding soil around the base of any plant as this causes water to drain away and will encourage undesirable top root growth.
- (d) The boundary between the adjacent sod and soil saucer should be crisp and well formed.
- (e) Restore wood chip mulch when cultivation completed.

- E40.11.6 Spraying
- (a) Spray trees to control insect pests and diseases. Use horticultural compounds approved by Agriculture Canada, which are specific for the problem to be contained.
- E40.11.7 Straightening
- (a) Straighten trees as required or as directed by the Contract Administrator.
- E40.11.8 Mulching Wood Chip
- (a) Add wood chip mulch to planting areas as required to maintain an even fresh surface.
- E40.11.9 Weeding
- (a) Hand weed and lightly rake a minimum of once per month, or as determined by the Contract Administrator, to remove competition for installed plant material/undesirable plant material. Dispose of undesirable material off-site.
 - (b) The Contractor shall be responsible for any fines or weed control notices issued for the planting areas. All such notices shall be dealt with by the Contractor in a timely fashion. Copies of any fines and notices shall be provided to the Contract Administrator within five (5) working days of receipt by the Contractor.
- E40.11.10 Dispose of waste material at a recognized solid waste disposal site.

MEASUREMENT AND PAYMENT

E40.12 General Maintenance of Trees

- E40.12.1 Trees will be measured on a unit and paid for at the Contract Unit Price per annual for the "Items of Work" listed here below which price shall be payment in full for supplying all materials and for completing all operations herein described and all other items incidental to the work included in this Specification, accepted and measured by the Contract Administrator.
- (a) Items of Work
 - (i) General Maintenance of Plant Material
 - (b) Two year general maintenance of trees including fertilizing, pruning, spraying for insects, disease control, cultivation, care of guy wires and turnbuckles, straightening, mulching and watering will be measured twice each season, typically in July and October, for a six month annual growing season from April 15 to October 15 each year.

E41. PLANT MATERIAL WARRANTY

DESCRIPTION

E41.1 General

- E41.1.1 This Specification covers the provision of warranty for all plant material itemized on the Plant List:
- (a) Plant Material shall be under warranty for two full years.
- E41.1.2 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.
- E41.2 Timing
- E41.2.1 Warranty shall commence upon acceptance of installed plant material.
- E41.3 Warranty

- E41.3.1 The Contractor hereby warrants that the plant material as itemized on the Plant Lists and on the Drawings will remain free of defects for the maintenance period indicated for each area of the Contract.
- E41.4 End-of-Warranty Inspection
- E41.4.1 Contract Administrator reserves the right to extend the Contractor's warranty responsibilities for an additional year, at the end of the designated warranty period for the appropriate area, if at that time plant material leaf development and growth are not sufficient to ensure future survival.
- E41.5 Replacement
- E41.5.1 During the warranty period, remove from site any plant material that has died or failed to grow satisfactorily, as determined by the Contract Administrator and replace with healthy plant material of the same species and size.
- E41.5.2 Replace plant material in the following spring or fall as directed.
- E41.5.3 Extend warranty on replacement plant material for an additional period until the end of the specified warranty period or for one full growing season, whichever is the longer period.
- E41.5.4 Continue such replacement and warranty until plant material is acceptable.
- E41.5.5 Trees determined by the Contract Administrator to have been damaged by vandalism shall be replaced and such replacement trees will be paid for at the Contract Unit Prices for the species indicated on the Drawings.

MEASUREMENT AND PAYMENT

- E41.6 Warranties on Plant Material
- E41.6.1 Warranties on plant material will be incidental to the "Plant Material." No measurement and payment will be made for these Items of Work.

E42. SALT TOLERANT GRASS SEEDING

DESCRIPTION

- E42.1 Further to CW 3520 and CW 3540, this specification shall cover sub-grade preparation and the supply and placement of Salt Tolerant Grass Seed.

MATERIALS

- E42.2 Salt Tolerant Grass Seed
- E42.2.1 Salt Tolerant Grass Seed for regional and collector boulevards, medians and interchange areas shall be a mixture composed of:
- (a) Seventy percent (70%) Fults or Nuttals Alkaligrass (*Puccinellia* spp.), twenty percent (20%) Audubon or Aberdeen Creeping Red Fescue and ten percent (10%) Perennial Ryegrass.

EQUIPMENT

- E42.3 Scarification equipment shall be suitable for the area being scarified, shall be capable of scarifying the sub-grade to the specified depth and shall be accepted by the Contract Administrator. For confined areas a toothed bucket may be acceptable. For larger areas tilling equipment may be required.

CONSTRUCTION METHODS

E42.4 Preparation of Existing Grade

E42.4.1 Prior to placing topsoil, in areas to be seeded greater in width than 600 mm, prepare the existing sub-grade by scarifying to a minimum depth of 75 mm and to a maximum depth of 100 mm to the satisfaction of the Contract Administrator.

E42.4.2 Scarification shall consist of breaking up and loosening the sub-grade. No scarification shall occur within the edge of a tree canopy (or drip line).

E42.5 Salt Tolerant Grass Seeding

E42.5.1 Salt Tolerant Grass Seed shall be sown at a rate of 2.2 kilograms per 100 square meters.

MEASUREMENT AND PAYMENT

E42.6 Supply, placement and maintenance of Salt Tolerant Grass Seed will be paid for at the Contract Unit Price per square metre for "Salt Tolerant Grass Seeding", measured as specified herein, which price shall be payment in full for supplying all materials and for completing all operations herein described and all other items incidental to the work included in this Specification. Payment for Salt Tolerant Grass Seeding shall be in accordance with the following:

- (a) Sixty five (65%) percent of quantity following supply and placement.
- (b) Remaining thirty five (35%) percent of quantity following termination of the Maintenance Period.

E43. WORK NEAR HIGH PRESSURE GAS MAIN

E43.1 The Contractor shall complete all works in accordance with typical utility requirements, review Appendix C - Work Near High Pressure Gas Main for additional.

E43.2 No further measurement or payment shall be made for meeting Manitoba Hydro requirements.

E44. TEMPORARY TRAFFIC CONTROL SIGNAGE

E44.1 The Contractor shall supply all signage in accordance with the City of Winnipeg – Manual of Temporary Traffic Control on City Streets. Any regulatory signage not included in the City of Winnipeg – Manual of Temporary Traffic Control on City Streets shall be supplied by the City of Winnipeg Traffic Services.

E44.2 The supply, erection, removal and disposal of the required signs shall be incidental to the traffic staging and no further measurement or payment shall be made.

E45. INSTALLATION OF CONDUIT

DESCRIPTION

E45.1 General

E45.1.1 This Specification covers all operations relating to the installation of conduit as required for Traffic Signals, Manitoba Hydro Street Lighting, etc. Locations of the required conduit will be determined on site during construction.

E45.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labor, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

MATERIALS

E45.2 Conduit

- E45.2.1 Supplied by the utility requiring the work.
- E45.2.2 Typically HDPE conduit to be installed with poly pull string, size of conduit may vary, typically 50mm.

CONSTRUCTION METHODS

- E45.3 Installation
 - E45.3.1 Installation of Conduit to be done in conjunction with road and or sidewalk excavation and shall be placed at a depth of a minimum of 1m below finished grade.

MEASUREMENT AND PAYMENT

- E45.3.2 Installation of Conduit shall be measured on a length basis and will be paid for at the contract Unit Price per metre for "Installation of Conduit" and installed in accordance with this specification and accepted and measured by the Contract Administrator.

E46. REMOVAL OF EXISTING PLANTER

DESCRIPTION

- E46.1 General
 - E46.1.1 This specification covers the removal of existing cast in place concrete planters.
 - E46.1.2 Existing planters consist of soil material, various shrubs and a perimeter of cast in place barrier curb roughly 400mm in height.

CONSTRUCTION METHODS

- E46.2 Removal of Existing Planter
 - E46.2.1 Remove concrete curb and all materials contained within.

MEASUREMENT AND PAYMENT

- E46.3 Removal of Existing Planters
 - E46.3.1 Removal of Existing Planters will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Removal of Existing Planters and installed in accordance with this specification and accepted and measured by the Contract Administrator.

E47. INSTALLATION OF ASPHALT SPEED BUMPS

DESCRIPTION

- E47.1 General
 - E47.1.1 This Specification covers all operations relating to the Installation of Asphalt Speed Bumps.
 - E47.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labor, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

MATERIALS

- E47.2 Asphaltic Concrete Pavement
 - E47.2.1 As per CW 3410

CONSTRUCTION METHODS

E47.3 Installation

- E47.3.1 Installation of Asphalt Speed Bumps to be done in conjunction with road construction and placed on top of the existing pavement surface. Mill 50mm into existing asphalt pavement at dimensions and locations shown on construction drawings. Thoroughly clean the designated location of all dirt, loose stone and other debris and apply Tack Coat to the satisfaction of the Contract Administrator. Contractor to place asphalt 1.8m wide by 1.8m long and to a height 75mm above existing road grade

MEASUREMENT AND PAYMENT

- E47.3.2 Installation of Asphalt Speed Bumps shall be measured on a unit basis and will be paid for at the contract Unit Price per unit for "Installation of Asphalt Speed Bumps" and installed in accordance with this specification and accepted and measured by the Contract Administrator.