



THE CITY OF WINNIPEG

TENDER

TENDER NO. 719-2021

**2022-23 REGIONAL STREET PROGRAM- MOUNTAIN AVE RECON, ARLINGTON
TO MCPHILLIPS**

TABLE OF CONTENTS

PART A - BID SUBMISSION

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

PART B - BIDDING PROCEDURES

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

PART C - GENERAL CONDITIONS

C0. General Conditions	1
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PART D - SUPPLEMENTAL CONDITIONS

General

D1. General Conditions	1
D2. Form of Contract Documents	1
D3. Scope of Work	1
D4. Contract Administrator	2
D5. Contractor's Supervisor	2
D6. Notices	3
D7. Furnishing of Documents	3

Submissions

D8. Authority to Carry on Business	3
D9. Safe Work Plan	3
D10. Insurance	3
D11. Contract Security	4
D12. Subcontractor List	5
D13. Detailed Work Schedule	5

Schedule of Work

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

D23. COVID-19 Schedule Delays	9
D24. Scheduled Maintenance	10
Control of Work	
D25. Job Meetings	10
D26. Prime Contractor – The Workplace Safety and Health Act (Manitoba)	10
D27. The Workplace Safety and Health Act (Manitoba) – Qualifications	10
Measurement and Payment	
D28. Payment	10
Warranty	
D29. Warranty	10
Third Party Agreements	
D30. Funding and/or Contribution Agreement Obligations	11
Form H1: Performance Bond	13
Form H2: Labour and Material Payment Bond	15
Form J: Subcontractor List	17

PART E - SPECIFICATIONS

General	
E1. Applicable Specifications and Drawings	1
E2. Site Requirements for Accessibility	3
E3. Mobilization and Demobilization Payment	4
E4. Geotechnical Report	6
E5. Office Facilities	6
E6. Protection Of Existing Trees	6
E7. Traffic Control	7
E8. Traffic Management	8
E9. Water Obtained From the City	8
E10. Surface Restorations	8
E11. Infrastructure Signs	9
E12. Work Within Rail Right-of-Way	9
E13. Operating Constraints for Work in Close Proximity to the Critical Water Infrastructure	9
E14. Shop Drawings	12
E15. Concrete Materials	13
E16. Manitoba Hydro Gas Information	13
E17. Hydro-Excavation	13
E18. Concrete Steps	14
E19. Portland Cement Concrete Sidewalk With Block Outs For Indicator Surfaces	15
E20. Paving Stones for Indicator Surfaces	15
E21. Supply and Install Insulation	16
E22. Concrete Curbs for Asphalt Pavements	18
E23. Tree Trimming	18
E24. Water Service Interruptions to Businesses and Apartment Buildings	19
E25. Connecting to Existing Water Services	19
E26. Water Main Renewal - Provisional Items	19
E27. Water Main Renewal – Temporary Surface Restoration	20
E28. Water Main Renewal and Combined Sewer Manhole – Permanent Restoration	21
E29. Construction of New Combined Sewer Manhole	22
E30. Combined Sewer Manhole – Excavation, Shoring, and Backfill	23
E31. Combined Sewer Manhole - Cast-in-Place Concrete	25
E32. Combined Sewer Manhole - Reinforcing Steel	26
E33. Sewer and Manhole Stabilization	27
E34. Confined Space Entry	29
E35. Working Around Manitoba Hydro Poles	31
E36. Installation of Street Lighting and Associated Works	31
E37. Cutovers (Traffic Signals)	46
E38. Installation of Early Open Concrete Bases (Traffic Signals)	46

E39. Splicing Conduit (Traffic Signals)

47

Appendix 'A' – Geotechnical Report

Appendix 'B' - Manitoba Hydro Gas Information

Appendix 'C' – Manitoba Hydro Streetlighting Standards

Appendix 'D' – Safe Excavation and Safety Watch Guidelines

Appendix 'E' – GELCAP Kit

Appendix 'F' – Electric and/or Natural Gas Facilities Locate

Appendix 'G' – Manitoba Hydro Job Plan- Engineering and Construction

Appendix 'H' – Manitoba Hydro Network Commissioning Report

Appendix 'I' – CP Safety and Flagging Information

Appendix 'J' – Underground Record Drawings

Appendix 'K' – Concrete Constituent Materials, Mix Design Requirements, and Hot and Cold Weather Concreting

Appendix 'L'- Allowable Excavations Around Manitoba Hydro Poles

PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 2022-23 Regional Street Program- Mountain Ave Recon, Arlington to McPhillips

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, April 5, 2022.

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

B3. ENQUIRIES

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

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

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

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

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

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

B4. CONFIDENTIALITY

B4.1 Information provided to a Bidder by the City or acquired by a Bidder by way of further enquiries or through investigation is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Contract Administrator. The use and disclosure of the confidential information shall not apply to information which:

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

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

B5. ADDENDA

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

- B5.2 The Contract Administrator will issue each addendum at least two (2) Business Days prior to the Submission Deadline, or provide at least two (2) Business Days by extending the Submission Deadline.
- B5.3 Addenda will be available on the MERX website at www.merx.com.
- B5.4 The Bidder is responsible for ensuring that he/she has received all addenda and is advised to check the MERX website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.
- B5.5 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid/Proposal. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.
- B5.6 Notwithstanding B3, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D4.

B6. SUBSTITUTES

- B6.1 The Work is based on the Plant, Materials and methods specified in the Tender.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
 - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
 - (c) identify any anticipated cost or time savings that may be associated with the substitute;
 - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
 - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/her sole discretion grant approval for the use of a substitute as an "approved equal" or as an "approved alternative", or may refuse to grant approval of the substitute.
- B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.
- B6.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.

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

B7. BID COMPONENTS

- B7.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
 - (b) Form B: Prices;
 - (c) Form G1: Bid Bond and Agreement to Bond.
- B7.2 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely.
- B7.3 The Bid shall be submitted electronically through MERX at www.merx.com.
- B7.3.1 Bids will **only** be accepted electronically through MERX.
- B7.4 Bidders are advised that inclusion of terms and conditions inconsistent with the Tender document, including the General Conditions, will be evaluated in accordance with B17.1(a).

B8. BID

- B8.1 The Bidder shall complete Form A: Bid/Proposal, making all required entries.
- B8.2 Paragraph 2 of Form A: Bid/Proposal shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, his/her name shall be inserted;
 - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
 - (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
 - (d) if the Bidder is carrying on business under a name other than his/her own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.
- B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.
- B8.3 In Paragraph 3 of Form A: Bid/Proposal, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.
- B8.4 Paragraph 13 of Form A: Bid/Proposal shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, it shall be signed by the Bidder;
 - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
 - (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers;

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

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

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

B9. PRICES

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

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

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

B9.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B9.5 The Bidder shall enter the Total Bid Price from Form B: Prices into the Total Bid Price field in MERX.

B9.5.1 Bidders are advised that the calculation indicated in B17.4 will prevail over the Total Bid Price entered in MERX.

B9.6 Form B: Prices is organized into Parts: Part 1 of the Work and Part 2 of the Work. Bidders shall provide a total price for each Part and, on the summary sheet, a Total Bid Price consisting of the sum of prices for Part 1 and Part 2.

B10. DISCLOSURE

B10.1 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. CONFLICT OF INTEREST AND GOOD FAITH

B11.1 Further to C3.2, Bidders, by responding to this Tender, declare that no Conflict of Interest currently exists, or is reasonably expected to exist in the future.

B11.2 Conflict of Interest means any situation or circumstance where a Bidder or employee of the Bidder proposed for the Work has:

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

that could or would be seen to:

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

B11.3 In connection with its Bid, each entity identified in B11.2 shall:

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

B11.4 Without limiting B11.3, the City may, in its sole discretion, waive any and all perceived, potential or actual Conflicts of Interest. The City's waiver may be based upon such terms and conditions as the City, in its sole discretion, requires to satisfy itself that the Conflict of Interest has been appropriately avoided or mitigated, including requiring the Bidder to put into place such policies, procedures, measures and other safeguards as may be required by and be acceptable to the City, in its sole discretion, to avoid or mitigate the impact of such Conflict of Interest.

B11.5 Without limiting B11.3, and in addition to all contractual or other rights or rights at law or in equity or legislation that may be available to the City, the City may, in its sole discretion:

- (a) disqualify a Bidder that fails to disclose a perceived, potential or actual Conflict of Interest of the Bidder or any of its employees proposed for the Work;
- (b) require the removal or replacement of any employees proposed for the Work that has a perceived, actual or potential Conflict of Interest that the City, in its sole discretion, determines cannot be avoided or mitigated;
- (c) disqualify a Bidder or employees proposed for the Work that fails to comply with any requirements prescribed by the City pursuant to B11.4 to avoid or mitigate a Conflict of Interest; and
- (d) disqualify a Bidder if the Bidder, or one of its employees proposed for the Work, has a perceived, potential or actual Conflict of Interest that, in the City's sole discretion, cannot be avoided or mitigated, or otherwise resolved.

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

B12. QUALIFICATION

B12.1 The Bidder shall:

- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba; and
- (b) be financially capable of carrying out the terms of the Contract; and

- (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.

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

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

B12.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

- (a) have successfully carried out work similar in nature, scope and value to the Work; and
- (b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and
- (c) have a written workplace safety and health program if required pursuant to The Workplace Safety and Health Act (Manitoba);

B12.4 Further to B12.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

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

B12.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B12.6 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B13. BID SECURITY

B13.1 The Bidder shall include in its Bid Submission bid security in the form of a digital bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in Form G1: Bid Bond and Agreement to Bond, available on The City of Winnipeg, Corporate Finance, Materials Management Division website at <https://www.winnipeg.ca/MatMgt/templates/files/eBidsecurity.pdf>.

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

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

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

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

B13.4.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.

B13.5 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly formed with the successful Bidder and the contract securities are furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.

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

B14. OPENING OF BIDS AND RELEASE OF INFORMATION

B14.1 Bids will not be opened publicly.

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

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

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

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

B15. IRREVOCABLE BID

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

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

furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid/Proposal.

B16. WITHDRAWAL OF BIDS

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

B17. EVALUATION OF BIDS

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

- (a) compliance by the Bidder with the requirements of the Tender, or acceptable deviation therefrom (pass/fail);
- (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B12 (pass/fail);
- (c) Total Bid Price;
- (d) economic analysis of any approved alternative pursuant to B6.

B17.2 Further to B17.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities, if the interests of the City so require.

B17.2.1 Any bid with an apparent imbalance between the unit prices in Part 1 and Part 2 may be determined to be non-responsive and rejected by the Award Authority in its sole discretion, acting reasonably.

B17.3 Further to B17.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is qualified.

B17.4 Further to B17.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.

B17.4.1 Further to B17.1(a), in the event that a unit price is not provided on Form B: Prices, the City may determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.

B17.4.2 Bidders are advised that the calculation indicated in B17.4 will prevail over the Total Bid Price entered in MERX.

B18. AWARD OF CONTRACT

B18.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

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

B18.2.1 Without limiting the generality of B18.2, the City will have no obligation to award a Contract where:

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

- B18.3 The Work of this Contract is contingent upon Council approval of sufficient funding in the 2022 Capital Budget. If the Capital Budget approved by Council does not include sufficient funding for the Work, the City will have no obligation to award a Contract.
- B18.4 Where an award of Contract is made by the City, the award shall be made to the qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B17.
- B18.4.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.
- B18.5 As noted in D3 and identified in Form B: Prices, the Work of Part 2 will be contingent upon Manitoba Hydro approving funding for the Work. If sufficient funding for Part 2 Work is not approved by Manitoba Hydro the City shall have the right to eliminate all or any portion of Part 2 Work in accordance with D3.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

- C0.1 The *General Conditions for Construction* (Revision 2020-01-31) are applicable to the Work of the Contract.
- C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm
- C0.2 A reference in the Tender to a section, clause or subclause with the prefix “**C**” designates a section, clause or subclause in the *General Conditions for Construction*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. FORM OF CONTRACT DOCUMENTS

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

D3. SCOPE OF WORK

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

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

Part 1 – City Funded Work

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

- (a) Concrete Reconstruction and Associated Work
 - (i) Mountain Avenue from Arlington Street to McPhillips Street
- (b) Watermain Renewal
 - (i) Mountain Avenue from McPhillips Street to Radford Street
 - (ii) Mountain Avenue from 20m East of Minnigaffe Street to Arlington Street
- (c) Combined Sewer Manhole Construction
 - (i) McPhillips Street at Mountain Avenue

Part 2 – Manitoba Hydro Funded Work

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

- (a) Street Lighting and Associated Work
 - (i) Mountain Avenue from Arlington Street to McPhillips Street

D3.4 The City currently has no approved funding in the Capital Budget for Part 2 of the Work, but is anticipating receiving notification about funding from Manitoba Hydro prior to Award. Part 2 of the Work is contingent upon Manitoba Hydro approving sufficient funding.

D3.4.1 Further to C7.1, if notice of sufficient funding is not received, the City shall have the right to eliminate all or any portion of Part 2, and the Contract Price will be reduced accordingly.

D3.4.2 Further to C7.5, C7.5.1, and C7.6, a reduction in the Contract Price pursuant to D3.4.1 shall not be considered in calculating the aggregate reduction in the Contract Price for purposes of C7.5.

D3.4.3 If all or any portion of Part 2 is eliminated pursuant to D3.4.1, the time periods stipulated in D20 for Substantial Performance of the Work and in D21 for Total Performance of the Work will be reduced proportionally by the Contract Administrator acting reasonably.

D3.5 The major components of the Work are as follows:

- (a) Concrete Reconstruction and Associated Work
 - (i) Removal of Existing Pavement;

- (ii) Excavation;
 - (iii) External Point Sewer and Manhole Repairs;
 - (iv) Installation of catch basins and sewer service pipe;
 - (v) Watermain Service Insulation;
 - (vi) Compaction of sub-grade;
 - (vii) Installation of subdrains;
 - (viii) Placement of separation/ filtration geotextile fabric and Class A geogrid;
 - (ix) Placement of sub-base and base course (Granular A) materials;
 - (x) Adjustment of existing manholes and appurtenances;
 - (xi) Installation of Traffic Signals conduit, service boxes, and concrete bases;
 - (xii) Construct integral concrete barrier curb (180 mm height) and modified barrier curb;
 - (xiii) Construction of 250 mm Plain Dowelled (31.8 mm dowels) and 200 mm Reinforced Concrete Pavements;
 - (xiv) Construction of 100 mm Concrete Sidewalk with Block Outs for Paving Stone Indicator Surface;
 - (xv) Topsoil and Sod.
- (b) Watermain Renewal
- (i) Renewal and upsizing of watermain on Mountain Av between McPhillips St and Radford St.
 - (ii) Renewal and upsizing of watermain on Mountain Av from 20m East of Minnigaffe St to Arlington St.
 - (iii) Installation of new fire hydrants within renewal limits.
 - (iv) Reconnection and renewal of water services with renewal limits.
- (c) Combined Sewer Manhole Construction
- (i) New Siphon Manhole on McPhillips St at Mountain Av.
- (d) Street Lighting and Associated Work
- (i) Removal of existing street lighting poles
 - (ii) Installation of concrete bases
 - (iii) Installation of new street lighting cables (trenching, boring, and/or overhead) and poles (including connections)

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is Morrison Hershfield, represented by:

James Kennedy, P.Eng.
Transportation Engineer

Telephone No. 204-977-8370

Email Address jkennedy@morrisonhershfield.com

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

D5. CONTRACTOR'S SUPERVISOR

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

D5.2 At least two (2) Business Days prior to the commencement of any Work on the site, the Contractor shall provide the Contract Administrator with a phone number where the supervisor

identified in D5.1 or an alternate can be contacted twenty-four (24) hours a day to respond to an emergency.

D6. NOTICES

- D6.1 Except as provided for in C22.4, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid/Proposal.
- D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator identified in D4.
- D6.3 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following facsimile number:
- The City of Winnipeg
Legal Services Department
Attn: Director of Legal Services
Facsimile No.: 204-947-9155

D7. FURNISHING OF DOCUMENTS

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

SUBMISSIONS

D8. AUTHORITY TO CARRY ON BUSINESS

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

D9. SAFE WORK PLAN

- D9.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.
- D9.2 The Safe Work Plan shall be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/safety/default.stm>
- D9.3 Notwithstanding B12.4 at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated COR Certificate or Annual Letter of good Standing. A Contractor, who fails to provide a satisfactory COR Certificate or Annual Letter of good Standing, will not be permitted to continue to perform any Work.

D10. INSURANCE

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

- (a) commercial general liability insurance, in the amount of at least five million dollars (\$5,000,000.00) inclusive, with the City and Manitoba and its Ministers, officers, employees and agents and Canadian Pacific Railway added as additional insureds, including a cross-liability clause. Such liability policy to also contain contractual liability, unlicensed motor vehicle liability, sudden and accidental pollution 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 \$5,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence;
- (c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation;
- (d) property insurance for all equipment, tools, field office, and portable toilets used by the Contractor directly or indirectly in the performance of the Work on the project that may be owned, rented, leased, or borrowed.
- (e) contractor's pollution liability (CPL) insurance in the amount of at least two million dollars (\$2,000,000) per occurrence and five million dollars aggregate (\$5,000,000) covering third party injury and property damage claims, including clean-up costs and transported cargo as a result of pollution conditions arising from the Contractor's operations and completed operations. Such policy shall name the City and CP as additional insureds and remain in place for a minimum of twelve (12) months following Total Performance.

D10.2 Deductibles shall be borne by the Contractor.

D10.3 All Subcontractors performing Work on the Project shall provide the Contractor with evidence of insurance as outlined in D10.1(a) and D10.1(b) above and be registered with Workers Compensation Board of Manitoba and maintain insurance and workers compensation coverage throughout the performance of the Work. The Contractor shall provide the Contract Administrator with evidence of same prior to the commencement of any Work.

D10.4 The Contractor shall provide the City Solicitor and Manitoba with a certificate(s) of insurance including any certificates of insurance for subcontractors involved in the Work, 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.

D10.5 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator and to Manitoba.

D10.6 All policies shall be taken out with insurers duly licensed to carry on business in the Province of Manitoba.

D11. CONTRACT SECURITY

D11.1 The Contractor shall provide and maintain the performance bond and the labour and material payment bond until the expiration of the warranty period in the form of:

- (a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; and
- (b) a labour and material payment bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H2: Labour and Material Payment Bond), in an amount equal to fifty percent (50%) of the Contract Price.

- D11.1.1 Where the contract security is a performance bond, it may be submitted in hard copy or digital format. If submitted in digital format the contract security must meet the following criteria:
- (a) the version submitted by the Contractor must have valid digital signatures and seals;
 - (b) the version submitted by the Contractor must be verifiable by the City with respect to the totality and wholeness of the bond form, including: the content; all digital signatures and digital seals; with the surety company, or an approved verification service provider of the surety company.
 - (c) the version submitted must be viewable, printable and storable in standard electronic file formats compatible with the City, and in a single file. Allowable formats include pdf.
 - (d) the verification may be conducted by the City immediately or at any time during the life of the bond and at the discretion of the City with no requirement for passwords or fees.
 - (e) the results of the verification must provide a clear, immediate and printable indication of pass or fail regarding D11.1(b).
- D11.1.2 Digital bonds failing the verification process will not be considered to be valid and may be determined to be an event of default in accordance with C18.1. If a digital bond fails the verification process, the Contractor may provide a replacement bond (in hard copy or digital format) within seven (7) Calendar Days of the City's request or within such greater period of time as the City in its discretion, exercised reasonably, allows.
- D11.1.3 Digital bonds passing the verification process will be treated as original and authentic.
- D11.2 The Contractor shall provide the City Solicitor with the required performance and labour and material payment bonds within seven (7) Calendar Days of notification of the award of the Contract by way of an award letter and prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.
- D11.3 The Contractor shall, as soon as practicable after entering into a contract with a Subcontractor:
- (a) give the Subcontractor written notice of the existence of the labour and material payment bond in D11.1(b); and
 - (b) post a notice of the bond and/or a copy of that bond in a conspicuous location at the Site of the Work.

D12. SUBCONTRACTOR LIST

- D12.1 The Contractor shall provide the Contract Administrator with a complete list of the Subcontractors whom the Contractor proposes to engage (Form J: Subcontractor List) at or prior to a pre-construction meeting, or at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the C4.1 for the return of the executed Contract Documents, if applicable.

D13. 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 Documents, as applicable.
- 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 the Detailed Work Schedule for only Part 1 of the Work assuming that, if all of Part 2 is eliminated, the time periods stipulated in D20 for Substantial Performance of the Work and in D21 for Total Performance of the Work will be reduced 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 Gantt chart for the Work;
acceptable to the Contract Administrator.
- D13.5 Further to D13.4(a), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

SCHEDULE OF WORK

D14. COMMENCEMENT

- D14.1 The Contractor shall not commence any Work until he/she is in receipt of an award letter 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 D5.2.
 - (iv) the Safe Work Plan specified in D9;
 - (v) evidence of the insurance specified in D10;
 - (vi) the contract security specified in D11;
 - (vii) the subcontractor list specified in D12;
 - (viii) the detailed work schedule specified in D13;
 - (ix) the direct deposit application form specified in D28; and
 - (x) the Pedestrian and Cyclist Accessibility Plan specified in E2.
 - (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 commence the Work on the Site within seven (7) Working Days of receipt of the award letter.
- D14.4 The Contractor shall not commence Part 2 of the Work as described in D3 and identified in Form B: Prices, unless he/she has received notification from the Contract Administrator that the City has received notice of sufficient funding from Manitoba Hydro.
- D14.5 The City intends to award this Contract by May 20, 2022.
- 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(tt);
- 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.
- D15.1.4 Saturdays and Sundays will also be considered a Working Day if the Contractor is working on Site and the Contract Administrator deems that the Contract Administrator's staff is also required on Site.

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 Further to C6.25, the Contractor's attention is directed to the fact that other contractors, the personnel of other utilities, and staff of the City of Winnipeg will be working in the same area as this Contract. The activities of these agencies may coincide with the Contractor's execution of the Work, and it will be the Contractor's responsibility to cooperate to the fullest extent with the other agencies working in the area, and such cooperation is an obligation of the Contractor under the terms of this Contract.
- D17.2 Work by others on or near the Site will include but not necessarily be limited to:
- (a) Traffic Signals- Traffic Signals Branch will be responsible for coordinating removal of above ground plant and cabling to facilitate the installation of the underground plant. The Contractor must coordinate with Traffic Signals such that the signals operations at each intersection are maintained except where permitted by the Contract Administrator and Traffic Signals Branch. This may result in work being completed in multiple stages.
 - (b) Manitoba Hydro – as required;
 - (c) Manitoba Hydro, Gas Division – relocation and/ or lowering/ rock wrapping of underground main and services as required;
 - (d) BellMTS – Manhole adjustments as required;
 - (e) Shaw – Installation of new vaults;
 - (f) CP Rail – Flagging and new crossing planks;
 - (g) City of Winnipeg Traffic Services - installation of new traffic signage and line painting; and
 - (h) City of Winnipeg Geomatics Branch – various work on survey infrastructure.
- D17.3 Further to D17.1 the Contractor is expected to cooperate and coordinate all activities with parties performing required works to facilitate their own works. The Contractor must include and accommodate work by others identified in D17.2 in their construction schedule to complete the Work

D18. SEQUENCE OF WORK

- D18.1 Further to C6.1, the sequence of work shall be as follows:
- D18.1.1 A recommended traffic staging plan has been included in E1.4 and is generally as follows:
- (a) 2022 Work: McPhillips Street to Airlies Street (Stages 1 thru 5)

- (b) 2023 Work: Airlies Street to Arlington Street (Stages 6 thru 9)
- (c) Full closure of Mountain Avenue at CP Rail crossing in 2023

D18.1.2 Placing the topsoil and finished grading of all boulevard areas shall be completed prior to commencing construction of asphaltic concrete pavements.

D19. CRITICAL STAGES

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

- (a) 2022 Work from McPhillips Street to Airlies Street shall be completed by October 21, 2022.
- (b) Construction of the combined sewer manhole on McPhillips Street shall be completed within twenty (20) consecutive Working Days of the commencement of work on the manhole.
- (c) All watermain renewal work shall be completed within thirty (30) consecutive Working Days of the commencement of the Work as specified in D14.
 - (i) The thirty (30) consecutive Working Days shall exclude any Working Days, to a total of five (5) Working Days, when the Contractor cannot perform any watermain renewal work while awaiting the bacteriological test results for the water samples taken from the new water main.

D19.2 When the Contractor considers the Work associated with D19.1(a), D19.1(b) & D19.1(c) 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 D19.1(a), D19.1(b) & D19.1(c) Work has been accepted by the Contract Administrator as being completed to the requirements of the Contract is the date on which completion of D19.1(a), D19.1(b) & D19.1(c) has been achieved.

D20. SUBSTANTIAL PERFORMANCE

D20.1 The Contractor shall achieve Substantial Performance within one hundred fifty five (155) 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 sixty (160) 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) 2022 Work (D19.1 (a))– three thousand nine hundred dollars (\$3,900);
- (b) Combined Sewer Manhole Work (D19.1 (b)) – one thousand five hundred dollars (\$1,500);
- (c) Watermain Renewal Work (D19.1(c)) – one thousand five hundred dollars (\$1,500);
- (d) Substantial Performance – three thousand nine hundred dollars (\$3,900);
- (e) Total Performance – one thousand five hundred dollars (\$1,500).

D22.2 The amounts specified for liquidated damages in D22.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve critical stages, Substantial Performance or Total Performance by the days fixed herein for same.

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

D23. COVID-19 SCHEDULE DELAYS

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

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

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

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

D23.5 The Work schedule, including the durations identified in D16 to D21 where applicable, will be adjusted to reflect delays accepted by the Contract Administrator. No additional payment will be made for adjustment of schedules except where seasonal work, not previously identified in the Contract, is carried over to the following construction season.

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

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

D24. SCHEDULED MAINTENANCE

- D24.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:
- (a) Sod maintenance as specified in CW 3510; and
 - (b) Reflective crack maintenance as specified in CW3250.
- D24.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

CONTROL OF WORK

D25. JOB MEETINGS

- D25.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.
- D25.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

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

- D26.1 Further to C6.26, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

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

- D27.1 Further to B12.4, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require updated proof of compliance, as set out in B12.4.

MEASUREMENT AND PAYMENT

D28. PAYMENT

- D28.1 Further to C12, the City shall make payments to the Contractor by direct deposit to the Contractor's banking institution, and by no other means. Payments will not be made until the Contractor has made satisfactory direct deposit arrangements with the City. Direct deposit application forms are at https://winnipeg.ca/finance/files/Direct_Deposit_Form.pdf.

WARRANTY

D29. WARRANTY

- D29.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire two (2) years thereafter, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D29.2 Notwithstanding C13.2 or D29.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if:

- (a) a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use.

D29.2.1 In such case the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

THIRD PARTY AGREEMENTS

D30. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

D30.1 Funding for the Work of the Contract is being provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada and accordingly, as required by the applicable funding agreements, the following terms and conditions shall apply.

D30.2 For the purposes of D30:

- (a) **“Government of Canada”** includes the authorized officials, auditors, and representatives of the Government of Canada; and
- (b) **“Government of Manitoba”** includes the authorized officials, auditors, and representatives of the Government of Manitoba.

D30.3 Indemnification By Contractor

D30.3.1 In addition to the indemnity obligations outlined in C17 of the General Conditions for Construction, the Contractor agrees to indemnify and save harmless the Government of Canada and the Government of Manitoba and each of their respective Ministers, officers, servants, employees, and agents from and against all claims and demands, losses, costs, damages, actions, suit or other proceedings brought or pursued in any manner in respect of any matter caused by the Contractor or arising from this Contract or the Work, or from the goods or services provided or required to be provided by the Contractor, except those resulting from the negligence of any of the Government of Canada’s or the Government of Manitoba’s Ministers, officers, servants, employees, or agents, as the case may be.

D30.4 Records Retention and Audits

D30.4.1 The Contractor shall maintain and preserve accurate and complete records in respect of this Contract and the Work, including all accounting records, financial documents, copies of contracts with other parties and other records relating to this Contract and the Work during the term of the Contract and for at least six (6) years after Total Performance. Those records bearing original signatures or professional seals or stamps must be preserved in paper form; other records may be retained in electronic form.

D30.4.2 In addition to the record keeping and inspection obligations outlined in C6 of the General Conditions for Construction, the Contractor shall keep available for inspection and audit at all reasonable times while this Contract is in effect and until at least six (6) years after Total Performance, all records, documents, and contracts referred to in D30.4.1 for inspection, copying and audit by the City of Winnipeg, the Government of Manitoba and/or the Government of Canada and their respective representatives and auditors, and to produce them on demand; to provide reasonable facilities for such inspections, copying and audits, to provide copies of and extracts from such records, documents, or contracts upon request by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada and their respective representatives and auditors, and to promptly provide such other information and explanations as may be reasonably requested by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada from time-to-time.

D30.5 Other Obligations

- D30.5.1 The Contractor consents to the City providing a copy of the Contract Documents to the Government of Manitoba and/or the Government of Canada upon request from either entity.
- D30.5.2 If the Lobbyists Registration Act (Manitoba) applies to the Contractor, the Contractor represents and warrants that it has filed a return and is registered and in full compliance with the obligations of that Act, and covenants that it will continue to comply for the duration of this Contract.
- D30.5.3 The Contractor shall comply with all applicable legislation and standards, whether federal, provincial, or municipal, including (without limitation) labour, environmental, and human rights laws, in the course of providing the Work.
- D30.5.4 The Contractor shall properly account for the Work provided under this Contract and payment received in this respect, prepared in accordance with generally accepted accounting principles in effect in Canada, including those principles and standards approved or recommended from time-to-time by the Chartered Professional Accountants of Canada or the Public Sector Accounting Board, as applicable, applied on a consistent basis.
- D30.5.5 The Contractor represents and warrants that no current or former public servant or public office holder, to whom the Value and Ethics Code for the Public Sector, the Policy on Conflict of Interest and Post Employment, or the Conflict of Interest Act applies, shall derive direct benefit from this Contract, including any employment, payments, or gifts, unless the provision or receipt of such benefits is in compliance with such codes and the legislation.
- D30.6 The Contractor represents and warrants that no member of the House of Commons or of the Senate of Canada or of the Legislative Assembly of Manitoba is a shareholder, director or officer of the Contractor or of a Subcontractor, and that no such member is entitled to any benefits arising from this Contract or from a contract with the Contractor or a Subcontractor concerning the Work.

FORM H1: PERFORMANCE BOND
(See D10.1)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

_____ dollars (\$_____)

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

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

TENDER NO. 719-2021

2022-23 Regional Street Program- Mountain Ave Recon, Arlington to McPhillips
which is by reference made part hereof and is hereinafter referred to as the "Contract".

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

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

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

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

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

_____ day of _____, 20____.

SIGNED AND SEALED
in the presence of:

(Witness as to Principal if no seal)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

By: _____ (Seal)
(Attorney-in-Fact)

FORM H2: LABOUR AND MATERIAL PAYMENT BOND
(See D10.1)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

_____ dollars (\$_____)

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

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

TENDER NO. 719-2021

2022-23 Regional Street Program- Mountain Ave Recon, Arlington to McPhillips

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

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

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

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

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

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

_____ day of _____, 20_____ .

SIGNED AND SEALED
in the presence of:

(Witness as to Principal if no seal)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

By: _____ (Seal)
(Attorney-in-Fact)

FORM J: SUBCONTRACTOR LIST
(See D12)

2022-23 Regional Street Program- Mountain Ave Recon, Arlington to McPhillips

<u>Portion of the Work</u>	<u>Name</u>	<u>Address</u>
Supply of Materials		
Concrete		
Asphalt		
Base Course		
Sub-Base Material		
Paving Stones		
Sod		
Catchbasins		
Separation/ Filtration Fabric		
Class A Geogrid		
Frames & Covers		
Drainage Pipe		
Street Lighting Material (not supplied by Hydro)		
Traffic Signals		
Installation/Placement		
Concrete		
Asphalt		
Excavation		
Base Course		
Sub-Base Material		
Paving Stones		
Catchbasin and CB Lead Installation		
Sewer Televising		
Landscaping		
Street Lighting		
Traffic Signals		
OTHERS		

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

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

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
P-3557-01	Cover Sheet- Location Plan & Drawing List	A1
P-3557-02	Mountain Avenue Horizontal Geometry, McPhillips St to Sta 0+270	A1
P-3557-03	Mountain Avenue Horizontal Geometry, Sta 0+270 to Sta 0+530	A1
P-3557-04	Mountain Avenue Horizontal Geometry, Sta 0+530 to Sta 0+780	A1
P-3557-05	Mountain Avenue Horizontal Geometry, Sta 0+780 to Sta 1+000	A1
P-3557-06	Mountain Avenue Horizontal Geometry, Sta 1+000 to Sta 1+210	A1
P-3557-07	Mountain Avenue Horizontal Geometry, Sta 1+210 to Arlington St	A1
P-3557-08	Mountain Avenue Paving and Grading, McPhillips St to Sta 0+150	A1
P-3557-09	Mountain Avenue Paving and Grading, Sta 0+150 to Sta 0+270	A1
P-3557-10	Mountain Avenue Paving and Grading, Sta 0+270 to Sta 0+400	A1
P-3557-11	Mountain Avenue Paving and Grading, Sta 0+400 to Sta 0+530	A1
P-3557-12	Mountain Avenue Paving and Grading, Sta 0+530 to Sta 0+660	A1
P-3557-13	Mountain Avenue Paving and Grading, Sta 0+660 to Sta 0+780	A1
P-3557-14	Mountain Avenue Paving and Grading, Sta 0+780 to Sta 0+910	A1

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
P-3557-15	Mountain Avenue Paving and Grading, Sta 0+910 to Sta 1+000	A1
P-3557-16	Mountain Avenue Paving and Grading, Sta 1+000 to Sta 1+090	A1
P-3557-17	Mountain Avenue Paving and Grading, Sta 1+090 to Sta 1+210	A1
P-3557-18	Mountain Avenue Paving and Grading, Sta 1+210 to Arlington St	A1
P-3557-19	Sections and Details	A1
D-16158	2022 Watermain Renewal and New Siphon Manhole- Index Page	D
D-16159	2022 Watermain Renewal and New Siphon Manhole- Mountain Avenue- McPhillips Street to 58m E of McPhillips Street	D
D-16160	2022 Watermain Renewal and New Siphon Manhole- Mountain Avenue- 58m E of McPhillips Street to 11m E of Tinniswood Street	D
D-16161	2022 Watermain Renewal and New Siphon Manhole- Mountain Avenue- 11m E of Tinniswood Street to Radford Street	D
D-16162	2022 Watermain Renewal and New Siphon Manhole- Mountain Avenue- 20m E of Minnigaffe Street to 7m W of Cairnsmore Street	D
D-16163	2022 Watermain Renewal and New Siphon Manhole- Mountain Avenue- 7m W of Cairnsmore Street to 20m E of Galloway Street	D
D-16164	2022 Watermain Renewal and New Siphon Manhole- Mountain Avenue- 20m E of Galloway Street to 7m W of Seymour Street	D
D-16165	2022 Watermain Renewal and New Siphon Manhole- Mountain Avenue- 7m W of Seymour Street to Arlington Street	D
13031	2022 Watermain Renewal and New Siphon Manhole- McPhillips Street- New Siphon Manhole at Mountain Avenue	D
ST-01	Traffic Signage- Legend and Notes	A1
ST-02	Traffic Signage- McPhillips Street Stage 1	A1
ST-03	Traffic Signage- Mountain Avenue Stage 1	A1
ST-04	Traffic Signage- Mountain Avenue Stage 1	A1
ST-05	Traffic Signage- McPhillips Street Stage 2	A1
ST-06	Traffic Signage- Mountain Avenue Stage 2	A1
ST-07	Traffic Signage- Mountain Avenue Stage 2	A1
ST-08	Traffic Signage- McPhillips Street Stage 3	A1
ST-09	Traffic Signage- Mountain Avenue Stage 3	A1

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
ST-10	Traffic Signage- Mountain Avenue Stage 3	A1
ST-11	Traffic Signage- McPhillips Street Stage 4	A1
ST-12	Traffic Signage- Mountain Avenue Stage 4	A1
ST-13	Traffic Signage- Mountain Avenue Stage 4	A1
ST-14	Traffic Signage- Mountain Avenue Stage 5	A1
ST-15	Traffic Signage- Mountain Avenue Stage 5	A1
ST-16	Traffic Signage- Mountain Avenue Stage 6	A1
ST-17	Traffic Signage- Mountain Avenue Stage 6	A1
ST-18	Traffic Signage- Mountain Avenue Stage 7	A1
ST-19	Traffic Signage- Mountain Avenue Stage 7	A1
ST-20	Traffic Signage- Mountain Avenue Stage 8	A1
ST-21	Traffic Signage- Mountain Avenue Stage 8	A1
ST-22	Traffic Signage- Mountain Avenue Stage 9	A1
ST-23	Traffic Signage- Mountain Avenue Stage 9	A1
ST-24	Traffic Signage- Mountain Avenue Stage- Full Closure at CP Rail	A1
ST-25	Traffic Signage- Mountain Avenue Stage- Full Closure at CP Rail	A1
S-1145	Traffic Signals- Arlington St. & Mountain Ave.	A1
S-1329	Traffic Signals- McPhillips St. & Mountain Ave.	A1
S-1940	Rapid Rectangular Flashing Beacon- Mountain Ave. & Robertson St.	A1
S-2143	Rapid Rectangular Flashing Beacon- Mountain Ave. & Radford St.	A1
S-2144	Rapid Rectangular Flashing Beacon- Airlies St. & Mountain Ave.	A1
S-2145	Rapid Rectangular Flashing Beacon- Mountain Ave. & Sinclair St.	A1
SL-01	Mountain Avenue Streetlighting (Sheet 1)	A1
SL-02	Mountain Avenue Streetlighting (Sheet 2)	A1

E2. SITE REQUIREMENTS FOR ACCESSIBILITY

- E2.1 The Contractor shall provide the Contract Administrator with an Accessibility Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.

- E2.2 The Accessibility Plan shall demonstrate how the Contractor will accommodate the safe passage of pedestrians and cyclists in accordance with the Manual of Temporary Traffic Control, the Contract Drawings, Staging Plans, and Streets By-Law No. 1481/77 at all times for the duration of the Construction. Unless noted in the Contract, the Accessibility Plan must include a written plan for the following:
- (a) How the Contractor will maintain at least one crossing in each direction for each intersection (one north/south crosswalk and one east/west crosswalk).
 - (b) How the Contractor will maintain access to bus stops within the site.
 - (c) How the Contractor will maintain access to pedestrian corridors and half signals.
 - (d) How the Contractor will maintain cycling facilities.
 - (e) How the Contractor will maintain access to residents and businesses unless otherwise noted in the Contract.
 - (f) Any required detour signage at adjacent crossings to facilitate sidewalk or active transportation pathway closures.
- E2.3 The Accessibility Plan may also include figures, sketches, or drawings to demonstrate the proposed plan.
- E2.4 The Accessibility Plan shall include written details on how the Contractor intends to review, maintain, and document all items related to the Accessibility Plan on-site during Construction, including, but not limited to:
- (a) Signage
 - (b) Temporary Ramping
 - (c) Transit Stops
 - (d) Detour Signage
- E2.5 At minimum, the Contractor shall review the site conditions on a daily basis to ensure that all features related to the Accessibility Plan are in place. The site review is intended to correct deficiencies as a result of unforeseen events such as wind, traffic, or the general public. Deficiencies that are direct result of the Contractors actions must be corrected immediately.
- E2.6 Any changes to the Accessibility Plan must be approved by the Contract Administrator.
- E2.7 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the site has been maintained.
- E2.8 Failure to produce records that demonstrate that the site was maintained in compliance with the Accessibility Plan or deficiencies as a direct result of actions by the Contractor that are not immediately corrected may result in a pay adjustment. The rate of pay adjustment will be as per the following schedule:
- (a) First Offence – A warning will be issued and documented in the weekly site meeting.
 - (b) Second Offence - A field instruction to immediately correct the site will be issued by the Contract Administrator.
- E2.9 Third and subsequent Offences – A pay reduction will be issued in the amount of \$250.00 per instance and per day.

E3. MOBILIZATION AND DEMOBILIZATION PAYMENT

DESCRIPTION

- E3.1 This Specification shall cover all operations relating to the mobilization and demobilization of the Contractor to the project location(s).

E3.2 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.

E3.3 The inclusion of a payment item for the Work under this Specification shall not release or reduce the responsibilities of the Contractor under any other specification in this Contract.

SCOPE OF WORK

E3.4 Further to C12 of the General Conditions, where Mobilization and Demobilization is included as a bid item, it shall consist of the following, as applicable:

(a) Mobilization shall include, but not be limited to:

- (i) All activities and associated costs for transportation of the Contractor's personnel, equipment, and operating supplies to the site, and/or sites, and/or between sites;
- (ii) Establishment of offices, buildings, other necessary general facilities and equipment parking/staging areas for the Contractor's operations at the site or sites;
- (iii) Premiums paid for performance and payment bonds including coinsurance and reinsurance agreements as applicable;
- (iv) General cleanup and housekeeping needed maintain a neat and orderly project site and/or sites;
- (v) Development, and implementation of the Accessibility Site Plan as per E2.
- (vi) Other job related items.

(b) Demobilization shall include, but not be limited to:

- (i) All activities and costs for transportation of personnel, equipment, and supplies not used in the project from the site, and/or sites, and/or between sites;
- (ii) Disassembly, removal, and site cleanup and restoration of offices, buildings, and other facilities assembled on the site and/or sites;
- (iii) Repair of access roads, temporary haul roads, and equipment parking areas leaving the project site in the same or better condition than at the start of the project;
- (iv) General cleanup and housekeeping needed to restore a neat and orderly project site.
- (v) Monitoring, maintenance, and reporting of the Accessibility Site Plan as per E2.

E3.5 Access to the site, equipment parking, and staging areas are limited to that shown on the drawings or as approved by the Contract Administrator.

MEASUREMENT AND PAYMENT

E3.6 The lump-sum price for the Mobilization and Demobilization bid item shall not exceed five percent (5.00%) of the total bid price for the Contract.

E3.6.1 Further to B9, B17, C12 and E3.6, should the lump sum price exceed 5% of the Total Bid Price the lump sum price will be reduced to 5% of the Total Bid Price, the Total Bid Price will be determined using the reduced lump sum price and payment will be based on the reduced lump sum price.

E3.7 Payment for Mobilization:

- (a) 60% of the lump-sum price will be paid to the contractor for Mobilization on the first Progress Estimate for the Contract.

E3.8 Payment for Demobilization:

- (a) The remaining 40% of the lump-sum price will be paid upon:
 - (i) Restoration of the site and/or sites to the satisfaction of the Contract Administrator;
 - (ii) Distribution of the Declaration of Total Performance.

E3.9 Pay Reduction for Accessibility Site Plan

- (a) The Demobilization payment will be reduced by the number of pay adjustments incurred in accordance with E2 and as determined by the Contract Administrator.

E3.10 Mobilization and Demobilization will be paid only once (to a maximum of 100%), regardless of the number of times the Contractor mobilizes to the site and/or sites.

E4. GEOTECHNICAL REPORT

E4.1 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'.

E5. OFFICE FACILITIES

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

- (a) The field office shall be for the exclusive use of the Contract Administrator.
- (b) The building shall be conveniently located near the site of the Work.
- (c) The building shall have a minimum floor area of 25 square metres, a height of 2.4 m with two windows for cross ventilation and a door entrance with a suitable lock.
- (d) The building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between either 16-18°C or 24-25°C.
- (e) The building shall be adequately lighted with florescent fixtures and have a minimum of three wall outlets.
- (f) The building shall be furnished with one desk, one drafting table, table 3m x 1.2m, one stool, one four drawer legal size filing cabinet, and a minimum of 12 chairs.
- (g) A portable toilet shall be located near the field office building. The toilet shall have a locking door 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.

E5.2 The Contractor shall be responsible for all installation and removal costs, all operating costs, and the general maintenance of the office facilities.

E5.3 The office facilities will be provided from the date of the commencement of the Work to the date of Total Performance.

E6. PROTECTION OF EXISTING TREES

E6.1 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 2400mm 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 neatly at the face of excavation.

- (d) Operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.
- (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.

E6.2 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.

E6.3 No separate measurement or payment will be made for the protection of trees.

E6.4 Except as required in clause E6.1(c) and E6.1(e), Elm trees shall not be pruned at any time between April 1 and July 31.

E7. TRAFFIC CONTROL

E7.1 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 supplying, placing, maintaining and removing the appropriate temporary traffic control devices as specified by the MTTC, the Contract Drawings, Staging Plans, and Traffic Management Plans or by the Traffic Management Branch of the City of Winnipeg Public Works Department. The Contractor shall bear all costs associated with the supply, placement and maintenance of temporary traffic control devices by their own forces or subcontractor.
- (c) In addition, the contractor shall be responsible for removing, placing, and maintaining all regulatory signing including but not limited to:
 - (i) Parking restrictions,
 - (ii) Stopping restrictions,
 - (iii) Turn restrictions,
 - (iv) Diamond lane removal,
 - (v) Full or directional closures on a Regional Street,
 - (vi) Traffic routed across a median,
 - (vii) 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.
- (d) The Contractor shall remove and stockpile any regulatory signage not required during construction such as but not limited to parking restrictions, turn restrictions and loading restrictions.

E7.2 Further to E7.1(c) the Contractor shall make arrangements with the Traffic Services Branch of the City of Winnipeg to supply regulatory signs as required.

E7.3 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the site has been maintained.

- E7.4 Further to E7.1(c) and E7.1(d) the Contractor shall make arrangements with the Traffic Services Branch of the City of Winnipeg to reinstall the permanent regulatory signs after the contract work is complete. At this time the contractor shall make arrangements to drop off the stockpiled materials to Traffic Services at 495 Archibald Street.
- E7.5 Any changes to the approved traffic management plan must be submitted to the Contract Administrator a minimum of 5 Working Days prior to the required change for approval.
- E7.6 If the Contract Administrator determines that the Contractor is not performing Traffic Control in accordance with this specification, Traffic Services may be engaged to perform the Traffic Control and the Contractor shall bear the costs associated by the Traffic Services Branch of the City of Winnipeg in connection with the works undertaken by the Contractor.

E8. TRAFFIC MANAGEMENT

- E8.1 Further to clause 3.7 of CW 1130:
- (a) Where not shown on the Drawings, 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 at any time unless approved by the Contract Administrator, in consultation with the Traffic Management Branch.
- E8.1.1 An approved traffic staging/ signage plan is included in the Drawings (see E1.4). Any changes to this plan with respect to lane closures must be approved by the Contract Administrator.
- E8.1.2 Flag persons may be necessary to maintain the flow of traffic during certain work operations.
- E8.1.3 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.
- E8.1.4 Pedestrian access must be maintained on the one 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 each intersections at all times.
- E8.1.5 Ambulance/emergency vehicle access must be maintained at all times.

E9. WATER OBTAINED FROM THE CITY

- E9.1 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.

E10. SURFACE RESTORATIONS

- E10.1 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.

E11. INFRASTRUCTURE SIGNS

E11.1 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

E12. WORK WITHIN RAIL RIGHT-OF-WAY

GENERAL REQUIREMENTS

- E12.2 The Contractor shall be responsible to meet all Canadian Pacific Railway (CP) constraints, requirements, and safety measures.
- E12.3 The Contractor shall arrange with each rail company to have them supply a flag person for all activity on the their right-of-way or the extension of the right-of-way as required.
- E12.4 The Contractor is expected to schedule his work in order to minimize the need for flagging.
- E12.5 Information regarding CP flagging is included in Appendix 'I'.
- E12.6 The City shall pay for the cost of flagging required for this Project.

MEASUREMENT AND PAYMENT

E12.7 There shall be no measurement or payment made for the work associated with this Specification. It shall be considered incidental to the Work

E13. OPERATING CONSTRAINTS FOR WORK IN CLOSE PROXIMITY TO THE CRITICAL WATER INFRASTRUCTURE

E13.1 Description

E13.1.1 This Specification details operating constraints for all Work to be carried out in close proximity to critical water infrastructure. Close proximity shall be deemed to be any construction activity within a 5 m horizontal offset from the centreline of a feeder main/large diameter watermain, within 5 m of valve chambers, and any other critical infrastructure identified below.

E13.2 Critical Water Infrastructure

E13.2.1 The following shall be considered critical pipelines and water infrastructure for this project:
(a) 450 mm Water Main on McPhillips St:

E13.3 General Considerations for Work in Close Proximity to Critical Water Infrastructure

E13.3.1 Feeder mains and large diameter water mains are a critical components of the City of Winnipeg's regional water supply and distribution system and work in close proximity to critical water infrastructure shall be undertaken with an abundance of caution. Feeder mains and large diameter water mains cannot typically be taken out of service for extended periods to facilitate construction and inadvertent damage caused to the pipe would likely have catastrophic consequences.

E13.3.2 Work around critical water infrastructure shall be planned and implemented to minimize the time period that Work is carried out in close proximity the pipeline/structure and to ensure that the pipeline/structure is not subjected to excessive construction related loads,

including excessive vibrations and/or concentrated or asymmetrical lateral loads during backfill placement.

E13.3.3 Large diameter pressure pipe generally has limited ability to withstand increased earth and live loading. Therefore, every precaution must be undertaken to ensure that applied loading during all phases of construction is within accepted loading parameters.

E13.4 Operational Limitations

E13.4.1 Feeder main and large diameter water main shutdowns are scheduled based on a number of factors including water demand, weather, reservoir operation, routine maintenance and repair work within the regional distribution system, and other factors. The City shall endeavour to make requested time periods available to the Contractor to schedule their work requiring removal of the pipeline from service, without limiting the City's control over the operation of the regional water and distribution systems to complete other work, maintain adequate water storage and supply and maintain the integrity of the infrastructure. The City shall reserve the right to cancel and/or delay these schedule dates at any time, due to any circumstances that could adversely affect the City's water supply including, but not limited to, high water demand, abnormal weather, failures of related water system components and/or security concerns.

E13.4.2 Scheduling Restrictions:

- (a) Isolation of the 450 mm water main on McPhillips St may only occur during overnight periods between 10 pm and 6 am.

E13.5 Pre-Work, Planning and General Execution

E13.5.1 No work shall commence in close proximity to feeder mains, large diameter water mains, chambers, and other critical infrastructure until the equipment specifications and construction method statement have been submitted and accepted, and feeder main locations have been clearly delineated in the field. Work over feeder mains shall only be carried out with equipment that has been reviewed and quantified in terms of its loading implications on the pipe.

E13.5.2 Notify the Contract Administrator five (5) Business Days prior to commencement of any work near the critical water infrastructure.

E13.5.3 The Drawings provide the location of the feeder mains, chambers, and critical pipelines through the construction site. Pipe locations noted on the Drawings are based on the original record drawings. Locate critical infrastructure and confirm their position horizontally and vertically (if required) prior to undertaking work in close proximity to said infrastructure. Visually delineate all critical infrastructure identified herein on Site by use of paint, staking/flagging, construction fencing, snow fencing, or other suitable methods

E13.5.4 Only utilize construction practices and procedures that do not impart excessive vibratory loads on feeder mains and chambers or that would cause settlement of the subgrade below feeder mains and critical pipelines.

E13.5.5 Where the existing road structure must be removed, crossing of critical infrastructure shall be prohibited from the time the existing roadway structure is removed until the completion of granular base construction. At all times prior to completion of final paving; reduce equipment speeds to levels that minimize the effects of impact loading to the critical infrastructure.

E13.5.6 Only equipment and construction practices stipulated in the accepted construction method statement and the supplemental requirements noted herein may be utilized in close proximity to feeder mains, chambers, and other critical infrastructure identified herein.

E13.5.7 Construction operations should be staged in such a manner as to limit multiple construction loads at one time, (e.g., offset crossings sufficiently from each other, rollers should remain a sufficient distance behind spreaders to limit loads. A reasonable offset distance is 3 m between loads).

E13.5.8 Granular material, construction material, soil, and/or other material shall not be stockpiled on the pipelines or within 5 m of any critical infrastructure identified herein.

E13.5.9 The Contractor shall ensure that all crew members understand and observe the requirements of working near feeder mains, valve chambers, and critical infrastructure. Prior to commencement of on-Site work, the Contractor shall jointly conduct an orientation meeting with the Contract Administer, all superintendents, foreman, and heavy equipment operators to make all workers on the Site fully cognizant of the limitations of altered loading on, the ramifications of inadvertent damage to, and the constraints associated with work in close proximity to feeder mains and critical pipelines. New personnel introduced after commencement of the Project need to be formally orientated as outlined herein. It is recommended that restrictions associated with the crossing, consistent with the Contractor's submitted method statement be posted on Site and near the crossing.

E13.6 Demolition, Excavation, and Shoring

E13.6.1 Use of pneumatic concrete breakers within 3 m of a feeder main, valve chamber, or critical pipeline is prohibited. Pavement shall be full depth sawcut and carefully removed. Use of hand held jackhammers for pavement removal will be allowed.

E13.6.2 Offset excavation equipment a minimum of 3 m from the centerline of critical pipelines when undertaking excavations where there is less than 2.4 m of earth cover over the pipeline.

E13.6.3 Utilize only smooth edged excavation buckets, soft excavation, or hand excavation techniques where there is less than 1.5 m of earth cover over the pipeline. Where there is less than 1.0 m of soil cover above the pipeline, provide full time supervision and complete the excavation utilizing hand excavation or soft excavation methods.

E13.6.4 Equipment should not be allowed to operate while positioned directly over a feeder main or critical pipeline except where permitted herein, outlined in the reviewed and accepted construction method statement.

E13.6.5 Excavations within 3 m of the outside edge of a feeder main (hydrovac holes for confirming trenchless installations excluded) and which extend below the invert of the feeder main shall utilize shoring methods that precludes the movement of native in-situ soils (i.e. a tight shoring system).

E13.6.6 Pre-bore all piles to below the invert of critical infrastructure within 5 m (horizontally) of the pipeline's outside edge.

E13.6.7 Offset pile driving equipment a minimum of 3 m (horizontally) from the centerline of the pipeline during piling operations.

E13.7 Underground Construction and Trenchless Pipe Installation

E13.7.1 Install pipes to the grades shown on the Drawings. A minimum clear separation distance (outside to outside of pipe wall) of 500 mm shall be maintained between crossing pipes and the critical pipelines.

E13.7.2 The Contractor shall locate critical pipelines and confirm their position horizontally and vertically prior to commencing with any trenchless pipe installations to ensure proper clearances are maintained. Under no circumstances should blind coring proceed across feeder mains.

E13.7.3 The Contractor shall visually confirm the location and alignment of the drill rods or jacking pipe (horizontally and vertically) prior to proceeding with the trenchless installation beneath the critical pipelines. It is recommended that the new pipe alignment be confirmed within 2 m of the outside of the critical pipeline but no closer than 0.5 m from the outside edge of the pipe.

E13.7.4 No trenchless methods involving soil displacement (plugs) shall be permitted in the vicinity of critical pipelines.

E13.7.5 Pressure grouting or approved alternative methods shall be used to fill voids caused by the installation or if the bored hole diameter is greater than the outside diameter of the pipe by more than 25 mm.

E13.7.6 Where excavation is required within the critical pipeline's embedment zone, the Contractor shall take steps to ensure the granular embedment material surrounding the pipeline remains stable during the work.

E13.8 Subgrade Construction

E13.8.1 Subgrade and backfill compaction within 3 metres (horizontal) of a critical pipeline or valve chamber shall be limited to non-vibratory methods only. Small walk behind vibratory packers will be permitted.

E13.8.2 Subgrade, sub-base and base course construction shall be kept in a rut free condition at all times. Construction equipment is prohibited from crossing pipelines if the grade is insufficient to support the equipment without rutting.

E13.8.3 Subgrade conditions should be inspected by personnel with competent geotechnical experience (e.g. ability to adequately visually classify soils and competency of subgrade, subbase, and base course materials). In the event of encountering unsuitable subgrade materials above a critical pipeline, proposed design revisions shall be submitted to the Contract Administrator for review to obtain approval from the Water and Waste Department relative to any change in conditions.

E13.8.4 Fill material shall not be dumped directly on pipelines but shall be stockpiled outside the limits noted in these recommendations and shall be carefully bladed in-place

E13.8.5 Only use compaction equipment approved by the contract administrator to compact fill materials above critical pipelines. Compaction of fill materials shall be completed using static methods only, no vibratory compaction will be allowed within the limits noted in these recommendations.

E13.8.6 Construction operations shall be staged to minimize the time period between excavation to subgrade and placement of granular subbase materials. Should bare subgrade be left overnight, measures shall be implemented to protect the subgrade against inadvertent travel over it and to minimize the impact of wet weather.

E13.9 Subbase and Base Course Construction

E13.9.1 Subbase or base course materials shall not be dumped directly on pipelines but shall be stockpiled outside limits noted in these recommendations and shall be carefully bladed in-place.

E13.9.2 Subbase compaction within 3 m horizontal of the centreline of a critical pipeline shall be either carried out by static methods (without vibration) or with smaller approved equipment such as hand held plate packers or smaller roller equipment.

E13.10 Paving

E13.10.1 When constructing asphalt pavements only non-vibratory compaction should be used within 3 m (horizontal) of the center of critical pipelines.

E13.11 Measurement and Payment

E13.11.1 Protection of Critical Water Infrastructure

- (a) Protection of critical water infrastructure shall be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

E14. SHOP DRAWINGS

E14.1 Description

- (a) This Specification shall revise, amend, and supplement the requirements of CW 1110 of the City of Winnipeg's Standard Construction Specifications.
- (b) The term "Shop Drawings: means drawings, diagrams, illustrations, schedules, performance charts, brochures, and other data, which are to be provided by the Contractor to illustrate details of a portion of the Work.

- E14.2 Submit all Shop Drawings in accordance with CW 1110 except as modified herein.
- E14.3 The Contractor shall submit specified Shop Drawings to the Contract Administrator for review. All submissions must be in metric units. Where data is in imperial units, the correct metric equivalent shall also be shown on all Shop Drawings.
- E14.4 Submit Shop Drawing submissions within five (5) Business Days of a request as indicated in (a) or receipt of Notice of Award in accordance with B18, whichever is earlier.
- E14.5 Allow for a five (5) Business Days period for review by the Contract Administrator of each individual submission and re-submission, unless noted otherwise in the Contract Documents.
- E14.6 Shop Drawings not meeting the requirements of CW 1100 or the requirements specified herein will be returned to the Contractor without review for resubmission.
- E14.7 Shop drawing submissions will be limited to two (2) reviews per shop drawing. This shall include a review of the initial submission and a review of the revised submission. Costs associated with subsequent reviews will be charged to the Contractor.
- E14.8 Measurement and Payment
- E14.9 The provision of Shop Drawings will be considered incidental to the Work and will not be measured for payment. No additional payment will be made.

E15. CONCRETE MATERIALS

- E15.1 The Specification contained in Appendix 'K' shall apply to the Work.

E16. MANITOBA HYDRO GAS INFORMATION

- E16.1 While working in close proximity to Manitoba Hydro gas infrastructure, all procedures and precautions outlined in Appendix 'B' as well as any supplemental direction from Manitoba Hydro must be adhered to. Ensure that all locates and clearances are current and have been received and understood prior to construction.
- E16.2 Any costs associated with the provision of Safety Watches for Manitoba Hydro gas infrastructure will be considered incidental to the Work and no payment will be made.

E17. HYDRO-EXCAVATION

DESCRIPTION

- E17.1 This Specification shall cover the removal of earthen material immediately adjacent to underground utilities infrastructure by means of high pressure water spray, and the recovery of excavated material by vacuum type means or equivalent method as approved by the Contract Administrator.

CONSTRUCTION METHODS

- E17.2 Hydro-Removal of Earthen Material
 - E17.2.1 The Contractor shall only be compensated for hydro-excavation undertaken with prior permission of the Contract Administrator. The Contractor will only be compensated for hydro-excavation required to locate utilities whose location is uncertain. Hydro-excavation

required to expose utilities shown on the Drawings by Safety Watches will not be compensated and shall be considered incidental to the Work.

E17.2.2 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. Expose the buried utility by using a sweeping motion only, perpendicular to the locate markings, until the line is sighted. After sighting, the line shall not be contacted by spray or vacuum to avoid damage.

E17.2.3 Maximum settings when excavating within 1 m of marked utilities will be 38°C (100°F) temperature and 10,342 kPa (1500 psi) pressure.

E17.3 Recovery of Excavated Material

E17.3.1 The recovery of excavated material shall be done using a vacuum type method, or other type method as approved by the Contract Administrator.

E17.3.2 The recovery of material shall follow immediately behind the excavation, to avoid excavated areas from filling with excavated material.

E17.3.3 The use of mechanical sweepers will not be allowed.

E17.3.4 Dispose of material in accordance with Section 3.4 or CW 1130-R1.

E17.4 Backfill of Hydro Excavated Material

E17.4.1 The Contractor shall be responsible for the backfill of the hydro excavated hole upon acceptance of the Work described herein by the Contract Administrator.

MEASUREMENT AND PAYMENT

E17.5 Hydro-Excavation

E17.5.1 Hydro-Excavation of earthen material and its recovery and disposal as well as backfilling the hole 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 completed in accordance with this Specification, accepted and measured by the Contract Administrator.

E17.5.2 The hours to be paid for "Hydro-Excavation" shall be measured as the time spent on-site by the required equipment and shall be approved daily by the Contract Administrator.

E18. CONCRETE STEPS

E18.1 Description

E18.1.1 This Specification covers the construction of concrete steps as shown on the Drawings.

E18.1.2 Concrete steps are located at the following addresses:

- (a) 389 Monreith Street: 2- 130 mm high x 250 mm deep x 893 mm wide step

E18.2 Materials

E18.2.1 All materials shall be in accordance with CW 3310-R17.

E18.3 Construction Methods

E18.3.1 Concrete steps shall be constructed in accordance with CW 3310-R17 and as shown on the Drawings.

E18.3.2 Concrete steps shall include one 10M reinforcing steel bar mat spaced 150 mm on centre in both directions.

E18.4 Measurement and Payment

- E18.4.1 Concrete steps will not be measured and will be paid for at the Contract Lump Sum Price per location "Concrete Steps", which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in this Specification.

E19. PORTLAND CEMENT CONCRETE SIDEWALK WITH BLOCK OUTS FOR INDICATOR SURFACES

DESCRIPTION

- E19.1 This specification shall supplement CW 3325-R5 "Portland Cement Concrete Sidewalks".

CONSTRUCTION METHODS

- E19.2 Add the following to section 9:

- E19.2.1 As shown on the drawings and as directed by the Contract Administrator, construct sidewalk with block outs and/or monolithic curb and sidewalk with block outs, to allow for the installation of indicator surfaces.

- E19.2.2 Verify dimensions of paving stones (indicator surface) prior to construction of the block-outs. Gaps between paving stones and concrete pavement shall not exceed five (5) millimetres.

- E19.2.3 Concrete curbs for monolithic curb and sidewalk with block outs shall be constructed in accordance with CW 3240.

MEASUREMENT AND PAYMENT

- E19.3 Add the following to section 12:

- E19.3.1 Construction of concrete sidewalks with block outs for indicator surfaces will be measured on surface area basis. The surface area to be paid for shall be the number of square metres constructed in accordance with this specification and accepted by the Contract Administrator, as computed by measurements made by the Contract Administrator.

BASIS OF PAYMENT

- E19.4 Add the following to section 13:

- E19.4.1 Construction of concrete sidewalks with block outs for indicator surfaces will be paid for at the Contract Unit Price per square meter for the "Items of Work" listed here below, measured as specified herein, which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this specification.

- E19.4.2 Items of Work:

- (a) 100 mm Type 5 Sidewalk with Block Outs

- E19.4.3 Concrete thickness greater than the specified sidewalk thickness as a result of shaping the base material to accommodate the block outs is incidental to the listed Items of Work.

E20. PAVING STONES FOR INDICATOR SURFACES

DESCRIPTION

- E20.1 This specification shall supplement CW 3330-R5 "Installation of Interlocking Paving Stones"

MATERIALS

- E20.2 Add the following to section 5:

- E20.2.1 Paving Stones for indicator surfaces shall be as shown on the drawings.

E20.2.2 Paving Stones for indicator surfaces shall be:

Barkman Concrete paving stones -
Charcoal Holland Paver (60mm X 210 mm X 210 mm)
<https://www.barkmanconcrete.com/>

CONSTRUCTION METHODS

E20.3 Add the following to section 9.2 "Preparation of Sub-grade, Sub-base and Sand-base" :

E20.3.1 Preparation of Sand-Base for Paving Stones in Sidewalk Block Outs.

E20.3.2 Place a 15mm layer of bedding sand in the blocked out sidewalk areas.

E20.3.3 The bedding sand shall be spread and levelled so that the paving stones when installed are 5 mm higher than the finished grade.

E20.3.4 No more sand shall be spread than can be covered in with paving stone on the same day.

E20.3.5 The bedding sand shall not be compacted or disturbed prior to laying the paving stones.

E20.4 Add the following to section 9.3 "Installation of Paving Stones":

E20.4.1 For indicator surface paving stones, commence installation of paving stones against the long edge of the block out to obtain the straightest possible course of installation.

MEASUREMENT AND PAYMENT

E20.5 Add the following to section 12:

E20.6 Supply and Installation of Paving Stones for Indicator Surfaces

E20.6.1 Paving stones for indicator surfaces will be measured on surface area basis. The surface area to be paid for shall be the number of square metres constructed in accordance with this specification and accepted by the Contract Administrator, as computed by measurements made by the contract Administrator.

BASIS OF PAYMENT

E20.7 Add the following to section 13:

E20.7.1 The supply and installation of paving stones for indicator surfaces will be paid for at the Contract Unit Price per square meter for "Paving Stone Indicator Surface", measured as specified herein, which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this specification.

E20.7.2 Concrete thickness greater than the specified sidewalk thickness as a result of shaping the base material to accommodate the block outs is incidental to the listed Items of Work.

E21. SUPPLY AND INSTALL INSULATION

DESCRIPTION

E21.1 Notwithstanding 3.12 of CW 2110, this specification covers the supply and installation of insulation in roadway excavations over watermains and water services. This specification also covers the supply and installation of insulation around catch basins, catch basin leads and subdrains which are located near existing BellMTS vaults and ducts.

E21.2 Referenced Standard Construction Specifications

(a) CW 2030 – Excavation Bedding and Backfill

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

- E21.3 Referenced Standard Details
(a) SD-018 - Watermain and Water Service Insulation

MATERIALS

- E21.4 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”

- E21.5 Sand Bedding:
(a) In accordance with CW 2030

CONSTRUCTION METHODS

- E21.6 Prior to the installation of any sub-base material or geotextile material, locate all existing water services. 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. Stockpile and dispose of excavated material in accordance with CW 3110.
- E21.7 Thickness of insulation is 100 mm (4”). If using 50 mm (2”) panels 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.
- E21.8 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.
- E21.9 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.
- E21.10 Take appropriate measures to ensure panels are not displaced when installing geotextiles and during backfilling operations.

MEASUREMENT AND PAYMENT

- E21.11 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.
(a) Excavation of the roadway subgrade in accordance with E21.6 will not be measured for payment and will be included in the payment for “Watermain and Water Service Insulation”.
- E21.12 Insulation around catch basins and catch basin leads shall be measured on an area basis and paid for at the Contract Unit Price per square metre of “Catch Basin and Catch Basin Lead Insulation”. The area to be paid for shall be the total square meters of catch basin or catch basin lead insulation supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.
(a) Excavation of the roadway subgrade in accordance with E21.6 will not be measured for payment and will be included in the payment for “Catch Basin and Catch Basin Lead Insulation”.

E21.13 Insulation around subdrains shall be measured on an area basis and paid for at the Contract Unit Price per square metre of "Subdrain Insulation". The area to be paid for shall be the total square meters of subdrain insulation supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

- (a) Excavation of the roadway subgrade in accordance with E21.6 will not be measured for payment and will be included in the payment for "Subdrain Insulation".

E22. CONCRETE CURBS FOR ASPHALT PAVEMENTS

DESCRIPTION

E22.1 This specification shall supplement CW 3310-R17 "Portland Cement Concrete Works".

CONSTRUCTION METHODS

E22.2 Add the following to section 9:

E22.2.1 As shown on the Drawings and as directed by the Contract Administrator, construct curbs for asphalt pavement.

MEASUREMENT AND PAYMENT

E22.3 Add the following to section 12:

E22.3.1 Construction of concrete curbs for asphalt pavements will be measured on a length basis. The length to be paid for shall be the number of metres constructed in accordance with this specification and accepted by the Contract Administrator, as computed by measurements made by the Contract Administrator.

BASIS OF PAYMENT

E22.4 Add the following to section 13:

E22.4.1 Construction of concrete curbs for asphalt pavement will be paid for at the Contract Unit Price per square meter for the "Items of Work" listed here below, measured as specified herein, which price shall be payment in full for supplying all materials and for performing all operations herein described and all other items incidental to the work included in this specification.

E22.4.2 Items of Work:

- (a) Construction of Integral Barrier Curb for Asphalt Pavement

E23. TREE TRIMMING

DESCRIPTION

E23.1 This Specification shall cover the trimming of trees as shown on the Drawings.

CONSTRUCTION METHODS

E23.2 Tree Trimming

E23.2.1 Before commencement of any work, the Contractor shall consult with the Contract Administrator as to which trees and/ or shrubs shall be trimmed. All other trees and shrubs shall be protected against damage from all construction activity in accordance with E6. Protection of Existing Trees.

E23.2.2 Tree trimming must be performed by a qualified contractor pre-approved by the City of Winnipeg, which can be found at the following link:
http://www.winnipeg.ca/publicworks/parksOpenSpace/UrbanForestry/Homeowner_Tree_Maintenance_Guidelines.stm

E23.2.3 Branches and limbs are to be felled so as to land within the limits of the works. The Contractor shall take all precautions to prevent damage to traffic, structures, pole lines, adjacent property and to trees and shrubs designated to be saved, and he shall be liable for any damages occurring in the performance of this work.

E23.2.4 The Contractor shall trim all trees and shrubs designated for trimming. The Contractor shall load and haul all material from the site and dispose of these materials at dumps located by the Contractor and approved by the Contract Administrator.

MEASUREMENT AND PAYMENT

E23.3 Tree Trimming

E23.3.1 Tree trimming will not be measured and will be paid for at the Contract Lump Sum Price for "Tree Trimming". The price paid shall cover all items covered in this Specification or considered incidental to it, measured and accepted by the Contract Administrator.

E24. WATER SERVICE INTERRUPTIONS TO BUSINESSES AND APARTMENT BUILDINGS

E24.1 General

(a) Water shutdowns to businesses will be arranged by the Contract Administrator in consultation with the business owner. Shutdowns shall be scheduled in accordance with these discussions.

E24.2 Submissions

(a) The Contractor shall be required to submit a work plan in accordance with E14 five (5) Business Days prior to any construction activities to illustrate how the work will be performed to minimize or eliminate water shutdowns of this project.

E24.3 Measurement and Payment

E24.3.1 Coordination of water service interruptions

- (a) Coordination of water service interruptions shall be considered incidental to the Work and will not be measured for payment. No separate payment will be made.
- (b) Should the Contract Administrator require that Work be carried out at night, on weekends, on Public Holidays where required to minimize water service interruptions on this project, the Contractor shall comply without additional compensation being considered to meet the requirement.

E25. CONNECTING TO EXISTING WATER SERVICES

E25.1 This specification shall amend clause 4.22 of CW 2110.

E25.2 Replace Clause 4.22 with "Connecting to existing lead water services will be measured and paid for in accordance with Clause 4.13 of CW 2110, "Connecting Existing Copper Water Services to New Watermain" for each connection made, regardless of the material of the existing water service being connected to. Connecting to existing lead water services will not be included in the installation of a curb stop."

E26. WATER MAIN RENEWAL - PROVISIONAL ITEMS

E26.1 General

E26.1.1 The Provisional Items listed in the Schedule of Prices are part of the Contract.

E26.1.2 The Contractor shall not perform Work included in the Provisional Items without prior authorization from the Contract Administrator. All Work included in the Provisional Items will be carried out within the construction area shown on the drawings.

E26.2 Methods

E26.2.1 Cement stabilized fill shall meet the requirements of CW 2160.

E26.2.2 Sodding works shall meet the requirements of CW 3510.

E26.2.3 Repairs to streetlight cables shall be completed in accordance with CW 3620. Where damaged, new streetlight conduit and cable must be installed from pole to pole. Complete repairs where directed by the Contract Administrator.

E26.3 Measurement and Payment

E26.3.1 Cement Stabilized Fill

- (a) Supply and placement of cement stabilized fill shall be measured on a volume basis and paid for at the Contract Unit Price per cubic meter for "Supply and Place Cement Stabilized Fill". Payment shall include all materials and labour required to complete the work as specified.

E26.3.2 Sodding

- (a) Sodding shall be paid in accordance with CW 3510.
- (b) As per CW 2110, boulevard restoration within the work area will be considered incidental to the Work. Only sodding completed outside of the work area and replaced at the direction of the Contract Administrator will be considered for payment.

E26.3.3 Install Street Light Conduit and Cable

- (a) Installation of streetlight conduit and cable shall be measured on a linear meter basis and paid for at the Contract Unit Price per linear meter for "Install Street Light Conduit c/w Cable" as per the installation method identified in Form B. Payment shall include all materials and labour required to complete the work as specified.

E27. WATER MAIN RENEWAL – TEMPORARY SURFACE RESTORATION

E27.1 Description

E27.1.1 This Specification shall cover the temporary restoration roadways and boulevards. Temporary restoration is required to facilitate construction staging. Temporary restoration shall be completed as specified herein

E27.2 General

E27.2.1 The Contractor is responsible for maintaining the roadway in an acceptable condition for traffic at all times while the Site is under the control of the Contractor. Temporary restoration of the roadway to permit traffic between completion of the water main renewal work and roadway renewal work shall be done in such a manner as to allow normal vehicle traffic. The Contractor shall be responsible for all maintenance of said restoration works. The period between the two portions of work shall be less than 20 Business Days.

E27.2.2 Should portions of the Site be turned over to the City after completion of the water main renewals for completion of roadway renewals in the subsequent calendar year, the restoration identified herein must be completed.

E27.2.3 In all cases, boulevards and roadways must be made safe for vehicles and pedestrians whenever the contractor is not actively working on site.

E27.3 Construction Methods

E27.3.1 Further to Clause 3.3 of CW 1130, the Contractor shall temporarily restore surfaces to the following minimum standards:

- (a) Backfill and level boulevards and grassed areas to match existing surface elevations.
- (b) Cap excavations in street pavement with 100 mm thick layer of "Concrete for Temporary Restoration of Utility Pavement Cuts" as specified in CW 3310.

- (c) Cap excavations in sidewalk pavement with a 50 mm thick layer of “Concrete for Temporary Restoration of Utility Pavement Cuts” as specified in CW 3310 or 50 mm of asphalt paving in accordance with CW 3410.
- (d) Where curb has been removed as part of the pavement cut, pour temporary curb using “Concrete for Temporary Restoration of Utility Pavement Cuts” as specified in CW 3310.

E27.3.2 Insulate temporary concrete where required during 24 hour curing period.

E27.3.3 Remove all temporary pavements prior to permanent restorations.

E27.3.4 The Contractor shall monitor and maintain temporarily restored surfaces as required until permanent restoration is complete.

E27.3.5 If, in the opinion of the Contract Administrator, temporarily restored surfaces are not being adequately maintained or were not properly constructed and pose a danger to the public, maintenance or reconstruction will be done by the City forces with no advance notification the Contractor. All costs associated with the maintenance or reconstruction of temporary pavement incurred by the City shall be deducted from future payments to the Contractor.

E27.4 Measurement and Payment

E27.4.1 Completion of all temporary restoration shall be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

E28. WATER MAIN RENEWAL AND COMBINED SEWER MANHOLE – PERMANENT RESTORATION

E28.1 Description

E28.1.1 This Specification covers all permanent restoration of roadways, boulevards and sidewalks. Permanent restoration shall be completed in all areas outside of the roadway renewals limits.

E28.2 Construction Methods

E28.2.1 Construct partial slab patches in accordance with CW 3230.

E28.2.2 Construct miscellaneous concrete slab renewals in accordance with CW 3235.

E28.2.3 Construct concrete curb renewal in accordance with CW 3240.

E28.2.4 Construct asphaltic concrete patches (Type 1A) in accordance with CW 3240. Notwithstanding CW 3410, there will be no maximum width for an asphalt patch.

E28.3 Measurement and Payment

E28.3.1 Partial Slab Patches

- (a) Partial Slab Patches shall be measured on an area basis and paid for at the Contract Unit Price per square meter for “Partial Slab Patches” at the applicable thickness, as identified in Form B. Payment shall include all materials and labour required to complete the work as specified.
- (b) All cost incurred for sub base and base course materials shall be included in the unit price for “Partial Slab Patches”.
- (c) Payment for partial slab patches will only be considered for areas that required restoration outside of the road reconstruction area. All restorations that fall within the road reconstruction limits will not be considered for payment.
- (d) No separate measurement or payment will be made for Drilled Dowels or Tie Bars, the cost for which shall be included in the prices bid for Partial Slab Patches.

E28.3.2 Miscellaneous Concrete Slab Renewal

- (a) Miscellaneous concrete slab renewals shall be measured on an area basis and paid for at the Contract Unit Price per square meter for “Miscellaneous Concrete Slab Renewal” for the specified application, as identified in Form B. Payment shall include all materials and labour required to complete the work as specified.
- (b) All cost incurred for sub base and base course materials shall be included in the unit price for “Miscellaneous Concrete Slab Renewal”.
- (c) Miscellaneous concrete slab renewals – sidewalks, will only be considered for areas that required restoration outside of the road reconstruction area. All restorations that fall within the road reconstruction limits will not be considered for payment.

E28.3.3 Concrete Curb Renewals

- (a) Concrete curb renewal shall be measured on a linear meter basis and paid for at the Contract Unit Price per linear meter for “Concrete Curb Renewal” for the specified curb type, as identified in Form B. Payment shall include all materials and labour required to complete the work as specified.
- (b) All cost incurred for sub base and base course materials shall be included in the unit price for “Concrete Curb Renewal”.
- (c) Concrete curb renewals will only be considered for areas that required restoration outside of the road reconstruction area. All restorations that fall within the road reconstruction limits will not be considered for payment.

E28.3.4 Asphaltic Concrete Patches Type 1A

- (a) Construction of asphaltic concrete patches type 1A shall be measured on an area basis and paid for at the Contract Unit Price per square meter for “Construction of Asphaltic Concrete Patches Type 1A”. Payment shall include all materials and labour required to complete the work as specified.
- (b) Asphaltic concrete patches will only be considered for areas that required restoration outside of the road reconstruction area. All restorations that fall within the road reconstruction limits will not be considered for payment.

E29. CONSTRUCTION OF NEW COMBINED SEWER MANHOLE

E29.1 Description

- (a) This Specification shall cover construction of the new manhole on the combined sewer at McPhillips St and Mountain Ave and modifications to the existing upstream siphon manhole at this location.

E29.2 General

E29.2.1 All work shall be completed in accordance with the following specifications:

- (a) E30: Combined Sewer Manhole – Excavation, Shoring, and Backfill
- (b) E31: Combined Sewer Manhole – Cast-In-Place Concrete
- (c) E32: Combined Sewer Manhole – Reinforcing Steel

E29.2.2 Pre-cast concrete manhole components and manhole construction shall meet the requirements of CW 2130.

E29.3 Construction Methods

E29.3.1 Removal of Existing Safety Grate in S-MH00008433

- (a) The Contractor shall remove the existing safety grate/platform from S-MH00008433. Based on the record drawings, the platform rests on a set of wall mounted brackets. The wall mounted brackets may remain but the grating and associated components shall be removed from the manhole.

E29.3.2 CCTV Inspections

- (a) The Contractor shall obtain panoramic manhole inspections of S-MH00008433 and the new combined sewer manhole in accordance with CW 2145 after completion of the work.
- (b) The Contractor shall obtain pre- and post-construction CCTV inspections of S-MA00017404 in accordance with CW 2145.

E29.4 Measurement and Payment

E29.4.1 Construction of New Combined Sewer Manhole

- (a) Construction of the new combined sewer manhole at McPhillips St and Mountain Ave shall be paid on a Lump Sum basis.
- (b) Payment for "Construction of New Combined Sewer Manhole" shall include all costs associated with construction of the new manhole, including but not limited to: excavations, shoring, demolition, manhole modifications, manhole replacement, new manhole installations, backfill, and all other materials, labour, and equipment required to complete the work as specified. Payment will be made on the following schedule:
- (c) The Contractor shall provide a lump sum breakdown for the cost for the new manhole construction. The breakdown shall include, but is not limited to the following:
 - (i) shoring installation and removal;
 - (ii) cast in place concrete work;
 - (iii) manhole construction; and
 - (iv) backfilling.

E29.4.2 Removal of Existing Safety Grate in S-MH00008433

- (a) Removal of the existing safety grate from S-MH00008433 shall be paid on a Lump Sum basis. Payment for "Removal of Existing Safety Grate in S-MH00008433" shall include all costs associated with removal of the existing grating.

E30. COMBINED SEWER MANHOLE – EXCAVATION, SHORING, AND BACKFILL

E30.1 Description

- (a) This Specification shall cover excavations and shoring to facilitate construction of the new manhole on the combined sewer.

E30.2 Submittals

- (a) A work plan shall be provided for the shoring installation. The work plan shall include the following:
 - (i) Limits of excavation (width, length, depth);
 - (ii) means of shoring the excavation;
 - (iii) services to be disrupted. Means of maintaining or otherwise dealing with service flows; and
 - (iv) other information required to describe the work.
- (b) Shop Drawings for excavation shoring (where required) shall be prepared and submitted in accordance with E14 a minimum of five (5) Business Days prior to undertaking the excavation and shoring installation. Where required by Workplace Safety and Health regulation, shoring Shop Drawings shall be sealed by a Professional Engineer, registered in the Province of Manitoba, experienced in the design of excavation shoring systems.

E30.3 Shoring Design

- (a) Shoring shall be provided for excavations in accordance with CW 2030.
- (b) Excavation shoring shall be designed to accommodate the proposed work.
- (c) All shoring systems shall comply with Manitoba Workplace Safety and Health requirements.

E30.4 Materials

E30.4.1 All materials shall conform to City of Winnipeg Standard Construction Specifications.

E30.4.2 Lightweight backfill shall meet the following:

- (a) Lightweight backfill shall meet the requirements of ACI 523.1 and CW 2160 except as modified herein.
- (b) Density: 400 kg/m³ ±5%
- (c) Minimum 28 Day Compressive Strength: 0.4 MPa (Max 2.5 MPa)
- (d) Approved Suppliers: Cematrix or approved equal in accordance with B6.

E30.5 Methods

E30.5.1 Excavation

- (a) The Contractor is responsible for locating the existing sewer and all other buried utilities, and shall take all steps to locate the existing sewer prior to excavation and installation of shoring.
- (b) Construction materials and excavation spoils shall not be stockpiled over pipelines.
- (c) Carefully excavate to expose existing pipelines.
- (d) Only smooth edged buckets may be utilized for excavations within 1.5 m of the existing sewer.
- (e) The existing sewer shall be located prior to proceeding with excavations within 1.0 m of the pipe. Final excavation (within 300 mm of the pipe wall) shall be completed using soft dig or hand excavation methods to prevent damage to the pipe.
- (f) Excess excavation materials shall be disposed of off site.
- (g) Any services severed during excavation and shoring installation must be rerouted or otherwise bypassed in accordance with E24.

E30.5.2 Shoring Installation

- (a) Piles (if used) shall be installed with a minimum of 500 mm of clear separation between the pile and the outside of the existing sewer wall.
- (b) Piles (if used) shall be pre-bored to a depth below the invert of the sewer. Pre-bored holes shall be filled with a flowable low strength cementitious material after installation of piles to prevent movement of existing soils around the pipe, permit excavation/installation of shoring, and removal of piles.
- (c) Excavation and shoring installation shall not initiate movement or otherwise destabilize soils sounding brick and concrete sewers greater than 1200 mm in diameter.
- (d) Locate the extents of the existing sewer prior to pre boring and installing shoring using soft dig methods. Please note the wall thicknesses and outside diameter of the existing trunk sewers are unknown.
- (e) Construction Vibrations
 - (i) The Contractor shall use means and methods that will limit vibrations at locations adjacent to utilities and structures.

E30.5.3 Demolition

- (a) Carefully remove, expose, and demolish existing manholes and sewers as required. The use of pneumatic breakers is prohibited. Tops of sewers may be saw cut or removed using small hand held jack hammers. Final openings in the existing sewers shall be neatly cut square to the existing pipe.

E30.5.4 New Manholes

- (a) Construct new cast-in-place or pre-cast manhole bases as shown on the drawings after completion of the liner installation.

- (b) Complete cast-in-place concrete and reinforcing steel work as shown on the Drawings and in accordance with E31 and E32.
- (c) Manholes shall be constructed as shown on the Drawings and in accordance with CW 2130.

E30.5.5 Shoring Removal

- (a) Shoring systems shall be completely removed upon completion of the works.
- (b) Care shall be taken to remove the shoring system and backfill the trench in such a way as to not create voids. If the shoring system requires removal after backfill is in place, resulting voids shall be filled with flowable cement slurry.

E30.5.6 Backfill

- (a) Backfill within 1.0 m of existing and proposed pavements shall be completed to CW 2030, Class 1 standards. Granular Class 2 backfill shall extend to the underside of the stabilized fill.
- (b) Backfill with lightweight backfill were identified.
- (c) Backfilling with frozen materials will not be permitted.

E30.6 Measurement and Payment

E30.6.1 Excavation, Shoring, and Backfill

- (a) Excavation, shoring, and backfill shall be considered incidental to "Construction of New Combined Sewer Manhole" and will not be measured for payment. No separate payment will be made.

E31. COMBINED SEWER MANHOLE - CAST-IN-PLACE CONCRETE

E31.1 Description

- (a) This Specification shall cover the construction of cast-in-place concrete trunk sewer closures.
- (b) All cast-in-place concrete shall be carried out in accordance with CW 2160 and CSA A23.1, except as amended or supplemented herein

E31.2 Submissions

E31.2.1 Construction Method Submission

- (a) No Work shall commence until after the Contract Administrator's review of the Contractor's Construction Method submission.
- (b) The Contractor shall prepare for the Contract Administrator's review a Construction Method submission detailing:
 - (i) Construction sequence to be followed including all methods to be employed to ensure no damage occurs to existing structures or adjacent properties within or adjacent to excavation.
 - (ii) Proposed method of construction.
 - (iii) Specialized equipment to be used.
 - (iv) Any design revisions proposed to accommodate the Contractor's proposed construction method.
 - (v) Flow control considerations including details on the Contractor's proposed method of flow control.
 - (vi) The Contractor shall respond to any concerns that may be raised by the Contract Administrator after review of the Construction Method submission.

E31.3 Materials

- (a) Structural Concrete Mix Design
 - (i) Provide concrete mixed in accordance with requirements of CW 2160 and CSA-A23.2. Concrete shall conform to requirements of Type A concrete in accordance with Table CW 2160.1.
 - (ii) Structural concrete design shall be in accordance with performance specification having the following properties:
 - ◆ Class of Exposure: S-1
 - ◆ Minimum Compressive Strength @ 28 days: 35 MPa
- (b) Polyurethane sealant for manhole construction
 - (i) Shall be non sag, polyurethane sealant.
 - (ii) Approved Product: Sikaflex 2C NSL or approved equal in accordance with B6.
- (c) Hydrophilic Waterstop
 - (i) One-part polyurethane, extrudable swelling waterstop (bentonite-free).
 - (ii) Approved Product: Sikaswell S-2 or approved equal in accordance with B6.

E31.4 Construction Methods

E31.4.1 Forming

- (a) The Contractor shall be responsible for the design and installation of all necessary shoring, bracing and formwork.
- (b) All shoring shall conform to CW 2160, CSA S269.3 and CSA C23.1.

E31.4.2 Cast-in-Place Concrete

- (a) All cast-in-place concrete shall conform to CW 2160, and CSA A23.1.

E31.5 Measurement and Payment

- (a) Supply and placement of cast-in-place concrete shall be considered incidental to "Construction of New Combined Sewer Manhole" and will not be measured for payment. No separate payment will be made.

E32. COMBINED SEWER MANHOLE - REINFORCING STEEL

E32.1 Description

- (a) This Specification shall cover all reinforcing steel work, in accordance with Specification CW 2160, except as amended or supplemented herein.

E32.2 Submittals

- (a) The Contractor shall submit reinforcing steel Shop Drawings in accordance with E14 a minimum of ten (10) Business Days prior to the fabrication of any reinforcing steel.

E32.3 Materials

E32.3.1 Reinforcing Steel

- (a) Further to CW 2160 Sentence 2.6 Materials: Reinforcing Steel, all reinforcing steel shall conform to the requirements of CSA G30.18, Grade 400.

E32.3.2 Bar Accessories

- (a) Bar accessories shall be of type approved by the Contract Administrator. They shall be made from a non-corroding material, and they shall not stain, blemish, or spall the concrete surface for the life of the concrete. Bar chairs are to be PVC; galvanized bar chairs are not acceptable.
- (b) Bar accessories shall include bar chairs, spacers, clips, wire ties, wire (18 gauge minimum), or other similar devices that may be approved by the Contract Administrator. Bar accessories are not shown on the Contract Drawings. The supply

and installation of bar accessories shall be considered incidental to the supply and placing of reinforcing steel.

E32.4 Construction Methods

E32.4.1 Placing of Reinforcing Steel

- (a) Placement of reinforcing steel shall be completed in accordance with CW 2160, CSA A23.1, and CSA A23.3.
- (b) Lap splices in accordance with CSA A23.3
- (c) Reinforcing steel shall be placed accurately in the positions shown on the Contract Drawings. Carefully adjust the location of reinforcing steel adjacent to openings to frame those openings in accordance with good practice, and maintain the bar spacing intent.
- (d) Splices in reinforcing steel shall be made only where indicated on the Contract Drawings. Prior approval of the Contract Administrator shall be obtained where, in the opinion of the Contractor, other splices must be made. All splices shall have laps of at least 40 bar diameters. Welded splices shall not be used.
- (e) A minimum of twenty-four (24) hours notice shall be given to the Contract Administrator prior to the pouring of any concrete to allow for inspection of reinforcing steel.

E32.4.2 Quality Control

- (a) The Contractor shall provide, without charge, the samples of reinforcing steel required for quality control tests and provide such assistance and use of tools and construction equipment as is required.

E32.5 Measurement and Payment

- (a) Supply and placement of reinforcing steel shall be considered incidental to "Construction of New Combined Sewer Manhole" and will not be measured for payment. No separate payment will be made

E33. SEWER AND MANHOLE STABILIZATION

E33.1 Description

- (a) Sewer and manhole stabilization shall mean the internal repair of sewers and manholes by man entry techniques. Repairs are varied and may consist of holes in sewers with voids, missing bricks in sewers, obstructions and manhole base or riser repairs.
- (b) The scope of work involved in sewer stabilization is as follows:
 - (i) Secure the site and provide temporary traffic control.
 - (ii) Obtain all necessary underground clearances.
 - (iii) Conduct a hazard assessment, including identification and evaluation.
 - (iv) Develop a safe work plan.
 - (v) Implement the necessary procedures and controls to control hazards and maintain a safe working environment.
 - (vi) Enter the manhole/sewer and perform the required repairs.
 - (vii) Clean-up the site.

E33.2 Materials

E33.2.1 Concrete

- (a) Concrete for large internal repairs to concrete and brick sewers and manholes and internal void filling shall be in conformance with Table CW 2160.1, Type B.

- (b) Patching and grouting of repairs to concrete and brick sewers and manholes shall be with a fast hardening high strength concrete repairing compound designed for underwater use
 - (i) Approved products: Duro-Crete by C C Chemicals or approved equal in accordance with B6.
- (c) Flowable cement-stabilized fill for external void filling from the ground surface shall be in conformance with Table CW 2160.1, Type D.

E33.2.2 Manhole components shall conform to CW2130.

E33.3 Construction Methods

E33.3.1 Equipment Set Up

- (a) In accordance with the safe work plan for the repair, the Contractor shall set up the required safety equipment and controls to safely perform the work.
- (b) Specialized equipment to perform the repair work, such as lights, pressure washers, drills and chipping hammers shall in no way adversely affect the operation of the safety equipment required to perform the work.
- (c) Subsequent to completion of the repairs the Contractor shall remove all equipment from the sewers and manholes.

E33.3.2 Internal Sewer Repairs

- (a) The Contractor shall repair the sewer fabric to restore the structural integrity of the sewer and provide a smooth flow surface conforming to the adjacent sewer/manhole cross-section and materials.
- (b) Large concrete repairs shall include a reasonable and limited level of surface preparation, including removal of unsound material and cleaning of the edges of the repair area, and setting of the required formwork and bracing. Concrete placement and finishing shall be done in accordance with CW 2160. All formwork and bracing shall be removed from the sewer/manhole at the completion of the work.
- (c) Concrete patching shall include a reasonable and limited level of surface preparation, including removal of unsound material and cleaning of the edges of the repair area. The Contractor shall apply the patching material in accordance with the manufacturer's printed instructions.
- (d) Small voids in the backfill shall be filled with concrete or other approved material from the inside of the sewer prior to repairing the sewer fabric or by pressure grouting after completion of the repairs. The void shall be completely filled to prevent settlement of the backfill and provide a solid backing for the liner.
- (e) Pressure grouting shall be done in accordance with the manufacturer's printed instructions.
- (f) Large voids shall be filled from the ground surface after completion of the repairs. Holes shall be cored in the pavement or the pavement shall be saw cut and removed to permit vacuum excavation from the underside of the pavement to the void. The void shall then be completely filled with flowable cement-stabilized fill.

E33.4 Quality Control

E33.4.1 Repair Acceptance

- (a) Upon completion of the designated repair the Contractor shall televise any repaired sewers and a manhole inspection be performed where any patching completed at a sewer/manhole interface in accordance with CW-2145.
- (b) The Contractor shall not be responsible for defects in existing un-repaired sewer lines unless those defects are a direct result of the Contractor's operation.

E33.4.2 Correction of Deficiencies

- (a) The Contractor shall correct deficiencies found in the sewer repair at their own cost including the cost of re-cleaning and re-inspection to confirm that the deficiencies are rectified in accordance with these specifications.

E33.5 Measurement and Payment

E33.5.1 Internal Sewer Repairs

- (a) Internal sewer repairs will be measured on a unit basis and paid for at the Contract Unit Price for "Internal Sewer Repairs" for the respective repair type. Number of units to be paid for will be the total number of internal sewer repairs made in accordance with this specification, accepted and measured by the Contract Administrator.
 - (i) Concrete patching of sewer walls up to 1.0 metre in length will be measured and paid for on a unit basis and paid for at the Contract Unit Price for "Concrete Patching – Up to 1.0 metre long". Number of units to be paid for will be total number of concrete patch repairs up to 1.0 metre long completed in accordance with this specification, accepted and measured by the Contract Administrator.
 - (ii) Concrete patching of sewer walls greater than 1.0 metre in length will be measured and paid for on a linear metre basis and paid for at the Contract Unit Price for "Concrete Patching – Greater than 1.0 metre long". Distance to be measured and paid will be total length of concrete patch in excess of 1.0 m long completed in accordance with this specification, accepted and measured by the Contract Administrator.
- (b) Payment for Internal Sewer Repairs shall include all materials, equipment and labour required to complete the work as specified.

E34. CONFINED SPACE ENTRY

E34.1 Description

- (a) This Specification shall outline minimum requirements for confined space operations through the course of the work.

E34.2 General

E34.2.1 The Contractor shall be aware that Hydrogen Sulphide Gas is present in all underground structures connected to the City's sewer systems and has been known to accumulate in concentrations sufficient to cause serious harm or death to personnel who are not using adequate Personal Protective Equipment.

E34.2.2 The Contractor's attention is drawn to the Province of Manitoba Workplace Safety and Health Act ("the Act"), and the Regulations and Guidelines there-under pertaining to Confined Space Entry Work and in particular the requirements for conducting hazard/risk assessments and providing personal protective equipment (PPE).

E34.2.3 The Contractor is responsible for all safety and confined space support throughout the project.

E34.3 Methods

E34.3.1 Hazard Assessment

- (a) In conjunction with securing the site and obtaining underground clearances, the Contractor shall conduct a hazard assessment for each site requiring work within a sewer or manhole. The assessment shall identify and evaluate the hazards, including but not be limited to review of the following as it pertains to the work to be performed:
 - (i) nature of the defect;
 - (ii) location of the defect in the sewer/manhole;
 - (iii) structural condition and amount of debris in the remaining sewer/manhole;
 - (iv) condition of the manholes up and downstream of the required repair;

- (v) atmospheric conditions in the manholes up and downstream of the required repair;
 - (vi) condition of adjacent downstream sewers; and,
 - (vii) flow in the sewer.
- (b) The hazard assessment shall be based on the Contractors review of video for the sewer(s) and site inspection of the manholes, sewers and external conditions. Prior to the inspection, the Contractor shall conduct the necessary atmospheric monitoring of the affected manholes and sewers to establish acceptable entry conditions.
- (c) Based on the results of the hazard assessment the Contractor shall determine if they can perform the stabilization repairs in a safe manner. If the Contractor decides to proceed with the internal repairs, they shall prepare a Safe Work Plan complete with the necessary controls and procedures required to maintain a safe working environment for the repair. Otherwise they shall notify the Contract Administrator and jointly the Contractor and the Contract Administrator shall review the nature of the work and determine alternative means of completing the work are required.

E34.3.2 Safe Work Plan

- (a) Subsequent to performing a hazard assessment the Contractor shall develop a safe work plan to address the potential hazards associated with each site. In addition to addressing the potential hazards the safe work plan shall address but not be limited to the following:
- (i) guidelines for confined space entry work established by The Manitoba Workplace Safety and Health Act;
 - (ii) provision for emergency response;
 - (iii) training and duties for entry personnel;
 - (iv) rescue and emergency services;
 - (v) requirement for purging, ingesting, flushing and/or continuous ventilation to eliminate or control atmospheric hazards;
 - (vi) requirement for and provision of supplied air;
 - (vii) communication between members of the repair crew in the pipe and on the ground's surface;
 - (viii) current and forecasted weather conditions;
 - (ix) isolating the workspace by plugging of upstream sewers and monitoring of upstream flow levels;
 - (x) provision of back-up equipment;
 - (xi) method of ingress into the sewer; and,
 - (xii) method of egress out of the sewer – forward and backwards.
- (b) The Contractor shall not enter the sewer or manholes to begin the work until they have completed a hazard assessment and safe work plan for the specific repair and reviewed the plans with their designated safety officer for acceptance. The safe work plan procedures and practices shall conform to all federal, provincial and municipal codes, regulations and guidelines including Manitoba Workplace Safety and Health Regulations.

E34.3.3 Enter the Manhole and Sewer

- (a) The Contractor shall enter the manhole/sewer and complete the work in accordance with their safe work plan and requirements for the repair contained herein.
- (b) If at any time during the repair the attendant and/or Contractor believes he cannot safely perform the work, they shall immediately stop the work and evacuate the sewer and manholes. The Contractor shall re-assess their safe work plan considering the reason for the work stoppage. The work shall only be resumed when the Contractor has deemed it safe to return by completing a re-assessment and safe work plan revision, where necessary.

- (c) If the Contractor deems the work cannot be safely completed by internal stabilization, they shall notify the Contract Administrator and jointly the Contractor and the Contract Administrator shall review the nature of the defect and determine alternative means of completing the work are required.

E34.4 Measurement and Payment

E34.4.1 Confined Space Entry

- (a) Performing hazard assessments, preparing a Safe Work Plans, and confined space entry support for the Work and inspections will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

E35. WORKING AROUND MANITOBA HYDRO POLES

GENERAL REQUIREMENTS

- E35.1 When excavating for the road within 3.0 metres of a Manitoba Hydro wood pole, a Safety Watch will be required. The Contractor shall provide a digger truck capable of holding the pole in place while excavation and granular subbase backfill is completed back to original grade.
- (a) The digger truck to be provided by the Contractor shall be to the satisfaction of the Contract Administrator and Manitoba Hydro Safety Watch personnel.
 - (b) See Appendix 'L' for allowable excavations around existing poles.

MEASUREMENT AND PAYMENT

- E35.2 The Work described in this Specification will be considered incidental to "Excavation" and no measurement or payment will be made.

E36. INSTALLATION OF STREET LIGHTING AND ASSOCIATED WORKS

E36.1 DEFINITIONS

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

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

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

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

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

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

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

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

E36.2 DESCRIPTION

E36.2.1 The work shall consist of the supply of all supervision, labour, materials (except as indicated under MATERIAL SUPPLIED BY MANITOBA HYDRO below) insurance, tools, backfill and equipment (and their maintenance), transportation, fuel, oil, meals and lodging, mobilization and de-mobilization, and warranty of workmanship as required to install and remove temporary Overhead Feeds, remove existing street light poles as required, install new street light poles and associated underground cables/conduits, all in accordance with the requirements specified in the tender documents.

E36.3 WORK LOCATIONS

E36.3.1 The proposed street light installation and removals are shown on construction drawings and are as follows:

- (a) Mountain Avenue between McPhillips Street and Arlington Street

COORDINATION OF WORK

E36.3.2 The Contractor shall provide a minimum of ten (10) working days notice to Manitoba Hydro prior to the start of construction. The work shall be conducted and coordinated with Manitoba Hydro in a manner to ensure street lighting is maintained at all times for the duration of the work. The construction drawings provide the Proposed Sequence of Construction.

E36.3.3 The Contractor shall obtain Work Clearance from Manitoba Hydro's Customer Service Centre(s) (CSC) affected prior to the work commencing. No additional compensation shall be paid to the Contractor for delays obtaining Work Clearance for any reason.

E36.3.4 Manitoba Hydro's CSC will provide the Limits of Approach applicable to the Contractor on the Work Clearance form.

E36.4 ORIENTATION

E36.4.1 Prior to the commencement of the proposed work, the Contractor's crew foremen, electricians, and other key personnel shall attend one (1) day of orientation provided by Manitoba Hydro for various operations such as cable handling, cable splicing/termination, installation of street light poles, concrete bases, luminaires and various other construction standards and procedures. The Contractor will be responsible for all costs associated with personnel salaries, travel, sustenance and overheads, etc., during training.

E36.5 PRE-CONSTRUCTION MEETING

E36.5.1 Prior to the commencement of the work, the Contractor shall attend a pre-construction meeting with Manitoba Hydro. The agenda for this meeting shall include but not be limited to the following:

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

E36.5.2 The Contractor's cost to attend this pre-construction meeting shall be incorporated into the unit prices for the work.

E36.6 QUALIFICATIONS AND CERTIFICATION

- E36.6.1 The Contractor's Crew Foreman, installers and other key Contractor's Personnel shall possess the necessary certification, licensing, training, experience and familiarity with safety rules, procedures and hazards relating to the work. Journeyman Power Line Technician (PLT), Journeyman Lineman, Journeyman Cableman or Journeyman Electricians shall be required to perform portions of this work.
- E36.6.2 Journeyman Power Line Technician (PLT), Journeyman Cableman and Journeyman Lineman are also required to possess a "Limited Specialized Trade Licence – 'M-P' Licence – Power Line" issued by the Province of Manitoba.
- E36.6.3 Office of the Fire Commissioner Bulletin OFC 18 – 002 dated May 23, 2018 regarding Electrician Licenses discusses the requirements for a "Limited Specialized Trade Licence – 'M-P' Licence – Power Line".

For more information contact:
Office of the Fire Commissioner
500-401 York Avenue
Winnipeg, Manitoba R3C 0P8
Tel. 204-945-3373
Fax 204-948-2089
Toll Free: 1-800-282-8069
firecomm@gov.mb.ca

- E36.6.4 Licensed Journeyman Electricians or Journeyman PLT or Journeyman Cableman or Journeyman Lineman ARE REQUIRED for all cable handling operations included but not limited to: disconnecting cables in the handhole, installation and removal of temporary overhead feeds, installation and connection of ground rods, streetlight cable splices, termination of streetlight cables in handholds and at luminaires. The Contractor shall employ sufficient qualified personnel on its crews to conform to the Electrician's Licensing Act. The Contractor shall be prepared to provide proof of licences to Manitoba Hydro upon request.
- E36.6.5 The Contractor shall assess the hazards associated with the work and have documented Safe work Procedures to perform the work. It is the Contractor's responsibility to train employees on these procedures. The Contractor shall be prepared to provide proof of training to Manitoba Hydro upon request.

E36.7 REFERENCED STANDARD CONSTRUCTION SPECIFICATIONS

- E36.7.1 In addition to these Specifications, the work to be performed by the Contractor relative to the installation and/or replacement of street lighting poles, concrete bases and associated cabling shall be in accordance with the following:
- (a) Manitoba Hydro 66kV and Below Standards;
 - (b) CSA C22.3 No. 7 (latest edition);
 - (c) Canadian Electrical Code (CEC) Part 1 (latest edition); and
 - (d) Any other applicable codes
 - (e) (collectively, the "Standards")
- E36.7.2 Revisions and updates to the Manitoba Hydro 66kV and Below Standards are issued periodically and the latest issued version of the Standard will apply. For the convenience of the Contractor for bidding purposes, excerpts of the Manitoba Hydro 66kV and Below Standards have been included as Appendix A.
- E36.7.3 In some cases, Municipal, Provincial or Federal laws or this Technical Specification may be more stringent than the CSA Standards. Whenever conflict exists, the Contractor shall comply with the most stringent requirements applicable at the place of the work.

E36.8 TOOLS, EQUIPMENT AND MATERIALS

E36.8.1 The Contractor shall be required to provide all tools and equipment required for performing the specified tasks. Equipment shall be in good operating condition, shall be properly maintained using original equipment manufacturer replacement parts and shall be provided with letters of testing/inspection from the manufacturer when requested. Where the equipment is provided as a kit with multiple parts and tools, the kit shall be complete with all parts required to perform the designed task. Contractor fabricated tools or equipment will not be accepted for use.

E36.8.2 The Contractor shall obtain the following specific Electrical Equipment including but not limited to:

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

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

E36.8.3 Dies shall be of the type shown in Standard CD210-21 and CD 210-24 only, must have identical markings, and compression tool die must match die number stamped on connector.

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

E36.8.4 Alternative equipment manufacturers may be considered upon request by the Contractor and shall be approved for use by Manitoba Hydro prior to use.

E36.8.5 Manitoba Hydro may reject any tools or equipment that do not appear to be in good condition or fail to successfully provide the required function.

E36.9 MATERIAL SUPPLIED BY MANITOBA HYDRO

E36.9.1 Manitoba Hydro shall supply all street light poles, concrete bases, breakaway bases, luminaires, street light arms, ground rods, compression sleeves, grommets, nuts, electrical cables, conduits, relays, cable guards, Gel-caps and all other materials noted in the Standards. The Contractor shall sign receipts indicating the location on which the materials are to be used. The material shall be picked up by the contractor from the following locations:

E36.9.2 Manitoba Hydro Central Stores (contact personnel will be provided to the successful contractor).

E36.9.3 Materials requested will be supplied to the Contractor by Manitoba Hydro upon presentation of Manitoba Hydro's Stores Material Order Form. The Contractor shall assume all responsibilities for the loading, unloading, transportation, proper handling, secure storage and working of the materials and shall make replacements at its own expense in case any material is damaged, stolen or lost due to improper handling, storage or poor workmanship.

E36.9.4 The Contractor shall, at the time of materials release, check and confirm the quantity of materials. Shortages, discrepancies, or damages to materials shall be immediately reported in writing to Manitoba Hydro.

E36.9.5 After commencing performance of the work, the Contractor shall continually monitor all material required for the timely completion of the work and shall report additional material requirements to Manitoba Hydro a minimum of 72 hours prior to materials being required to

perform the work. No additional compensation shall be paid as a result of delays due to material shortages where additional material requirements were not reported a minimum of 72 hours prior to being required for the work on an active project.

E36.10 MATERIAL SUPPLIED BY CONTRACTOR

E36.10.1 The Contractor shall be responsible to furnish gravel, sand, ¾" down limestone, ¼" down limestone, protective hose (i.e. typically 2" fire hose), duct seal and pit-run material for backfilling around street light poles and around cables as per the Standards. The cost of furnishing the above listed materials shall be incorporated into the unit prices for the work.

E36.11 SURPLUS, RECLAIM AND SCRAP MATERIAL

E36.11.1 Upon completion of the work, the Contractor shall, at its own expense, deliver to Manitoba Hydro Central Stores, all Surplus materials furnished by Manitoba Hydro and not used in the work, regardless of the location of said material at that time.

E36.11.2 In addition, the Contractor shall, at its own expense, deliver to Manitoba Hydro Central Stores all Reclaim materials from the work specifically HPS luminaires. Manitoba Hydro shall be responsible for the proper disposal of Reclaim HPS luminaires. The HPS bulb shall remain installed and unbroken in the Reclaim luminaire. The Contractor shall handle the Reclaim luminaires with care and shall avoid breaking the bulb or refractor.

E36.11.3 Manitoba Hydro's preference is to recycle as much Scrap Material as practicable. The Contractor is responsible to remove the Scrap Material, transport to the recycler or Manitoba Hydro approved disposal site, pay for any disposal fees and may retain any recycling value.

E36.12 DE-ENERGIZATION AND LOCKOUT

E36.12.1 **Manitoba Hydro** - Where a standard is supplied from an Overhead Source, Manitoba Hydro's staff shall be responsible to disconnect and isolate the street light standard or standards between the standard and Overhead Source. Some street light standards may be temporarily fed from an Overhead Source. This Overhead Source shall be disconnected and removed by Manitoba Hydro staff prior to commencing with the work. The streetlight circuits will not be Locked Out by Manitoba Hydro.

E36.12.2 **The Contractor** - The Contractor shall assess the hazards associated with the work and employ its own Safe Work Procedure for the work to be performed. The Contractor's Safe Work Procedure shall include provisions that the street light circuits will not be Locked Out by Manitoba Hydro. The Contractor's Safe Work Procedure shall achieve Lock Out or techniques equivalent to Lock Out.

E36.12.3 The Contractor shall complete a job planning form (an example is included as Appendix E) on a daily basis before any work commences and provide Manitoba Hydro with copies of the job plans if requested.

E36.13 TEMPORARY OVERHEAD FEEDS

E36.13.1 Manitoba Hydro in consultation with the Contractor will determine if temporary lighting will be provided by the existing street lights or from the new street lights.

E36.13.2 When using the existing poles for temporary lighting, Manitoba Hydro shall remove an Overhead Source in accordance with DE-ENERGIZATION AND LOCKOUT section above, prior to the Contractor installing a #4 duplex overhead conductor between the existing poles. The #4 duplex overhead conductor will normally be attached to the tenon of the davit arm near the luminaire with a pre-form grip. Older poles may require a spool insulator be attached to the pole using a pre-form grip to support the #4 duplex overhead conductor. A short length of 2C/#12 copper conductor is connected to the terminals of the luminaire brought out and connected to the #4 duplex overhead conductor. The final span to the Overhead Source shall be installed by Manitoba Hydro.

E36.13.3 When using the new poles for temporary lighting, the Contractor shall install the new bases, poles and #4 duplex overhead conductor. The #4 duplex overhead conductor will

be attached to the tenon of the davit arm near the luminaire with a pre-form grip. A short length of 2C/#12 copper conductor is connected to the terminals of the luminaire brought out and connected to the #4 duplex overhead conductor. The final span to the Overhead Source shall be installed by Manitoba Hydro.

E36.13.4 All material used to provide the temporary overhead feed shall be returned to Manitoba Hydro. Care shall be taken to coil and tag Reclaim conductor for reuse. If used, insulators shall be handled carefully to prevent breakage.

E36.14 SAFE EXCAVATION

E36.14.1 The work shall be performed in accordance with the requirements of Manitoba Hydro's Safe Excavation and Safety Watch Guidelines (latest revision) included as Appendix B and Manitoba Workplace Safety and Health Regulation 217 latest revision.

E36.15 SAFE HANDLING

E36.15.1 The Contractor shall apply handling techniques in accordance with Manitoba Workplace Health and Safety Regulation 217 (latest revision).

E36.16 ELECTRIC CABLES AND CONDUITS

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

E36.17 PRECAST CONCRETE BASES

E36.17.1 The Contractor shall handle, store, transport and unload the precast concrete bases in a manner to prevent damage to the threaded bolts and conduit casing.

E36.17.2 Precast Concrete Bases are extremely heavy. Approximate weight of pre-cast concrete bases are found in the Standards. The Contractor shall only use equipment rated for such weight.

E36.18 STREET LIGHT POLES AND ARMS

E36.18.1 The Contractor shall handle, store, transport, and provide proper load securement for the poles and arms in a manner to prevent damage.

E36.19 LUMINAIRES

E36.19.1 The Contractor shall handle, store, transport and unload the luminaires in their original packaging and in a manner to prevent damage.

E36.20 SMALL MATERIAL

E36.20.1 Photo electric cells, shorting caps, shims, nut covers and associated supplies shall be kept in a suitable warehouse provided by the Contractor at its own expense. Photo electric cells shall be transported and stored in such a manner as to prevent breakage.

E36.21 CARE OF MATERIALS

E36.21.1 The Contractor shall assume all responsibilities of all the materials and shall replace, at its own expense, any materials damaged, stolen or lost due to improper handling or poor workmanship.

E36.22 WIRE AND CABLE REEL STORAGE

E36.22.1 Cable reels shall be stored with the flanges upright and resting on a hard surface. At temporary storage sites where the soil may be soft, preservative-treated plywood sheets may be used to keep the flanges from sinking into the ground.

E36.22.2 If cable reels must be pancaked or stored on their side in vertical racks, do not lift the reel by the top flange. Spacers (two 2 X 4s placed wide side up) should be placed under the bottom flange and between the reels in order to create a space to insert the forks and lift the reels without damaging the cable.

E36.23 REEL HANDLING

E36.23.1 When off-loading reels from a truck, reels shall be lowered using a hydraulic gate, hoist or forklift truck. When a reel is rolled from one point to another, care must be taken to see that the reel does not straddle objects such as rocks, pipes, curbs or wooden blocks which could damage the cable or protective covering. A reel should always be rolled on hard surfaces to avoid sinkage and in the opposite direction to the cable wraps to ensure that the reel is rolled in such a direction as to tighten the cable on the reel.

E36.23.2 When using a hoist, install a mandrel through the reel arbour hole and attach a sling. Use a spreader bar approximately 6 inches longer than the overall reel width placed between the sling ends just above the reel flanges. This will prevent bending of the reel flanges and damage to the cable.

E36.23.3 If a forklift is used to move a reel, the reel is to be approached from the flange side. Position the forks such that the reel is lifted by both reel flanges. The lift forks shall not contact the cable.

E36.23.4 Returnable reels shall be returned promptly to Manitoba Hydro Central Stores and in no case later than three (3) days after the completion of the work unless otherwise mutually agreed between the Contractor and Manitoba Hydro.

E36.24 PRESSURIZED WATER/VACUUM EXCAVATION

E36.24.1 Pressurized water/vacuum excavation (PW/VE) shall be used to daylight all buried utilities and structures where excavation by other mechanical means would be expected to provide a physical risk to that utility or structure.

E36.24.2 The work shall be performed in accordance with the requirements of Manitoba Hydro's Safe Excavation and Safety Watch Guidelines (latest revision) included as Appendix B.

E36.25 REMOVAL STREET LIGHT POLE FROM EXISTING BASE

E36.25.1 This shall include all work required to remove a street light pole from an existing base as set forth in this Technical Specification. The pole may be on an existing precast concrete base, steel power installed screw base or poured in place concrete base.

E36.25.2 The Contractor shall furnish all labour, supplies and materials (except as indicated in the Section "MATERIAL SUPPLIED BY MANITOBA HYDRO") necessary for the removal of the street light pole from the existing base. Care shall be taken to preserve the luminaire. The luminaire shall be reinstalled on the new street light pole or returned to Manitoba Hydro's stores as instructed by the Manitoba Hydro.

E36.25.3 The Contractor shall be responsible to transport all Surplus and Reclaim materials to Manitoba Hydro Central Stores and transport and dispose of all Scrap material as set forth in this Specification.

E36.26 REMOVAL OF BASE AND DIRECT BURIED STREET LIGHT POLE

E36.26.1 This shall include all excavation, whether by auger, pressurized water/vacuum excavation, by hand, or by other methods which may be necessary to remove a base or direct buried street light pole. The base may be poured in place concrete, steel power installed or precast concrete.

E36.26.2 The Contractor shall be responsible to transport all Surplus and Reclaim materials to Manitoba Hydro Central Stores and transport and dispose of all Scrap material as set forth in this Specification.

E36.26.3 The Contractor is responsible to supply all backfill material as specified in the Standards and carry out all backfill, compacting and leveling of all excavations and voids for removed bases and direct buried street light poles so as to be ready for top soil and seed or sod or as directed by Manitoba Hydro.

E36.27 INSTALLATION OF FOUNDATION - CONCRETE BASE

E36.27.1 This shall include all excavation, whether by auger, pressurized water/vacuum excavation, by hand, or by other methods which may be necessary to replace or install a concrete base as set forth in this Specification.

E36.27.2 The Contractor shall furnish all labour, supplies and material (except as indicated in the Section "MATERIAL SUPPLIED BY MANITOBA HYDRO") necessary to install a new or replace a concrete base. Excavation for the precast concrete base shall be to a diameter and depth specified in Standard CD 300-6. All excess material is to be removed by the Contractor.

E36.27.3 The concrete base shall be set on a bed of ¾" down limestone. The concrete base backfill material shall be compacted in lifts no more than 150 mm. Backfill material shall be ¾" down limestone. Compacting of backfill material shall be done using a hydraulic tamper. Alternative tamping methods shall be approved by Manitoba Hydro. Underground cables entering the concrete base shall be protected by a length of protective hose supplied by the Contractor and a layer of sand surrounding the cables to protect it from the limestone. The concrete base shall be installed level in all 4 directions. Final grade must be established prior to installing the concrete bases.

E36.27.4 The completed backfill shall be at least equal in compaction to undisturbed soil, as required by the Municipal authorities or elsewhere in this Specification. The Contractor shall level all excavations.

E36.27.5 Should settlement occur in the excavation and cause a depression in the surface, the Contractor shall repair the surface. Placing of additional backfill material due to settlement shall be at the Contractor's expense.

E36.27.6 The concrete base shall be oriented in the proper direction to allow the easy entrance of the underground cables into the plastic pipe preinstalled in the concrete base. Care shall be taken to prevent damage to the insulation or jacket of the conductors. The cable shall be left long enough to extend one (1) metre beyond the top of the hand hole.

E36.28 BASE MOUNTED STREET LIGHT POLES

E36.28.1 This shall include all work required to install the street light pole on the concrete base as set forth in this Specification.

E36.28.2 The Contractor shall furnish all labour, supplies and material (except as indicated in the Section "MATERIAL SUPPLIED BY MANITOBA HYDRO") necessary for the installation of the pole (straight shaft or davit) on the concrete base.

- E36.28.3 Unless otherwise specified on the construction drawings, the Contractor shall orient the poles so that the hand hole is on the left side of the pole when viewed from the road. A worker should be able to see oncoming traffic when working in the hand hole.
- E36.28.4 The Contractor shall level the street light pole in all 4 directions. Leveling shims may be used.
- E36.28.5 Tightening of bolts shall be performed in a manner that brings the surfaces up evenly. All nuts shall be tightened and torqued in accordance with Standard CD 300-9. The Contractor shall install the nut covers included with the pole.
- E36.28.6 Unless otherwise specified, excess underground cable and 2C-12 wire shall be left inside the hand hole with the hand hole cover loosely installed.
- E36.28.7 Existing street light poles may have street signs attached. The Contractor shall remove the signs from the existing pole and temporarily reattach the signs to the new pole. The Contractor shall notify Manitoba Hydro of the location where the signs have been removed.

E36.29 LUMINAIRES AND ASSOCIATED WIRING

- E36.29.1 The Contractor shall furnish labour, supplies and material (except as indicated in the Section "MATERIAL SUPPLIED BY MANITOBA HYDRO") necessary to install the luminaire and associated wiring. Unless otherwise specified, the luminaire shall be installed with a tilt of zero (0) degrees. The Contractor shall install a length of 2 conductor No. 12 gauge (2C-12) wire from the terminals of the luminaire, through the arm (if applicable), down the pole to the hand hole. One (1) metre of 2C-12 wire shall be left at the hand hole. Impact equipment (air or electric) shall not be used to tighten luminaire mounting bolts. The Contractor shall be liable for damage due to over tightening.
- E36.29.2 The Contractor shall verify the luminaire voltage matches the source voltage as shown on the construction drawings. If luminaire voltage does not match the source voltage, the Contractor shall re-wire the luminaire in accordance with the wiring diagram provided.
NOTE: Not applicable for LED luminaires.
- E36.29.3 As specified on the construction drawings, the luminaire will require either a photo electric cell (PEC) or shorting cap installed. When installing the PEC the eye shall be oriented north. The Contractor shall also install the appropriate wattage bulb in the luminaire.
NOTE: Bulb installation not applicable for LED luminaires.

E36.30 BREAK AWAY BASES

- E36.30.1 Break away bases shall be installed in accordance with Standard CD 300-10. The height of the concrete base above grade shall not exceed 50mm. The surface of the concrete base shall be flat and level. A reaction plate shall be installed between the concrete base and the break-away base.
- E36.30.2 The Contractor shall torque the couplers in accordance with Standard CD 300-10. Impact tools shall not be used to tighten or torque couplers or nuts associated with a break away base.

E36.31 SPLICING/CONNECTING CABLES

- E36.31.1 The electric cable shall be spliced/terminated as per Standards CD 215-12, CD 215-13, CD 310-1, CD 310-4, CD 310-9 and CD 310-10 with the exception that the Contractor will use a GELCAP-SL-2/0 splice kit (See Appendix C). Termination in the hand hole may include the installation of an inline fuse holder.
- E36.31.2 The Contractor shall furnish all labour, supplies and material (except as indicated in the Section "MATERIAL SUPPLIED BY MANITOBA HYDRO") necessary to splice/terminate the street light conductor(s).

E36.32 EXCAVATION

- E36.32.1 The Contractor shall furnish all labour, supplies and material (except as indicated in the Section "MATERIAL SUPPLIED BY MANITOBA HYDRO") necessary for the completion and maintenance of grade and line of the street light cables and conduit including water control if found to be necessary. The trench shall be graded to conform to the street light cables and conduit so that the street light cables and conduit rest firmly on a smooth surface throughout its length. All stones or other objects which, in the opinion of Manitoba Hydro might damage the street light cable jacket and conduit shall be removed. Where the presence of rock or other condition prevent a satisfactory bed for the cables, 150 mm of well-tamped, clean soil or ¼" down crushed limestone shall be placed in the bottom of the trench. In this case, the spoil bank from trenching operations shall not be allowed to fall into the trench or mix with the soil to be used in backfilling the trench. Loose debris or foreign matter and the spoil bank shall be placed so as not to hinder drainage, damage property, or obstruct traffic.
- E36.32.2 Trenches shall be dug to such a depth that will provide a minimum cover of 600 mm from final grade in sodded areas and 1000 mm in roadways in accordance with Standard CD 305-1.

E36.33 LAYING CABLES

- E36.33.1 Cables are to be lowered in the trench in an orderly fashion so as to maintain a consistent path and straight alignment. All cables shall be lowered in a continuous run (NO SPLICING) and in accordance with the construction drawings; and shall maintain the necessary separation, where required. All cables shall be of continuous runs and capped and sealed if they are not being installed in the pole at that time. Cables shall not be dragged over paved surfaces.
- E36.33.2 Once a cable is cut its ends must be sealed immediately with an approved and appropriately sized, heat shrink or cold shrink sealing cap to prevent moisture ingress unless the cable is being installed in the pole at that time.
- E36.33.3 During the removal of the cable, the reels shall be placed on jacks, stands or trailers with a bar through the arbour holes which will allow the reel to be turned easily, and the cable to be paid out. Cables can be paid out from the bottom or the top of the reel. Cable in coils shall be handled in a similar manner. This can be achieved by supporting the coil in a vertical plane and rotating it by hand as the cable is carefully uncoiled. The cable shall never be pulled over the flange of a reel, or pulled off the side of a coil, since this will introduce a twist in the cable.
- E36.33.4 During installation, under no circumstance is the cable to be subjected to a bending radius tighter than that detailed in the Standards.
- E36.33.5 Where specified in the Standards or on the construction drawings, the Contractor shall install the street light cable in a conduit.

E36.34 INSTALLING CONDUIT AND CABLE BY BORING (HORIZONTAL DIRECTIONAL DRILLING)

- E36.34.1 The Contractor shall dig the approaches and openings necessary to install boring equipment, and the boring equipment used shall be of such a nature as to minimize the opening size required. The boring equipment shall produce a straight hole without unnecessary dips or bends. The bore hole shall be only slightly larger than the outside diameter of the conduits or cables to minimize possible settlement. Cables and conduits shall be pulled in with pulling eyes or using a kellum grip in a manner so as to guard against damage.
- E36.34.2 During construction as the drill bit crosses each existing facility a lookout shall be assigned by the Contractor to visually confirm the drill bit is maintaining a minimum 300 mm clearance from the existing facility all in accordance with Manitoba Hydro Safe Excavation and Safety Watch Guidelines (latest revision) included as Appendix B. Maximum pulling tensions on any streetlight cable shall be limited to 2.9 kN/0.65 kips.

- E36.34.3 Drilling fluids and associated waste materials shall be disposed of in a manner that minimizes environmental effects.
- E36.34.4 The Contractor shall properly compact the backfill material and will be responsible for placing additional material should settlement occur for the duration of the warranty period.

E36.35 BURIED UTILITY CROSSINGS

- E36.35.1 All buried obstructions are not necessarily shown on the reference drawings and the locations of those indicated are approximate only.
- E36.35.2 The Contractor shall determine the location of all buried obstructions and shall notify the appropriate authorities and obtain all necessary permits prior to excavation, trenching and directional drilling near or across such obstructions. All buried obstructions where the new buried cable route crosses other utilities including but not limited to gas, water, sewer, telephone and electric lines shall be exposed as per each utilities guidelines by the Contractor, including the use of Pressurized Water/Vacuum Equipment (PW/VE) where necessary. Should any damage occur to such lines during the course of the work, the Contractor shall be responsible for the damage and the costs of repairs to buried obstructions caused by its operations and shall fully indemnify the City of Winnipeg and Manitoba Hydro from and against all claims arising out of such damage. Manitoba Hydro Safe Excavation and Safety Watch Guidelines (latest revision) included as Appendix B shall be followed when crossing natural gas pipelines and electrical cables by the directional boring method.
- E36.35.3 The PW/VE technique, used to expose underground plant in certain conditions, must be performed in accordance with each utility's requirements, including but not limited to Manitoba Hydro, Manitoba Telecom Services, Shaw Cable, etc. PW/VE costs that the Contractor will incur during the work must be factored into the Contractor's bid prices. The Contractor shall not be entitled to extra compensation for the use of PW/VE on the work.
- E36.35.4 The Contractor shall be responsible to supply all backfill material and carry out all backfill, compacting and leveling of all excavations so as to be ready for topsoil and seed or sod or as directed by Manitoba Hydro.

E36.36 BENDING CABLES/CONDUITS AND INSTALLATION INTO STANDARDS

- E36.36.1 It is desired to reduce to a minimum the required number of bends and to lay the cables/conduits to conform to the contour of the ground and maintain a normal covering. This shall be accomplished by cutting the trench slightly deeper in approaches to road crossings and drainage ditches. It is intended that the Contractor shall eliminate unnecessary bending by operating the trenching machine at various depths rather than by finishing grading the trench by hand whenever practical.
- E36.36.2 Sharp bends of the cables/conduits shall be avoided at all times. All bends shall meet the requirements set out in this Specification. If excessive bending was exerted on any cable, the cable shall be replaced at the Contractor's cost. During installation, under no circumstance is the cable to be subjected to a bending radius tighter than that detailed in the Standards. At street light poles the Contractor shall install the ends of the cables into the plastic pipe preinstalled in the concrete base. Care shall be taken to prevent damage to the insulation or jacket of the conductors. Underground cables entering the concrete base shall be protected by a length of protective hose supplied by the Contractor and by a layer of sand surrounding the cables to protect it from the limestone. The cable shall be left long enough to extend one (1) metre beyond the hand hole. The street light cable in the trench shall be installed in conduit for mechanical protection and the ends sealed with duct seal supplied by the Contractor. Care shall be taken to prevent damaging the cable where it exits the conduit. The conduit shall only be installed into the concrete base if conduit sizes make it practicable.
- E36.36.3 Unless otherwise directed, excess underground cable and 2C-12 wire shall be left inside the hand hole with the hand hole cover loosely installed.

E36.37 BACKFILL

- E36.37.1 All backfilling material within 300 mm of the cables/conduits shall be clean, free of sod, vegetation, organic material, stones or other debris, and of a consistency as to not create significant voids or air spaces around the cables/conduits. Other backfilling material shall be free of stones greater than 150 mm on their maximum dimension. Where cinders or very acid soil are encountered or where gravel or incompressible fill is required by Municipal authorities, ¼" down crushed limestone shall be placed all around the cables for a depth of at least 300 mm. The completed backfill shall be at least equal in compaction to undisturbed soil or as directed by Manitoba Hydro. Backfill material is to be placed and compacted in lifts not exceeding 300 mm. All excess material is to be removed by the Contractor.
- E36.37.2 Tamping or flushing methods must be used where necessary to give the required compaction. Where tamping is used, hand tampers shall be used to at least 300 mm above the cable before machine tamping may be used. The Contractor shall level all excavations so as to be ready for topsoil and seed or sod or as directed by the Manitoba Hydro. Should settlement occur in the excavation and cause a depression in the surface, the Contractor shall repair the surface to the satisfaction of the Manitoba Hydro at the Contractor's cost.
- E36.37.3 Excavations remaining where poles have been removed shall be backfilled with spoil, pit run gravel or ¾" down limestone and compacted in lifts of 150mm as directed by Manitoba Hydro. The top 300 mm of the excavation shall be backfilled with topsoil.
- E36.37.4 Excavations remaining where utility crossings have been exposed shall be backfilled with sand or clean spoil and compacted in lifts of 150mm. The top 300 mm of the excavation shall be backfilled with topsoil.
- E36.37.5 Backfill of all excavations shall be in accordance with City of Winnipeg Standard Construction Specification CW 2030 (latest revision), to the satisfaction of the authority having jurisdiction and Manitoba Hydro.

E36.38 DEFECTIVE WORK & WARRANTY

- E36.38.1 If any portion of the work fails to comply with the requirements of this Specification, fails within the Warranty period, or if the final tests prove or indicate the existence of any fault or defect in the work, or any part thereof, Manitoba Hydro may forthwith re-execute or make good the faulty or defective work or alter the same to make it comply with requirements of the Specification at the Contractor's expense. Manitoba Hydro shall give the Contractor notice together with particulars of such failure, fault or defect, Manitoba Hydro's cost to re-execute or make good the faulty or defective work and the Cost shall be deducted from the Contract.
- E36.38.2 At the completion of the work for each location, Manitoba Hydro shall prepare and issue a Network Commissioning Report, a sample of which is included as Appendix F, to the Contractor. The Network Commissioning Report shall be dated indicating the commencement of the Warranty period for the work performed at the location.

E36.39 AS-BUILT DRAWING

- E36.39.1 The Contractor shall provide an as-built drawing or mark-up drawing to Manitoba Hydro which accurately displays the "as-built" location of the buried street light cables, conduits and street light poles.

E36.40 MEASUREMENT AND PAYMENT

- E36.40.1 Removal of 25' to 35' street light pole and precast, poured in place concrete, steel power installed base or direct buried including davit arm, luminaire and appurtenances
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Removal of 25' to 35' street light pole and precast, poured in place concrete, steel power installed base or direct buried including davit arm, luminaire and appurtenances". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by

Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including removal of the pole, base, luminaire, appurtenances, use of pressurized water/vacuum excavation, transportation of Reclaim, Surplus and Scrap material, payment of associated disposal fees and all other items incidental to the work included in the Specification.

- E36.40.2 Removal of 45' street light pole and precast, poured in place concrete, steel power installed base or direct buried including davit arm, luminaire and appurtenances
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Removal of 45' street light pole and precast, poured in place concrete, steel power installed base or direct buried including davit arm, luminaire and appurtenances". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including removal of the pole, base, luminaire, appurtenances, use of pressurized water/vacuum excavation, transportation of Reclaim, Surplus and Scrap material, payment of associated disposal fees and all other items incidental to the work included in the Specification.
- E36.40.3 Installation of Conduit and #4 AL C/N or 1/0 AL Triplex Streetlight Cable in Conduit by Open Trench Method
- (a) This pay item will be measured on a linear metre basis and paid for at the Contract Unit Price per linear metre for "Installation of Conduit and #4 AL C/N or 1/0 AL Triplex streetlight cable in Conduit by open trench method." The number of meters to be paid for at the Contract Unit Price shall be measured and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of the conduit, pulling cable into the conduit, backfilling the trench, buried utility crossings, use of pressurized water/vacuum excavation and all other items incidental to the work included in the Specification.
- E36.40.4 Installation of 50 mm Conduit by Boring Method complete with Cable Insertion (#4 AL C/N or 1/0 AL Triplex)
- (a) This pay item will be measured on a linear metre basis and paid for at the Contract Unit Price per linear metre for "Installation of 50 mm conduit or conduits by boring method complete with cable insertion (#4 AL C/N or 1/0 AL Triplex)." The number of meters to be paid for at the Contract Unit Price shall be measured and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of 50mm conduit or conduits by boring method, inserting the #4 AL C/N or 1/0 AL Triplex streetlight cable into the conduit(s), buried utility crossings, use of pressurized water/vacuum excavation and all other items incidental to the work included in the Specification.
- E36.40.5 Installation of cable (#4 AL C/N or 1/0 AL Triplex) by boring method.
- (a) This pay item will be measured on a linear metre basis and paid for at the Contract Unit Price per linear metre for "Installation of cable(s) (#4 AL C/N or 1/0 AL Triplex) by boring method." The number of meters to be paid for at the Contract Unit Price shall be measured and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of the cable or cables by boring method, buried utility crossings, use of pressurized water/vacuum excavation and all other items incidental to the work included in the Specification.
- E36.40.6 Installation of 25'/35' Pole, Davit Arm and Precast Concrete Base Including Luminaire and Appurtenances
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Installation of 25'/35' pole, davit arm and precast concrete base including luminaire and appurtenances." The number of units

to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of the pole, davit arm, base, luminaire, appurtenances, placing the cable(s) into the base, use of pressurized water/vacuum excavation and all other items incidental to the work included in the Specification.

- E36.40.7 Installation of 45' Pole, Davit Arm and Precast Concrete Base Including Luminaire and Appurtenances
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Installation of 45' pole, davit arm and precast concrete base including luminaire and appurtenances." The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of the pole, davit arm, base, luminaire, appurtenances, placing the cable(s) into the base, use of pressurized water/vacuum excavation and all other items incidental to the work included in the Specification.
- E36.40.8 Installation of One (1) 10' Ground Rod at Every Third Street Light, at the End of a Street Light Circuit or Anywhere Else as Shown on the Design Drawings. Trench #4 Ground Wire up to 1 m From Rod Location to New Street Light and Connect (Hammerlock) to Top of Ground Rod
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Installation of one (1) 10' ground rod at every third street light, at the end of a street light circuit or anywhere else as shown on the design drawings. Trench #4 ground wire up to 1 m from rod location to new street light and connect (hammerlock) to top of the ground rod." The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including install one (1) 10' ground rod, trench the #4 ground wire to the new streetlight pole, connect (hammerlock) ground wire to rod and all other items incidental to the work included in the Specification.
- E36.40.9 Installation of Lower 3 m of Cable Guard, Ground Lug, Cable Up Pole, and First 3 M Section of Ground Rod Per Standard CD 315-5
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Install/lower 3 m of Cable Guard, ground lug, cable up pole, and first 3 m section of ground rod per Standard CD 315-5". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installing the lower section of cable guard, ground lug, ground rod, coiling cable(s) up the pole and all other items incidental to the work included in the Specification.
- E36.40.10 Installation and Connection of Externally-Mounted Relay and PEC Per Standards CD 315-12 and CD 315-13
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Installation and connection of externally-mounted relay and PEC per Standards CD 315-12 and CD 315-13". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including mounting the relay, PEC, wiring as per the schematic and all other items incidental to the work included in the Specification.
- E36.40.11 Termination of 2/C #12 Copper Conductor to Street Light Cables Per Standard CD310-4, CD310-9 or CD310-10

- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Terminate 2/C #12 copper conductor to street light cables per Standard CD310-4, CD310-9 or CD310-10". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including connection of the 2/C # 12 copper conductor to the #4 C/N or 1/0 Al Triplex cable(s) using a GELCAP-SL-2/0 splice kit and all other items incidental to the work included in the Specification.

E36.40.12 Splicing #4 AL C/N or 2 Single Conductor Street Light Cables

- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Splicing #4 Al C/N or 2 single conductor street light cables". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including splicing the #4 AL C/N or 2 single conductor cables in accordance with Standard CD 215-12 and CD 215-13 and all other items incidental to the work included in the Specification.

E36.40.13 Splicing 1/0 AL Triplex Cable or 3 Single Conductor Street Light Cables

- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Splicing 1/0 AL triplex cable or 3 single conductor street light cables". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including splicing the 1/0 Al triplex cable or set of 3 single conductor cables in accordance with Standard CD 215-12 and CD 215-13 and all other items incidental to the work included in the Specification.

E36.40.14 Installation of Break-Away Base and Reaction Plate on Base-Mounted Poles up to 35'

- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Installation of break-away base and reaction plate on base mounted poles up to 35'". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of the reaction plate, break-away base and all other items incidental to the work included in the Specification.

E36.40.15 Installation of Overhead Span of #4 Duplex Between New or Existing Streetlight Poles and Connect Luminaire to Provide Temporary Overhead Feed

- (a) This pay item will be measured on per span basis and paid for at the Contract Unit Price per span for "Installation of Overhead Span of #4 duplex Between New or Existing Streetlight Poles and Connect Luminaire to Provide Temporary Overhead Feed". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including attachment of the #4 duplex overhead conductor using a perform grip (c/w spool insulator(s) to davit arm if necessary), sagging conductor, connection of luminaire using 2C#12 copper conductor and all other items incidental to the work included in the Specification.

E36.40.16 Removal of Overhead Span of #4 Duplex Between New or Existing Streetlight Poles to Remove Temporary Overhead Feed

- (a) This pay item will be measured on a per span basis and paid for at the Contract Unit Price per span for "Removal of Overhead Span of #4 duplex Between New or Existing Streetlight Poles to Remove Temporary Overhead Feed". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by the Manitoba Hydro. The Price shall be payment in

full for performing all operations herein described including removal of the #4 duplex overhead conductor, spool insulator(s) and all other items incidental to the work included in the Specification.

E36.40.17 Expose Underground Cable Entrance of Existing Streetlight Pole and Install New Streetlight Cable(s).

- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Expose Underground Cable Entrance of Existing Streetlight Pole and Install New Streetlight Cable(s)". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including excavation and exposure of the underground cable entrance by any means necessary including use of pressurized water/vacuum excavation, installation of the new streetlight cables(s), backfill, compaction and all other items incidental to the work included in the Specification.

E37. CUTOVERS (TRAFFIC SIGNALS)

E37.1 Perform the following tasks for cutovers:

- (a) Expose existing conduits where new conduit is specified to be coupled.
- (b) Remove cables from the conduit (if present).
- (c) Cut conduit at specified location.
- (d) Push existing cables into new conduit (if present).
- (e) Couple old and new conduits together as specified in SD-340.
- (f) Backfill as specified in SD-342.
- (g) Restore as directed by the Contract Administrator.

MEASUREMENT AND PAYMENT

E37.2 Cutovers

- (a) As per 4.15 of CW 3620.

E38. INSTALLATION OF EARLY OPEN CONCRETE BASES (TRAFFIC SIGNALS)

DESCRIPTION

E38.1 This Specification shall cover the installation of early open concrete bases.

MATERIALS

E38.2 Early Open Concrete Bases

- (a) Supply concrete for bases in accordance with CW 2160, Table CW 2160.1 Design Requirements for Concrete Used for Underground Structures, for Type A Structures (monolithic sewers and reinforced structures).
- (b) Further to E26.2(a), the supplied concrete shall achieve a minimum compressive strength of 22 MPa at 48 hours.
- (c) City supplied materials shall be as per Section 2.10 of CW 3620.

CONSTRUCTION METHODS

E38.3 Early Open Concrete Bases

E38.3.1 Install early open concrete bases as per Section 3.7 of CW 3620.

MEASUREMENT AND PAYMENT

E38.4 Early Open Concrete Bases

E38.4.1 Installation of concrete bases shall be measured on a unit basis and paid for at the Contract Unit Price per unit for the "Items of Work" listed below. The number of units to be paid for shall be the total number of concrete bases installed in accordance with this Specification, accepted and measured by the Contract Administrator.

Items of Work:

- (a) Signal Pole Base Early Open – Type A
- (b) Signal Pole Base Early Open – Type OD
- (c) Signal Pole Base Early Open – Type G
- (d) Signal Pole Base Early Open – Type J

E38.4.2 Payment for the items of work in this Specification include the supply and installation of ready mix or mixed concrete on site.

E38.4.3 Payment for the items of work listed above include the supply and installation of grounding rods (electrodes) installed with the concrete bases.

E38.4.4 Payment for the items of work listed above include boring.

E38.4.5 Payment for the items of work listed above include top ring forms.

E39. SPLICING CONDUIT (TRAFFIC SIGNALS)

E39.1 In addition to CW 3620 3.11.12, Joining of conduit will not be allowed except:

- (d) Where joining of conduit is required for Convenience of Road Construction Sequencing with a maximum of one (1) joint per conduit.

E39.2 In place of CW 3620 3.11.13, Joining of conduit shall use an approved oversize coupler to connect nominal size 1.5" or 2" LDPE pipe, IPEX Series 75, installation to follow manufacture's recommendations.

(a) Approved Products:

- (i) Plasson Universal Slip Repair Coupler 60-64, Product Code: 176100060064 for use with nominal 2" LDPE.
- (ii) Plasson Universal Slip Repair Coupler 48-51, Product Code: 176100048051 for use with nominal 1.5" LDPE.

(b) Substitutes will not be allowed except:

- (i) Where application has been made to and approval has been provided by Traffic Signals. The Contractor shall provide sufficient information and details to enable the Traffic Signals to determine acceptability.

E39.3 As per CW 3620 4.11.5, No measurement or payment shall be made for Joining of Conduit.

E39.4 Removal of CW 3620 2.10.1 (b) Conduit coupling pipe and gear clamps.