



THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 151-2015

**2015 LOCAL STREETS RENEWAL PROGRAM: CHURCH AVE, MACHRAY AVE,
ANDREWS ST, AND VARIOUS OTHER LOCATIONS**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 2015 Local Streets Renewal Program: Church Ave, Machray Ave, Andrews St, and Various Other Locations

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, March 24, 2015.

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

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

B3. ENQUIRIES

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

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

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

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

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

B4. CONFIDENTIALITY

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

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

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

B5. ADDENDA

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

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

B6. SUBSTITUTES

- B6.1 The Work is based on the Plant, Materials and methods specified in the Bid Opportunity.
- B6.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.
- B6.3 Requests for approval of a substitute will not be considered unless received in writing by the Contract Administrator at least five (5) Business Days prior to the Submission Deadline.
- B6.4 The Bidder shall ensure that any and all requests for approval of a substitute:
- (a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;
 - (b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;
 - (c) identify any anticipated cost or time savings that may be associated with the substitute;
 - (d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance;
 - (e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.
- B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/her sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.
- B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.
- B6.6.1 The Contract Administrator will issue an Addendum, disclosing the approved materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any person or persons he/she wishes to inform.
- B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.

- B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his/her Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B15.
- 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.
- B6.10 Notwithstanding B6.2 to B6.9, in accordance with B7.6, deviations inconsistent with the Bid Opportunity document shall be evaluated in accordance with B15.1(a).

B7. BID COMPONENTS

- B7.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
 - (b) Form B: Prices, hard copy;
 - (c) Bid Security
 - (i) Form G1: Bid Bond and Agreement to Bond, or
Form G2: Irrevocable Standby Letter of Credit and Undertaking, or
a certified cheque or draft;
- B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.
- B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Bid.
- B7.4 The Bid shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.
- B7.4.1 Samples or other components of the Bid which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder's Bid.
- B7.4.2 A hard copy of Form B: Prices must be submitted with the Bid. If there is any discrepancy between the Adobe PDF version of Form B: Prices and the Microsoft Excel version of Form B: Prices, the PDF version shall take precedence.
- B7.5 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.
- B7.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B15.1(a).
- B7.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.
- B7.8 Bids shall be submitted to:
- The City of Winnipeg
Corporate Finance Department
Materials Management Division
185 King Street, Main Floor
Winnipeg MB R3B 1J1

B8. BID

- B8.1 The Bidder shall complete Form A: Bid, making all required entries.
- B8.2 Paragraph 2 of Form A: Bid shall be completed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, his/her name shall be inserted;
 - (b) if the Bidder is a partnership, the full name of the partnership shall be inserted;
 - (c) if the Bidder is a corporation, the full name of the corporation shall be inserted;
 - (d) if the Bidder is carrying on business under a name other than his/her own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.
- B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.
- B8.3 In Paragraph 3 of Form A: Bid, the Bidder shall identify a contact person who is authorized to represent the Bidder for purposes of the Bid.
- B8.4 Paragraph 12 of Form A: Bid shall be signed in accordance with the following requirements:
- (a) if the Bidder is a sole proprietor carrying on business in his/her own name, it shall be signed by the Bidder;
 - (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
 - (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, shall be affixed;
 - (d) if the Bidder is carrying on business under a name other than his/her own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.
- B8.4.1 The name and official capacity of all individuals signing Form A: Bid should be printed below such signatures.
- B8.5 If a Bid is submitted jointly by two or more persons, the word "Bidder" shall mean each and all such persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

B9. PRICES

- B9.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.
- B9.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will use said quantities for the purpose of comparing Bids.
- B9.3 The quantities for which payment will be made to the Contractor are to be determined by the Work actually performed and completed by the Contractor, to be measured as specified in the applicable Specifications.
- B9.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).
- B9.5 Form B: Prices is organized into Parts: Part 1 of the Work and Part 2 of the Work. Bidders shall provide a total price for each Part and, on the summary sheet, a Total Bid Price consisting of the sum of prices for Part 1 and Part 2.

B10. QUALIFICATION

B10.1 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.

B10.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

B10.3 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);

B10.4 Further to B10.3(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) 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
- (b) 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
- (c) 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/>).

B10.5 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.

B10.6 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.

B11. BID SECURITY

B11.1 The Bidder shall provide bid security in the form of:

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

B11.1.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.

B11.1.2 All signatures on bid securities shall be original.

B11.1.3 The Bidder shall sign the Bid Bond.

B11.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.

B11.2 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly executed by the successful Bidder and the performance security furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.

B11.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B11.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.

B11.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.

B11.3 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Bid Opportunity.

B12. OPENING OF BIDS AND RELEASE OF INFORMATION

B12.1 Bids will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Division, or in such other office as may be designated by the Manager of Materials.

B12.1.1 Bidders or their representatives may attend.

B12.1.2 Bids determined by the Manager of Materials, or his/her designate, to not include the bid security specified in B11 will not be read out.

B12.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>

B12.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page

at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/>

- B12.4 The Bidder is advised that any information contained in any Bid may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

B13. IRREVOCABLE BID

- B13.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.
- B13.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly executed and the performance security furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid.

B14. WITHDRAWAL OF BIDS

- B14.1 A Bidder may withdraw his/her Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.
- B14.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.
- B14.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid, and only such person, has authority to give notice of withdrawal.
- B14.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:
- (a) retain the Bid until after the Submission Deadline has elapsed;
 - (b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid; and
 - (c) if the notice has been given by any one of the persons specified in B14.1.3(b), declare the Bid withdrawn.
- B14.2 A Bidder who withdraws his/her Bid after the Submission Deadline but before his/her Bid has been released or has lapsed as provided for in B13.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law, including the right to retain the Bidder's bid security.

B15. EVALUATION OF BIDS

- B15.1 Award of the Contract shall be based on the following bid evaluation criteria:
- (a) compliance by the Bidder with the requirements of the Bid Opportunity, or acceptable deviation therefrom (pass/fail);
 - (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B10 (pass/fail);
 - (c) Total Bid Price;
 - (d) economic analysis of any approved alternative pursuant to B6.
- B15.2 Further to B15.1(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.

- B15.2.1 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.
- B15.3 Further to B15.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is responsible and qualified.
- B15.4 Further to B15.1(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.
- B15.4.1 Further to B15.1(a), in the event that a unit price is not provided on Form B: Prices, the City will determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.
- B15.4.2 The electronic Form B: Prices and the formulas imbedded in that spreadsheet are only provided for the convenience of Bidders. The City makes no representations or warranties as to the correctness of the imbedded formulas. It is the Bidder's responsibility to ensure the extensions of the unit prices and the sum of Total Bid Price performed as a function of the formulas within the electronic Form B: Prices are correct.

B16. AWARD OF CONTRACT

- B16.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B16.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.
- B16.2.1 Without limiting the generality of B16.2, 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.
- B16.3 The Work of this Contract is contingent upon Council approval of sufficient funding in the 2015 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.
- B16.4 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B15.
- B16.4.1 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.
- B16.5 As noted in D2 and identified in Form B: Prices, the Work of Part 2 will be contingent upon the 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 D2.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

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

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

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

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

Part 1 – City Funded Work

D2.2 Part 1 – City Funded Work shall consist of:

- (a) Asphalt Reconstruction
 - (i) Church Avenue – Aikins St to Salter St
 - (ii) Machray Avenue – Main St to Emslie St
 - (iii) Andrews Street – Jefferson Ave to Hartford Ave
- (b) Rehabilitation
 - (i) Hallet Street – Rover Ave to Euclid Ave
 - (ii) Airlies Street – Merriwood Ave to Jefferson Ave
 - (iii) Ashmore Drive – Mandalay Dr to Adsum Dr
 - (iv) Duval Street – Adsum Dr to Margate Rd

Part 2 – Manitoba Hydro Funded Work

D2.3 Part 2 – Manitoba Hydro Funded Work shall consist of:

- (a) Street Lighting and Associated Works
 - (i) Church Avenue – Aikins St to Salter St
 - (ii) Machray Avenue – Main St to Emslie St

D2.4 The City currently has no approved funding in the Capital Budget for Part 2 of the Work, but is anticipating receiving notification about funding Manitoba Hydro before Award of Contract. Part 2 of the Work is contingent upon Manitoba Hydro approving sufficient funding.

D2.4.1 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.

D2.4.2 Further to C7.5, C7.5.1, and C7.6, a reduction in the Contract Price pursuant to D2.4 shall not be considered in calculating the aggregate reduction in the Contract Price for purposes of C7.5.

D2.4.3 If all or any portion of Part 2 is eliminated pursuant to D2.4, 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.

D2.5 The major components of the Work are as follows:

- (a) Asphalt Reconstruction
 - (i) Removal of existing pavement
 - (ii) Excavation
 - (iii) Installation of subdrain

- (iv) Sub-grade compaction
 - (v) Installation of catch basins and sewer service pipe
 - (vi) Placement of separation geotextile fabric
 - (vii) Placement of sub-base and base course materials
 - (viii) Construction of curb and gutter (180 mm ht.)
 - (ix) Construction of modified barrier curb
 - (x) Adjustment of existing manholes and appurtenances
 - (xi) Placement of asphalt pavement
 - (xii) Renewal of existing sidewalks
 - (xiii) Landscaping
- (b) Rehabilitation
- (i) Planing of existing asphalt pavement (if required)
 - (ii) Full depth concrete repairs of existing joints and slabs
 - (iii) Renewal of existing curbs
 - (iv) Installation of catch basins and connection pipe
 - (v) Adjustment of existing catch basins, manholes and appurtenances
 - (vi) Placement of asphalt overlay
 - (vii) Renewal of existing sidewalk
 - (viii) Boulevard restoration
- (c) Street Lighting and Associated Works
- (i) Removal of existing street lighting poles
 - (ii) Installation of concrete bases
 - (iii) Installation of new street lighting cables (trenching and boring) and poles (including connections)

D3. CONTRACT ADMINISTRATOR

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

Vilko Maroti, P.Eng.
Transportation Engineering Manager

Telephone No. 204 943-3178

Facsimile No. 204 943-4948

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

D3.3 Bids Submissions must be submitted to the address in B7.8

D4. CONTRACTOR'S SUPERVISOR

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

D4.2 At least two (2) business days prior to the commencement of any Work on the site, the Contractor shall provide the Contract Administrator with a phone number where the supervisor identified in D4.1 or an alternate can be contacted twenty-four (24) hours a day to respond to an emergency.

D5. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE

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

D6. NOTICES

- D6.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.
- D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the facsimile number identified in D3.1.
- 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
- D6.1 Bids Submissions must be submitted to the address in B7.8.

D7. FURNISHING OF DOCUMENTS

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

SUBMISSIONS

D8. AUTHORITY TO CARRY ON BUSINESS

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

D9. SAFE WORK PLAN

- D9.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract.
- D9.2 The Safe Work Plan shall be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgt/safety/default.stm>

D10. INSURANCE

- D10.1 The Contractor shall provide and maintain the following insurance coverage:
- (a) commercial general liability insurance, in the amount of at least two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability, broad form property damage cover and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
 - (b) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence;
 - (c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation.
- D10.2 Deductibles shall be borne by the Contractor.
- D10.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in the C4.1 for the return of the executed Contract.
- D10.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

D11. PERFORMANCE SECURITY

- D11.1 The Contractor shall provide and maintain performance security until the expiration of the warranty period in the form of:
- (a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; or
 - (b) an irrevocable standby letter of credit issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form attached to these Supplemental Conditions (Form H2: Irrevocable Standby Letter of Credit), in the amount of fifty percent (50%) of the Contract Price; or
 - (c) a certified cheque or draft payable to "The City of Winnipeg", drawn on a bank or other financial institution registered to conduct business in Manitoba, in the amount of fifty percent (50%) of the Contract Price.
- D11.1.1 Where the performance security is in the form of a certified cheque or draft, it will be deposited by the City. The City will not pay any interest on certified cheques or drafts furnished as performance security.

D11.2 If the bid security provided in his/her Bid was not a certified cheque or draft pursuant to B11.1(c), the Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of letter of intent and prior to the commencement of any Work on the Site and in no event later than the date specified in the C4.1 for the return of the executed Contract.

D12. SUBCONTRACTOR LIST

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

D13. DETAILED WORK SCHEDULE

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

D13.2 If, prior to submitting the Detailed Work Schedule, the Contractor does not receive notification pursuant to D14.4 that all or some portion of Part 2 of the Work may be commenced, he/she shall complete 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 a letter of intent from the Award Authority authorizing the commencement of the Work.

D14.2 The Contractor shall not commence any Work on the Site until:

- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D8;
 - (ii) evidence of the workers compensation coverage specified in C6.15;
 - (iii) the twenty-four (24) hour emergency response phone number specified in D4.2.
 - (iv) the Safe Work Plan specified in D9;
 - (v) evidence of the insurance specified in D10;
 - (vi) the performance security specified in D11;
 - (vii) the subcontractor list specified in D12; and
 - (viii) the detailed work schedule specified in D13.
- (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.

- D14.3 The Contractor shall not commence the Work on the Site before May 19, 2015, and shall commence the Work on Site no later than June 8, 2015, as directed by the Contract Administrator and weather permitting.
- D14.4 The Contractor shall not commence Part 2 of the Work as described in D2 and identified in Form B: Prices, unless he/she has received notification from the Contract Administrator that the City has received notice of sufficient funding from Manitoba Hydro
- D14.5 The City intends to award this Contract by April 21, 2015

D15. WORKING DAYS

- D15.1 Further to C1.1(jj);
- D15.1.1 The Contract Administrator will determine daily if a Working Day has elapsed and will record his/her assessment. On a weekly basis the Contract Administrator will provide the Contractor with a record of the Working Days assessed for the preceding week. The Contractor shall sign each report signifying that he/she agrees with the Contract Administrator's determination of the Working Days assessed for the report period.
- D15.1.2 Work done to restore the Site to a condition suitable for Work, shall not be considered "work" as defined in the definition of a Working Day.
- D15.1.3 When the Work includes two or more major types of Work that can be performed under different atmospheric conditions, the Contract Administrator shall consider all major types of Work in determining whether the Contractor was able to work in assessing Working Days.

D16. RESTRICTED WORK HOURS

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

D17. WORK BY OTHERS

- D17.1 Work by others on or near the Site will include but not necessarily be limited to:
- (a) City of Winnipeg Central Services – Machray Ave is anticipated to have a sewer lining installation and external point repairs performed for completion by Spring to early Summer;
 - (b) Manitoba Hydro – supply and inspection of new street lighting hardware (to be installed by the Contractor) and the de-energizing and energizing of the new street light plant;
 - (c) Manitoba Hydro Gas Division – Gas services will be lowered if required on Reconstruction roadwork locations. This work should be coordinated immediately after excavation has taken place;

D18. SEQUENCE OF WORK

- D18.1 Further to C6.1, the sequence of work shall comply with the following:
- D18.1.1 Construction activity on Machray Avenue shall not commence until construction of a sewer lining and external point repairs, by the City of Winnipeg Centralized Services, is completed. This Work is expected to be completed by Spring to Early Summer of 2015.
- D18.1.2 Construction activity on Church Avenue, Andrews Street, and Airlies Street shall not commence until the school year is completed on June 30, 2015.

- D18.1.3 Providing that the Work on each street is completed in a similar order to the order that the Work was commenced in, the Contractor will be permitted to have a maximum of three (3) streets under construction at any one time. Completion of a street means that all of the necessary concrete, asphalt including approaches and landscaping Work is completed to the satisfaction of the Contract Administrator.
- D18.1.4 Where the Contractor utilizes two (2) or more crews that work independently on the same major component of the Work as identified in D2, the Contract Administrator may approve an increase to the maximum number of streets under construction at any time.
- D18.1.5 Placing the topsoil and finished grading of all boulevard and median areas shall be completed prior to commencing construction of asphaltic concrete overlays, including scratch courses.

D19. CRITICAL STAGES

- D19.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:
- (a) Complete Church Avenue by September 7, 2015
 - (b) Complete Andrews Street by September 7, 2015
 - (c) Complete Airlies Street by September 7, 2015

D20. SUBSTANTIAL PERFORMANCE

- D20.1 The Contractor shall achieve Substantial Performance within Sixty (60) 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 Sixty-Five (65) 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) Critical Stage D19.1(a) – Three Thousand dollars (\$3,000.00);
 - (b) Critical Stage D19.1(b) – Three Thousand dollars (\$3,000.00);
 - (c) Critical Stage D19.1(c) – Three Thousand dollars (\$3,000.00);
 - (d) Substantial Performance – Three Thousand dollars (\$3,000.00);
 - (e) Total Performance – One Thousand dollars (\$1,000.00).
- D22.2 The amounts specified for liquidated damages in D22.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve critical stages, Substantial Performance or Total Performance by the days fixed herein for same.
- D22.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D23. SCHEDULED MAINTENANCE

- D23.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:
- (a) Reflective crack maintenance during one and two year maintenance warranties as specified in CW 3250;
 - (b) Sod maintenance as specified in CW 3510.
- D23.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

CONTROL OF WORK

D24. JOB MEETINGS

- D24.1 Regular weekly job meetings will be held at Site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.
- D24.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

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

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

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

D26.1 Further to B10.4, 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 B10.4.

MEASUREMENT AND PAYMENT

D27. PAYMENT

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

WARRANTY

D28. WARRANTY

D28.1 Notwithstanding C13.2, the warranty period shall begin on the date of Substantial Performance and shall expire one (1) years thereafter for pavement rehabilitations , and two (2) years thereafter for pavement reconstruction works, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

D28.2 Notwithstanding C13.2 or D28.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Substantial 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.

D28.2.1 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.

FORM H1: PERFORMANCE BOND
(See D11)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

_____ dollars (\$ _____)

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

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

BID OPPORTUNITY NO. 151-2015

2015 Local Streets Renewal Program: Church Ave, Machray Ave, Andrews St, and Various Other Locations

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

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

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

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

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

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

_____ day of _____, 20____ .

SIGNED AND SEALED
in the presence of:

(Witness as to Principal if no seal)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

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

**FORM H2: IRREVOCABLE STANDBY LETTER OF CREDIT
(PERFORMANCE SECURITY)**
(See D11)

(Date)

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

RE: PERFORMANCE SECURITY – BID OPPORTUNITY NO. 151-2015

2015 Local Streets Renewal Program: Church Ave, Machray Ave, Andrews St, and Various Other Locations

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

(Name of Contractor)

(Address of Contractor)

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

Canadian dollars.

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

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

Partial drawings are permitted.

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

(Address)

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

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

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

(Date)

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

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

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

(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

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

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
	Cover Sheet	
5514132-C1-01	CHURCH AVENUE - SALTER STREET TO STA 2+00	A1
5514132-C1-02	CHURCH AVENUE - STA 2+00 TO AIKINS STREET	A1
5514132-C1-03	MACHRAY AVENUE - MAIN STREET TO STA 2+00	A1
5514132-C1-04	MACHRAY AVENUE - STA 2+00 TO EMSLIE STREET	A1
5514132-C1-05	ANDREWS STREET - JEFFERSON AVENUE TO STA 2+50	A1
5514132-C1-06	ANDREWS STREET - STA 2+50 TO HARTFORD AVENUE	A1
5514132-C1-07	HALLET STREET - EUCLID STREET TO STA 2+40	A1
5514132-C1-08	HALLET STREET - STA 2+40 TO ROVER AVENUE	A1
5514132-C1-09	AIRLIES STREET - JEFFERSON AVENUE TO STA 2+50	A1
5514132-C1-10	AIRLIES STREET - STA 2+50 TO MERRIWOOD AVENUE	A1
5514132-C1-11	ASHMORE DRIVE - MANDALAY DRIVE TO STA 2+30	A1
5514132-C1-12	ASHMORE DRIVE - STA 2+30 TO STA 3+50	A1
5514132-C1-13	ASHMORE DRIVE - STA 3+50 TO STA 4+90	A1
5514132-C1-14	ASHMORE DRIVE - STA 4+90 TO STA 6+50	A1
5514132-C1-15	ASHMORE DRIVE - STA 6+50 TO ADSUM DRIVE	A1
5514132-C1-16	DUVAL STREET - ADSUM DRIVE TO STA 2+10	A1
5514132-C1-17	DUVAL STREET - STA 2+10 TO STA 3+50	A1
5514132-C1-18	DUVAL STREET - STA 3+50 TO MARGATE ROAD	A1
1-04707-DD-50000-0230	STREET LIGHTING PROJECT- CHURCH AVE. FROM AIKINS ST. TO SALTER ST.	A1
1-04707-DD-50000-0231	STREET LIGHTING PROJECT - MACHRAY AVE. FROM MAIN ST. TO EMSLIE ST	A1

E2. GEOTECHNICAL REPORT

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

E3. PROTECTION OF EXISTING TREES

- E3.1 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.
- E3.2 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.
- E3.3 No separate measurement or payment will be made for the protection of trees.
- E3.4 Except as required in clause E3.1(c) and E3.1(e), Elm trees shall not be pruned at any time between April 1 and July 31.

E4. TRAFFIC CONTROL

- E4.1 Further to clauses 3.6 and 3.7 of CW 1130:
- (a) Where directed, 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 in Work Areas on City Streets, the Contractor ("Agency" in the manual) shall make arrangements with the Traffic Services Branch of the City of Winnipeg to place all temporary regulatory signs. The Contractor shall bear all costs associated with the placement of temporary traffic control devices by the Traffic Services Branch of the City of Winnipeg in connection with the works undertaken by the Contractor.

E5. TRAFFIC MANAGEMENT

E5.1 Further to clause 3.7 of CW 1130:

E5.1.1 The Contractor shall schedule construction activities to meet the following:

- (a) Airlies Street, Hallet Street, Ashmore Drive, and Duval Street will be closed to through traffic. Local access and/or bus traffic shall be maintained. The Contractor shall sign the street "Road Closed Local Access Only" in accordance with the Manual of Temporary Traffic Control.
- (b) Church Avenue, Machray Avenue, and Andrews Street will be closed to all traffic. The Contractor shall sign the street "Road Closed" in accordance with the Manual of Temporary Traffic Control.
- (c) Intersecting street and private approach access shall be maintained at all times where possible.

E5.1.2 Should the Contractor be unable to maintain an existing access to a residence or business, he/she shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.

E5.1.3 Pedestrian and ambulance/emergency vehicle access must be maintained at all times.

E6. REFUSE AND RECYCLING COLLECTION

E6.1 While access to refuse and/or recycling collection vehicles is restricted, on collection day(s) the Contractor shall move all of the affected property owners refuse and/or recycling materials to a nearby common area, prior to an established time, in accordance with E6.2 to permit the normal collection vehicles to collect the materials. Immediately following recycling collection the Contractor shall return recycling receptacles to the addresses marked on the receptacles.

E6.2 Collection Schedule:

Church Avenue from Aikins Street to Salter Street.

Collection Day(s): **Thursdays**
Collection Time: **6:00 to 18:00**
Common Collection Area: **Refuse and Recycling is back lane pickup, maintain access to back lanes.**

Machray Avenue from Main Street to Emslie Street.

Collection Day(s): **Thursdays**
Collection Time: **6:00 to 18:00**
Common Collection Area: **Refuse and Recycling is back lane pickup, maintain access to back lanes.**

Hallet Street from Rover Avenue to Euclid Avenue

Collection Day(s): **Thursdays**
Collection Time: **6:00 to 18:00**
Common Collection Area: **Refuse and Recycling is back lane pickup, maintain access to back lanes.**

Airlies Street from Merriwood Avenue to Jefferson Avenue.

Collection Day(s): **Wednesdays**
Collection Time: **6:00 to 18:00**
Common Collection Area: **Refuse and Recycling is front street pickup, carts to be relocated for pickup.**

Ashmore Drive from Mandalay Drive to Adsum Drive.

Collection Day(s): **Tuesdays**
Collection Time: **6:00 to 18:00**
Common Collection Area: **Refuse and Recycling is front street pickup, carts to be relocated for pickup.**

Duval Street from Adsum Drive to Margate Road

Collection Day(s): **Tuesdays**
Collection Time: **6:00 to 18:00**
Common Collection Area: **Refuse and Recycling is front street pickup, carts to be relocated for pickup.**

E6.3 No measurement or payment will be made for the work associated with this specification.

E7. PEDESTRIAN SAFETY

E7.1 During the project, the Contractor shall ensure that proper signage is in place during sidewalk construction to direct any pedestrians within the construction zone either around the construction or to the sidewalk on the opposite side of the street. The Contractor must also use proper signage, barricades, and temporary fencing to protect and keep pedestrians safely away from the construction area to the satisfaction of the Contract Administrator. No measurement for payment shall be made for this work.

E8. WATER OBTAINED FROM THE CITY

E8.1 Further to clause 3.7 of CW 1120, the Contractor shall pay for all costs, including sewer charges, associated with obtaining water from the City in accordance with the Waterworks and Sewer By-laws.

E9. SURFACE RESTORATIONS

E9.1 Further to clause 3.3 of CW 1130, when Total Performance is not achieved in the year the Contract is commenced, the Contractor shall temporarily repair any Work commenced and not completed to the satisfaction of the Contract Administrator. The Contractor shall maintain the temporary repairs in a safe condition as determined by the Contract Administrator until permanent repairs are completed. The Contractor shall bear all costs associated with temporary repairs and their maintenance.

E10. INFRASTRUCTURE SIGNS

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

E11. SUPPLY AND INSTALLATION OF PAVEMENT REPAIR FABRIC

DESCRIPTION

E11.1 General

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

E11.1.2 Referenced Standard Construction

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

MATERIALS

E11.2 Storage and Handling

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

E11.3 Pavement Repair Fabric

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

CONSTRUCTION METHODS

E11.4 General

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

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

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

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

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

E11.4.6 Replace damaged or improperly placed fabric.

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

MEASUREMENT AND PAYMENT

E11.5 Pavement Repair Fabric

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

E12. PARTIAL DEPTH PATCHING OF EXISTING JOINTS

DESCRIPTION

E12.1 General

E12.1.1 This specification covers the Partial Depth Patching of existing concrete pavement joints.

E12.2 Referenced Standard Construction Specifications

(a) CW 3230 – Full-Depth Patching of Existing Slabs and Joints

(b) CW 3410 – Asphalt Concrete Pavement Works

MATERIALS

E12.3 Asphalt Materials

E12.3.1 Asphalt material will be Type 1A supplied in accordance with Sections 5 and 6 of CW 3410.

E12.4 Tack Coat

E12.4.1 Tack Coat will be undiluted SS-1 emulsified asphalt or approval equal.

CONSTRUCTION METHODS

E12.5 Planing of Joints

E12.5.1 Plane existing joints designated by the Contract Administrator to a minimum depth of 50 mm and a maximum of depth 90 mm to remove ravelled or deteriorated concrete. Width of joint to be planed will vary with depth.

E12.5.2 Should the depth of joint deterioration exceed the maximum indicated, as determined by the Contract Administrator, the entire joint shall be renewed and paid for in accordance with CW 3230 as a full depth joint repair. Planing completed shall be paid for in accordance with Section 14.7 of this specification

E12.5.3 Dispose of material in accordance with Section 3.4 of CW 1130.

E12.6 Placement of Asphalt Material

E12.6.1 Prior to placement of asphalt material, the planed joint shall be swept or blow clean of any loose material.

E12.6.2 Apply Tack Coat uniformly on the entire surface of the planed joint. The application rate shall not exceed 0.23 litres per square metre. The planed joint shall be dry prior to applying the tack coat.

E12.6.3 Place and compact asphalt material in accordance with Section 9.3 of CW 3410 to the satisfaction of the Contract Administrator. The finished elevation of the patch shall be flush with surrounding pavement surface.

E12.6.4 Compact the asphalt material to an average 95% of the 75 blow Marshall Density of the paving mixture with no individual test being less than 90 %.

E12.6.5 Ensure that no traffic is allowed to travel over the patched area until the asphalt has cooled to atmospheric temperature.

MEASUREMENT AND PAYMENT

E12.7 Partial Depth Planing of Existing Joints

E12.7.1 Partial Depth Planing of Existing Joints will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Partial Depth Planing of Existing Joints". The area to be paid for will be the total number of square metres of joints planed in accordance with this specification, accepted and measured by the Contract Administrator.

E12.8 Asphalt Patching of Partial Depth Joints

E12.9 Asphalt Patching of Partial Depth Joints will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Asphalt Patching of Partial Depth Joints". The area to be paid for will be the total number of square metres of joints patched in accordance with this specification, accepted, and measured by the Contract Administrator.

E13. SALT TOLERANT GRASS SEEDING

DESCRIPTION

- E13.1 Further to CW 3520 and CW3540, this specification shall cover sub-grade preparation and the supply and placement of Salt Tolerant Grass Seed.

MATERIALS

- E13.2 Salt Tolerant Grass Seed

- E13.2.1 Salt Tolerant Grass Seed for regional and collector boulevards, medians and interchange areas shall be a mixture composed of:

- (a) Seventy percent (70%) Fults or Nuttals Alkaligrass (*Puccinellia* spp.), twenty percent (20%) Audubon or Aberdeen Creeping Red Fescue and ten percent (10%) Perennial Ryegrass.

EQUIPMENT

- E13.3 Scarification equipment shall be suitable for the area being scarified, shall be capable of scarifying the sub-grade to the specified depth and shall be accepted by the Contract Administrator. For confined areas a toothed bucket may be acceptable. For larger areas tilling equipment may be required.

CONSTRUCTION METHODS

- E13.4 Preparation of Existing Grade

- E13.4.1 Prior to placing topsoil, in areas to be seeded greater in width than 600mm, prepare the existing sub-grade by scarifying to a minimum depth of 75mm and to a maximum depth of 100mm to the satisfaction of the Contract Administrator.

- E13.4.2 Scarification shall consist of breaking up and loosening the sub-grade. No scarification shall occur within the edge of a tree canopy (or drip line).

- E13.5 Salt Tolerant Grass Seeding

- E13.5.1 Salt Tolerant Grass Seed shall be sown at a rate of 2.2 kilograms per 100 square meters.

MEASUREMENT AND PAYMENT

- E13.6 Supply, placement and maintenance of Salt Tolerant Grass Seed will be paid for at the Contract Unit Price per square metre for "Salt Tolerant Grass Seeding", measured as specified herein, which price shall be payment in full for supplying all materials and for completing all operations herein described and all other items incidental to the work included in this Specification.

Payment for Salt Tolerant Grass Seeding shall be in accordance with the following:

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

E14. HYDRO-EXCAVATION

DESCRIPTION

- E14.1 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.

EQUIPMENT

E14.2 Hydro-Excavation equipment shall be capable of maintaining a minimum working pressure of 10,000 psi, at a rate of flow of 10 to 12 gallons per minute. The unit should be adjustable, so as to provide adequate pressure to remove earthen material identified by the Contract Administrator.

E14.3 Spray head shall be equipped with a rotating type nozzle in order to provide a wider path of cut.

CONSTRUCTION METHODS

E14.4 Hydro-Removal of Earthen Material

E14.4.1 Earthen material adjacent to utility entity shall be sprayed with high pressure water so as to remove all such material identified by the Contract Administrator.

E14.5 Recovery of Excavated Material

E14.5.1 The recovery of excavated material shall be done using a vacuum type method, or other type method as approved by the Contract Administrator.

E14.5.2 The recovery of material shall follow immediately behind the excavation, to avoid excavated areas from filling with excavated material.

E14.5.3 The use of mechanical sweepers will not be allowed.

E14.5.4 Dispose of material in accordance with Section 3.4 of CW 1130-R2.

MEASUREMENT AND PAYMENT

E14.6 Hydro-Excavation

E14.6.1 Hydro-Excavation of earthen material and its recovery and disposal will not be measured and payment shall be considered incidental to "Excavation".

E15. SEWERMAIN AND CATCHBASIN LEAD EXTERNAL POINT REPAIRS

E15.1 Combined sewer repairs shall be performed in accordance with CW 2130 and televised in accordance with CW 2145.

E15.2 The Contractor shall supply a sewage flow control plan to the Contract Administrator 24 hours prior to excavation for the sewer repair.

E15.3 Post repair video inspection of the sewers to take place within 48 hours of completion of the sewer repairs and in the presence of the Contract Administrator.

MEASUREMENT AND PAYMENT

E15.4 This work shall be paid for at the Contract Unit Prices for "Sewer Repair – Up to 3 m Long (SD-022A) and "Sewer Repair – In Addition to the First 3.0 m (SD-022B)."

E16. REMOVAL OF EXISTING PIPES

DESCRIPTION

E16.1 This Specification shall amend and supplement Specification CW 2130 and CW 3210.

CONSTRUCTION METHODS

E16.2 Removal of existing pipes shall consist of existing catch basin or curb inlet leads which are to be removed in order to facilitate the installation of new catch basins or catch pits.

MEASUREMENT AND PAYMENT

E16.3 The removal of existing pipes by excavating, removing and disposing of existing pipe will be measured on a length basis. The length to be paid for shall be the total number of linear metres of pipe removed from the specified area measured horizontally at grade. Removal of existing pipes will be paid for at the Contract Unit Price for "Removal of Existing Pipes", in which price shall be payment in full for the supply of all materials and for performing all operations required to complete the work as specified.

E17. ADJUSTMENT OF SPRINKLER HEADS

DESCRIPTION

E17.1 Further to CW 3210, this Specification covers the adjustment of existing sprinkler heads and/or drainage pipe within the City of Winnipeg right-of-way to match proposed boulevard grading requirements.

MATERIALS

E17.2 Sprinkler Heads and Irrigation Pipe

E17.2.1 If, in the opinion of the Contract Administrator new irrigation piping is required it shall be Series 100, High Density Polyethylene pipe and conform to CSA B137.0 and B137.1, CGSB-41-GP-25m and ASTM D-1248-78. Fittings shall be approved brass saddle fittings at head connections and socket-fusion external fittings at pipe connections. All fittings will be sized to fit pipe diameter and of a pressure rating equal to or better than adjacent pipe. Three elbow swing joints shall be unplasticized schedule 80 threaded PVC pipe and schedule 40 fittings.

CONSTRUCTION METHODS

E17.3 Contractor to locate and mark existing sprinkler heads and irrigation piping prior to undertaking any excavations of boulevards.

E17.4 Contractor shall verify with Owner that existing sprinkler heads and piping are functional prior to any grade adjustments.

E17.5 Raise or lower existing sprinkler leads and relocate up to 2.0 metres to match finished grade of grassed area. Ensure sprinkler head is plumb and maintain existing sprinkler head direction.

E17.6 Adjust existing irrigation lines to maintain existing cover requirements. The Contractor may be required to lower or raise irrigation lines or supplement with additional length of pipe. Pipe material to match or exceed existing pipe material.

E17.7 Contractor is responsible to replace any damaged sprinkler heads or irrigation lines as a result of construction activities.

E17.8 Upon completion of adjustments after final acceptance of sodded areas, the Contractor shall arrange for the inspection sprinkler heads and irrigation system with the Contract Administrator to ensure proper functioning of system.

E17.9 Contractor to repair any deficiencies to the satisfaction of the Contract Administrator.

MEASUREMENT AND PAYMENT

E17.10 Adjustment of Sprinkler Heads and/or Drainage Pipe

E17.10.1 Adjustments of existing sprinkler heads and/or drainage pipe will be measure on a unit basis and paid for at the Contract Unit Price per unit for "Adjustment of Sprinkler Head and/or Drainage Pipe". The number of units to be paid for will be the total number of sprinkler heads and/or drainage pipe adjusted in accordance with this specification, accepted and measured by the Contract Administrator.

E17.11 Replace Existing Sprinkler Pipe

- E17.11.1 Replacement of existing sprinkler pipe will be measured on a linear metre basis and paid for at the Contract Unit Price for "Replace Existing Sprinkler Pipe". The length to be paid for shall be the total number of metres of pipe supplied and installed in accordance with this Specification, accepted and measured by the Contract Administrator.

E18. INSTALLATION OF STREET LIGHTING AND ASSOCIATED WORKS

E18.1 DESCRIPTION

- E18.2 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 OH supply, remove existing street light poles and install new street light poles and associated underground cables/conduits, all in accordance with the requirements specified in the tender documents.

E18.3 WORK LOCATIONS

- E18.3.1 The proposed street light installation and removals are shown on construction drawings and are as follows:
- (a) Church Ave – Aikins St to Salter St
 - (b) Machray Ave – Main St to Emslie St

E18.4 COORDINATION OF WORK

- E18.4.1 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. Manitoba Hydro will require a minimum of 5 working days notice prior to the start of the work. See the construction drawings for the Proposed Sequence of Construction.

E18.5 TRAINING

- E18.5.1 Prior to the commencement of the proposed work, the Contractor's crew foremen, electricians, and other key personnel shall attend one (1) day of training 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. The Contractor personnel being trained are responsible to bring Contractor equipment for training purposes. The Contractor personnel will be certified on the equipment that they will be using in the field.

E18.6 JOURNEYMAN ELECTRICIAN

- E18.6.1 Licensed journeyman electricians, and/or, apprentices under the supervision of licensed electricians, are required to splice / terminate cables, make connections in the luminaire and install temporary overhead feeds in accordance with amendments to the Electrician's Licensing Act ("the Act"). The Contractor shall be prepared to provide proof of licenses to the Contract Administrator upon request.

E18.7 REFERENCED STANDARD CONSTRUCTION SPECIFICATIONS

- E18.7.1 In addition to these Specifications, the Work to be performed by the Contractor relative to the installation and/or replacement of street lighting poles and concrete bases 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)

(d) Any other applicable codes

E18.7.2 Revisions and updates to the Manitoba Hydro 66kV 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 Standard have been included as Appendix A.

E18.7.3 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.

E18.8 PRE-TRAINED CONTRACTORS

E18.8.1 The following contractors are experienced and trained to complete all associated works for the proposed installation of street light cable, poles and bases :

E18.8.2

- (a) Tri-Star Traffic Inc.
 Attention: Mr. Joey Hydrochuk
 101 - 356 Furby Street
 Winnipeg, Manitoba
 R3B 2V5
 Phone: (204) 788-4006
- (b) Lohr Underground Construction
 Attention: Mr. Charles Lohr
 PO Box 27
 Ile Des Chene, Manitoba
 R0A 0T0
 Phone: (204) 799-3581
- (c) Alpine Electric
 Attention: Decio Alphonso
 Unit 5 – 3000 Main St
 West St. Paul, Manitoba
 R2V 4Z3
 Phone: (204) 661-4341
- (d) The contractors listed above have been pre-trained by Manitoba Hydro and would not be subject to the TRAINING requirements above. Other contractors may be considered but would be subject to the TRAINING requirements above.

E18.9 TOOLS, EQUIPMENT AND MATERIALS

E18.9.1 The Contractor will be required to provide all tools and equipment as 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.

E18.9.2 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

- E18.9.3 Dies shall be of the type shown in Standard CD210-21 and CD 210-24 only, must have identical markings, and compression tool die must match die number stamped on connector.
- (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.
- E18.9.4 Alternative equipment manufactures may be considered upon request by the Contractor and shall be approved for use by the Contract Administrator prior to use.
- E18.9.5 The Contract Administrator will reject any tools or equipment that do not appear to be in good condition or fail to successfully provide the required function.
- E18.10 MATERIAL SUPPLIED BY MANITOBA HYDRO**
- E18.10.1 Manitoba Hydro shall supply all street light poles, concrete bases, breakaway bases, luminaires, street light arms, ground rods, compression sleeves, grommets, nuts, electrical cables, conduits, relays, cable guards and all other materials noted in the Standards. The Contractor shall sign receipts indicating the part of the project on which the materials are to be used. from the material shall be picked up by the contractor from the following locations:
- E18.10.2 Manitoba Hydro's Waverley Service Centre - 1840 Chevrier Blvd - Winnipeg, Manitoba (contact personnel will be provided to the successful contractor).
- E18.10.3 Manitoba Hydro Stores - 1315 Notre Dame Avenue- Winnipeg, Manitoba (contact personnel will be provided to the successful contractor).
- E18.10.4 Materials requested will be supplied to the Contractor by Manitoba Hydro upon presentation of Manitoba Hydro's Stores Material Order Form signed by Manitoba Hydro. 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.
- E18.10.5 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 the Contract Administrator.
- E18.11 MATERIAL SUPPLIED BY CONTRACTOR**
- E18.11.1 The Contractor shall be responsible to furnish gravel, sand, ¾ down limestone, ¼ down limestone, and pit-run material for backfilling around street light poles and around cables as per the Standards. The cost of furnishing materials shall be incorporated into the unit prices for the work.
- E18.12 SCRAP, RECLAIM AND RECYCLING**
- E18.12.1 Upon completion of the Work, the Contractor shall, at its own expense, deliver to the delivery point(s), depots, storage lots or warehouses designated by the Contract Administrator, all materials furnished by Manitoba Hydro and not used in the Work, regardless of the location of said material at that time.
- E18.12.2 In addition, the Contractor shall, at its own expense, deliver to the delivery point(s), depots, storage lots, storage lots, recycler or warehouses designated by the Contract Administrator, all reclaim materials from the Work including but not limited to concrete bases, steel poles, power installed bases and wire and pay any associated disposal or dumping fees.
- E18.12.3 Reclaim material shall be sorted into the following categories and returned to:
- E18.12.4 Manitoba Hydro, 1840 Chevrier Blvd, Winnipeg, Manitoba
- (a) copper - poly covered

- (b) copper - bare (ground wire)
- (c) control cable (2C - 12, #4 AL C/N)
- (d) steel (street light poles, power installed screw bases)

E18.12.5 Rocky Road Recycling, 4154 McGillvray Blvd, Winnipeg, Manitoba Contact:

- (a) concrete (precast, poured in place)

E18.12.6 Reclaimed street light poles shall be disassembled by removing the davit arm and at all tenon joints. If street light poles cannot be disassembled at the tenon joints, the Contractor shall cut the street light poles apart at the tenon joints prior to returning to the depot at 1840 Chevrier Boulevard, Winnipeg, Manitoba.

E18.13 DE-ENERGIZATION AND LOCKOUT

E18.13.1 Prior to Commencement of Construction Manitoba Hydro's staff shall be responsible to disconnect and isolate the street light pole or poles to be replaced. Manitoba Hydro WORKER PROTECTION CODE (Lockout) - 0147/08R shall be followed prior to the start of any Work to remove a street light pole or base.

E18.13.2 The Contractor shall employ its own lockout procedure in addition to that required by Manitoba Hydro WORKER PROTECTION CODE (Lockout) - 0147/08R to comply with the lockout program stipulated in Manitoba Regulation 217, Part 16, 14-18 and Part 38,14-15. The Contractor shall ensure that a potential (voltage) check is conducted on each and every service conductor prior to any Work taking place to ensure that the service (of overhead) cables are de-energized. Some street light poles may have been temporarily fed from overhead feeds. This overhead feed shall be disconnected and isolated by Manitoba Hydro staff prior to commencing with the Work. The Contractor may remove the overhead feeds once de-energized and locked out by Manitoba Hydro.

E18.14 TEMPORARY OVERHEAD FEEDS

E18.14.1 Manitoba Hydro in consultation with the Contract Administrator and the Contractor will determine if temporary lighting will be provided by the existing street lights or from the new street lights.

E18.14.2 When using the existing poles for temporary lighting, Manitoba Hydro shall de-energization and lockout the existing underground/overhead feeds 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 drop to the power source shall be installed by Manitoba Hydro.

E18.14.3 When using the new poles for temporary lighting, the Contractor shall install the new bases, poles and #4 duplex overhead conductor. The #4 duplex overhead conductor will be attached to the tenon of the davit arm near the luminaire with a pre-form grip. A short length of 2C/#12 copper conductor is connected to the terminals of the luminaire brought out and connected to the #4 duplex overhead conductor. The final drop to the power source shall be installed by Manitoba Hydro.

E18.14.4 All material used to provide the temporary overhead feed shall be returned to Manitoba Hydro. Care shall be taken to coil and tag salvaged conductor for reuse. If used, insulators shall be handled carefully to prevent breakage.

E18.15 SAFE EXCAVATION

E18.15.1 Work shall be performed in accordance with the requirements of the Manitoba Hydro Safe Excavation and Safety Watch Guidelines included as Appendix B and Manitoba Workplace Safety and Health Regulation 217 latest revision.

E18.16 SAFE HANDLING

E18.16.1 The Contractor shall apply handling techniques in accordance with Manitoba Workplace Health and Safety Regulation 217 latest revision.

E18.17 ELECTRIC CABLES AND CONDUITS

- (a) The Contractor shall use diligent care and proper equipment in handling of all cables, so as not to injure the jacket and avoid gouging, kinking, scratching or abrading the cables. If any material is damaged to any extent, the Contractor shall repair the damages at its own expense, in a manner approved by the Contract Administrator 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 the Contract Administrator.
- (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.

E18.18 PRECAST CONCRETE BASES

E18.18.1 The Contractor shall handle, store, transport and unload the precast concrete bases in a manner to prevent damage to the threaded bolts and conduit casing.

E18.18.2 Precast Concrete Bases are extremely heavy. Approximate weight of pre-cast concrete base for 25'/35' pole is 680 kg. The Contractor shall only use equipment rated for such weight.

E18.19 STREET LIGHT POLES AND ARMS

E18.19.1 The Contractor shall handle, store, transport and unload the poles and arms in a manner to prevent damage.

E18.20 LUMINAIRES

E18.20.1 The Contractor shall handle, store, transport and unload the luminaires in their original packaging and in a manner to prevent damage.

E18.21 BULBS AND SMALL MATERIAL

E18.21.1 Bulbs, 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. Bulbs and photo electric cells shall be transported and stored in such a manner as to prevent breakage.

E18.22 CARE OF MATERIALS

E18.22.1 The Contractor shall assume all responsibilities of all the materials and shall replace, at its own expense, any materials damaged, stolen or lost due to improper handling or poor workmanship.

E18.23 WIRE AND CABLE REEL STORAGE

E18.23.1 Cable reels shall be stored with the flanges upright and resting on a hard surface. At temporary storage sites where the soil may be soft, preservative-treated plywood sheets may be used to keep the flanges from sinking into the ground.

E18.23.2 If cable reels must be pancaked or stored on their side in vertical racks, do not lift the reel by the top flange. Spacers (two 2 X 4s placed wide side up) should be placed under the

bottom flange and between the reels in order to create a space to insert the forks and lift the reels without damaging the cable.

E18.24 REEL HANDLING

- E18.24.1 When off-loading reels from a truck, reels shall be lowered using a hydraulic gate, hoist or forklift truck. When a reel is rolled from one point to another, care must be taken to see that the reel does not straddle objects such as rocks, pipes, curbs or wooden blocks which could damage the cable or protective covering. A reel should always be rolled on hard surfaces to avoid sinkage and in the opposite direction to the cable wraps to ensure that the reel is rolled in such a direction as to tighten the cable on the reel.
- E18.24.2 When using a hoist, install a mandrel through the reel arbour hole and attach a sling. Use a spreader bar approximately 6 inches longer than the overall reel width placed between the sling ends just above the reel flanges. This will prevent bending of the reel flanges and damage to the cable.
- E18.24.3 If a forklift is used to move a reel, the reel is to be approached from the flange side. Position the forks such that the reel is lifted by both reel flanges. The lift forks shall not contact the cable.

E18.25 PRESSURIZED WATER/VACUUM EXCAVATION

- E18.25.1 Pressurized water/vacuum excavation (PW/VE) shall be used to daylight all buried utilities and structures where excavation by other mechanical means would be expected to provide a physical risk to that utility or structure.
- E18.25.2 Work shall be performed in accordance with the requirements of the Manitoba Hydro Guidelines for Excavation of Cables by Water Pressure/Vacuum Systems procedure included as Appendix C. The maximum water temperature shall be 38°C (100°F) and the maximum water pressure shall be 10,340 kPa (1500 psi). The end of the vacuum tube shall be neoprene or equivalent.

E18.26 REMOVAL STREET LIGHT POLE FROM EXISTING BASE

- E18.26.1 This shall include all Work required to remove a street light pole from an existing base as set forth in this Technical Specification. The pole may be on an existing precast concrete base, steel power installed screw base or poured in place concrete base.
- E18.26.2 The Contractor shall furnish all labour and supplies 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 Contract Administrator.
- E18.26.3 The Contractor shall be responsible to transport all salvaged poles, luminaires and appurtenances to a location specified by the Contract Administrator.

E18.27 REMOVAL OF BASE AND DIRECT BURIED STREET LIGHT POLE

- E18.27.1 This shall include all excavation, whether by auger, pressurized water/vacuum excavation, by hand, or by other methods which may be necessary to remove a base or direct buried street light pole. The base may be poured in place concrete, steel power installed power installed or precast concrete.
- E18.27.2 The Contractor shall be responsible to transport all salvaged concrete bases and poles to a location specified by the Contract Administrator and pay any associated disposal or dumping fees.
- E18.27.3 The Contractor is responsible to supply all backfill material as specified in the Standards and carry out all backfill, compacting and leveling of all excavations and voids for removed bases and direct buried street light poles so as to be ready for top soil and seed or sod or as directed by the Contract Administrator.

E18.28 INSTALLATION OF FOUNDATION - CONCRETE BASE

- E18.28.1 This shall include all excavation, whether by auger, pressurized water/vacuum excavation, by hand, or by other methods which may be necessary to replace or install a concrete base as set forth in this Specification.
- E18.28.2 The Contractor shall furnish all labour and supplies 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.
- E18.28.3 The concrete base shall be set on a bed of $\frac{3}{4}$ down limestone. The concrete base backfill material shall be compacted in lifts of 150 mm. Backfill material shall be $\frac{3}{4}$ down limestone. Compacting of backfill material shall be done using a hydraulic tamper. Alternative tamping methods shall be approved by the Contract Administrator. Underground cables entering the concrete base shall be protected by a length of protective hose supplied by Manitoba Hydro or 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.
- E18.28.4 The completed backfill shall be at least equal in compaction to undisturbed soil, as required by the Municipal authorities or elsewhere in this Specification. The Contractor shall level all excavations.
- E18.28.5 Should settlement occur in the excavation and cause a depression in the surface, the Contractor shall repair the surface. Placing of additional backfill material due to settlement shall be at the Contractor's expense.
- E18.28.6 The concrete base shall be oriented in the proper direction to allow the easy entrance of the underground cables into the plastic pipe preinstalled in the concrete base. Care shall be taken to prevent damage to the insulation or jacket of the conductors. The cable shall be left long enough to extend one (1) metre beyond the top of the hand hole.

E18.29 BASE MOUNTED STREET LIGHT POLES

- E18.29.1 This shall include all Work required to install the street light pole on the concrete base as set forth in this Specification.
- E18.29.2 The Contractor shall furnish all labour and supplies necessary for the installation of the pole (straight shaft or davit) on the concrete base.
- E18.29.3 Unless otherwise specified on the construction drawings, the Contractor shall orient the poles so that the hand hole is on the left side of the pole when viewed from the road. A worker should be able to see oncoming traffic when working in the hand hole.
- E18.29.4 The Contractor shall level the street light pole in all 4 directions. Leveling shims may be used.
- E18.29.5 Tightening of bolts shall be performed in a manner that brings the surfaces up evenly. All nuts shall be tightened and torqued in accordance with Standard CD 300-9. The Contractor shall install the nut covers included with the pole. Nut covers are typically not supplied for the 55' and 65' street light poles.
- E18.29.6 Unless otherwise specified, excess underground cable and 2C-12 wire shall be left inside the hand hole with the hand hole cover loosely installed.
- E18.29.7 Existing street light poles may have street signs attached. The Contractor shall remove the signs from the existing pole and temporarily reattach the signs to the new pole. The Contractor shall notify the Contract Administrator of the location where the signs have been removed.

E18.30 LUMINAIRES AND ASSOCIATED WIRING

- E18.30.1 The Contractor shall furnish labour and supplies 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.

E18.30.2 The Contractor shall verify the luminaire voltage matches the source voltage as shown on the drawings. If luminaire voltage does not match the source voltage, the Contractor shall re-wire the luminaire in accordance with the wiring diagram provided.

E18.30.3 As specified on the construction drawings, the luminaire will require either a photo electric cell (PEC) or shorting cap installed. When installing the PEC the eye shall be oriented north. The Contractor shall also install the appropriate wattage bulb in the luminaire.

E18.31 BREAK AWAY BASES

E18.31.1 Break away bases shall be installed in accordance with Standard CD 300-10. The height of the concrete base above grade shall not exceed 50mm. The surface of the concrete base shall be flat and level. A reaction plate shall be installed between the concrete base and the break-away base.

E18.31.2 The Contractor shall torque the couplers in accordance with Standard CD 300-10. Impact tools shall not be used to tighten or torque couplers or nuts associated with a break away base.

E18.32 SPLICING/CONNECTING CABLES

E18.32.1 The electric cable shall be spliced/terminated as per Standards CD 215-12, CD 215-13, CD 310-1, CD 310-4, CD 310-9 and CD 310-10 with the exception that the Contractor will use a GELCAP-SL-2/0 splice kit (See Appendix E). Termination in the hand hole may include the installation of an inline fuse holder.

E18.32.2 The Contractor shall furnish all labour and supplies necessary to splice/terminate the street light conductor(s). Care shall be taken to ensure the conductors entering the street light from underground are not damaged.

E18.33 EXCAVATION

E18.33.1 The Contractor shall furnish all materials and labour and supplies 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 the Contract Administrator 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.

E18.33.2 Trenches shall be dug to such a depth that will provide a minimum cover of 600 mm from final grade in sodded areas and 1000 mm in roadways in accordance with Standard CD 305-1.

E18.34 LAYING CABLES

E18.34.1 Cables are to be lowered in the trench in an orderly fashion so as to maintain a consistent path and straight alignment. All cables shall be lowered in a continuous run (NO SPLICING) and in accordance with 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.

E18.34.2 Once a cable is cut its ends must be sealed immediately with an approved and appropriately sized, heat shrink or cold shrink sealing cap to prevent moisture ingress unless the cable is being installed in the pole at that time.

E18.34.3 During the removal of the cable, the reels shall be placed on jacks, stands or trailers with a bar through the arbour holes which will allow the reel to be turned easily, and the cable to

be paid out. Cables can be paid out from the bottom or the top of the reel. Cable in coils shall be handled in a similar manner. This can be achieved by supporting the coil in a vertical plane and rotating it by hand as the cable is carefully uncoiled. The cable shall never be pulled over the flange of a reel, or pulled off the side of a coil, since this will introduce a twist in the cable.

E18.34.4 During installation, under no circumstance is the cable to be subjected to a bending radius tighter than that detailed in the Standards. The minimum bending radius of #4CN street light cable is 125 mm per Electrical Standard CD 210-15.

E18.35 INSTALLING CONDUIT AND CABLE BY BORING (HORIZONTAL DIRECTIONAL DRILLING)

E18.35.1 The Contractor shall dig the approaches and openings necessary to install boring equipment, and the boring equipment used shall be of such a nature as to minimize the opening size required. The boring equipment shall produce a straight hole without unnecessary dips or bends. The bore hole shall be only slightly larger than the outside diameter of the conduits or cables to minimize possible settlement. Cables and conduits shall be pulled in with pulling eyes or using a kellum grip in a manner so as to guard against damage.

E18.35.2 During construction as the drill bit crosses each existing facility a lookout shall be assigned by the Contractor to visually confirm the drill bit is maintaining a minimum 300 mm clearance from the existing facility. The minimum allowable clearance between the proposed cable or conduit and existing facilities is 300 mm or as otherwise specified by the Contract Administrator. Maximum pulling tensions on any streetlight cable shall be limited to 2.9 kN/0.65 kips.

E18.35.3 Drilling fluids and associated waste materials shall be disposed of in a manner that minimizes environmental effects.

E18.35.4 The Contractor shall properly compact the backfill material and will be responsible for placing additional material should settlement occur for the duration of the warranty period.

E18.35.5 All horizontal directional drilling practices must conform to Manitoba Hydro Directional Boring Guidelines included as Appendix D.

E18.36 BURIED UTILITY CROSSINGS

E18.36.1 All buried obstructions are not necessarily shown on the reference drawings and the locations of those indicated are approximate only.

E18.36.2 The Contractor shall determine the location of all buried obstructions and shall notify the appropriate authorities and obtain all necessary permits prior to excavation, trenching and directional drilling near or across such obstructions. All buried obstructions where the new buried cable route crosses other utilities including but not limited to gas, water, sewer, telephone and electric lines shall be exposed as per each utilities guidelines by the Contractor, including the use of Pressurized Water/Vacuum Equipment (PW/VE) where necessary. Should any damage occur to such lines during the course of the Work, the Contractor shall be responsible for the damage and the costs of repairs to buried obstructions caused by its operations and shall fully indemnify the City of Winnipeg and Manitoba Hydro from and against all claims arising out of such damage. The requirements of the Directional Boring Guidelines are included in Appendix D shall be followed when crossing natural gas pipelines and electrical cables by the directional boring method.

E18.36.3 The PW/VE technique, used to expose underground plant in certain conditions, must be performed in accordance with each utility's requirements, including but not limited to Manitoba Hydro, Manitoba Telecom Services, Shaw Cable, etc. PW/VE costs that the Contractor will incur during the Work must be factored into the Contractor's bid prices. The Contractor shall not be entitled to extra compensation for the use of PW/VE on the Work. At a minimum; the Contractor will be required to use PW/VE when excavating within 1m horizontal distance to polyethylene gas mains or services when 12 inches (or greater) of frost is present in the local ground conditions. The Contractor shall also be required to use PW/VE when excavating within 1 m horizontal distance to high pressure or transmission

pressure steel gas mains or services when 12 inches (or greater) of frost is present in the local ground conditions. PW/VE is also required when digging within 1m horizontal distance of an energized high voltage cable regardless whether frost is present in local ground conditions or not.

- E18.36.4 The Contractor shall be responsible to supply all backfill material and carry out all backfill, compacting and leveling of all excavations so as to be ready for topsoil and seed or sod or as directed by the Contract Administrator.

E18.37 BENDING CABLES AND INSTALLATION INTO STANDARDS

- E18.37.1 It is desired to reduce to a minimum the required number of bends and to lay the cables 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.

- E18.37.2 Sharp bends of the cables 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. The minimum bending radius of #4 AL C/N street light cable is 125 mm and 115mm for 1/0 AL Triplex as per Electrical Standard CD210-15.

- E18.37.3 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 Manitoba Hydro or 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.

- E18.37.4 Unless otherwise directed, excess underground cable and 2C-12 wire shall be left inside the hand hole with the hand hole cover loosely installed.

E18.38 BACKFILL

- E18.38.1 All backfilling material within 300 mm of the cables 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. 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 the Contract Administrator. Backfill material is to be placed and compacted in lifts not exceeding 300 mm. All excess material is to be removed by the Contractor.

- E18.38.2 Tamping or flushing methods must be used where necessary to give the required compaction. Where tamping is used, hand tampers shall be used to at least 300 mm above the cable before machine tamping may be used. The Contractor shall level all excavations so as to be ready for topsoil and seed or sod or as directed by the Contract Administrator. Should settlement occur in the excavation and cause a depression in the surface, the Contractor shall repair the surface to the satisfaction of the Contract Administrator at the Contractor's cost.

- E18.38.3 Excavations remaining where poles have been removed shall be backfilled with spoil, pit run gravel or 3/4 down limestone and compacted in lifts of 150mm as directed by the Contract Administrator. The top 300 mm of the excavation shall be backfilled with topsoil.

- E18.38.4 Excavations remaining where utility crossings have been exposed shall be backfilled with sand or clean spoil and compacted in lifts of 150mm. The top 300 mm of the excavation shall be backfilled with topsoil.

E18.39 DEFECTIVE WORK

- E18.39.1 If any portion of the Work fails to comply with the requirements of this Specification, 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.

E18.40 AS-BUILT DRAWING

- E18.40.1 The Contractor shall provide an as-built drawing or mark-up drawing to the Contract Administrator which accurately displays the "as-built" location of the buried street light cables, conduits and street light poles.

E18.41 MEASUREMENT AND PAYMENT

- E18.41.1 Removal of 25' to 35' street light pole and precast, poured in place concrete, steel power installed base or direct buried including davit arm, luminaire and appurtenances
- (a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Removal of 25' to 35' street light pole and precast, poured in place concrete, steel power installed base or direct buried including davit arm, luminaire and appurtenances". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by the Contract Administrator. 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 scrap material, payment of associated disposal fees and all other items incidental to the work included in the Specification.
- E18.41.2 Installation of #4 AL C/N or 1/0 AL Triplex Streetlight Cable 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 #4 AL C/N or 1/0 AL Triplex streetlight cable by open trench method." The number of meters to be paid for at the Contract Unit Price shall be measured and accepted by the Contract Administrator. The Price shall be payment in full for performing all operations herein described including installation of the cable, backfilling the trench, buried utility crossings, use of pressurized water/vacuum excavation and all other items incidental to the work included in the Specification.
- E18.41.3 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 the Contract Administrator. 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.
- E18.41.4 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 the Contract Administrator. 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.

- E18.41.5 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 the Contract Administrator. 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 into the base, use of pressurized water/vacuum excavation and all other items incidental to the work included in the Specification.
- E18.41.6 Installation of One (1) 10' Ground Rod at End of Street Light Circuit. 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 end of street light circuit. 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 the Contract Administrator. 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.
- E18.41.7 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
- (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 the Contract Administrator. 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 up the pole and all other items incidental to the work included in the Specification.
- E18.41.8 Installation and Connection of Externally-Mounted Relay 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 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 the Contract Administrator. The Price shall be payment in full for performing all operations herein described including mounting the relay, wiring as per the schematic and all other items incidental to the work included in the Specification.
- E18.41.9 Terminate 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 the Contract Administrator. 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 using a GELCAP-SL-2/0 splice kit and all other items incidental to the work included in the Specification.
- E18.41.10 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 the Contract Administrator. 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.

E18.41.11 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 the Contract Administrator. The Price shall be payment in full for performing all operations herein described including splicing the 1/0 Al triplex cable or 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.

E18.41.12 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 the Contract Administrator. 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.

E18.41.13 Installation of Overhead Span of #4 Duplex Between New or Existing Streetlight Poles and Connect Luminaire to Provide Temporary 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 Feed". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by the Contract Administrator. 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.

E18.41.14 Removal of Overhead Span of #4 Duplex Between New or Existing Streetlight Poles to Remove Temporary 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 feed". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by the Contract Administrator. 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.

E18.41.15 Expose underground cable entrance of existing streetlight pole and install new streetlight cable.

- (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". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by the Contract Administrator. 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 conductor(s), backfill, compaction and all other items incidental to the work included in the Specification.