THE CITY OF WINNIPEG

TENDER

TENDER NO. 483-2021

2021-2023 REGIONAL PAVEMENT RENEWAL: JUBILEE AVENUE AND PEMBINA HIGHWAY

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 2021-2023 Regional Pavement Renewal: Jubilee Avenue and Pembina Highway

B2. SUBMISSION DEADLINE

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

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

B3. ENQUIRIES

B3.1 All enquiries shall be directed to the Contract Administrator identified in D5.1.

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

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

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

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

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

B4. CONFIDENTIALITY

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

(a) was known to the Bidder before receipt hereof; or

(b) becomes publicly known other than through the Bidder; or

(c) is disclosed pursuant to the requirements of a governmental authority or judicial order.

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

B5. ADDENDA

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

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

B5.3 Addenda will be available on the MERX website at www.merx.com.

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

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

B5.6 Notwithstanding B3, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D5.

B6. SUBSTITUTES

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

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

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

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

(a) provide sufficient information and details to enable the Contract Administrator to determine the acceptability of the Plant, Material or method as either an approved equal or alternative;

(b) identify any and all changes required in the applicable Work, and all changes to any other Work, which would become necessary to accommodate the substitute;

(c) identify any anticipated cost or time savings that may be associated with the substitute;

(d) certify that, in the case of a request for approval as an approved equal, the substitute will fully perform the functions called for by the general design, be of equal or superior substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed Work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance; and

(e) certify that, in the case of a request for approval as an approved alternative, the substitute will adequately perform the functions called for by the general design, be similar in substance to that specified, is suited to the same use and capable of performing the same function as that specified and can be incorporated into the Work, strictly in accordance with the proposed Work schedule and the dates specified in the Supplemental Conditions for Substantial Performance and Total Performance.

B6.5 The Contract Administrator, after assessing the request for approval of a substitute, may in his/her sole discretion grant approval for the use of a substitute as an “approved equal” or as an “approved alternative”, or may refuse to grant approval of the substitute.

B6.6 The Contract Administrator will provide a response in writing, at least two (2) Business Days prior to the Submission Deadline, to the Bidder who requested approval of the substitute.

B6.6.1 The Contract Administrator will issue an Addendum, disclosing the approved Materials, equipment, methods and products to all potential Bidders. The Bidder requesting and obtaining the approval of a substitute shall be responsible for disseminating information regarding the approval to any Person or Persons he/she wishes to inform.

B6.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.

B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his/her Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B17.

B6.9 No later claim by the Contractor for an addition to the Total Bid Price because of any other changes in the Work necessitated by the use of an approved equal or an approved alternative will be considered.

B7. BID COMPONENTS

B7.1 The Bid shall consist of the following components:

(a) Form A: Bid;

(b) Form B: Prices; and

(c) Form G1: Bid Bond and Agreement to Bond.

B7.2 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely.

B7.3 The Bid shall be submitted electronically through MERX at www.merx.com.

B7.3.1 Bids will **only** be accepted electronically through MERX.

B7.4 Bidders are advised that inclusion of terms and conditions inconsistent with the Tender document, including the General Conditions, will be evaluated in accordance with B17.1(a).

B8. BID

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

B8.2 Paragraph 2 of Form A: Bid/Proposal shall be completed in accordance with the following requirements:

(a) if the Bidder is a sole proprietor carrying on business in his/her own name, his/her name shall be inserted;

(b) if the Bidder is a partnership, the full name of the partnership shall be inserted;

(c) if the Bidder is a corporation, the full name of the corporation shall be inserted; or

(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 (2) or more Persons, each and all such Persons shall identify themselves in accordance with B8.2.

B8.3 In Paragraph 3 of Form A: Bid/Proposal, the Bidder shall identify a contact Person who is authorized to represent the Bidder for purposes of the Bid.

B8.4 Paragraph 13 of Form A: Bid/Proposal shall be signed in accordance with the following requirements:

(a) if the Bidder is a sole proprietor carrying on business in his/her own name, it shall be signed by the Bidder;

(b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;

(c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers; or

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

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

B8.5 If a Bid is submitted jointly by two (2) or more Persons, the word "Bidder" shall mean each and all such Persons, and the undertakings, covenants and obligations of such joint Bidders in the Bid and the Contract, when awarded, shall be both joint and several.

B9. PRICES

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

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

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

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

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

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

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

B10. DISCLOSURE

B10.1 Various Persons provided information or services with respect to this Work. In the City's opinion, this relationship or association does not create a conflict of interest because of this full disclosure. Where applicable, additional material available as a result of contact with these Persons is listed below.

B10.2 The Persons are:

(a) N/A

B11. CONFLICT OF INTEREST AND GOOD FAITH

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

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

(a) other commitments;

(b) relationships;

(c) financial interests; or

(d) involvement in ongoing litigation;

that could or would be seen to:

(i) exercise an improper influence over the objective, unbiased and impartial exercise of the independent judgment of the City with respect to the evaluation of Bids or award of the Contract; or

(ii) compromise, impair or be incompatible with the effective performance of a Bidder's obligations under the Contract;

(e) has contractual or other obligations to the City that could or would be seen to have been compromised or impaired as a result of its participation in the Tender process or the Work; or

(f) has knowledge of confidential information (other than confidential information disclosed by the City in the normal course of the Tender process) of strategic and/or material relevance to the Tender process or to the Work that is not available to other Bidders and that could or would be seen to give that Bidder an unfair competitive advantage.

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

(a) avoid any perceived, potential or actual Conflict of Interest in relation to the procurement process and the Work;

(b) upon discovering any perceived, potential or actual Conflict of Interest at any time during the Tender process, promptly disclose a detailed description of the Conflict of Interest to the City in a written statement to the Contract Administrator; and

(c) provide the City with the proposed means to avoid or mitigate, to the greatest extent practicable, any perceived, potential or actual Conflict of Interest and shall submit any additional information to the City that the City considers necessary to properly assess the perceived, potential or actual Conflict of Interest.

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

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

(a) disqualify a Bidder that fails to disclose a perceived, potential or actual Conflict of Interest of the Bidder or any of its employees proposed for the Work;

(b) require the removal or replacement of any employees proposed for the Work that has a perceived, actual or potential Conflict of Interest that the City, in its sole discretion, determines cannot be avoided or mitigated;

(c) disqualify a Bidder or employees proposed for the Work that fails to comply with any requirements prescribed by the City pursuant to B11.4 to avoid or mitigate a Conflict of Interest; and

(d) disqualify a Bidder if the Bidder, or one of its employees proposed for the Work, has a perceived, potential or actual Conflict of Interest that, in the City's sole discretion, cannot be avoided or mitigated, or otherwise resolved.

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

B12. QUALIFICATION

B12.1 The Bidder shall:

(a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba;

(b) be financially capable of carrying out the terms of the Contract; and

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

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

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

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

(a) have successfully carried out Work similar in nature, scope and value to the Work;

(b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and

(c) have a written workplace safety and health program if required pursuant to The Workplace Safety and Health Act (Manitoba).

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

(a) Written confirmation of a safety and health certification meeting SAFE Work Manitoba's SAFE Work Certified Standard (e.g., COR™ and SECOR™) in the form of:

(i) a copy of their valid Manitoba COR certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Certificate of Recognition (COR) Program administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or

(ii) a copy of their valid Manitoba SECOR™ certificate and Letter of Good Standing (or Manitoba equivalency) as issued under the Small Employer Certificate of Recognition Program (SECOR™) administered by the Construction Safety Association of Manitoba or by the Manitoba Heavy Construction Association's WORKSAFELY™ COR™ Program; or

(b) a report or letter to that effect from an independent reviewer acceptable to the City. A list of acceptable reviewers and the review template are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/.

B12.5 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator that the approach to slip-form paving on Jubilee Avenue is consistent with technical requirements of the Specifications, the Contract Drawings and the quantities listed in the Form B: Prices.

B12.6 Further to B12.3(a) the Bidder and/or any Subcontractor undertaking the slip-form paving of the Jubilee Avenue Reconstruction must be able to demonstrate the following qualifications in accordance with B12.5. Senior project Site personnel (foremen, superintendents, or similar) which can demonstrator the following qualifications will be considered when evaluating the qualifications of the Bidder or Subcontractor:

(a) A minimum of one (1) successful slip-form paving installation in close proximity to trees using methods meeting the requirements stipulated within the Tender.

B12.7 The Bidder shall submit, within three (3) Business Days of a request by the Contract Administrator, proof satisfactory to the Contract Administrator of the qualifications of the Bidder and of any proposed Subcontractor.

B12.8 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B13. BID SECURITY

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

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

(a) The version submitted by the Bidder must have valid digital signatures and seals;

(b) The version submitted by the Bidder must be verifiable by the City with respect to the totality and wholeness of the bond form, including: the content; all digital signatures and digital seals; with the surety company, or an approved verification service provider of the surety company;

(c) The version submitted must be viewable, printable and storable in standard electronic file formats compatible with the City, and in a single file. Allowable formats include pdf;

(d) The verification may be conducted by the City immediately or at any time during the life of the bond and at the discretion of the City with no requirement for passwords or fees; and

(e) The results of the verification must provide a clear, immediate and printable indication of pass or fail regarding B13.2(a).

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

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

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

B13.5 The Bid security of the successful Bidder and the next two (2) lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly formed with the successful Bidder and the Contract securities are furnished as provided herein. The Bid securities of all other Bidders will be released when a Contract is awarded.

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

B14. OPENING OF BIDS AND RELEASE OF INFORMATION

B14.1 Bids will not be opened publicly.

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

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

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

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

B15. IRREVOCABLE BID

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

B15.2 The Acceptance by the City of any Bid shall not release the Bids of the next two (2) lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly formed and the Contract securities have been furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid/Proposal.

B16. WITHDRAWAL OF BIDS

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

B17. EVALUATION OF BIDS

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

(a) compliance by the Bidder with the requirements of the Tender, or acceptable deviation therefrom (pass/fail);

(b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B12 (pass/fail);

(c) Total Bid Price; and

(d) economic analysis of any approved alternative pursuant to B6.

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

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

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

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

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

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

B18. AWARD OF CONTRACT

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

B18.2 The City will have no obligation to award a Contract to a Bidder, even though one (1) or all of the Bidders are determined to be qualified, and the Bids are determined to be responsive.

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

(a) the prices exceed the available City funds for the Work;

(b) the prices are materially in excess of the prices received for similar Work in the past;

(c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;

(d) only one (1) Bid is received; or

(e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.

B18.3 The Work of this Contract is contingent upon Council approval of sufficient funding in the 2022 Capital Budget. If the Capital Budget approved by Council does not include sufficient funding for the Work, the City will have no obligation to award a Contract.

B18.4 Where an award of Contract is made by the City, the award shall be made to the qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B17.

B18.4.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.

B18.5 As noted in D3 and identified in Form B: Prices, the Work of Part 2 will be contingent upon the Province approving funding for the Work. If sufficient funding for Part 2 Work is not approved by the Province the City shall have the right to eliminate all or any portion of Part 2 Work in accordance with D3.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

C0.1 The *General Conditions for Construction* (Revision 2020-01-31) are applicable to the Work of the Contract.

C0.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm

C0.2 A reference in the Tender to a section, clause or subclause with the prefix "**C**" designates a section, clause or subclause in the *General Conditions for Construction*.

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. FORM OF CONTRACT DOCUMENTS

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

D3. SCOPE OF WORK

D3.1 The Work to be done under the Contract shall consist of two (2) parts:

(a) Part 1 – City Funded Work; and

(b) Part 2 – Manitoba Hydro Funded Work.

Part 1 – City Funded Work

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

Phase 1

D3.2.1 Jubilee Avenue (2022):

(a) Pavement Reconstruction:

(i) Jubilee Avenue from Cockburn Street South to Osborne Street.

D3.2.2 Pembina Highway (2022):

(a) Pavement Rehabilitation and Transit Stop Improvements:

(i) Pembina Highway Southbound from Chevrier Boulevard to McGillivray Boulevard.

(b) Pavement Widening:

(i) Pembina Highway Southbound from Chevrier Boulevard to McGillivray Boulevard.

Phase 2

D3.2.3 Jubilee Avenue (2023):

(a) Pavement Reconstruction:

(i) Jubilee Avenue from Pembina Highway to Cockburn Street South.

(b) Churchill Drive Pump Station – Structural Works:

(i) 905 Cockburn Street South.

D3.2.4 Pembina Highway (2023):

(a) Pavement Rehabilitation and Transit Stop Improvements:

(i) Pembina Highway Northbound from Chevrier Boulevard to McGillivray Boulevard.

(b) Pavement Widening:

(i) Pembina Highway Northbound from Chevrier Boulevard to McGillivray Boulevard.

Part 2 – Manitoba Hydro Funded Work

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

D3.3.1 Jubilee Avenue:

(a) Street Lighting and Associated Works:

(i) Jubilee Avenue from Pembina Highway to Osborne Street.

D3.3.2 Pembina Highway:

(a) Street Lighting and Associated Works:

(i) Pembina Highway from Chevrier Boulevard to McGillivray Boulevard.

D3.4 The City currently has no approved funding in the Capital Budget for Part 2 of the Work, but is anticipating receiving notification about funding from Manitoba Hydro by February 2022. Part 2 of the Work is contingent upon Manitoba Hydro approving sufficient funding.

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

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

D3.4.3 If all or any portion of Part 2 is eliminated pursuant to D3.4.1, the time periods stipulated in D21 for Substantial Performance of the Work and in D22 for Total Performance of the Work will be reduced proportionally by the Contract Administrator acting reasonably.

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

(a) Pavement Reconstruction:

(i) removal of existing pavement;
(ii) removal of existing streetcar tracks and bedding;
(iii) construction of temporary asphalt widening and crossovers;
(iv) excavation;
(v) installation of subdrains;
(vi) installation of streetlights and associated infrastructure;
(vii) installation of Traffic Signal underground conduit, bases, and pits;
(viii) compaction of existing sub-grade;
(ix) installation of catch basins and sewer service pipe;
(x) installation of water service insulation;
(xi) relocation and/or adjustments of fire hydrants;
(xii) repairs to existing mainline sewers and manholes;
(xiii) placement of high-woven geotextile;
(xiv) placement of sub-base and base course Materials;
(xv) adjustment of existing pavement appurtenances;
(xvi) construction of two hundred thirty (230) millimetres (mm) plain dowelled concrete pavements;
(xvii) construction of one hundred eighty (180) mm integral barrier curb;
(xviii) construction of concrete medians/islands;
(xix) construction of splash strip;
(xx) construction of sidewalks with block-outs;
(xxi) installation of paving stones;
(xxii) construction of asphalt pathways;
(xxiii) renewal of existing sidewalk;

(xxiv) regrading private walkways;
(xxv) completion of boulevard grading; and
(xxvi) installation of topsoil and sod.

(b) Churchill Drive Pump Station – Structural Works:
(i) demolition and disposal of the existing concrete steps and associated foundation in front of northeast Churchill Pump Station entrance;
(ii) structural excavation;
(iii) prepare and compact subgrade;
(iv) place and compact base course;
(v) construct staircase concrete foundation and place anchor bolts and sets;
(vi) reconstruct steel steps as per the new staircase drawings; and
(vii) supply and install aluminum handrail.

(c) Pavement Rehabilitation:
(i) planing of existing asphalt overlay as required;
(ii) catch basin and catch basin lead repairs;
(iii) repairs to existing mainline sewers and manholes;
(iv) installation of streetlights and associated infrastructure;
(v) installation of Traffic Signal underground conduit, bases, and pits;
(vi) adjustment of existing pavement appurtenances;
(vii) full depth (two hundred (200) mm reinforced) concrete repairs of existing slabs and joints;
(viii) renewal of curbs, curb ramps, bullnoses, and miscellaneous concrete slabs as required;
(ix) construction of one hundred (100) mm sidewalk;
(x) construction of protected bike lane and transit stop improvements;
(xi) installation of directional bar tiles;
(xii) installation of interlocking paving stones;
(xiii) completion of boulevard grading;
(xiv) installation of topsoil and sod;
(xv) asphalt patching over full depth concrete repairs;
(xvi) placement of mainline asphalt overlay (average thickness eighty (80) mm) utilizing automatic grade control for final lift; and
(xvii) placement of tie-in asphalt overlay for project limits and private approaches.

(d) Pavement Widening:
(i) removal of existing curb;
(ii) tree Removal;
(iii) excavation of boulevard;
(iv) compaction of existing subgrade;
(v) placement of separation/filtration geotextile fabric;
(vi) placement and compaction of sub-base and base course material;
(vii) adjustment of existing boulevard and center median structures;
(viii) installation of catch pits/catch basin and drainage connection/sewer service pipes;
(ix) renewal of existing concrete approaches as required;
(x) construction of two hundred (200) mm concrete pavement (reinforced);
(xi) construction of monolithic concrete splash strip utilizing slip form paver(one hundred fifty (150) mm reveal height);
(xii) construction of barrier curb;

(xiii) construction of safety median, monolithic concrete median slab and monolithic concrete bullnose;

(xiv) placement of pavement repair fabric over longitudinal joint as required; and

(xv) placement of mainline asphalt overlay (average thickness eighty (80) mm) utilizing automatic grade control for final lift.

D4. DEFINITIONS

D4.1 When used in this Tender:

(a) "**Local Street**" means an open (transversable) right-of-way that is not identified in Schedule E of the most recent City of Winnipeg By-Law No. 1481/77 (e.g., not a regional street);

(b) "**Multi-Use Path**" means a hard surfaced facility, separated from vehicular lanes, which provides a path for mixed-use active transportation such as bicycles, pedestrians, and other vulnerable road users;

(c) "**OHSS**" means Overhead Sign Support Structure.

(d) "**Regional Street**" means those streets listed in Schedule E of the most recent City of Winnipeg By-Law No. 1481/77; and

(e) "**Rehabilitation**" means pavement, curb and sidewalk repairs, replacement or adjustment of drainage infrastructure, adjustment of appurtenances in the pavement and boulevards, and an asphalt overlay.

D5. CONTRACT ADMINISTRATOR

D5.1 The Contract Administrator is Dillon Consulting Limited, represented by:

David Wiebe, P.Eng., PTOE
Project Manager

Telephone No. 204 453-2301
Email Address dwiebe@dillon.ca

D5.2 At the pre-construction meeting, David Wiebe, P.Eng., PTOE will identify additional personnel representing the Contract Administrator and their respective roles and responsibilities for the Work.

D6. CONTRACTOR'S SUPERVISOR

D6.1 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.

D6.2 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 D6.1 or an alternate can be contacted twenty-four (24) hours a day to respond to an emergency.

D7. NOTICES

D7.1 Except as provided for in C22.4, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid/Proposal.

D7.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D7.3

or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator identified in D5.

D7.3 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

D8. FURNISHING OF DOCUMENTS

D8.1 Upon award of the Contract, the Contractor will be provided with 'issued for construction' Contract Documents electronically, including Drawings in PDF formal only.

SUBMISSIONS

D9. AUTHORITY TO CARRY ON BUSINESS

D9.1 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.

D10. SAFE WORK PLAN

D10.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least ten (10) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.

D10.2 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

D10.3 Notwithstanding B12.4 at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated COR Certificate or Annual Letter of good Standing. A Contractor, who fails to provide a satisfactory COR Certificate or Annual Letter of good Standing, will not be permitted to continue to perform any Work.

D11. INSURANCE

D11.1 The Contractor shall provide and maintain the following insurance coverage:

(a) commercial general liability insurance, in the amount of at least five million dollars ($5,000,000.00) inclusive, with The City of Winnipeg and Manitoba and its Ministers, officers, employees and agents added as additional insureds, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, sudden and accidental pollution liability, non-owned automobile liability, broad form property damage cover and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;

(b) Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than five million dollars ($5,000,000.00) inclusive for loss

or damage including personal injuries and death resulting from any one accident or occurrence;

(c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or Materials intended to enter into and form part of any installation;

(d) property insurance for all equipment, tools, field office and portable toilets used by the Contractor directly or indirectly in the performance of the Work on the project that may be owned, rented, leased or borrowed; and

(e) Contractor's pollution liability (CPL) insurance in the amount of at least one million dollars ($1,000,000.00) per occurrence and two million dollars aggregate ($2,000,000.00) covering third party injury and property damage claims, including clean-up costs and transported cargo as a result of pollution conditions arising from the Contractor's operations and completed operations. Such policy shall name the City and Manitoba and its Ministers, officers, employees and agents as additional insureds and remain in place for a minimum of twelve (12) months following Total Performance.

D11.2 Deductibles shall be borne by the Contractor.

D11.3 All Subcontractors performing Work on the project shall provide the Contractor with evidence of insurance as outlined in D11.1 above and be registered with Workers Compensation Board of Manitoba and maintain insurance and workers compensation coverage throughout the performance of the Work, The Contractor shall provide the Contract Administrator with evidence of same prior to the commencement of any Work.

D11.4 All policies shall be taken out with insurers duly licensed in the Province of Manitoba.

D11.5 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 Documents, as applicable.

D12. CONTRACT SECURITY

D12.1 The Contractor shall provide and maintain the performance bond and the labour and material payment bond until the expiration of the warranty period in the form of:

(a) a performance bond of a company registered to conduct the business of a surety in Manitoba, in the form attached to these Supplemental Conditions (Form H1: Performance Bond), in the amount of fifty percent (50%) of the Contract Price; and

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

D12.1.1 Where the Contract security is a performance bond, it may be submitted in hard copy or digital format. If submitted in digital format the Contract security must meet the following criteria:

(a) the version submitted by the Contractor must have valid digital signatures and seals;

(b) the version submitted by the Contractor must be verifiable by the City with respect to the totality and wholeness of the bond form, including: the content; all digital signatures and digital seals; with the surety company, or an approved verification service provider of the surety company;

(c) the version submitted must be viewable, printable and storable in standard electronic file formats compatible with the City, and in a single file. Allowable formats include pdf;

(d) the verification may be conducted by the City immediately or at any time during the life of the bond and at the discretion of the City with no requirement for passwords or fees; and

(e) the results of the verification must provide a clear, immediate and printable indication of pass or fail regarding D12.1(b).

D12.1.2 Digital bonds failing the verification process will not be considered to be valid and may be determined to be an event of default in accordance with C18.1. If a digital bond fails the verification process, the Contractor may provide a replacement bond (in hard copy or digital format) within seven (7) Calendar Days of the City's request or within such greater period of time as the City in its discretion, exercised reasonably, allows.

D12.1.3 Digital bonds passing the verification process will be treated as original and authentic.

D12.2 The Contractor shall provide the City Solicitor with the required performance and labour and material payment bonds within seven (7) Calendar Days of notification of the award of the Contract by way of an award letter and prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.

D12.3 The Contractor shall, as soon as practicable after entering into a Contract with a Subcontractor:

(a) give the Subcontractor written notice of the existence of the labour and material payment bond in D12.1(b); and

(b) post a notice of the bond and/or a copy of that bond in a conspicuous location at the Site of the Work.

D13. SUBCONTRACTOR LIST

D13.1 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 ten (10) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the C4.1 for the return of the executed Contract Documents, if applicable.

D14. DETAILED WORK SCHEDULE

D14.1 The Contractor shall provide the Contract Administrator with a detailed Work schedule at least ten (10) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the General Conditions for the return of the executed Contract Documents, as applicable.

D14.2 If, prior to submitting the Detailed Work Schedule, the Contractor does not receive notification pursuant to D15.5 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 D21 for Substantial Performance of the Work and in D22 for Total Performance of the Work will be reduced by five (5) Working Days.

D14.3 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.

D14.4 The detailed Work schedule shall consist of the following:

(a) a Gantt chart for the Work based on the critical path schedule; and

(b) a separate schedule for each year of Work.

all acceptable to the Contract Administrator.

D14.5 Further to D14.4(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

D15. COMMENCEMENT

D15.1 The Contractor shall not commence any Work until he/she is in receipt of an award letter from the Award Authority authorizing the commencement of the Work.

D15.2 The Contractor shall not commence any Work on the Site until:

(a) the Contract Administrator has confirmed receipt and approval of:

(i) evidence of authority to carry on business specified in D9;

(ii) evidence of the workers compensation coverage specified in C6.15;

(iii) the twenty-four (24) hour emergency response phone number specified in D6.2;

(iv) the Pedestrian and Cyclist Accessibility Plan Specified in E2;

(v) the Safe Work Plan specified in D10;

(vi) evidence of the insurance specified in D11;

(vii) the Contract security specified in D12;

(viii) the Subcontractor list specified in D13;

(ix) the detailed Work schedule specified in D14; and

(x) the direct deposit application form specified in D30.

(b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.

D15.3 The Contractor shall not commence the Work on Phase 1 before May 9, 2022, as directed by the Contract Administrator and weather permitting.

D15.4 The Contractor shall not commence the Work on Phase 2 before May 8, 2023, as directed by the Contract Administrator and weather permitting.

D15.5 The Contractor shall not commence Part 2 of the Work as described in D3 and identified in Form B: Prices, unless he/she has received notification from the Contract Administrator that the City has received notice of sufficient funding from Manitoba Hydro.

D16. WORKING DAYS

D16.1 Further to C1.1(tt);

D16.1.1 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.

D16.1.2 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.

D16.1.3 Further to D17.1, if a Contractor receives permission from the Contract Administrator for Work to be performed on Saturdays and Sundays, these days will considered Working Days if the Contract Administrator deems that they are also required on Site.

D16.1.4 When the Work includes two (2) 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.

D17. RESTRICTED WORK HOURS

D17.1 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.

D17.2 The following work hour restrictions shall also apply:

(a) Winnipeg Blue Bomber Event Days:

(i) For the period of two (2) hours before the event start and two (2) hours following the completion of the event, the Contractor shall maintain a minimum of two (2) lanes of traffic per direction on Pembina Highway. Schedule of event days will be provided once available.

(b) Manitoba Marathon – 2022 (June 19, 2022) and 2023 (to be determined):

(i) the Contractor is to maintain a minimum of two (2) lanes of traffic in each direction on Pembina Highway on the event date; and

(ii) the Contractor is to maintain a minimum of one (1) lane of traffic in each direction on Jubilee Avenue on the event date.

D18. WORK BY OTHERS

D18.1 Work by others on or near the Site will include but not necessarily be limited to:

(a) City of Winnipeg Traffic Services – Traffic Control to be completed by the Contractor in accordance with E7. Contractor to coordinate with Traffic Services to supply regulatory signage as required at make arrangements to reinstall the permanent regulatory signs after the Contract is complete. Traffic Services will provide sign clamps line painting;

(b) City of Winnipeg Traffic Signals – Traffic Signals Branch will be responsible for coordinating removal of above ground plant and cabling to facilitate the installation of the underground plant. The Contractor must coordinate with Traffic Signals such that the signals operations at each intersection are maintained except where permitted by the Contract Administrator and Traffic Signals Branch. This may result in Work being completed in multiple stages;

(c) City of Winnipeg Transit – Transit will remove existing bus shelters, benches, bus stop signs, stop flags and totems for reuse and provide temporary Transit stop signage. The Contractor is to coordinate with Transit for the location of temporary stops and provide a safe, delineated area with temporary ramps where needed. Transit will reinstall shelters, benches, stop signage, stop flags and totems after construction;

(d) Manitoba Hydro Gas – Manitoba Hydro will evaluate the feasibility of lowering existing small gas services during roadway excavation. Manitoba Hydro may be required to rock wrap existing gas mains and/or services during roadway excavation;

(e) Manitoba Hydro – Manitoba Hydro will activate and energize the new streetlight plant installed by the Contractor. Manitoba Hydro will provide inspection of new street lighting hardware installed by the Contractor. Manitoba Hydro will remove existing overhead power supply poles (former trolley poles) in the general vicinity of 816 Jubilee to 840 Jubilee, and will install new power supplies to these locations;

(f) Conduent – Red light camera poles, cameras and loops may require decommissioning and reinstallation;

(g) TeraSpan – Fibre crossing at Pembina Highway and Dowker to be maintained;

(h) Benchmark – Benchmark will remove and reinstall advertising Transit benches; and

(i) Outfront Media – Outfront Media will remove the northbound Pembina Transit shelters at Nesbitt and Fletcher and reinstall after construction.

D19. SEQUENCE OF WORK

D19.1 Further to C6.1, the sequence of Work shall be as follows:

D19.1.1 The Work shall be divided into two (2) phases. Each Phase shall be subdivided into stages. Stages are further subdivided into major items of Work.

D19.1.2 **Phase I (2022)** – Phase 1 shall consist of the Works completed in the year 2022 which includes Jubilee from Cockburn Street South to Osborne Street and Southbound Pembina Highway from Chevrier Boulevard to McGillivray Boulevard.

Jubilee Avenue – Cockburn Street South to Osborne Street

(a) **Stage I** – Westbound Jubilee Avenue from Cockburn Street South to Osborne Street:
- (i) pavement and curb removals;
- (ii) complete underground works and sewer/manhole repairs;
- (iii) excavate/remove streetcar rail/bedding;
- (iv) roadway excavation;
- (v) subdrain installation;
- (vi) sub-grade preparation and sub-base/base construction;
- (vii) plain dowelled concrete roadway construction of gutter and center lanes;
- (viii) concrete roadway construction of side streets and private approaches;
- (ix) renew north sidewalk;
- (x) tie-in asphalt overlay placement for side streets;
- (xi) boulevard grading and placing topsoil; and
- (xii) laying of sod.

(b) Placing the topsoil and finished grading of all side street boulevards shall be completed prior to commencing construction of the asphaltic concrete overlay, including the scratch course.

(c) **Stage II** – Eastbound Jubilee Avenue from Cockburn Street South to Osborne Street:
- (i) construct temporary road as needed;
- (ii) pavement and curb removals;
- (iii) complete underground works and sewer/manhole repairs;
- (iv) excavate/remove streetcar rail/bedding;
- (v) roadway excavation;
- (vi) subdrain installation;
- (vii) sub-grade preparation and sub-base/base construction;
- (viii) plain dowelled concrete roadway construction of gutter and center lanes;
- (ix) island concrete reconstruction;
- (x) concrete roadway construction of side streets and private approaches;
- (xi) renew south sidewalk;
- (xii) tie-in asphalt overlay placement for side streets;
- (xiii) boulevard grading and placing topsoil; and
- (xiv) laying of sod.

(d) Placing the topsoil and finished grading of all side street boulevards shall be completed prior to commencing construction of the asphaltic concrete overlay, including the scratch course.

Southbound Pembina Highway – Chevrier Boulevard to McGillivray Boulevard

(e) **Stage I** – Median and Left Turn Lane Rehabilitation/Pavement Widening:
- (i) planing of asphalt and concrete where required;
- (ii) removal of existing curb;

(iii) excavation of boulevard;
(iv) compaction of existing sub-grade;
(v) placement of separation/filtration geotextile fabric;
(vi) placement and compaction of base course material;
(vii) construction of two hundred (200) mm concrete pavement (reinforced);
(viii) concrete pavement slab and joint work and adjustments to pavement structures and appurtenances;
(ix) median splash strip and bullnose construction;
(x) placing topsoil and finish grading;
(xi) placing of scratch course of asphalt; and
(xii) laying of sod.

(f) **Stage II** – Center Lane Rehabilitation:
(i) Planing of asphalt and concrete where required;
(ii) Concrete pavement slab and joint work and adjustments to pavement structures and appurtenances; and
(iii) Placing of scratch course of asphalt.

(g) **Stage III** – Gutter Lane Rehabilitation/Pavement Widening/Protected Bike Facility and Transit Stop Improvements:
(i) planing of asphalt and concrete where required;
(ii) removal of existing curb;
(iii) removal of existing sidewalk;
(iv) excavation of boulevard;
(v) compaction of existing sub-grade;
(vi) placement of separation/filtration geotextile fabric;
(vii) placement and compaction of base course material;
(viii) construction of two hundred (200) mm concrete pavement (reinforced);
(ix) concrete pavement slab and joint work and adjustments to pavement structures and appurtenances;
(x) construction of transit shelter foundations;
(xi) curb renewals, concrete boulevard works, sidewalk reconstruction and construction of sidewalk with block-outs for interlocking paving stones and asphalt;
(xii) placing topsoil and finish grading;
(xiii) placing of asphalt pavement for bicycle path;
(xiv) placing of scratch course of asphalt; and
(xv) laying of sod.

(h) **Stage IV** – All Lanes:
(i) place pavement repair fabric over median longitudinal joint as instructed by Contract Administrator;
(ii) placing of final lift of asphalt for Stage I, Stage II, and Stage III; and
(iii) placing of sod (if not done previously during topsoil placement).

D19.1.3 Placing the topsoil and finished grading of all boulevard and median areas shall be completed prior to commencing construction of the asphaltic concrete overlay, including the scratch course.

D19.1.4 All asphaltic concrete Work shall be performed using a lane-at-a-time method (see E8 for minimum requirements of traffic lanes to be left open at various times).

D19.1.5 At the end of any day, there shall be no drop-off along any longitudinal joint, excepting the longitudinal joint between the gutter and approaches.

D19.1.6 Immediately following the completion of the asphaltic concrete works of Phase I, the Contractor shall clean up the Site and remove all plant, surplus material, waste and debris, other than that left by the City or other Contractors.

D19.1.7 **Phase II (2023)** – Phase 2 shall consist of the Works completed in the year 2023 which includes Jubilee from Cockburn Street South to Pembina Highway and Northbound Pembina Highway from Chevrier Boulevard to McGillivray Boulevard.

Jubilee Avenue – Cockburn Street South to Pembina Highway

(a) **Stage I** – Westbound Jubilee Avenue from Cockburn Street South to Pembina Highway:

(i) construct temporary road as needed;
(ii) pavement and curb removals;
(iii) complete underground works and sewer/manhole repairs;
(iv) excavate/remove streetcar rail/bedding;
(v) roadway excavation;
(vi) subdrain installation;
(vii) sub-grade preparation and sub-base/base construction;
(viii) plain dowelled concrete roadway construction of gutter and center lanes;
(ix) concrete construction of medians and island;
(x) concrete roadway construction of side streets;
(xi) renew north sidewalk;
(xii) boulevard grading and placing topsoil;
(xiii) tie-in asphalt overlay placement for side streets;
(xiv) asphalt placement for multi-use path; and
(xv) laying of sod.

(b) **Stage II** – Eastbound Jubilee Avenue from Cockburn Street South to Osborne Street:

(i) construct temporary road as needed;
(ii) pavement and curb removals;
(iii) complete underground works and sewer/manhole repairs;
(iv) excavate/remove streetcar rail/bedding;
(v) roadway excavation;
(vi) subdrain installation;
(vii) sub-grade preparation and sub-base/base construction;
(viii) plain dowelled concrete roadway construction of gutter and center lanes;
(ix) concrete construction of medians;
(x) concrete roadway construction of side streets and private approaches;
(xi) renew south sidewalk and multi-use path including paving band;
(xii) boulevard grading and placing topsoil;
(xiii) tie-in asphalt overlay placement for side streets;
(xiv) laying of sod; and
(xv) restoration of median temporary roadway.

Northbound Pembina Highway – Chevrier Boulevard to McGillivray Boulevard

(c) **Stage I** – Median and Left Turn Lane Rehabilitation/Pavement Widening:

(i) planing of asphalt and concrete where required;
(ii) removal of existing curb;
(iii) excavation of boulevard;
(iv) compaction of existing sub-grade;

(v) placement of separation/filtration geotextile fabric;
(vi) placement and compaction of base course material;
(vii) construction of two hundred (200) mm concrete pavement (reinforced);
(viii) concrete pavement slab and joint work and adjustments to pavement structures and appurtenances;
(ix) median splash strip and bullnose construction;
(x) placing topsoil and finish grading;
(xi) placing of scratch course of asphalt; and
(xii) laying of sod.

(d) **Stage II** – Center Lane Rehabilitation:
(i) planing of asphalt and concrete where required;
(ii) concrete pavement slab and joint work and adjustments to pavement structures and appurtenances; and
(iii) placing of scratch course of asphalt.

(e) **Stage III** – Gutter Lane Rehabilitation/Pavement Widening/Protected Bike Facility and Transit Stop Improvements:
(i) planing of asphalt and concrete where required;
(ii) removal of existing curb;
(iii) removal of existing sidewalk;
(iv) removal of existing Transit shelter and totem foundations;
(v) relocation of electrical works for powered shelters and totems;
(vi) excavation of boulevard;
(vii) compaction of existing sub-grade;
(viii) placement of separation/filtration geotextile fabric;
(ix) placement and compaction of base course material;
(x) construction of two hundred (200) mm concrete pavement (reinforced);
(xi) concrete pavement slab and joint work and adjustments to pavement structures and appurtenances;
(xii) construction of transit shelter foundations;
(xiii) curb renewals, concrete boulevard works, sidewalk reconstruction and construction of sidewalk with block-outs for interlocking paving stones and asphalt;
(xiv) placing topsoil and finish grading;
(xv) placing of asphalt pavement for multi-use path;
(xvi) placing of scratch course of asphalt; and
(xvii) laying of sod.

(f) **Stage IV** – All Lanes:
(i) place pavement repair fabric over median longitudinal joint as instructed by Contract Administrator;
(ii) placing of final lift of asphalt for Stage I, Stage II, and Stage III; and
(iii) placing of sod (if not done previously during topsoil placement).

D19.1.8 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.

D19.1.9 All asphaltic concrete Work shall be performed using a lane-at-a-time method (see E8 for minimum requirements of traffic lanes to be left open at various times).

D19.1.10 At the end of any day, there shall be no drop-off along any longitudinal joint, excepting the longitudinal joint between the gutter and approaches.

D19.1.11 Immediately following the completion of the asphaltic concrete works for each phase, the Contractor shall clean up the Site and remove all plant, surplus material, waste and debris, other than that left by the City or other Contractors.

D20. CRITICAL STAGES

D20.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:

(a) Critical Stage 1 – September 9, 2022 – Phase 1 – Completion of Southbound Pembina Highway – McGillivray Boulevard to Chevrier Boulevard;

(b) Critical Stage 2 – July 29, 2022 – Phase 1, Stage 1 – Jubilee Avenue – Completion of Phase 1, Stage 1, one (1) way traffic staging Cockburn Street to Osborne Street;

(c) Critical Stage 3 – Phase 1, Stage 2 – Jubilee Avenue – During Stage 2 active traffic lanes as shown on the staging Drawings may not be closed/blocked for construction activities. If slip form paving of the median lane requires closure of the adjacent active lane, it must occur on a weekend between 18:00 Friday and 04:00 Monday (specific weekend subject to Contract Administrator approval);

(d) Critical Stage 4 – September 30, 2022 – Phase 1 – Jubilee Avenue – Osborne Street to Cockburn Street South, all four (4) lanes re-opened;

(e) Critical Stage 5 – Phase 2, Stage 1 and Stage 2 – Jubilee Avenue – During Stage 1 and Stage 2, active traffic lanes as shown on the staging Drawings may not be closed/blocked for construction activities. If slip form paving of the median lane requires closure of the adjacent active lane, it must occur on a weekend between 17:30 Friday and 04:00 Monday (specific weekend subject to Contract Administrator approval);

(f) Critical Stage 6 – Phase 2, Stage 1 Jubilee Avenue – Eastbound left turns at the Jubilee Ramp intersection may be closed to Transit buses for a maximum of twenty-one (21) consecutive Calendar Days to facilitate intersection construction; and

(g) Critical Stage 7 – September 10, 2023 – Phase 2 Pembina Highway – Completion of Northbound Pembina Highway – Chevrier Boulevard to McGillivray Boulevard.

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

D20.3 The date on which each critical stage of the Work has been accepted by the Contract Administrator as being completed to the requirements of the Contract is the date on which completion of these critical stages has been achieved.

D21. SUBSTANTIAL PERFORMANCE

D21.1 The Contractor shall achieve Substantial Performance within two hundred (200) consecutive Working Days of the commencement of the Work as specified in D15.

D21.2 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.

D21.3 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.

D22. TOTAL PERFORMANCE

D22.1 The Contractor shall achieve Total Performance within two hundred ten (210) Working Days of the commencement of the Work as specified in D15.

D22.2 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.

D22.3 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.

D23. LIQUIDATED DAMAGES

D23.1 If the Contractor fails to achieve Critical Stages, Substantial Performance or Total Performance in accordance with the Contract by the days (or hours if indicated) fixed herein for same, the Contractor shall pay the City the following amounts per Working Day (or per hour if indicated) for each and every Working Day (or each and every full hour if indicated) following the days (or hour if indicated) fixed herein for same during which such failure continues:

(a) Critical Stage 1 listed in D20.1(a) – Six thousand dollars ($6,000.00);

(b) Critical Stage 2 listed in D20.1(b) – Two thousand dollars ($2,000.00);

(c) Critical Stage 3 listed in D20.1(c) – One thousand dollars ($1,000.00) per hour;

(d) Critical Stage 4 listed in D20.1(d) – Six thousand dollars ($6,000.00);

(e) Critical Stage 5 listed in D20.1(e) – One thousand dollars ($1,000.00) per hour;

(f) Critical Stage 6 listed in D20.1(f) – Two thousand dollars ($2,000.00);

(g) Critical Stage 7 listed in D20.1(g) – Six thousand dollars ($6,000.00);

(h) Substantial Performance – Six thousand dollars ($6,000.00); and

(i) Total Performance – Two thousand dollars ($2,000.00).

D23.2 The amounts specified for liquidated damages in D23.1 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.

D23.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D24. COMPLETION BONUS

D24.1 This Supplemental Condition shall cover the completion bonus of up to twenty thousand dollars ($20,000.00) for this Contract achievable under Critical Stage 2 listed in D20.1(b) of the Contract.

D24.2 Completion of Work:

D24.2.1 At no risk to the City, the Contractor at its own initiative, means and expense, may undertake to complete all Works included under Critical Stage 2 listed in D20.1(b) on Jubilee Avenue between Osborne Street and Cockburn Street in advance of the Calendar Date noted.

D24.2.2 If any portions of the Work required under Critical Stage 2 are incomplete, the completion bonus will be forfeited, including landscaping.

D24.2.3 In recognition of the fact that completion of these Works prior to Critical Stage 2 is of benefit to the City, the City will compensate the Contractor for said completion on a unit basis per Working Day.

D24.2.4 It is noted that certain delays of the Work are normal, due to Site conditions, necessary layout and dimensional changes. The Contract Administrator will attempt to resolve each situation as soon as possible. The Contractor is advised that no extension to the date listed in D20.1(b) will be given for events of this sort which cause construction delay and are resolved within forty-eight (48) hours of the requirement of change becoming known to both the Contractor and the Contract Administrator.

D24.3 Method of Measurement:

D24.3.1 Subject to clause D24.2 hereof, completion bonus will be measured on a unit basis per Working Day. The number of Working Days to be paid for will be the total number of full Working Days which the Works included under Critical Stage 2 listed in D20.1(b) is complete in advance of the noted Calendar Date, with all specified Works completed acceptable to the Contract Administrator.

D24.4 Basis of Payment:

D24.4.1 Subject to Clause D24.2 hereof, completion bonus will be paid for at the Unit Price per Working Day specified hereinafter for “Completion Bonus” which price shall be payment in full for performing all operations undertaken and all other items incidental to the Work included in this Specification. The Unit Price for Completion Bonus shall be two thousand dollars ($2,000.00) per Working Day up to a maximum of ten (10) Working Days.

D24.4.2 Payment for this item is not identified on Form B: Prices, and shall not be included thereon. If completion bonus does occur as specified herein, then payment shall be made for this item as a change to the Contract.

D25. COVID-19 SCHEDULE DELAYS

D25.1 The City acknowledges that the schedule for this Contract may be impacted by the COVID-19 pandemic. Commencement and progress of the Work shall be performed by the Contractor with due consideration to the health and safety of workers and the public, directives from health authorities and various levels of government and in close consultation with the Contract Administrator.

D25.2 If the Contractor is delayed in the performance of the Work by reason of the COVID-19 pandemic, the Work schedule may be adjusted by a period of time equal to the time lost due to such delay and costs related to such delay will be determined as identified herein.

D25.3 A minimum of seven (7) Calendar Days prior to the commencement of Work, the Contractor shall declare whether COVID-19 will affect the start date. The Contractor shall provide sufficient evidence that the delay is directly related to COVID-19, including but not limited to evidence related to availability of staff, availability of Material or Work by others.

D25.4 For any delay related to COVID-19 and identified after Work has commenced, the Contractor shall within seven (7) Calendar Days of becoming aware of the anticipated delay declare the additional delay and shall provide sufficient evidence as indicated in D25.3. Failure to provide this notice will result in no additional time delays being considered by the City.

D25.5 The Work schedule, including the durations identified in D17 to D22 where applicable, will be adjusted to reflect delays accepted by the Contract Administrator. No additional payment will be made for adjustment of schedules except where seasonal work, not previously identified in the Contract, is carried over to the following construction season.

D25.6 Where Work not previously identified is being carried over solely as a result of delays related to COVID-19, as confirmed by the Contract Administrator, the cost of temporary works to maintain the Work in a safe manner until Work recommences, will be considered by the Contract

Administrator. Where the Work is carried over only partially due to COVID-19, a partial consideration of the cost of temporary works will be considered by the Contract Administrator.

D25.7 Any time or cost implications as a result of COVID-19 and in accordance with the above, as confirmed by the Contract Administrator, shall be documented in accordance with C7.

D26. SCHEDULED MAINTENANCE

D26.1 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 (1) year warranty period) as specified in CW 3250-R7; and

(b) Sodding (maintenance period) as specified in CW 3510-R9.

D26.2 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

D27. JOB MEETINGS

D27.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one (1) representative of the Contract Administrator, one (1) representative of the City and one (1) 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.

D27.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

D28. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

D28.1 Further to C6.26, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

D29. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS

D29.1 Further to B12.4, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require updated proof of compliance, as set out in B12.4.

MEASUREMENT AND PAYMENT

D30. PAYMENT

D30.1 Further to C12, the City shall make payments to the Contractor by direct deposit to the Contractor's banking institution, and by no other means. Payments will not be made until the Contractor has made satisfactory direct deposit arrangements with the City. Direct deposit application forms are at https://winnipeg.ca/finance/files/Direct_Deposit_Form.pdf.

D30.2 Further to C12.10, if a Contractor enters into a Subcontract for Phase 1 – 2022 Construction Work and a separate Subcontract for Phase 2 – 2023 Construction Work, this may permit release, by the City, of the value of the holdback with respect to the Subcontract for Phase 1 works in accordance with The Builders' Liens Act, such as Section 25.

WARRANTY

D31. WARRANTY

D31.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) years thereafter for pavement rehabilitation works, 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.

THIRD PARTY AGREEMENTS

D32. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

D32.1 Funding for the Work of the Contract is being provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada and accordingly, as required by the applicable funding agreements, the following terms and conditions shall apply.

D32.2 For the purposes of D32:

(a) **"Government of Canada"** includes the authorized officials, auditors, and representatives of the Government of Canada; and

(b) **"Government of Manitoba"** includes the authorized officials, auditors, and representatives of the Government of Manitoba.

D32.3 Indemnification By Contractor

D32.3.1 In addition to the indemnity obligations outlined in C17 of the General Conditions for Construction, the Contractor agrees to indemnify and save harmless the Government of Canada and the Government of Manitoba and each of their respective Ministers, officers, servants, employees, and agents from and against all claims and demands, losses, costs, damages, actions, suit or other proceedings brought or pursued in any manner in respect of any matter caused by the Contractor or arising from this Contract or the Work, or from the goods or services provided or required to be provided by the Contractor, except those resulting from the negligence of any of the Government of Canada's or the Government of Manitoba's Ministers, officers, servants, employees, or agents, as the case may be.

D32.4 Records Retention and Audits

D32.4.1 The Contractor shall maintain and preserve accurate and complete records in respect of this Contract and the Work, including all accounting records, financial documents, copies of contracts with other parties and other records relating to this Contract and the Work during the term of the Contract and for at least six (6) years after Total Performance. Those records bearing original signatures or professional seals or stamps must be preserved in paper form; other records may be retained in electronic form.

D32.4.2 In addition to the record keeping and inspection obligations outlined in C6 of the General Conditions for Construction, the Contractor shall keep available for inspection and audit at all reasonable times while this Contract is in effect and until at least six (6) years after Total Performance, all records, documents, and contracts referred to in D32.4.1 for inspection, copying and audit by the City of Winnipeg, the Government of Manitoba and/or the Government of Canada and their respective representatives and auditors, and to produce them on demand; to provide reasonable facilities for such inspections, copying and audits, to provide copies of and extracts from such records, documents, or contracts upon request by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada and their respective representatives and auditors, and to promptly provide such other

information and explanations as may be reasonably requested by the City of Winnipeg, the Government of Manitoba, and/or the Government of Canada from time-to-time.

D32.5 Other Obligations

D32.5.1 The Contractor consents to the City providing a copy of the Contract Documents to the Government of Manitoba and/or the Government of Canada upon request from either entity.

D32.5.2 If the Lobbyists Registration Act (Manitoba) applies to the Contractor, the Contractor represents and warrants that it has filed a return and is registered and in full compliance with the obligations of that Act, and covenants that it will continue to comply for the duration of this Contract.

D32.5.3 The Contractor shall comply with all applicable legislation and standards, whether federal, provincial, or municipal, including (without limitation) labour, environmental, and human rights laws, in the course of providing the Work.

D32.5.4 The Contractor shall properly account for the Work provided under this Contract and payment received in this respect, prepared in accordance with generally accepted accounting principles in effect in Canada, including those principles and standards approved or recommended from time-to-time by the Chartered Professional Accountants of Canada or the Public Sector Accounting Board, as applicable, applied on a consistent basis.

D32.5.5 The Contractor represents and warrants that no current or former public servant or public office holder, to whom the Value and Ethics Code for the Public Sector, the Policy on Conflict of Interest and Post Employment, or the Conflict of Interest Act applies, shall derive direct benefit from this Contract, including any employment, payments, or gifts, unless the provision or receipt of such benefits is in compliance with such codes and the legislation.

D32.5.6 The Contractor represents and warrants that no member of the House of Commons or of the Senate of Canada or of the Legislative Assembly of Manitoba is a shareholder, director or officer of the Contractor or of a Subcontractor, and that no such member is entitled to any benefits arising from this Contract or from a Contract with the Contractor or a Subcontractor concerning the Work.

FORM H1: PERFORMANCE BOND
(See D12)

KNOW ALL MEN BY THESE PRESENTS THAT

_____
(hereinafter called the "Principal"), and

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

_____

_____ dollars ($_____.____)

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

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

TENDER NO. 483-2021

2021-2023 Regional Pavement Renewal: Jubilee Avenue and Pembina Highway which is by reference made part hereof and is hereinafter referred to as the “Contract”.

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

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

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

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

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

_____ day of _____ , 20____ .

SIGNED AND SEALED
in the presence of:

_____
(Witness as to Principal if no seal)

_____
(Name of Principal)

Per: _____ (Seal)

Per: _____

_____
(Name of Surety)

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

FORM H2: LABOUR AND MATERIAL PAYMENT BOND
(See D12)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

_____

_____ dollars ($_____.____)

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

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

TENDER NO. 483-2021

2021-2023 Regional Pavement Renewal: Jubilee Avenue and Pembina Highway which is by reference made part hereof and is hereinafter referred to as the “Contract”.

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

(a) a claimant is defined as one having a direct Contract with the Principal for labour, service and material, or any of them, used or reasonably required for use in the performance of the contract, labour, service and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment (but excluding rent of equipment where the rent pursuant to an agreement is to be applied towards the purchase price thereof) directly applicable to the Contract;

(b) the above-named Principal and Surety hereby jointly and severally agree with the Obligee that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant’s work, labour or service was done or performed, or Materials were furnished by such claimant, may sue on this bond, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon;

(c) no suit or action shall be commenced hereunder by any claimant

    (i) unless claimant shall have given written notice to the Principal and the Surety above-named, within one hundred and twenty (120) days after such claimant did or performed the last of the work, labour or service, or furnished the last of the Materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the Materials were furnished, or for whom the work, labour or service was done or performed. Such notice shall be served by mailing the same by registered mail to the Principal, and Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the Province of Manitoba;

(ii) after the expiration of one (1) year following the date on which Principal ceased work on said Contract; including work performed under the guarantees provided in the Contract;

(iii) other than in a court of competent jurisdiction in the Province of Manitoba.

(d) The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.

(e) The Surety shall not be liable for a greater sum than the specified penalty of this bond.

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

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

_____ day of _____ , 20____ .

SIGNED AND SEALED
in the presence of:

_____
(Witness as to Principal if no seal)

_____
(Name of Principal)

Per: _____ (Seal)

Per: _____

_____
(Name of Surety)

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

FORM J: SUBCONTRACTOR LIST
(See D13)

2021-2023 Regional Pavement Renewal: Jubilee Avenue and Pembina Highway

Portion of the Work	Name	Address
SURFACE WORKS		
Supply of Materials		
Base Course and Sub-Base Course		
Paving Stones		
Concrete		
Asphalt		
Topsoil/Sod		
Installation/Construction		
Excavation		
Base Works		
Concrete		
Asphalt		
Landscaping		
Streetlight Works		
Signal Works – Conduits, anchor bolts, concrete for bases		
UNDERGROUND WORKS		
Supply of Materials		
Precast Concrete Catchbasins, Catch Pits and Manhole Risers		
Sewer Pipe and Hydrants		
Frames/Covers		
Installation/Construction		
Catchbasins and Connections		
Sewer Televising		
Subdrains		
Sewer Repairs		
MISCELLANEOUS		
Tree Consultant/Arborist		

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

E1.1 These Specifications shall apply to the Work.

E1.2 *The City of Winnipeg Standard Construction Specifications* in its entirety, whether or not specifically listed on Form B: Prices, shall apply to the Work.

E1.2.1 *The City of Winnipeg Standard Construction Specifications* is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/Spec/Default.stm

E1.2.2 The version in effect three (3) Business Days before the Submission Deadline shall apply.

E1.2.3 Further to C2.4(d), Specifications included in the Tender shall govern over *The City of Winnipeg Standard Construction Specifications*.

E1.3 Bidders are reminded that requests for approval of substitutes as an approved equal or an approved alternative shall be made in accordance with B6. In every instance where a brand name or design Specification is used, the City will also consider approved equals and/or approved alternatives in accordance with B6.

E1.4 The following are applicable to the Work:

Drawing No.	Drawing Name/Title	Drawing (Original) Sheet Size
	Cover Sheet	A1
	JUBILEE AVENUE	
P-3550-01	JUBILEE AVE – CONTROL LINE GEOMETRY AND JOINT LAYOUT (1 OF 5)	A1
P-3550-02	JUBILEE AVE– CONTROL LINE GEOMETRY AND JOINT LAYOUT (2 OF 5)	A1
P-3550-03	JUBILEE AVE– CONTROL LINE GEOMETRY AND JOINT LAYOUT (3 OF 5)	A1
P-3550-04	JUBILEE AVE– CONTROL LINE GEOMETRY AND JOINT LAYOUT (4 OF 5)	A1
P-3550-05	JUBILEE AVE– CONTROL LINE GEOMETRY AND JOINT LAYOUT (5 OF 5)	A1
P-3550-06	JUBILEE AVE – PLAN-PROFILE (START TO STA. 1+140)	A1
P-3550-07	JUBILEE AVE – PLAN-PROFILE (STA. 1+140 TO 1+290)	A1
P-3550-08	JUBILEE AVE – PLAN-PROFILE (STA. 1+290 TO 1+440)	A1
P-3550-09	JUBILEE AVE – PLAN-PROFILE (STA. 1+440 TO 1+590)	A1
P-3550-10	JUBILEE AVE – PLAN-PROFILE (STA. 1+590 TO 1+740)	A1
P-3550-11	JUBILEE AVE – PLAN-PROFILE (STA. 1+740 TO 1+895)	A1
P-3550-12	JUBILEE AVE – PLAN-PROFILE (STA. 1+895 TO 2+040)	A1
P-3550-13	JUBILEE AVE – PLAN-PROFILE (STA. 2+040 TO 2+190)	A1
P-3550-14	JUBILEE AVE – PLAN-PROFILE (STA. 2+190 TO 2+340)	A1
P-3550-15	JUBILEE AVE – PLAN-PROFILE (STA. 2+340 TO 2+490)	A1
P-3550-16	JUBILEE AVE – PLAN-PROFILE (STA. 2+490 TO 2+640)	A1
P-3550-17	JUBILEE AVE – PLAN-PROFILE (STA. 2+640 TO END)	A1
P-3550-18	JUBILEE AVE – PLAN-PROFILE TURN LANES (1 OF 2)	A1
P-3550-19	JUBILEE AVE – PLAN-PROFILE TURN LANES (2 OF 2)	A1
P-3550-20	CHURCHILL DR-COCKBURN ST – PLAN PROFILE	A1
P-3550-21	JUBILEE AVE – SECTIONS	A1
P-3550-22	JUBILEE AVE – DETAILS	A1
P-3550-23	STRUCTURAL GENERAL NOTES AND HANDRAIL DETAILS	A1
P-3550-24	STEEL STAIR DETAILS	A1
P-3550-25	JUBILEE AVE – TRAFFIC STAGING PHASE 1 – STAGE 1 (1 OF 3)	A1
P-3550-26	JUBILEE AVE – TRAFFIC STAGING PHASE 1 – STAGE 1 (2 OF 3)	A1
P-3550-27	JUBILEE AVE – TRAFFIC STAGING PHASE 1 – STAGE 1 (3 OF 3)	A1

Drawing No.	Drawing Name/Title	Drawing (Original) Sheet Size
P-3550-28	JUBILEE AVE – TRAFFIC STAGING PHASE 1 – STAGE 2 (1 OF 3)	A1
P-3550-29	JUBILEE AVE – TRAFFIC STAGING PHASE 1 – STAGE 2 (2 OF 3)	A1
P-3550-30	JUBILEE AVE – TRAFFIC STAGING PHASE 1 – STAGE 2 (3 OF 3)	A1
P-3550-31	JUBILEE AVE – TRAFFIC STAGING PHASE 2 – STAGE 1 (1 OF 3)	A1
P-3550-32	JUBILEE AVE – TRAFFIC STAGING PHASE 2 – STAGE 1 (2 OF 3)	A1
P-3550-33	JUBILEE AVE – TRAFFIC STAGING PHASE 2 – STAGE 1 (3 OF 3)	A1
P-3550-34	JUBILEE AVE – TRAFFIC STAGING PHASE 2 – STAGE 2 (1 OF 3)	A1
P-3550-35	JUBILEE AVE – TRAFFIC STAGING PHASE 2 – STAGE 2 (2 OF 3)	A1
P-3550-36	JUBILEE AVE – TRAFFIC STAGING PHASE 2 – STAGE 2 (3 OF 3)	A1
S-1446	JUBILEE AVE – TRAFFIC SIGNALS – 120 m EAST OF PEMBINA HWY	A1
S-1939	JUBILEE AVE – TRAFFIC SIGNALS – RIVERDALE ST	A1
S-1350	JUBILEE AVE – TRAFFIC SIGNALS – COCKBURN ST	A1
S-1377	JUBILEE AVE – TRAFFIC SIGNALS – DALY ST	A1
S-1507	JUBILEE AVE – TRAFFIC SIGNALS – OSBORNE ST	A1
1-04707-DE-50000-0576	JUBILEE AVE – STREET LIGHTS (1 OF 3)	A1
1-04707-DE-50000-0576	JUBILEE AVE – STREET LIGHTS (2 OF 3)	A1
1-04707-DE-50000-0576	JUBILEE AVE – STREET LIGHTS (3 OF 3)	A1
	PEMBINA HWY	
P-3550-37	PEMBINA HWY – CONTROL LINE GEOMETRY (1 OF 3)	A1
P-3550-38	PEMBINA HWY – CONTROL LINE GEOMETRY (2 OF 3)	A1
P-3550-39	PEMBINA HWY – CONTROL LINE GEOMETRY (3 OF 3)	A1
P-3550-40	PEMBINA HWY – PLAN PROFILE (START TO STA. 1+220)	A1
P-3550-41	PEMBINA HWY – PLAN PROFILE (STA. 1+220 TO 1+375)	A1
P-3550-42	PEMBINA HWY – PLAN PROFILE (STA. 1+375 TO 1+530)	A1
P-3550-43	PEMBINA HWY – PLAN PROFILE (STA. 1+530 TO 1+690)	A1
P-3550-44	PEMBINA HWY – PLAN PROFILE (STA. 1+690 TO 1+845)	A1
P-3550-45	PEMBINA HWY – PLAN PROFILE (STA. 1+845 TO 1+995)	A1
P-3550-46	PEMBINA HWY – PLAN PROFILE (STA. 1+995 TO 2+155)	A1
P-3550-47	PEMBINA HWY – PLAN PROFILE (STA. 2+155 TO 2+285) NORTHBOUND	A1
P-3550-48	PEMBINA HWY – PLAN PROFILE (STA. 2+155 TO 2+285) SOUTHBOUND	A1
P-3550-49	PEMBINA HWY – PLAN PROFILE – MISC	A1
P-3550-50	PEMBINA HWY – SIDE STREETS	A1
P-3550-51	PEMBINA HWY – SECTIONS	A1
P-3550-52	PEMBINA HWY – DETAILS (1 OF 2)	A1
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P-3550-54	PEMBINA HWY – TRAFFIC STAGING PHASE 1 – STAGE 1 (1 OF 3)	A1
P-3550-55	PEMBINA HWY – TRAFFIC STAGING PHASE 1 – STAGE 1 (2 OF 3)	A1
P-3550-56	PEMBINA HWY – TRAFFIC STAGING PHASE 1 – STAGE 1 (3 OF 3)	A1
P-3550-57	PEMBINA HWY – TRAFFIC STAGING PHASE 1 – STAGE 2 (1 OF 3)	A1
P-3550-58	PEMBINA HWY – TRAFFIC STAGING PHASE 1 – STAGE 2 (2 OF 3)	A1
P-3550-59	PEMBINA HWY – TRAFFIC STAGING PHASE 1 – STAGE 2 (3 OF 3)	A1
P-3550-60	PEMBINA HWY – TRAFFIC STAGING PHASE 1 – STAGE 3 (1 OF 3)	A1
P-3550-61	PEMBINA HWY – TRAFFIC STAGING PHASE 1 – STAGE 3 (2 OF 3)	A1
P-3550-62	PEMBINA HWY – TRAFFIC STAGING PHASE 1 – STAGE 3 (3 OF 3)	A1
P-3550-63	PEMBINA HWY – TRAFFIC STAGING PHASE 1 – STAGE 4	A1
P-3550-64	PEMBINA HWY – TRAFFIC STAGING PHASE 2 – STAGE 1 (1 OF 3)	A1
P-3550-65	PEMBINA HWY – TRAFFIC STAGING PHASE 2 – STAGE 1 (2 OF 3)	A1
P-3550-66	PEMBINA HWY – TRAFFIC STAGING PHASE 2 – STAGE 1 (3 OF 3)	A1
P-3550-67	PEMBINA HWY – TRAFFIC STAGING PHASE 2 – STAGE 2 (1 OF 3)	A1
P-3550-68	PEMBINA HWY – TRAFFIC STAGING PHASE 2 – STAGE 2 (2 OF 3)	A1
P-3550-69	PEMBINA HWY – TRAFFIC STAGING PHASE 2 – STAGE 2 (3 OF 3)	A1
P-3550-70	PEMBINA HWY – TRAFFIC STAGING PHASE 2 – STAGE 3 (1 OF 3)	A1
P-3550-71	PEMBINA HWY – TRAFFIC STAGING PHASE 2 – STAGE 3 (2 OF 3)	A1
P-3550-72	PEMBINA HWY – TRAFFIC STAGING PHASE 2 – STAGE 3 (3 OF 3)	A1
P-3550-73	PEMBINA HWY – TRAFFIC STAGING PHASE 2 – STAGE 4	A1
S-1234	PEMBINA HWY – TRAFFIC SIGNALS – CHEVRIER BLVD/CRESCENT DR	A1

Drawing No.	Drawing Name/Title	Drawing (Original) Sheet Size
S-1236	PEMBINA HWY – TRAFFIC SIGNALS – CLARENCE AVE	A1
S-1146	PEMBINA HWY – TRAFFIC SIGNALS – WALLER AVE	A1
S-1205	PEMBINA HWY – TRAFFIC SIGNALS – McGILLIVRAY BLVD/OAKENWALD AVE	A1

E2. SITE REQUIREMENTS FOR ACCESSIBILITY

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

E2.2 The Accessibility Plan shall demonstrate how the Contractor will accommodate the safe passage of pedestrians and cyclists in accordance with the Manual of Temporary Traffic Control, the Contract Drawings, Staging Plans, and Streets By-Law No. 1481/77 at all times for the duration of the Construction. Unless noted in the Contract, the Accessibility Plan must include a written plan for the following:

(a) how the Contractor will maintain at least one (1) crossing in each direction for each intersection (one (1) north/south crosswalk and one (1) east/west crosswalk);

(b) how the Contractor will maintain access to bus stops within the Site;

(c) how the Contractor will maintain access to pedestrian corridors and half signals;

(d) how the Contractor will maintain cycling facilities;

(e) how the Contractor will maintain access to residents and businesses unless otherwise noted in the Contract; and

(f) any required detour signage at adjacent crossings to facilitate sidewalk or active transportation pathway closures.

E2.3 The Accessibility Plan may also include figures, sketches, or Drawings to demonstrate the proposed plan.

E2.4 The Accessibility Plan shall include written details on how the Contractor intends to review, maintain, and document all items related to the Accessibility Plan on-site during Construction, including, but not limited to:

(a) signage;

(b) temporary ramping;

(c) transit stops; and

(d) detour signage.

E2.5 At minimum, the Contractor shall review the Site conditions on a daily basis to ensure the all features related to the Accessibility Plan are in place. The Site review is intended to correct deficiencies as a result of unforeseen events such as wind, traffic, or the general public. Deficiencies that are direct result of the Contractors actions must be corrected immediately.

E2.6 Any changes to the Accessibility Plan must be approved by the Contract Administrator.

E2.7 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the Site has been maintained.

E2.8 Failure to produce records that demonstrate that the Site was maintained in compliance with the Accessibility Plan or deficiencies as a direct result of actions by the Contractor that are not immediately corrected may result in a pay adjustment. The rate of pay adjustment will be as per the following schedule:

(a) First Offence – A warning will be issued and documented in the weekly Site meeting;

(b) Second Offence – A field instruction to immediately correct the Site will be issued by the Contract Administrator; and

(c) Third and subsequent Offences – A pay reduction will be issued in the amount of two hundred fifty dollars ($250.00) per instance and per day.

E3. MOBILIZATION AND DEMOBILIZATION PAYMENT

DESCRIPTION

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

E3.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, Materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

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

SCOPE OF WORK

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

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

(i) all activities and associated costs for transportation of the Contractor's personnel, equipment, and operating supplies to the site, and/or sites, and/or between sites;

(ii) establishment of offices, buildings, other necessary general facilities and equipment parking/staging areas for the Contractor's operations at the Site or Sites;

(iii) premiums paid for performance and payment bonds including coinsurance and reinsurance agreements as applicable;

(iv) general cleanup and housekeeping needed maintain a neat and orderly project Site and/or sites;

(v) development and implementation of the Accessibility Site Plan as per E2; and

(vi) other job related items.

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

(i) all activities and costs for transportation of personnel, equipment, and supplies not used in the project from the site, and/or sites, and/or between sites;

(ii) disassembly, removal, and Site cleanup and restoration of offices, buildings, and other facilities assembled on the Site and/or sites;

(iii) repair of access roads, temporary haul roads, and equipment parking areas leaving the project Site in the same or better condition than at the start of the project;

(iv) general cleanup and housekeeping needed to restore a neat and orderly project site; and

(v) monitoring, maintenance, and reporting of the Accessibility Site Plan as per E2.

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

MEASUREMENT AND PAYMENT

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

E3.6.1 Further to B9, B17, C12 and E3.6, should the lump sum price exceed five percent (5%) of the Total Bid Price the lump sum price will be reduced to five percent (5%) of the Total Bid

Price, the Total Bid Price will be determined using the reduced lump sum price and payment will be based on the reduced lump sum price.

E3.7 Payment for Mobilization:

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

E3.8 Payment for Demobilization:

(a) The remaining forty percent (40%) of the lump-sum price will be paid upon:
   (i) restoration of the Site and/or Sites to the satisfaction of the Contract Administrator; and
   (ii) distribution of the Declaration of Total Performance.

E3.9 Pay Reduction for Accessibility Plan:

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

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

E4. GEOTECHNICAL REPORT

E4.1 Further to C3.1, the geotechnical report is provided to aid the Contractor's evaluation of the pavement structure and/or existing soil conditions. The geotechnical report is contained in Appendix 'A'.

E5. OFFICE FACILITIES

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

(a) the field office shall be for the exclusive use of the Contract Administrator;

(b) the building shall be conveniently located near the Site of the Work;

(c) the building shall have a minimum floor area of twenty-five (25) square metres, a height of 2.4 metres (m) with two (2) windows for cross ventilation and a door entrance with a suitable lock;

(d) the building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between either sixteen (16) to eighteen (18) degrees Celsius or twenty-four (24) to twenty-five (25) degrees Celsius;

(e) the building shall be adequately lighted with fluorescent fixtures and have a minimum of three (3) wall outlets;

(f) the building shall be furnished with one (1) desk, one (1) drafting table, table three (3) m by 1.2 m, one (1) stool, one (1) four (4) drawer legal size filing cabinet and a minimum of twelve (12) chairs;

(g) the Contractor shall supply one (1) refrigerator and one (1) microwave;

(h) the Contractor shall supply a water cooler and stocker water supply;

(i) a portable toilet shall be located near the field office building. The toilet shall have a locking door and be for the exclusive use of the Contract Administrator and other personnel from the City; and

(j) the field office building and the portable toilet shall be cleaned on a weekly basis immediately prior to each Site meeting. The Contract Administrator may request additional cleaning when he/she deems it necessary.

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

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

E5.3.1 Further to E5.3 the office facilities shall be removed from Site within two (2) weeks following the 2022 seasonal end date.

E5.3.2 The office facilities shall be returned to Site no more than two (2) weeks prior to the beginning of construction in 2023 in a location acceptable to the Contract Administrator.

E5.4 On a one (1) time basis, where directed by the Contract Administrator, the Contractor shall relocate the office facilities to a location more convenient for the remaining Work.

E6. PROTECTION OF EXISTING TREES

E6.1 Construction activities near trees may result in injury to the trunk, limbs or roots of trees causing damage or death of the tree. In order to prevent such damage:

(a) trees within or adjacent to a construction area must be protected during construction by means of a barrier surrounding a “Tree Protection Zone” (TPZ) as outlined in Sections E6.1 and E6.2 of this Policy;

(b) activities which are likely to injure or destroy the tree are not permitted within the TPZ;

(c) tree pruning or root pruning of City of Winnipeg owned trees may only be done by a Contractor approved by the project’s Qualified Tree Consultant (Refer to E6.7) or Urban Forestry Branch;

(d) no objects may be attached to trees protected by City of Winnipeg by-laws without written authorization by the City of Winnipeg; and

(e) no City of Winnipeg tree or tree protected by a City of Winnipeg by-law may be pruned or removed without the written permission of the City Forester or Designate.

E6.2 Tree Protection Zone

E6.2.1 Tree Protection Zones will be established on Site during a walk-through at commencement and will be established by the City Forester or Designate, the Contract Administrator and the Contractor to determine functional limits. The following chart identifies the required distance for a TPZ. Distance is to be measured from the outside edge of the tree trunk, thirty (30) centimeters (cm) above grade.

Trunk Diameter (DBH)	Minimum Protection Distance Required
<10.1 cm	2.0 m
10.1 – 40.0 cm	2.4 m
40.1 – 50.0 cm	3.0 m
50.1 – 60.0 cm	3.6 m
60.1 – 70.0 cm	4.2 m
70.1 – 80.0 cm	4.8 m
80.1 – 90.0 cm	5.4 m
90.1 – 100.0 cm	6.0 m
>100.0 cm	6.0 cm for reach 1.0 cm of trunk diameter

E6.2.2 No accumulation of water or other substances as a result of activities associated with construction is permitted within the TPZ.

E6.2.3 No parking of vehicles or equipment within the TPZ.

E6.2.4 A continuous TPZ will be established on Jubilee Avenue from Daly Street to Osborne Street between the front (street facing) side of the trees to behind the trees to protect the root system longitudinally between the trees with the intention of preventing stockpiling of Materials in this area and continuous movement of equipment over this area during road and underground construction works.

E6.3 Tree Protection Barriers

E6.3.1 Trees within TPZ shall be protected by means of a "tree protection barrier" meeting the following Specifications:

(a) the required barrier is a 1.2 m (four (4) foot) high orange plastic web snow fencing on 50.8 mm (two (2) inches) by 101.6 mm (four (4) inches) frame or as directed by the City of Winnipeg Urban Forestry Branch in accordance with City of Winnipeg Protection of Existing Tree Specifications. The barrier can be lowered around branches lower than 1.2 m (four (4) foot). The barrier location can be adjusted to align with curbs, edges of excavation and edges at clear path of travel zones;

(b) where fill or excavation material must be stored within one (1) m of the outside of the TPZ, a barrier of 19.05 mm (¾ inch) thick plywood must be securely installed along the outside of the orange plastic web snow fencing and must be long enough to accommodate the full extent of fill or excavated material to ensure no material enters the TPZ;

(c) trunk protection material will be installed on individual trees, in accordance with CW1140, where Work may need to be completed within the TPZ;

(d) tree protection barriers are to be erected prior to the commencement of any construction or grading activities on the Site and are to remain in place throughout the entire duration of the project. The applicant shall notify the City of Winnipeg prior to commencing any construction activities to confirm that the tree protection barriers are in place;

(e) all supports and bracing used to safely secure the barrier should be located outside the TPZ. All supports and bracing should minimize damage to roots;

(f) no grade change, storage of Materials or equipment is permitted within the TPZ area. The tree protection barrier must not be removed without the written authorization of the City of Winnipeg; and

(g) a "Tree Protection Zone" sign must be mounted on any side facing foot and vehicular traffic, including construction traffic. The sign shall be produced in colour and be forty-five (45) by sixty (60) cm in size and made of white chloroplast. Template must be provided to the Contract Administrator for review and approval prior to installation.

E6.4 Further to E6.2.2 and E6.3.1, continuous protective fencing shall be installed at the face of trees on Jubilee Avenue on both north and south boulevards between Daly Street and Osborne Street during all underground, road and curbing works. No Materials shall be stockpiled at any time on these boulevards.

E6.5 Contractor must maintain a minimum three hundred (300) mm distance from outside the visible edge of the trunk during excavation. For information purposes, a plan of the approximate distance from the visible edge of tree trunks to the back of curb between Cockburn Street and Osborne Street is included in Appendix 'H'.

E6.6 Capital Construction Projects

E6.6.1 It is recognized that there are cases where trees are growing overtop existing utilities or beside capital infrastructure. While the guidelines in this section still apply, in these cases some modification to the established TPZ's in addition to root pruning may be permitted provided non-open trench methods of construction are employed (as defined in CW2110 and CW2130).

E6.6.2 Root pruning will be required to be done under the direction of – and along with – written sign-off by the Project's Qualified Tree Consultant. The objective is to avoid severance of anchor roots, which provide upright support for trees and minimize damage to the tree.

E6.6.3 Above ground clearance for overhanging branches in the work zone must be anticipated. The utility or its consultant is required to have a Contractor approved by the project's Qualified Tree Consultant or the Urban Forestry Branch prune branches to provide adequate clearance for construction equipment and with permission from the City Forester or Designate.

E6.7 Qualified Tree Consultants:

(a) an arborist who holds a valid arborist certification with the International Society of Arboriculture (ISA);

(b) a landscape architect who is a member in good standing of the Manitoba Association of Landscape Architects and holds a valid arborist certification with the ISA;

(c) a certificate from the University of Manitoba Arboriculture Course or a Manitoba Arborist License does not constitute holding a valid arborist certification with the ISA; and

(d) the Contractor shall provide a Qualified Tree Consultant to perform the necessary tasks and the cost will be considered incidental to the Work.

E6.8 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 the TPZ.

(b) individual trees identified to be at risk and where a TPZ is not feasible in accordance with E6.2.1, trunk protection material is to be installed in accordance with CW1140;

(c) if Work is required to be performed within the TPZ, trunk protection is to be installed on the individual tree(s) in accordance with CW1140;

(d) excavation shall be performed in a manner that minimizes damage to the existing root systems. No excavation shall occur within the TPZ. Where roots must be cut to facilitate excavation, they shall be pruned neatly and cleanly at the face of excavation;

(e) the Contractor shall ensure that the operations do not cause flooding or sediment deposition within the TPZ; and

(f) Work on-site shall be carried out in such a manner so as to minimize damage to tree branches. Preventative pruning may be carried out with permission for the City Forester or Designate and by a Contractor approved by the project's Qualified Tree Consultant (Refer to E6.7) or Urban Forestry Branch. Where damage to branches does occur, they shall be neatly pruned.

E6.9 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 Designate.

E6.10 Damage to any public tree(s) not authorized for pruning or removal as part of the Work, or failure to adhere to the Specifications for "Protection of Existing Trees" shall result in compensation requirements for the appraised value for damage to any part or whole tree(s); as determined by the City Forester or Designate.

E6.10.1 Financial compensation shall be paid to the City of Winnipeg Urban Forestry Branch and submitted to 1539 Waverley Street, R3T 4V7.

E6.10.2 Compensation will be calculated as follows:

(a) for trees ten (10) cm DBH and less, compensation values will be determined by the Urban Forestry's Branch current cost of replacement (for the same or similar tree species); and

(b) for trees greater than ten (10) cm DBH, compensation values will be determined in accordance with the latest edition of "The Guide for Plant Appraisal" by the Council of Tree and Landscape Appraisers.

E7. TRAFFIC CONTROL

E7.1 Further to clauses 3.6, 3.7 and 3.8 of CW 1130:

(a) Where directed by the Contract Administrator, the Contractor shall construct and maintain temporary asphalt ramps to alleviate vertical pavement obstructions such as manholes and planing drop-offs to the satisfaction of the Contract Administrator. Payment shall be in accordance with CW3410;

(b) In accordance with the Manual of Temporary Traffic Control on City Streets (MTTC), the Contractor ("Construction Agency" in the manual) shall be responsible for supplying, placing, maintaining and removing the appropriate temporary traffic control devices as specified by the MTTC or by the Traffic Management Branch of the City of Winnipeg Public Works Department. The Contractor shall bear all costs associated with the supply, placement and maintenance of temporary traffic control devices by their own forces or Subcontractor;

(c) In addition, the Contractor shall be responsible for removing, placing, and maintaining all regulatory signing including but not limited to:

(i) parking restrictions;

(ii) stopping restrictions;

(iii) turn restrictions;

(iv) diamond lane removal;

(v) full or directional closures on a Regional Street;

(vi) traffic routed across a median; and

(vii) full or directional closure of a non-regional street where there is a requirement for regulatory signs (turn restrictions, bus stop relocations, etc.) to implement the closure.

(d) The Contractor shall remove and stockpile any regulatory signage not required during construction such as but not limited to parking restrictions, turn restrictions and loading restrictions.

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

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

E7.4 Further to E7.1(c) and E7.1(d) the Contractor shall make arrangements with the Traffic Services Branch of the City of Winnipeg to reinstall the permanent regulatory signs after the Contract Work is complete. At this time the Contractor shall make arrangements to drop off the stockpiled Materials to Traffic Services at 495 Archibald Street.

E7.5 Any changes to the approved traffic management plan must be submitted to the Contract Administrator a minimum of five (5) Working Days prior to the required change for approval.

E7.6 If the Contract Administrator determines that the Contractor is not performing Traffic Control in accordance with this Specification, Traffic Services may be engaged to perform the Traffic Control and the Contractor shall bear the costs associated by the Traffic Services Branch of the City of Winnipeg in connection with the Works undertaken by the Contractor.

E8. TRAFFIC MANAGEMENT

E8.1 Further to clause 3.7 of CW 1130:

(a) refer to Traffic Staging Drawings P-3550-25 to P-3550-36 and P-3550-54 to P-3350-73 for traffic management details for each stage; and

(b) any proposed modifications to the construction staging and/or traffic management plans outlined in the Contract Documents must be approved by the Contract Administrator.

E9. REFUSE AND RECYCLING COLLECTION

E9.1 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 E9.2 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.

E9.2 Collection Schedule:

Jubilee Avenue.

Collection Day(s):	**Residential Pick up – Wednesday**
	Front End Bin Service 766 Jubilee (Garbage) – Monday
	Front End Bin Service 766 Jubilee (Recycling) – Tuesday
Collection Time:	**0700**
	Back lane residential pick up except on south side Jubilee from Riverside Drive to Cockburn Street south. Contractor to ensure access to back lanes is maintained for back lane pickup. For on street pickup (south Jubilee from Riverside Drive to Cockburn Street South), Contractor to relocate bins to common collection point and return back to the property as required.
Common Collection Area:	**Contractor to ensure access to 766 Jubilee (Bridge Drive-in) is maintained for Front End Bin Service pickup.**

Pembina Highway.

Collection Day(s):	**Residential Pick up – Wednesday**
	Front End Bin Service – Monday and Thursday
	Front End Bin Service (1430 Pembina) – Friday
Collection Time:	**0700**
Common Collection Area:	**Back lane pick up, Contractor to ensure access to back lanes is maintained.**

E9.3 No measurement or payment will be made for the Work associated with this Specification.

E10. PEDESTRIAN SAFETY

E10.1 During the project, a temporary snow fence shall be installed where hazards exist adjacent to pedestrian facilities, such as open excavations. The Contractor shall be responsible for maintaining the snow fence in a proper working condition. No measurement for payment shall be made for this Work.

E11. WATER OBTAINED FROM THE CITY

E11.1 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.

E12. SURFACE RESTORATIONS

E12.1 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.

E13. INFRASTRUCTURE SIGNS

E13.1 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 (1) 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.

E14. SUPPLY AND INSTALLATION OF PAVEMENT REPAIR FABRIC

DESCRIPTION

E14.1 General

E14.1.1 This Specification covers the supply and installation of pavement repair fabrics for reinforcement of asphalt layers, distribution of loads, and reducing reflective cracking distresses.

E14.1.2 Referenced Standard Construction Specifications

(a) CW 3110 – Sub-Grade, Sub-Base and Base Course Construction;

(b) CW 3410 – Asphaltic Concrete Pavement Works; and

(c) Approved Products for Surface Works.

E14.2 Definitions

E14.2.1 Pavement Repair Fabric composed of fiberglass strands coated with an elastomeric polymer and formed into a grid structure.

E14.2.2 Minimum Average Roll Value (MARV) is property value calculated as typical minus two (2) standard deviations. It shall yield a 97.7 percent degree of confidence that any sample taken during quality assurance testing will exceed the value reported.

E14.2.3 Apertures are the open spaces formed between the interconnected network of longitudinal and transverse ribs of a fabric.

E14.2.4 Type A Pavement Repair Fabric will be used for full width asphalt reinforcement by allowing asphalt particles to penetrate through the fabric to achieve high interlock and effective bonding of the two (2) asphalt lifts.

E14.2.5 Type B Pavement Repair Fabric is high strength fabric in the cross-machine direction and will be used for localized repair reinforcement (e.g., at joints and cracks) to minimizes both thermal and stress related reflective cracking.

MATERIALS

E14.3 Approved Products

E14.3.1 Use only those Materials listed as Approved Products for Surface Works. The Approved Products for Surface Works are available at the City of Winnipeg, Corporate Finance, Material Management Internet Site at: https://www.winnipeg.ca/finance/findata/matmgt/std_const_spec/current/Docs/Approved_Pro ducts_Surface_Works.pdf

E14.4 Material Identification

E14.4.1 Pavement Repair Fabric shall be labeled in accordance with ASTM D4873/D4873M, and must clearly show the manufacturer name, product style number, and roll number. Products without proper identification or labelling, mislabelling, or misrepresentation of Materials shall be rejected.

E14.5 Storage and Handling

E14.5.1 Pavement Repair Fabric rolls shall be elevated off the ground and adequately covered to protect them from Site construction damage, precipitation, any contamination of dirt or dust, and any other deleterious Materials.

E14.5.2 Pavement Repair Fabric rolls shall be protected from extended ultraviolet radiation including sunlight, chemicals that are strong acids or strong bases, flames including welding sparks, excess temperatures, and any other environmental conditions that may damage the physical properties of the fabric.

E14.5.3 Store and handle the Pavement Repair Fabric in accordance with the manufacturer's recommendations. Manufacturer's data sheets shall include preparation instructions and recommendations as well as storage and handling requirements and recommendations.

E14.6 Certification

E14.6.1 The Contractor shall provide Manufacturer's Mill Certificate and MARV Roll Data to the Contract Administrator prior to installation. The certification shall state that the Pavement Repair Fabric meets MARV requirements as evaluated under the manufacturer's quality control program. The certification shall be attested to by a Person having legal authority to bind the manufacturer. The Pavement Repair Fabric shall be annually tested by an accredited third party testing facility.

E14.6.2 The Contractor shall provide a letter to the Contract Administrator stating the product name, manufacturer, style number, and other pertinent information to fully describe the Pavement Repair Fabric.

E14.6.3 All testing and data shall be in accordance with approved ASTM standards. Data reported in accordance with other standards will not be accepted.

E14.7 Pavement Repair Fabric Properties

E14.7.1 Pavement Repair Fabric shall consist of a high strength, fiberglass grid custom knitted, and coated with an elastomeric polymer and self-adhesive glue with square or rectangular opening configurations.

E14.7.2 The axis with the least strength will be taken as the ultimate strength of the fabric for any given property.

E14.7.3 Type A Pavement Repair Fabric shall meet the requirements in Table CW 3140.1.

Table CW 3140.1 – Type A Pavement Repair Fabric Property Requirements

Physical Property	Machine Direction	Cross-Machine Direction	Test Method
Tensile Strength, Minimum	100 kN/m	100 kN/m	ASTM D 6637
Tensile Strength @ 2% Strain, Minimum	80 kN/m	80 kN/m	ASTM D 6637
Secant Stiffness EA at 2% Strain	4,000 kN/m	4,000 kN/m	ASTM D 6637
Elongation at Break, Maximum	3%		ASTM D 6637
Coating Softening Point, Minimum	150 °C		ASTM D 36
Coating Melting Point, Minimum	350 °C		ASTM D 276
Glass Melting Point, Minimum	820 °C		ASTM D 338
Mass/Unit Area, Minimum	420 g/m^2		ASTM D 5261

E14.7.4 Type B Pavement Repair Fabric shall meet the requirements in Table CW 3140.2.

Table CW 3140.2 – Type B Pavement Repair Fabric Property Requirements

Physical Property	Machine Direction	Cross-Machine Direction	Test Method
Tensile Strength, Minimum	100 kN/m	200 kN/m	ASTM D 6637
Tensile Strength @ 2% Strain, Minimum	80 kN/m	160 kN/m	ASTM D 6637
Secant Stiffness EA at 2% Strain	4,000 kN/m	8,000 kN/m	ASTM D 6637
Elongation at Break, Maximum	3%		ASTM D 6637
Coating Softening Point, Minimum	150 °C		ASTM D 36
Coating Melting Point, Minimum	350 °C		ASTM D 276
Glass Melting Point, Minimum	820 °C		ASTM D 338
Mass/Unit Area, Minimum	420 g/m^2		ASTM D 5261

E14.7.5 All physical property requirements are MARV determined in accordance with ASTM 4759. Values not labelled as MARV will not be accepted.

E14.7.6 Aperture sizes shall be as follows:

(a) between ten (10) mm and fourteen (14) mm for pavement repair fabric immediately below or within Type 1A asphalt layer; and

(b) between nineteen (19) mm and 25.4 mm for pavement repair fabric immediately below or within Type III asphalt layer.

E14.7.7 If the fabric has a rectangular aperture size, the smaller dimension shall be used to establish the suitable Pavement Repair Fabric.

CONSTRUCTION METHODS

E14.8 General

E14.8.1 Pavement Repair Fabric shall not be placed when weather conditions, in the opinion of the Contract Administrator, are not suitable for installation including heavy rainfall, extreme cold or frost conditions, or extreme heat.

E14.8.2 Make all repairs as required prior to placement of Pavement Repair Fabric. Seal cracks and fill holes using a method that provides a proper level surface. Receiving surface shall be smooth, with the existing cracks pretreated.

E14.8.3 Surfaces shall be mechanically cleaned by sweeping and vacuuming and be free of oil, vegetation, sand, dirt, water, gravel, and other contaminants prior to placement of Pavement Repair Fabric.

E14.8.4 Pavement Repair Fabric placement should not be undertaken if rain is likely to fall prior to covering the fabric with an asphalt mat overlay. Pavement Repair Fabric that is placed and

will not adhere due to moisture shall be removed and replaced at the Contractor's expense.

E14.8.5 Pavement Repair Fabric shall be laid out by mechanical means or by hand using sufficient pressure to eliminate ripples. Remove any ripples by pulling the fabric tight. Cutting of the fabric may permitted on tight radii to prevent ripples.

E14.8.6 Transverse joints shall be overlapped seventy-five (75) mm or as recommended by the manufacturer, whichever is greater. Longitudinal joints shall be overlapped 37.5 mm or as recommended by the manufacturer, whichever is greater.

E14.8.7 Prior to the asphalt topping placement, the fabric shall be inspected by the Contract Administrator for damage during installation. Damaged fabric shall be removed and replaced at the Contractor's expense.

E14.8.8 Activate self-adhesive glue by rolling with a rubber coated drum roller or a pneumatic tire roller. In no instance shall steel-wheeled or vibratory rollers be used. Rolling shall continue until the adhesive is activated and the fabric is bonded to the levelling course.

E14.8.9 Roller tires shall be kept clean to the satisfaction of the Contract Administrator.

E14.8.10 If bonding of the fabric is not readily achieved, it shall be removed and replaced at the Contractor's expense.

E14.8.11 Pavement Repair Fabric shall be laid and rolled over ironworks (e.g., manhole covers). Once the fabric has been rolled, those portions covering the ironworks shall be removed by cutting the fabric with a utility knife or other methods approved by the Contract Administrator.

E14.8.12 Protect the Pavement Repair Fabric until placement of the finished asphalt topping.

E14.8.13 Where a tack coat or emulsified asphalt is specified, the approved tack coat/emulsion and dose should be used as recommended by the manufacturer in conjunction with the Pavement Repair Fabric. Tack coat or emulsified asphalts shall not be diluted. Unless otherwise recommended by the manufacturer, apply tack coat or emulsified asphalt at the rate of 0.35 liters per square meter of surface area.

E14.8.14 Where tack coat or emulsified asphalt is placed prior to the fabric, it must fully cure prior to placement of the fabric. Where tack coat or emulsified asphalt is placed after the fabric, it must fully cure prior to construction traffic, including paving, travelling on the surface.

E14.8.15 Prevent spattering of tack coat or emulsified asphalt when placed adjacent to curbs, gutters, structures and other adjacent surfaces. Clean any surfaces where it has been contaminated by the tack coat or emulsified asphalt.

E14.8.16 Levelling course or overlay layer shall be a minimum thickness of forty (40) mm. Place and compact asphalt over the Pavement Repair Fabric in accordance with CW 3410.

QUALITY ASSURANCE TESTING

E14.9 The Contract Administrator shall test the adhesion for pavement repair fabric in field during construction is as follows:

E14.9.1 Place approximately one (1) square metre of fabric on a prepared surface that is representative of the project conditions.

E14.9.2 Activate self-adhesive glue by rolling with a rubber-tired roller or by applying adequate pressure to fully activate the pressure-sensitive adhesive.

E14.9.3 Use a calibrated spring balance by inserting the hook of the balance under the centre of the fabric and pulling upward until the fabric starts to pull away from the surface.

E14.9.4 A nine (9) kilogram pull is required without pulling the grid free or creating ripples in the fabric.

METHOD OF MEASUREMENT

E14.10 Pavement Repair Fabric

E14.10.1 The supply and installation of the pavement repair fabric will be measured on an area basis in accordance with this Specification as computed by the Contract Administrator.

BASIS OF PAYMENT

E14.11 Pavement Repair Fabric

E14.11.1 The supply and installation of the pavement repair fabric will be paid for on an area basis 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.

E14.11.2 Only material placed within the designated limits will be included in the payment for "Supply and Install Pavement Repair Fabric".

E14.11.3 No payment will be made for "Supply and Install Pavement Repair Fabric" removed and replaced due to improper installation or damaged Materials.

E14.11.4 No payment will be made for transverse and longitudinal overlap.

E15. ASPHALT PATCHING OF MISCELLANEOUS CONCRETE

DESCRIPTION

E15.1 General

E15.1.1 Further to CW 3410, this Specification covers the placement of asphalt patches in various situations to prepare a concrete pavement for subsequent placement of mainline asphalt pavement overlay. This includes patching full depth concrete repairs, cracks, joints, and vertical faults.

E15.1.2 Referenced City of Winnipeg Standard Construction Specifications:

(a) CW 1130 – Site Requirements; and

(b) CW3410 – Asphaltic Concrete Pavement Works.

MATERIALS

E15.2 Asphalt Materials

E15.2.1 Asphalt material supplied shall be in accordance with CW 3410 Type 1A Asphalt Material.

E15.3 Equipment

E15.3.1 Equipment shall be in accordance with CW 3410 Clause 8.

CONSTRUCTION METHODS

E15.4 Full Depth Concrete Repairs

E15.4.1 Place asphaltic concrete over the newly constructed joint repair area with greater than twenty (20) mm elevation difference between the repair surface and the adjacent surface. Remove any loose or debonded asphalt at the joint perimeter and place new asphaltic concrete in these areas as well.

E15.4.2 Dispose of all material in accordance with CW 1130 Section 3.4.

E15.4.3 Ensure surface is dry and clean prior to placement of asphaltic concrete patching material.

E15.4.4 Prepare the joint repair area surface with a uniform application of tack coat applied in small quantities sufficient to wet the concrete surface.

E15.4.5 Place and compact asphaltic concrete over the joint repair area in accordance with CW 3410 Clause 9.3 and to the satisfaction of the Contract Administrator so that the finished elevation of the patch is flush with the adjacent surrounding area.

E15.4.6 Compact the asphaltic concrete to an average of ninety-five percent (95%) of the 75 blow Marshal Density of the paving mixture with no individual test being less than ninety percent (90%).

E15.4.7 Traffic is not permitted on the patch area until the asphalt has cooled to ambient temperature.

MEASUREMENT AND PAYMENT

E15.5 Asphalt Patching of Miscellaneous Concrete will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Asphalt Patching of Miscellaneous Concrete". The area to be paid for will be the total number of square metres of full depth joints, cracks and joints, and vertical faults patched in accordance with this Specification.

E16. PORTLAND CEMENT CONCRETE SIDEWALK WITH BLOCK OUTS FOR INDICATOR SURFACES

DESCRIPTION

E16.1 General

E16.1.1 This Specification shall supplement CW 3325-R5 "Portland Cement Concrete Sidewalks".

CONSTRUCTION METHODS

E16.2 Add the following to section 9:

E16.2.1 As shown on the Drawings and as directed by the Contract Administrator, construct sidewalk with block outs and/or monolithic curb and sidewalk with block outs, to allow for the installation of indicator surfaces.

E16.2.2 Verify dimensions of paving stones (indicator surface) prior to construction of the block-outs. Gaps between paving stones and concrete pavement shall not exceed five (5) mm.

E16.2.3 Concrete curbs for monolithic curb and sidewalk with block outs shall be constructed in accordance with CW 3240.

MEASUREMENT AND PAYMENT

E16.3 Add the following to section 12:

E16.3.1 Construction of concrete sidewalks with block outs for indicator surfaces will be measured on surface area basis. The surface area to be paid for shall be the number of square metres constructed in accordance with this Specification and accepted by the Contract Administrator, as computed by measurements made by the Contract Administrator.

BASIS OF PAYMENT

E16.4 Add the following to section 13:

E16.4.1 Construction of concrete sidewalks with block outs for indicator surfaces will be paid for at the Contract Unit Price per square metre for the "Items of Work" listed here below, measured as specified herein, which price shall be payment in full for supplying all Materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

E16.4.2 Items of Work:

(a) One hundred (100) mm Sidewalk with Block Outs.

E16.4.3 Concrete thickness greater than the specified sidewalk thickness as a result of shaping the base material to accommodate the block outs is incidental to the listed Items of Work.

E17. PORTLAND CEMENT CONCRETE SIDEWALK WITH BLOCK OUTS FOR ASPHALT

DESCRIPTION

E17.1 This Specification shall supplement CW 3325-R5 “Portland Cement Concrete Sidewalks”.

CONSTRUCTION METHODS

E17.2 Add the following to section 9:

E17.2.1 As shown on the Drawings and as directed by the Contract Administrator, construct sidewalk with block outs and/or monolithic curb and sidewalk with block outs, to allow for the installation of asphalt pavement.

E17.2.2 Concrete curbs for monolithic curb and sidewalk with block outs shall be constructed in accordance with CW 3240.

MEASUREMENT AND PAYMENT

E17.3 Add the following to section 12:

E17.3.1 Construction of concrete sidewalks with block outs for asphalt will be measured on surface area basis. The surface area to be paid for shall be the number of square metres constructed in accordance with this Specification and accepted by the Contract Administrator, as computed by measurements made by the Contract Administrator.

BASIS OF PAYMENT

E17.4 Add the following to section 13:

E17.4.1 Construction of concrete sidewalks with block outs for asphalt will be paid for at the Contract Unit Price per square metre for the “Items of Work” listed here below, measured as specified herein, which price shall be payment in full for supplying all Materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

E17.4.2 Items of Work:

(a) One hundred (100) mm Sidewalk with Asphalt Block Outs at Transit Stops.

E17.4.3 Concrete thickness greater than the specified sidewalk thickness as a result of shaping the base material to accommodate the block outs is incidental to the listed Items of Work.

E18. PAVING STONES FOR INDICATOR SURFACES

DESCRIPTION

E18.1 This Specification shall supplement CW 3330-R5 “Installation of Interlocking Paving Stones”

MATERIALS

E18.2 Add the following to section 5:

E18.2.1 Paving Stones for indicator surfaces shall be:

Barkman Concrete paving stones –

Charcoal Holland Paver (sixty (60) mm by two hundred ten (210) mm by two hundred ten (210) mm)
https://www.barkmanconcrete.com/

E18.2.2 Sand

(a) Clean brick sand as minimum thirteen (13) mm depth setting bed. Bedding sand shall be fine aggregate as specified in Specification CW 3330.

CONSTRUCTION METHODS

E18.3 Add the following to section 9.2 “Preparation of Sub-grade, Sub-base and Sand-base”:

E18.3.1 Preparation of Sand-Base for Paving Stones in Sidewalk Block Outs.

E18.3.2 Place a fifteen (15) mm layer of bedding sand in the blocked out sidewalk areas.

E18.3.3 The bedding sand shall be spread and levelled so that the paving stones when installed are five (5) mm higher than the finished grade.

E18.3.4 No more sand shall be spread than can be covered in with paving stone on the same day.

E18.3.5 The bedding sand shall not be compacted or disturbed prior to laying the paving stones.

E18.4 Add the following to section 9.3 “Installation of Paving Stones”:

E18.4.1 For indicator surface paving stones, commence installation of paving stones against the long edge of the block out to obtain the straightest possible course of installation.

MEASUREMENT AND PAYMENT

E18.5 Add the following to section 12 :

E18.6 Supply and Installation of Paving Stones for Indicator Surfaces:

E18.6.1 Paving stones for indicator surfaces will be measured on surface area basis. The surface area to be paid for shall be the number of square metres constructed in accordance with this Specification and accepted by the Contract Administrator, as computed by measurements made by the Contract Administrator.

BASIS OF PAYMENT

E18.7 Add the following to section 13 :

E18.7.1 The supply and installation of paving stones for indicator surfaces will be paid for at the Contract Unit Price per square metre for “Paving Stone Indicator Surface”, measured as specified herein, which price shall be payment in full for supplying all Materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

E18.7.2 Concrete thickness greater than the specified sidewalk thickness as a result of shaping the base material to accommodate the block outs is incidental to the listed Items of Work.

E19. TRANSIT PAVING STONE INDICATOR SURFACES

DESCRIPTION

E19.1 Further to the latest version of the City of Winnipeg Standard Construction Specification CW 3335, this Specification shall cover the:

(a) supplying and installing the interlocking paving stones (unit pavers) used in Transit stop paving band square; and

(b) supplying and installing the sand setting bed.

E19.2 The Work to be done by the Contractor under this Specification shall include the furnishings of all superintendence, overhead, labour, Materials, equipment, tools, supplies and all other things necessary and/or incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E19.3 Referenced Specifications and Drawings

(a) The latest version of the City of Winnipeg Standard Construction Specifications.

(i) CW 3330 Installation of Interlocking Paving Stones.

MATERIALS

E19.4 General

(a) All Materials supplied under this Specification shall be of the type approved by the Contract Administrator, and shall be subject to inspection and testing by the Contract Administrator.

(b) The Contractor shall be responsible for the supply, safe storage and handling of all Materials set forth in this Specification. All Materials shall be handled in a careful and workmanlike manner, to the satisfaction of the Contract Administrator.

E19.5 Interlocking Paving Stones

(a) Concrete interlocking paving stones (unit pavers) for indicator strips or equivalent in accordance with B6, supplied by:

Barkman Concrete
Phone: (204) 667-3310
www.barkmanconcrete.com

(b) As shown on the Drawings and as follows:

(i) Blue Holland Stone one hundred five (105) by two hundred ten (210) by sixty (60) mm.

(c) Concrete interlocking paving stones (unit pavers) for indicator strips shall be clay brick pavers conforming to CAN3-A231.2, Precast Concrete Pavers. Further to CAN3-A231.2.6.1.1, where concrete pavers are shipped for installation before the pavers are twenty-eight (28) days old, the average compressive strength of the pavers at the time of delivery to the Site of Work shall not be less than forty (40) MPa.

E19.5.1 Sand

(a) Clean brick sand as joint filler or polymeric sand as directed by Contract Administrator.

(b) Clean brick sand as minimum thirteen (13) mm depth setting bed.

(c) Bedding sand shall be fine aggregate as specified in Specification CW 3330.

EQUIPMENT

E19.6 All equipment shall be of a type acceptable to the Contract Administrator and shall be kept in good working order.

CONSTRUCTION METHODS

E19.7 Installation of paving stones in paving band square.

(a) Paving stones shall be installed in formed concrete blockouts in accordance with CW 3330, set in locations and patterns as shown on the Drawings. Spaces between the joints shall not exceed three (3) mm and shall be uniform and consistent while maintaining true patterns as indicated on the Drawings.

(b) Contractor to verify the exact dimensions of pavers prior to construction of blockouts in concrete sidewalk.

(c) Remove and dispose of existing paving stones in existing sidewalks. Any removal and/or disposal shall be incidental to the Work within this Specification.

(d) Install concrete sidewalk complete with blockouts for paving stones as specified on the Drawings.

(e) Install sand setting bed to a minimum thirteen (13) mm depth as shown on the Drawings.

(f) Do not compact sand setting bed prior to installation of paving stones.

(g) Sand setting bed shall be covered with pavers in the same day.

(h) Remove adjacent paving stones in patterns as required to ensure that paving stones do not require cutting to fit existing paving stone pattern.

(i) Where paving stones conflict with vertical structural elements or other elements, paving stones must be saw cut and fit true and hand tight.

(j) Commence installation of paving stones along a straight edge to obtain the straightest possible course for installation.

(k) Paving stones shall be cut with a saw only, to obtain true, even, and undamaged edges. Chipped paving stones are unacceptable.

(l) Crews installing paving stones shall work from installed pavers and not the sand bedding.

(m) Spread fine grade brick sand over paving stone surface and sweep into joints in multiple directions. Sand is incidental to the price for supply and installation of paving stones.

(n) Compact pavers with vibratory plate compactor having a mass of not less than one hundred thirteen (113) kilograms. Compaction is incidental to the price for supply and installation of paving stones.

(o) Sweep remaining sand over all paving areas until joints are full and remove excess from site.

(p) Removed cracked, shipped, broken, or otherwise damages paving materials from Site immediately.

(q) Upon completion, clean in accordance with manufacturers recommendations.

MEASUREMENT AND PAYMENT

E19.8 Transit Paving Stone Indicator Surfaces

(a) The supply and installation of paving stones for indicator squares will be paid for at the Contract Unit Price per square metre for “Transit Paving Stone Indicator Surfaces”, measured as specified herein, which price shall be payment in full for supplying all Materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

(b) Concrete thickness greater than the specified sidewalk thickness as a result of shaping the base material to accommodate the blockouts is incidental to the listed Items of Work.

E20. TEMPORARY RUBBER SPEED BUMPS

E20.1 Description

E20.1.1 The Work covered under this item shall include all operations related to the supply, delivery, installation, and removal of the Temporary Rubber Speed Bumps for Jubilee Avenue neighbourhood.

E20.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, Materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of the Work as hereinafter specified. All Materials supplied under this Specification shall be subject to inspection and acceptance by the Contract Administrator.

E20.1.3 Site specific requirements for installation of Temporary Rubber Speed Bumps will be in accordance with the Drawing provided in Appendix 'C'. General supply, loading, hauling, unloading, storing and installing is as per Manufacturer's recommended procedures.

E20.1.4 The Temporary Rubber Speed Bump manufacturer product data sheet shall be submitted to the Contract Administrator for approval prior to supply and installation.

E20.2 Materials

E20.2.1 Materials shall be supplied in accordance with the manufacturer's product manual.

E20.2.2 The Contractor shall be responsible for the supply, safe storage and handling of all Materials set forth in this Specification.

E20.2.3 Temporary Rubber Speed Bumps or equivalent in accordance with B7, supplied by:

(a) 1,828.8 mm (six (6) foot) Rubber Speed Bump by Prairie Parking Systems Ltd. as shown in Appendix 'C'.

E20.3 Construction Methods

E20.3.1 The Temporary Rubber Speed Bumps shall be installed in accordance with the manufacturer's installation manual.

E20.3.2 The Contractor shall be responsible for loading, and unloading as well as storing of the crash attenuation barrels. The Contractor shall supply all necessary equipment for loading, hauling, unloading, and storing of the components.

E20.3.3 The proposed locations for Temporary Rubber Speed Bumps are shown in Appendix 'C'. Final locations and layout will be provided by the Contract Administrator prior to installation.

E20.3.4 Place the rubber speed bump in the proposed location.

E20.3.5 Using the four (4) pre-drilled holes on the speedbump as the template, drill into the roadway using a 12.7 mm (0.5 inch) hammer drill bit. Once all holes are drilled into the roadway, secure the speed bumps in place by hammering the fastening pins into the holes.

E20.3.6 Following completion of Phase 1 and re-opening of travel lanes, the Temporary Rubber Speeds Bumps along with fastening pins are to be salvaged and delivered to City yards as directed by the Contract Administrator.

E20.3.7 Any holes in the pavement left from the speed bumps are to be backfilled with hot mix asphalt.

E20.4 Measurement and Payment

E20.4.1 Supply of Temporary Rubber Speed Bumps, and all related appurtenances will be measured on a unit basis and paid for per speed bump at the Contract Unit Price in accordance with this Specification, accepted and measured by the Contract Administrator.

E20.4.2 The unit price for "Supply Temporary Rubber Speed Bumps" will be payment in full for the supply and delivery of the speed bumps to Site and all related operations as herein described and all other items incidental to the Work included, accepted and measured by the Contract Administrator.

E20.4.3 Installation of Temporary Rubber Speed Bumps, and all related appurtenances will be measured on a unit basis and paid for per speed bump at the Contract Unit Price in accordance with this Specification, accepted and measured by the Contract Administrator.

E20.4.4 The unit price for "Installation of Temporary Rubber Speeds Bump" will be payment in full for placement of speed bumps, and all related operations as herein described and all other items incidental to the Work included, accepted and measured by the Contract Administrator.

E20.4.5 Removal, delivery to City yards and restoration of drill holes shall be considered incidental to the Work.

E21. SUPPLY AND INSTALL WATERMAIN AND WATER SERVICE INSULATION

DESCRIPTION

E21.1 Notwithstanding 3.12 of CW 2110, this Specification covers the supply and installation of insulation in roadway excavations over watermains and water services.

E21.2 Referenced Standard Construction Specifications

(a) CW 2030 – Excavation Bedding and Backfill; and

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

E21.3 Referenced Standard Details

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

MATERIALS

E21.4 Acceptable insulation is:

(a) Extruded Polystyrene rigid foam insulation – Type 4, 101.6 mm (four (4) inches) in thickness.

DOW – Roofmate or Highload 40

Owen's Corning – Foamular 350 or Foamular 400.

50.8 mm (two (2) inches) by 1,219.2 mm (forty-eight (48) inches) by 2,438.4 mm (ninety-six (96) inches), 50.8 mm (two (2) inches) by 609.6 mm (twenty-four (24) inches) by 2,438.4 mm (ninety-six (96) inches), 101.6 mm (four (4) inches) by 609.6 mm (twenty-four (24) inches) by 2,438.4 mm (ninety-six (96) inches)

E21.5 Sand Bedding :

(a) In accordance with CW 2030.

CONSTRUCTION METHODS

E21.6 Prior to the installation of any sub-base material or geotextile material, locate all existing water services. Further to SD-018, where directed by the Contract Administrator, excavate the sub-grade to allow the top of the insulation to be installed flush with the surrounding sub-grade. Install the insulation on a level surface centered over the located watermain or water service for the full width of the roadway excavation. Install sand bedding if required to level the surface. Stockpile and dispose of excavated material in accordance with CW 3110.

E21.7 Thickness of insulation is one hundred (100) mm (four (4) inches). If using fifty (50) mm (two (2) inches) panels two (2) layers are required. Total width of insulation to be as directed by the Contract Administrator. Place sufficient full width panels to meet or exceed the specified width.

E21.8 Place insulation panels adjacent to each other over the specified area with no gaps between panels and less than fifteen (15) mm of elevation difference along the adjoined edges. Where 50.8 mm (two (2) inches) thick panels are being used, offset the top layer to prevent the panel joints from aligning with the joints in the lower layer.

E21.9 Use full panels of insulation where possible. Where necessary cut insulation panels to obtain coverage to specified lengths. Insulation pieces shall be a minimum of dimension of three hundred (300) mm in width or length.

E21.10 Take appropriate measures to ensure panels are not displaced when installing geotextiles and during backfilling operations.

MEASUREMENT AND PAYMENT

E21.11 Watermain and Water Service Insulation shall be measured on an area basis and paid for at the Contract Unit Price per square metre of "Watermain and Water Service Insulation". The area to be paid for shall be the total square metres of watermain and water service insulation supplied and installed in accordance with this Specification, accepted and measured by the Contract Administrator.

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

E22. SUPPLY AND INSTALL DIRECTIONAL TACTILE STRIP

DESCRIPTION

E22.1 This Specification covers the supply and installation of directional bar tiles in one hundred (100) mm concrete sidewalks. These are used at bus stops where the sidewalk must cross a Multi-Use Path or bicycle path.

REFERENCES

E22.2 Referenced Specifications and Drawings

E22.2.1 The latest version of the City of Winnipeg Standard Construction Specifications:

(a) CW 3235 – Renewal of Existing Miscellaneous Concrete Slabs;

(b) CW 3310 – Portland Cement Concrete Pavement Works; and

(c) CW 3325 – Portland Cement Concrete Sidewalk.

MATERIALS AND EQUIPMENT

E22.3 Acceptable Directional Tactile Strip product is (or equivalent in accordance with B6):

(a) three hundred five (305) mm by six hundred ten (610) mm Cast in Place (Wet Set) with Anchors – Manufactured by ADA Solutions;

(b) part # 1224BAR1875Y;

(c) Flush Mount, Federal Yellow;

(d) fasteners: six (6) mm diameter by thirty-eight (38) mm long SS FH Bolts (Hex Drive) and six (6) mm diameter by thirty-eight (38) mm long Zinc Inserts; and

(e) Sealant: Manufacturer recommended.

E22.3.1 Product Specifications found in Appendix 'B' of this document.

EQUIPMENT

E22.4 All equipment shall be of a type acceptable to the Contract Administrator and shall be kept in good working order.

CONSTRUCTION METHODS

E22.5 Install Wet Set Replaceable units as per manufacturer's recommendations, and as shown on Contract Drawings.

E22.6 Where necessary, cut Wet Set Replaceable units accurately using a sixty (60) tooth carbide or diamond blade with a suitable cutting device. No cut unit shall measure less than two hundred fifty (250) mm in length. In accordance with manufacture's recommendations, supplemental fasteners and inserts shall be added as needed when the distance between the cut face of the unit and the original hardware exceeds one hundred (100) mm.

E22.7 Install Wet Set Replaceable units true to grade, in location, layout pattern as indicated on the Drawings.

E22.8 Wet Set Replaceable units shall be set flush into a minimum sixty-five (65) mm depth of concrete. Vibrate or tamp (with rubber mallet) the Wet Set Replaceable units into the fresh concrete to insure that there are no voids underlying the units and that the units are flush with the adjacent substrate. Temporary weights can be added as necessary in the event of float during initial set of the units.

E22.9 Joint Lines between successive Wet Set Replaceable Units: Maintain a three (3) mm to five (5) mm consistent joint line between successive units.

E22.10 Tooled Edge Detail: maintain a three (3) mm to six (6) mm tooled edge detail along the perimeter of the Wet Set Replaceable unit installation. Installation of the tooled edge detail facilitates future removal and replacement of the units.

E22.11 Positive Plastic Sheet: particularly in direct sunlight and when temperatures exceed twenty-five (25) degrees Celsius, remove the protective plastic sheeting from the Wet Set Replaceable units within forty-eight (48) hours of installation of the unit. Failure to do so will be solely at the Contractors risk and may result in the protective plastic bonding to the unit thus requiring a considerable effort to remove the protective plastic sheeting. If plastic sheeting cannot be removed, it will be at the Contractors expense to replace that unit.

MEASUREMENT AND PAYMENT

E22.12 Directional Tactile Strip

E22.12.1 Directional Tactile Strip shall be measured on a unit basis and paid for at the Contract Unit Price per unit for the item listed here below. The number of units to be paid for shall be the total number of Directional Tactile Strip supplied and installed in accordance with this Specification, accepted and measured by the Contract Administrator.

(a) Directional Tactile Strip: three hundred five (305) mm by six hundred ten (610) mm tiles.

E23. SIGN SUPPORT CLAMPS

E23.1 The Contractor shall install all new sign support clamps at the locations shown on the Drawings or as directed by the Contract Administrator. The City shall supply all sign support clamps.

E23.2 All costs in connection with the installation of sign support clamps are incidental to the Contract.

E24. CONSTRUCTION OF TEMPORARY MEDIAN CROSSINGS AND OPENINGS

DESCRIPTION

E24.1 This Specification shall cover the construction of temporary median crossing and temporary median opens as identified on the Drawings.

E24.2 Referenced City of Winnipeg Standard Construction Specifications:

(a) CW 3110 – Sub-Grade, Sub-Base and Base Course Construction;

(b) CW 3170 – Earthwork and Grading; and

(c) CW 3410 – Asphaltic Concrete Pavement Works.

MATERIAL AND EQUIPMENT

E24.3 Asphalt Materials

E24.3.1 Asphalt material supplied shall be in accordance with CW 3410 Type 1A Asphalt Material.

E24.4 Asphalt Paving Equipment

E24.4.1 Equipment shall be in accordance with CW 3410 Clause 8.

CONSTRUCTION METHODS

E24.5 Construction shall take place in accordance with the Drawings, CW 3110, CW 3170, and CW 3410.

E24.6 Temporary median crossovers shall be excavated to the limits noted and constructed using the pavement structure identified on the Drawings. Median openings must be paved using Type 1A Asphalt Material as per CW 3410 and be maintained by the Contractor as needed during construction. The Contract Administrator may direct the Contractor to repave or repair the crossovers.

E24.7 Temporary median openings shall be excavated to the limits noted and constructed using the pavement structure identified on the Drawings. Median openings will be granular and must be maintained by the Contractor as needed during construction. The Contract Administrator may direct the Contractor to add additional base course to the median openings.

MEASUREMENT AND PAYMENT

E24.8 Median crossovers and opening shall be measured on an area basis and paid for at the Contract Unit Price per square metre of "Construction of Temporary Median Crossovers and Median Openings". The area to be paid for shall be the total square metres constructed in accordance with this Specification, accepted and measured by the Contract Administrator.

E24.9 Restoration of the crossovers and median openings will be paid separately under existing line items for curbs, landscaping and median type

E25. HYDRO EXCAVATION

DESCRIPTION

E25.1 This Specification covers the removal of earthen material immediately adjacent to underground utilities infrastructure by means of high pressure water spray, and the recovery of evacuated material by vacuum type means or equivalent method as approved by the Contract Administrator.

E25.2 Further to E28 this item is related specifically to excavation of the roadbed directly over the three hundred fifty (350) mm and fifty (50) mm gas lines on Jubilee Avenue from Pembina Highway to Daly Street that are under the existing westbound lanes.

EQUIPMENT

E25.3 Hydro Excavation unit shall be capable of maintain a minimum working pressure of ten thousand (10,000) psi, at a rate of ten (10) to twelve (12) gallons per minute. Unit should be adjustable, so as to provide adequate pressure to remove earthen material identified by the Contract Administrator.

E25.4 Spray head shall be equipped with a rotating nozzle, in order to provide a wider path of cut.

CONSTRUCTION METHODS

E25.5 Hydro-Removal of Earthen Material

(a) 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.

E25.6 Recovery of Excavated Material

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

(b) The recovery of material shall follow immediately behind the excavation, to avoid excavated areas from filling with excavated material.

(c) The use of mechanical sweepers will not be allowed.

(d) Dispose of material in accordance with Section 3.4 of CW 1130.

E25.7 Backfill of Hydro Excavated Hole

(a) The Contractor shall be responsible for the backfill of the hydro excavation hole upon the completion of the Work described herein, to the approval of the Contract Administrator.

MEASUREMENT AND PAYMENT

E25.8 Hydro Excavation of earthen material will be measured on an hourly basis and paid for at the Contract Unit Price per hour for "Hydro Excavation". The hours to be paid for will be the total number of hour of Hydro Excavation in accordance with this Specification, accepted and measured by the Contract Administrator.

E26. BOULEVARD AND MEDIAN GRASS MAINTENANCE

E26.1 During construction, the Contractor is to maintain the grassed median and boulevards within the project area to a height of less than one hundred fifty (150) mm. No measurement for payment shall be made for this Work.

E27. MAINTAINING TEMPORARY STREET LIGHTING ON JUBILEE

DESCRIPTION

E27.1 General

E27.1.1 The Contractor shall be responsible for maintaining existing lighting levels throughout the extent of the project. The Contractor will be responsible for methodology, construction, maintenance and the removal of any temporary lighting material required for the project.

E27.1.2 This Work shall be done in conjunction with E59.

E27.1.3 The roadway lighting shall provide illumination for the extent of the travelled portion of the Jubilee Avenue in addition to illuminating the adjacent pedestrian pathway as required.

E27.1.4 Lighting levels shall be as per existing conditions.

E27.1.5 Typical utility clearances apply if installing temporary street light poles.

(a) Exception is the Shaw fibre conduit located on the north boulevard below the sidewalk. Shaw will waive the typical one (1) metre clearance as long as soft-dig methods are utilized. Proposed Work to be approved by a Shaw representative and the Contract Administrator prior to installation.

E27.1.6 All lighting (including roadway and pedestrian path) shall be vandal-proof.

E27.1.7 Pole locations shall be installed so as not to block sightlines for motorists.

E27.1.8 Connections to Manitoba Hydro supplied electrical service cabling for street light power shall be done by Manitoba Hydro forces.

E27.2 Submission

E27.2.1 The Contractor shall be responsible for the methodology of maintaining existing lighting as a technical submission at least thirty (30) Working Days prior to planned construction.

E27.2.2 Methodology to align with construction traffic staging plan.

MATERIALS

E27.3 All material specified shall be new and built in accordance with EEMAC standards and shall be CSA approved. Material shall also comply with Canadian Electrical Code.

E27.4 All material installed to be as per the latest Manitoba Hydro Street lighting Standards.

MEASUREMENT AND PAYMENT

E27.5 Jubilee Avenue Temporary Lighting

E27.5.1 Maintaining Temporary Lighting shall be paid for at the Contract Unit Price as a Lump Sum for "Maintain Temporary Lighting", measured as specified herein, performed in accordance with this Specification and accepted by the Contract Administrator, which price shall be paid in full for supplying all Materials and for performing all operations herein described and all other items incidental to the Work.

E28. WORKING IN CLOSE PROXIMITY TO GAS INFRASTRUCTURE

DESCRIPTION

E28.1 While working in close proximity to gas infrastructure, all procedures and precautions outlined in the Appendix 'D' – *Safe Excavation and Safety Watch Guideline* manual, as well as any supplemental direction from Manitoba Hydro contained in Appendix 'D', must be adhered to. Ensure that all locates and clearances are current and have been received and understood prior to construction.

MEASUREMENT AND PAYMENT

E28.2 Hydro excavation to locate and verify gas infrastructure as typically required by Manitoba Hydro will be considered incidental to the Work.

E28.3 Full hydro excavation of any gas main for full exposure longitudinally or transversely in a long and continuous fashion as noted in E25 will not be considered incidental to the Work.

E28.4 Any costs associated performing Safety Watches will be considered incidental to the Work.

E29. EXISTING STREETCAR TRACK AND BEDDING REMOVAL

DESCRIPTION

E29.1 This Specification covers the removal of existing street car track bedding excluding rails on Jubilee Avenue between Pembina Highway and Cockburn Street.

E29.2 Investigation during design provided no evidence of existing street car track and bedding still present in the road. However, based on historical documentation the track and bedding may be present.

E29.3 Investigation during design provided no evidence of steel rails still present in the road. However, steel rails may still be present.

E29.4 The term Street Car Track Bedding shall include concrete bedding, wooden ties, and any other track bedding material for the street car tracks located on Jubilee Avenue.

CONSTRUCTION METHODS

E29.5 Remove the existing concrete bedding, wooden ties and any other Materials, by demolishing, loading, hauling, and disposing of the removed track bedding material.

E29.6 Ensure that Manitoba Hydro requirements for working in close proximity to Gas infrastructure including transverse service connections are adhered to.

E29.6.1 When individual transverse gas services are within 0.200 metres from the bottom of the streetcar tracks and bedding, additional efforts to remove the streetcar tracks and bedding will not be considered incidental.

E29.7 Dispose of the removed material as per CW 1130.

MEASUREMENT AND PAYMENT

E29.8 Removal of existing Street Car Track Bedding shall be measured on cubic metre basis and paid for at the Contract Unit Price for "Removal of Existing Street Car Track Bedding". The volume paid shall be the total number of cubic meters of existing street car track bedding removed as measured and accepted by the Contract Administrator.

E29.8.1 Removal of material below the concrete bedding required to achieve subgrade elevation will not be considered street car track bedding and shall be achieved for as Excavation.

E29.8.2 Removal of the existing pavement on top of wooden ties and bedding will not be considered street car bedding and shall be paid for as Pavement Removal.

E29.9 Removal of existing Street Car Track Rails shall be measured on lineal meter basis and paid for at the Contract Unit Price for "Removal of Existing Street Car Track Rails". The length paid shall be the total number of lineal metres of existing street car track rail removed as measured and accepted by the Contract Administrator.

E30. HIGH STRENGTH WOVEN GEOSYNTHETIC

DESCRIPTION

E30.1 This Specification covers the supply and installation of High Strength Woven Geosynthetic above the prepared road subgrade on Jubilee Avenue as shown in the Drawings and any other areas required that is requested by the Contract Administrator.

MATERIALS

E30.2 Refer to Appendix 'E' – Mirafi RS380i.

CONSTRUCTION METHODS

E30.3 Install as shown on the Contract Drawings and as per the manufacturers Specifications.

E30.4 Refer to Appendix 'E' – Mirafi RS380i.

MEASUREMENT AND PAYMENT

E30.5 The supply and installation of the High Strength Woven Geosynthetic will be measured on an area basis (excluding overlap) and paid for at the Contract Unit Price per square metre for "High Strength Woven Geosynthetic". The area to be paid for will be the total number of square metres of High Strength Woven Geosynthetic supplied and installed in accordance with this Specification, accepted and measured by the Contract Administrator.

E31. TREE REMOVALS

DESCRIPTION

E31.1 This Specification shall amend the City of Winnipeg Standard Construction Specification CW 3010 "Clearing and Grubbing", and shall cover the removal of trees as specified on the Contract Drawings. The City of Winnipeg, Forestry Branch must be contacted prior to removing any trees.

CONSTRUCTION METHODS

E31.2 Remove only trees marked and confirmed for removal in the field by the Contract Administrator.

E31.3 Remove trees in accordance with CW 3010.

E31.4 Remove stumps in accordance with E32 Stump Grinding.

E31.5 The Contractor shall arrange for any Elmwood to be disposed of by the City of Winnipeg.

MEASUREMENT AND PAYMENT

E31.6 Removal of trees will be measured on a unit basis and paid for at the Contract Unit Price per unit item of "Tree Removal". The number to be paid for will be the total number of trees removed in accordance with this Specification and accepted by the Contract Administrator.

E31.7 Stump grinding related to trees removed by the Contractor will be considered incidental to the Work.

E32. STUMP GRINDING

DESCRIPTION

E32.1 General

(a) This Specification shall cover the grinding down of existing stumps on Jubilee Avenue and Pembina Highway as directed by the Contract Administrator.

E32.2 Referenced Standard Construction Specifications

(a) CW 3010 – Clearing and Grubbing.

MATERIALS

E32.3 General

(a) The grinding of stumps specified by the Contract Administrator shall be done with the use of a mechanical stump grinder.

CONSTRUCTION METHODS

E32.4 General

(a) Stumps will be ground a minimum depth of three hundred (300) mm from top of finished median and the material removed from the specified areas as marked and confirmed by the Contract Administrator.

(b) The Contractor shall take all precautions to prevent damage to traffic, structures, pole lines, adjacent properties and to trees and shrubs designated to be saved.

(c) The Contractor shall arrange for any Elmwood to be disposed of by the City of Winnipeg.

(d) Remove and dispose of material as per CW 3010 Clause 9.

MEASUREMENT AND PAYMENT

E32.5 General

(a) Grinding of stumps will be measured on a unit basis and paid for at the Contract Unit Price per unit item for "Stump Grinding". The number to be paid for will be the total number of stumps ground in accordance with this Specification and accepted by the Contract Administrator.

E33. THREE HUNDRED (300) MM BARRIER CURB

DESCRIPTION

E33.1 This Specification covers the Work related to the installation of various formats of Curb and Gutter.

REFERENCES

E33.2 Referenced Standard Construction Specifications

E33.2.1 CW 3310 – Portland Cement Concrete Pavement Works.

E33.3 Referenced Standard Details and Drawings

E33.3.1 All applicable Contract Drawings.

MATERIALS AND EQUIPMENT

E33.4 Materials

E33.4.1 Materials supplied shall be as per CW 3310 Clause 5.

E33.5 Equipment

E33.5.1 Equipment as per CW 3310 Clause 8.

CONSTRUCTION METHOD

E33.6 Three hundred (300) mm Barrier Curb

E33.6.1 Three hundred (300) mm Barrier Curb shall be constructed as shown on the Contract Drawings.

MEASUREMENT AND PAYMENT

E33.7 Three hundred (300) mm Barrier Curb

(a) Construction of three hundred (300) mm Barrier Curb will be measured on a length basis and will be paid for at the Contract Unit Price per metre for "Three Hundred (300) mm Barrier Curb", measured as specified herein, which price shall be payment in full for performing all operations herein described and all other items incidental to the Work included in the Specification.

E34. WOODEN BOLLARDS

DESCRIPTION

E34.1 This Specification covers the supply and installation of wooden bollards.

E34.2 Supply and installation as per the following Specification and the Contract Drawings.

MATERIALS

E34.3 Wooden Bollards

E34.3.1 As per SCD-105B1.

E34.4 Crushed Limestone Base

E34.4.1 Supply crushed limestone base as per CW 3110.

CONSTRUCTION METHODS

E34.5 Removal of Existing Bollards

E34.5.1 Utilize appropriate equipment to excavate around bollard and pull out of ground.

E34.5.2 Protect the public and Site from damage during removal.

E34.5.3 If bollard breaks and a portion remains embedded, demolish to three hundred (300) mm below grade.

E34.5.4 Backfill hole with crushed limestone base course as per CW 3110. Tamp and compact base course to satisfaction of the Contract Administrator.

E34.5.5 Dispose of bollard off site.

E34.6 Installation of Wooden Bollards

E34.6.1 Install bollards as per SCD-105B1 and the Contract Drawings.

MEASUREMENT AND PAYMENT

E34.7 Removal of Existing Bollards

E34.7.1 The removal and disposal of existing bollards will be measured on a unit basis as per bollard and paid for the Contract Unit Price for “Remove Existing Wooden Bollards”. The number to be paid for will be the total number of bollards removed and disposed in accordance with this Specification, accepted and measured by the Contract Administrator.

E34.8 Wooden Bollards

E34.8.1 The supply and installation of wooden bollards will be measured on a unit basis per bollard and paid for at the Contract Unit Price for “Install Wooden Bollards”. The number to be paid for will be the total number of bollards supplied and installed in accordance with this Specification, accepted and measured by the Contract Administrator.

E35. SITE FURNISHINGS

DESCRIPTION

E35.1 General

E35.1.1 This Specification covers all operations relating to the relocations of benches and waste receptacles on Churchill Drive.

E35.1.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, Materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

MATERIALS

E35.2 General

E35.2.1 The Contractor shall be responsible for the removal, handling and installation of all benches and waste receptacles set forth in this Specification and shall be subject to inspection and acceptance by the Contract Administrator.

E35.3 All fasteners shall be galvanized.

CONSTRUCTION METHODS

E35.4 Benches and Waste Receptacles

E35.4.1 Utilize appropriate equipment to excavate around and pull out of ground.

E35.4.2 Protect the public and Site from damage during removal.

E35.4.3 Break away existing concrete base from pole.

E35.4.4 Install benches and waste receptacles with in-ground mountings as indicated on the Construction Drawings and following manufacturer’s instructions, using approved vandal resistant fasteners to ensure solid, durable, finished Work suitable for the purpose intended. Fasteners and assembly hardware shall be incidental to the Work.

E35.4.5 All furnishings and fixtures to be installed plumb and true. Locations to be confirmed by Contract Administrator prior to installation.

E35.4.6 All furnishings and fixtures to be carefully handled so that no parts shall be bent, broken, or otherwise damaged.

MEASUREMENT AND PAYMENT

E35.5 Benches and Waste Receptacles

E35.5.1 Benches and waste receptacles relocations will not be measured and will paid for on a lump sum basis for "Relocate Existing Bench and Garbage Receptacle", which prices shall be payment in full for supplying all Materials and for completing all operations herein described and all other items incidental to the Work included in this Specification, accepted and measured by the Contract Administrator.

E36. TRANSIT SHELTER FOUNDATIONS

DESCRIPTION

E36.1 This Specification shall cover the installation of concrete bus shelter pad foundations as identified on the Drawings.

E36.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, Materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all works as hereinafter specified.

REFERENCES

E36.3 Referenced Specification and Drawings

(a) The latest version of the City of Winnipeg Standard Construction Specifications:
  (i) CW 3310 – Portland Cement Concrete Pavement Works; and
  (ii) CW 3325 – Portland Cement Concrete Sidewalk.

MATERIALS AND EQUIPMENT

E36.4 General

(a) All Materials supplied under this Specification shall be of a type approved by the Contract Administrator and shall be subject to inspection and testing by the Contract Administrator.

(b) The Contractor shall be responsible of the supply, safe storage and handling of all Materials set forth in this Specification. All Materials shall be handled in a careful and workmanlike manner, to the satisfaction of the Contract Administrator.

E36.5 Concrete and Reinforcing Steel

(a) Concrete mix design shall comply with Clause 6.2a) of the latest version of the CW 3310 Specification.

(b) All other Materials as per Clause 5 of the latest version of the CW 3310 Specification.

CONSTRUCTION METHODS

E36.6 Construction shall take place in accordance with the Drawings, CW 3310, and CW 3325.

E36.7 All forming is incidental to the unit price Bid for the Specification.

E36.8 Verify dimensions of bus shelter pads prior to construction.

E36.9 Meet existing grades and slopes unless otherwise indicated on the Drawings. Notify the Contract Administrator where this requirement will not result in positive drainage.

E36.10 Removal of an existing concrete bus shelter pad shall be incidental to the Work.

MEASUREMENT AND PAYMENT

E36.11 Transit Shelter Foundations

E36.11.1 Construction of the Transit Shelter Foundations shall be paid for at the Contract Unit Price per square metre for “Transit Shelter Foundations”, measured as specified herein, performed in accordance with this Specification ad accepted by the Contract Administrator, which price shall be payment in full for supplying all Materials and performing all operations herein described and all other items incidental to the Work. The area to be paid for shall be the total number of square metres of Transit Shelter Foundations constructed in accordance with this Specification and as measured and accepted by the Contract Administrator.

E37. OUTFRONT MEDIA TRANSIT SHELTER

DESCRIPTION

E37.1 This Specification shall cover the removal, preparation for and reinstallation of the Outfront Media Transit Shelters located on northbound Pembina Highway north of Finch Bay and northbound Pembina south of Clarence Avenue. These shelters are owned by Outfront Media and requires an electrical supply for lighting.

MATERIALS

E37.2 Materials shall conform to the Outfront Media Shelter detail provided in the Drawings and to CW 3325.

E37.3 Electrical supply to support:

(a) one hundred twenty (120) Volt;

(b) 2.8 Amp;

(c) sixty (60) Cycle; and

(d) fifteen (15) Amp Breaker.

E37.4 Feeder Cable to be:

(a) Minimum #10 AWG rated to two hundred forty (240) Volt.

(b) Buried a minimum of 457.2 mm (eighteen (18) inches) below grade with 152.4 mm (six (6) inches) of sand above cable.

CONSTRUCTION METHODS

E37.5 The Contract Administrator shall coordinate the removal of the existing shelter with Outfront Media.

E37.6 The base slab shall be constructed as per the Outfront Media Shelter detail provided in the Drawings and CW 3325.

E37.7 No joints shall be sawcut into the shelter base slab.

E37.8 The Contractor shall not proceed with pouring the shelter base without the approval of the Contract Administrator. The Contract Administrator will coordinate an inspection of the formed and prepared shelter base by Outfront Media prior to pouring.

E37.9 The Contract Administrator shall coordinate the reinstallation of the shelter with Outfront Media.

E37.10 An electrical supply will be required to service the shelter. The electrical service connection location is identified on the Manitoba Hydro Drawings and will be a connection to the nearest new street light to the Transit Stop or as approved by Manitoba Hydro.

E37.11 The Contract Administrator will coordinate with Manitoba Hydro regarding an acceptable electrical connection type. The cable is to be fused and labelled at the street light.

E37.12 The Contractor will be required to coordinate and complete all electrical Work including connections to the reinstalled shelter, conduit installations and any other items not outlined in this Specification.

MEASUREMENT AND PAYMENT

E37.13 Construction of the Outfront Shelter base pad and related electrical Work, shall be paid for at a Lump Sum price for "Outfront Media Shelter" and shall include all Work related the Outfront Media Shelter as outlined above.

E38. BUS STOP FLAG AND TOTEM FOUNDATION

DESCRIPTION

E38.1 The Work covered under this Item shall include all concreting operations related to construction of cast-in-place concrete foundations for bus stop flags and bus stop totems in accordance with this Specification and as shown on the Drawings.

E38.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, Materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.

MATERIALS

E38.3 General

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

E38.4 Handling and Storage of Materials

(a) All Materials shall be handled and stored in a careful and workmanlike manner, to the satisfaction of the Contract Administrator. Storage of Materials shall be in accordance with CSA Standard A23.1-04.

E38.5 Testing and Approval

(a) All Materials supplied under this Specification shall be subject to inspection and testing by the Contract Administrator or by the Testing Laboratory designated by the Contract Administrator. There shall be no charge to the City for any Materials taken by the Contract Administrator for testing purposes.

(b) All Materials shall be approved by the Contract Administrator at least seven (7) days before any construction is undertaken. If, in the opinion of the Contract Administrator, such Materials in whole or in part, do not conform to the Specifications detailed herein or are found to be defective in manufacture or have become damaged in transit, storage, or handling operations, then such Materials shall be rejected by the Contract Administrator and replaced by the Contractor at their own expense.

E38.6 Patching Mortar

(a) The patching mortar shall be made of the same cementitious material and of approximately the same proportions as used for the concrete, except that the coarse aggregate shall be omitted and the mortar shall consist of not more than one (1) part cement to two (2) parts sand by damp loose volume. White Portland Cement shall be substituted for a part of the grey Portland Cement on exposed concrete in order to produce a colour matching the colour of the surrounding concrete, as determined by a trial patch. The quantity of mixing water shall be no more than necessary for handling and placing.

E38.7 Cement

(a) Cement shall be Type HS or HSb, high-sulphate-resistant hydraulic cement, conforming to the requirements of CSA Standard A23.1-04

E38.8 Concrete

(a) General

(i) Concrete repair material shall be compatible with the concrete substrate.

(b) The Contractor shall be responsible for the design and performance of all concrete mixes supplied under this Specification. Either ready mix concrete or proprietary repair mortars, where applicable, may be used having the following minimum properties in accordance with CSA A23.1-04:

(i) Class of Exposure: S-1;

(ii) Compressive Strength at fifty-six (56) days = thirty-five (35) MPa;

(iii) Water/Cementing Materials Ratio = 0.4;

(iv) Air Content: Category 2 per Table 4 of CSA A23.1-04 (4-7%); and

(v) Cement – shall be as specified in E38.7. Mix design for ready mix concrete shall be submitted to Contract Administrator at least two weeks prior to concrete placing operations.

(c) The workability of each concrete mix shall be consistent with the Contractor's placement operations. Self-compacting concrete may be used for the foundations.

(d) Any proposed proprietary repair mortar shall be subject to the approval of the Contract Administrator and must meet or exceed the properties of the ready mix concrete.

(e) The temperature of all types of concrete shall be between fifteen (15) degrees Celsius and twenty-five (25) degrees Celsius at discharge. Temperature requirements for concrete containing silica fume shall be between ten (10) degrees Celsius and eighteen (18) degrees Celsius at discharge unless otherwise approved by the Contract Administrator.

(f) Concrete Materials susceptible to frost damage shall be protected from freezing.

E38.9 Aggregate

E38.9.1 The Contractor shall be responsible for testing the fine and coarse aggregates to establish conformance to these Specifications, and the results of these tests shall be provided to the Contract Administrator if requested. All aggregates shall comply with CSA A23.1

(a) Coarse Aggregate:

(i) The maximum nominal size of coarse aggregate shall be sized to suit the Contractor's mix design. Gradation shall be in accordance with CSA A23.1, Table 11, Group 1. The coarse aggregate shall satisfy the Standard Requirements specified in CSA A23.1, Table 12, "Concrete Exposed to Freezing and Thawing".

(ii) Coarse aggregate shall consist of crushed stone or gravel or a combination thereof, having hard, strong, durable particles free from elongation, dust, shale, earth, vegetable matter or other injurious substances. Coarse aggregate shall be clean and free from alkali, organic or other deleterious matter; and shall have an absorption not exceeding 2.25%.

(iii) The aggregate retained on the five (5) mm sieve shall consist of clean, hard, tough, durable, angular particles with a rough surface texture, and shall be free from organic material, adherent coatings of clay, clay balls, and excess of thin particles or any other extraneous material.

(iv) Coarse aggregate when tested for abrasion in accordance with ASTM C131 shall not have a loss greater than thirty percent (30%).

(v) Tests of the coarse aggregate shall not exceed the limits for standard for requirements prescribed in CSA A23.1, Table 12, for concrete exposed to freezing and thawing.

(b) Fine Aggregate

(i) Fine aggregate shall meet the grading requirements of CSA A23.1, Table 10, Gradation FA1.

(ii) Fine aggregate shall consist of sand, stone, screenings, other inert Materials with similar characteristics or a combination thereof, having clean, hard, strong, durable, uncoated grains free from injurious amounts of dust, lumps, shale, alkali, organic matter, loam, or other deleterious substances.

(iii) Tests of the fine aggregate shall not exceed the limits for standard requirements prescribed in CSA A23.1, Table 12.

E38.10 Cementing Materials

E38.10.1 Cementing Materials shall conform to the requirements of CSA A3001.

(a) Silica Fume:

(i) Should the Contractor choose to include silica fume in the concrete mix design, it shall not exceed eight percent (8%) by mass of cement.

(b) Fly Ash:

(i) Fly ash shall be Type C1 or Type F and shall not exceed twenty-five percent (25%) by mass of cement.

E38.10.2 Cementitious Materials shall be stored in a suitable weather-tight building that shall protect these Materials from dampness and other destructive agents. Cementitious Materials that have been stored for a length of time resulting in the hardening or formation of lumps shall not be used in the Work.

E38.11 Admixtures

(a) Air entraining admixtures shall conform to the requirements of ASTM C260.

(b) Chemical admixtures shall conform to the requirements of ASTM C494 or C1017 for flowing concrete.

(c) All admixtures shall be compatible with all other constituents. The addition of calcium chloride, accelerators, and air-reducing agents will not be permitted, unless otherwise approved by the Contract Administrator.

(d) Appropriate low range water reducing and/or superplasticizing admixtures shall be used in concrete containing silica fume. Approved retarders or set controlling admixtures may be used for concrete containing silica fume.

(e) An aminocarboxylate based migrating corrosion inhibitor admixture shall be used in concrete that will be used as a repair material that will either be in contact with or adjacent to reinforcing steel in existing concrete. Proposed admixtures shall be subject to the approval of the Contract Administrator.

E38.12 Water

(a) Water used for mixing concrete shall be clean and free from injurious amounts of oil, acid, alkali, organic matter, or other deleterious substances. It shall be equal to potable water in physical and chemical properties.

E38.13 Concrete Supply

(a) Concrete shall be proportioned, mixed, and delivered in accordance with the requirements of CSA A23.1, except that the transporting of ready mixed concrete in non-agitating equipment will not be permitted unless prior written approval is received from the Contract Administrator.

(b) Unless otherwise directed by the Contract Administrator, the discharge of ready mixed concrete shall be completed within one hundred twenty (120) minutes after the introduction of the mixing water to the cementing Materials and aggregates.

(c) The Contractor shall maintain all equipment used for handling and transporting the concrete in a clean condition and proper working order.

E38.14 Reinforcing Steel

(a) Reinforcing steel shall be deemed to include all reinforcing bars, tie-bars, and dowels.

(b) All reinforcing steel shall conform to the requirements of CSA Standard G30.18, Grade 400 W, Billet-Steel Bars for Concrete Reinforcement. All reinforcing steel shall be new deformed billet steel bars. All bars, including ties, shall be hot-dip galvanized in accordance with CSA Standard G164 for a minimum net retention of six hundred (600) g/m^2. Reinforcing steel supply and installation will be incidental to construction of concrete foundation and no separate payment will be made.

E38.15 Anchor Bolts, Nuts, and Washers

(a) Anchor bolts, nuts and washers shall be supplied by the Contract Administrator.

E38.16 Anchor Bolt Templates

(a) Anchor bolt templates shall be supplied by the Contract Administrator.

(b) Anchor bolt templates will be incidental to construction of new concrete foundation and no separate payment will be made.

E38.17 Fibre Joint Filler

(a) Fibre joint filler shall be rot-proof and of the preformed, non-extruding, resilient-type, made with a bituminous fibre such as “Flexcell,” and shall conform to the requirements of ASTM Standard D1751, or approved equal in accordance with B6.

E38.18 Anti-Graffiti Coating

(a) Anti-graffiti coating shall be “Professional Water Sealant & Anti-Graffiti System” or approved equal in accordance with B6.

E38.19 Waterproofing Membrane

(a) Waterproofing membrane shall be “Sonoshield HLM 5000 R” or approved equal in accordance with B6.

E38.20 Miscellaneous Materials

(a) Miscellaneous Materials shall be of the type specified on the Drawings or approved by the Contract Administrator.

CONSTRUCTION METHODS

E38.21 Location and Alignment of Foundations

(a) Foundation construction shall not commence until the Contractor has obtained clearance from the appropriate Utility Authorities.

(b) Foundations shall be placed in the positions shown on the Drawings and as directed by the Contract Administrator in the field.

(c) The deviation of the axis of any finished foundation shall not differ by more than one percent (1%) from the vertical.

E38.22 Buried Utilities

(a) The Contractor shall exercise extreme caution when constructing the foundations in the vicinity of existing buried utilities and buildings. The Drawings show the approximate locations of existing buried utilities. The Contractor shall be responsible for obtaining the exact location of the buried utilities from the appropriate Utility Authorities prior to installing the foundations.

(b) The proposed locations of the foundations may be changed by the Contract Administrator if they interfere with the buried utilities.

(c) The Contractor shall be responsible for all costs that may be incurred for repair/rectification of any damage caused to the existing buried utilities as a result of the Contractor's operations in constructing cast-in-place concrete foundations, as determined by the Contract Administrator.

E38.23 Excavation

(a) The Contractor is responsible for determining the excavation method at each foundation location.

(b) Excavations for foundations shall be made with equipment designed to remove a core of the diameter shown on the Drawings, or hydro-jet excavation to a depth to bypass and/or expose adjacent utilities.

(c) Upon reaching the required elevation, the bottom of the excavation shall be cleaned as directed by the Contract Administrator in the field.

(d) All excavated material from the foundations shall be promptly hauled away from the Site to an approved disposal area as located by the Contractor.

(e) Upon completion of the cleaning out of the bottom to the satisfaction of the Contract Administrator, the reinforcement and anchor bolts shall be set in place and the concrete poured immediately. Under no circumstances shall a hole be left to stand open after boring has been complete.

E38.24 Sleeving

(a) Timber or steel sleeving shall be used to temporarily line the bore to prevent bulging or caving of the walls and to protect men at Work in the bore.

(b) The sleeving shall be designed by the Contractor and constructed to resist all forces that may tend to distort it.

(c) The sleeving shall be withdrawn as the concrete is placed in the bore. The sleeving shall extend at least one (1) m below the top of the freshly deposited concrete at all times.

(d) The clearance between the face of the bore hole and the sleeving shall not exceed seventy-five (75) mm.

E38.25 Inspection of Bores

(a) Concrete shall not be placed in a bore until the bore has been inspected and approved by the Contract Administrator.

(b) The Contractor shall have available suitable light for the inspection of each bore throughout its entire length.

(c) All improperly set sleeving, bore, or bottom shall be corrected to the satisfaction of the Contract Administrator.

E38.26 Placing Reinforcing Steel

(a) Reinforcement shall be:

(i) placed in accordance with the details shown on the Drawings;

(ii) rigidly fastened together; and

(iii) lowered into the bore intact before concrete is placed.

(b) Spacers shall be utilized to properly locate the reinforcing steel cage in the bore.

E38.27 Placing Anchor Bolts

(a) The anchor bolts shall be aligned with a steel template supplied by the Contract Administrator matching the bolt holes in the sign structure base plate. **Extreme care shall be used in this operation to ensure bolts are aligned properly**. Placement of anchor bolts without the steel template will not be permitted.

(b) The threaded portion of the anchor bolts projecting above the top surface of foundation shall be coated with oil, before the concrete is poured, to minimize the fouling of threads splattered by concrete residue.

E38.28 Placing Metal Bases

(a) Contractor to install metal bases as supplied by the Contract Administrator following curing of concrete foundations.

(b) Metal bases are to be installed plumb, level, and flush to the concrete foundation. Contractor to use stainless steel washers to level bases as required.

E38.29 Forms

(a) Forms for exposed surfaces that require an “ordinary surface finish” shall be made of good quality plywood, or an approved equivalent, or uniform thickness, with or without a form liner.

(b) Architectural concrete form liner shall be as specified on the Plans or equivalent as approved by the Contract Administrator.

(c) Permeable formwork liner shall be Drainoform, Zemdrail II, or equivalent as approved by the Contract Administrator.

(d) Formwork Materials shall conform to CSA Standard CAN/CSA-A23.1, and American Concrete Publication SP: 4, “Formwork for Concrete”.

(e) No “stay-in-place” formwork or falsework is permitted.

(f) Form sheeting plywood to be covered with form liner or to be directly in contact with soil shall be exterior Douglas Fir, concrete form grade, conforming to CSA Standard O121-M1978, a minimum of twenty (20) mm thick.

(g) Where form liner is not being used, form sheeting shall be Douglas Fir, overlay form liner type conforming to CSA Standard O121-M1978. Approved manufacturers are “Evans” and “C-Z”.

(h) Boards used for formwork shall be fully seasoned and free from defects such as knots, warps, cracks, etc., which may mark the concrete surface.

(i) No formwork accessories will be allowed to be left in place within fifty (50) mm of the surface following form removal. Items to be left in place, must be made from a non-rusting material or galvanized steel; and they shall not stain, blemish, or spall the concrete surface for the life of the concrete.

(j) Forms for exposed concrete surfaces that do not require a form liner may be either new plywood or steel as authorized by the Contract Administrator.

(k) Studding shall be spruce or pine and shall have such dimensions and spacing that they shall withstand distortion from all the forces to which the forms will be subjected. Minimum dimensions shall be fifty (50) mm by one hundred fifty (150) mm.

(l) Walers shall be spruce or pine, with minimum dimensions of one hundred (100) mm by one hundred fifty (150) mm.

(m) All forms are incidental to these Works and must be removed by the Contractor once adequate strength and curing of the concrete has been achieved.

(n) The forms shall be sufficiently rigid to prevent lateral or vertical distortions from the loading environment to which they shall be subjected. Forms shall be set to the design grades, lines, and dimensions, as shown on the Drawings.

E38.30 Placing Concrete

(a) Care shall be taken to ensure that anchor bolts are vertically aligned and that anchor bolts and conduits are properly positioned prior to placement of concrete.

(b) Concrete shall not have a free fall of more than two (2.0) m and shall be placed so that the aggregates will not separate or segregate. The slump of the concrete shall not exceed one

hundred ten (110) mm. The concrete shall be vibrated throughout the entire length of the foundation.

(c) Concrete shall be placed to the elevations as shown on the Drawings. The top surface of the foundation shall be finished smooth and even with a hand float.

(d) The shaft shall be free of water prior to placing of concrete. Concrete shall not be placed in or through water unless authorized by the Contract Administrator.

E38.31 Protection of Newly Placed Concrete

(a) Newly laid concrete threatened with damage by rain, snow, fog, or mist shall be protected with a tarpaulin or other approved means.

E38.32 Construction Joints

(a) Construction joints shall be located only where shown on the Drawings or as otherwise approved in writing by the Contract Administrator. Construction joints shall be at right angles to the direction of the main reinforcing steel. All reinforcing steel shall be continuous across the joints. Bevelled shear keys, as shown on the Drawings or approved by the Contract Administrator, shall be provided at all joints.

(b) In lieu of shear keys, the Contractor may roughen the surface as follows. The surface shall be rough, with minimum amplitude of six (6) mm. Acceptable procedures to obtain this rough surface are as follows:

(i) by removing the mortar from between the larger aggregate particles with a water jet and soft brush when the concrete is in a semi-hardened state (green-cut); and

(ii) by first applying a chemical retarder to the surface and then removing the mortar from the larger aggregate particles with a water jet and brush.

(c) The face of joints shall be cleaned of all laitance and dirt, after which the cementitious grout or an approved bonding agent shall be applied. Forms shall be retightened, and all reinforcing steel shall be thoroughly cleaned at the joint prior to concreting.

E38.33 Curing Concrete

(a) The top of the freshly finished concrete foundations shall be covered and kept moist by means of wet polyester blankets immediately following finishing operations and shall be maintained at above ten (10) degrees Celsius for at least seven (7) consecutive days thereafter.

(b) After the finishing is completed, the surface shall be promptly covered with a minimum of a single layer of clean, damp polyester blanket.

(c) Concrete shall be protected from the harmful effects of sunshine, drying winds, surface dripping or running water, vibration, and mechanical shock. Concrete shall be protected from freezing until at least twenty-four (24) hours after the end of the curing period.

(d) Changes in temperature of the concrete shall be uniform and gradual and shall not exceed three (3) degrees in one (1) hour or twenty (20) degrees in twenty-four (24) hours.

E38.34 Form Removal

(a) Forms shall not be removed for a period of at least twenty-four (24) hours after the concrete has been placed. Removal of forms shall be done in a manner to avoid damage to, or spalling of, the concrete.

(b) The minimum strength of concrete in place for safe removal of forms shall be twenty (20) MPa.

(c) Field-cured test specimens, representative of the in-place concrete being stripped, will be tested to verify the concrete strength.

E38.35 Patching of Formed Surfaces

(a) Immediately after forms around top of foundation have been removed, but before any repairing or surface finishing is started, the concrete surface shall be inspected by the

Contract Administrator. Any repair of surface finishing started before this inspection may be rejected and required to be removed.

(b) All formed concrete surfaces shall have bolts, ties, struts, and all other timber or metal parts not specifically required for construction purposes cut back fifty (50) mm from the surface before patching.

(c) Minor surface defects caused by honeycomb, air pockets greater than five (5) mm in diameter, and voids left by strutting, and tie holes shall be repaired by removing the defective concrete to sound concrete, dampening the area to be patched and then applying patching mortar. A slurry grout consisting of water and cement shall be well-brushed onto the area to be patched. When the slurry grout begins to lose the water sheen, the patching mortar shall be applied. It shall be struck-off slightly higher than the surface and left for one (1) hour before final finishing to permit initial shrinkage of the patching mortar and it shall be touched up until it is satisfactory to the Contract Administrator. The patch shall be cured as specified in this Specification, and the final colour shall match the surrounding concrete.

E38.36 Cold Weather Concreting

(a) Protection of concrete shall be considered incidental to its placement. The temperature of the concrete shall be maintained at or above ten (10) degrees Celsius for a minimum of three (3) days or till the concrete has reached a minimum compressive strength of twenty (20) MPa, by whatever means are necessary. Concrete damaged as a result of inadequate protection against weather conditions shall be removed and replaced by the Contractor at their own expense. Also, concrete allowed to freeze prior to the three (3) days will not be accepted for payment.

E38.37 Anti-Graffiti Coating

(a) Anti-graffiti coating shall be applied to all raised planter walls shown on the Drawings or identified by the Contract Administrator.

(b) The anti-graffiti coating shall be applied according to manufactures Specifications.

(c) Maintain anti-graffiti coating on all vertical concrete surfaces for a period of two (2) years.

E38.38 Waterproofing

(a) Waterproofing membrane shall be applied to all new concrete raised planter interior walls and existing concrete columns within the planters which will come into contact with planting soil, as identified on the Drawings or by the Contract Administrator. The waterproofing membrane shall be roller applied according to manufactures Specifications.

E38.39 Quality Control

E38.39.1 All workmanship and all Materials furnished and supplied under this Specification are subject to close and systematic inspection and testing by the Contract Administrator, including all operations from the selection and production of Materials, through to final acceptance of the Work. The Contractor shall be wholly responsible for the control of all operations incidental thereto notwithstanding any inspection or approval that may have been previously given. The Contract Administrator reserves the right to reject any Materials or Works that are not in accordance with the requirements of this Specification.

E38.39.2 The Contractor shall be responsible for making a thorough inspection of Materials to be supplied under this Contract. All material shall be free of surface imperfections and other defects.

MEASUREMENT AND PAYMENT

E38.40 Bust Stop Flag and Totem Foundations

E38.40.1 Construction of bus stop flag and totem foundations will be measured on a unit basis and will be paid for at the Contract Lump Sum Price per foundation for the “Items of Work”

listed here below for concrete foundations constructed in accordance with this Specification and accepted by the Contract Administrator.

(a) Items of Work:

(i) Transit Bus Flag Foundation; and

(ii) Transit Bus Totem Foundation.

E39. ELECTRICAL WORKS FOR TRANIST TOTEMS

GENERAL PROVISIONS

E39.1 Refer also to Drawings.

E39.2 The Contract Administrator shall coordinate the removal of the existing totems with Transit.

E39.3 All Sites to be left in a safe manner for installation of new Work.

E39.4 Furnish all labour, new material, equipment and services for the complete installation of the electrical Work as shown on the plans and specified. Complete system to operate to total satisfaction of the responsible professional engineer.

E39.5 Conform to all Codes and pay all permits and Fees. Upon completion, present a “Certificate of Approval” for electrical Work from the Inspection Department.

E39.6 Examine the Site and local conditions affecting the Work under this Contract.

E39.7 The foundation shall be installed in accordance with E38.

E39.8 Install all Work promptly and in advance of concrete pouring and/or construction.

E39.9 The Contractor shall be responsible to make good all “Cutting and Patching” required by his section of the Contract. Include all trenching, backfilling and surface repair. Contractor to push wires where possible at all locations.

E39.10 All Work shall be executed in a first class and workmanlike manner. All supports, hangers, and securing devices shall be solid and substantial. All Work shall be laid out neatly in its mechanical appearance. It shall be logically arranged for simplicity of installation and accessibility.

E39.11 Provide corrected “as-built” Drawings on completion of the project. All underground services shall be indicated on as-builts and dimensioned.

E39.12 Provide Shop Drawings for approval of all major electrical items. Provide three (3) copies of manufacturers maintenance instructions bound in hard covered book for each piece of major electrical equipment.

E39.13 Identify circuits/equipment with lamacoid nameplates.

E39.14 All electrical apparatus shall be properly grounded according to the latest edition of the “Canadian Electrical Code”.

E39.15 All equipment, wiring, conduit, grounding, seals, etc., shall be in compliance with the latest edition of the “Canadian Electrical” and local “Codes”. Wiring in finished grade shall be in rigid PVC conduits, complete with ground conductor.

E39.16 Wiring shall be copper, RWU-90, insulated, minimum #12 AWG and buried a minimum of 457.2 mm (eighteen (18) inches) below grade with 152.4 (six (6) inches) of sand above cable.

E39.17 Wire and connect to signs where indicated. Provide lockable, weatherproof disconnect switches for each sign as shown on the drawings. Locate as directed on Site.

E39.18 Co-ordinate disconnection, reconnection and installation with Manitoba Hydro and City of Winnipeg. Installation to conform with all utility requirements.

E39.19 An electrical supply will be required to service the totem. The electrical service connection will be either the existing totem power connection, the nearest new street light to the Transit Stop or, as approved by Manitoba Hydro.

E39.20 Obtain all permits and inspections. Provide copies of all paperwork to the Contract Administrator prior to completion of the Work.

E39.21 Installation of signs will be completed by Transit. Coordinate for electrical connection requirements and timing of installation.

E39.22 Provide ground rod and grounding connections to suit Manitoba Hydro and City of Winnipeg Inspection Department.

E39.23 All distribution equipment to be weather proof.

E39.24 The Contractor shall carefully examine all Drawings relating to the Work, to be certain that the Work under this Contract can be carried out and, prior to the submission of his/her Bid in accordance with B3, report at once to the Contract Administrator any defect, discrepancy, omission or interference affecting the Work of this section or the guarantee of same.

E39.25 The Contractor shall be responsible for any damage caused to the City or their Contractors by improperly carrying out this contract.

E39.26 The Contractor shall guarantee the satisfactory operation of all Work and apparatus included and installed under this section for a period of twelve (12) calendar months after the final acceptance of the project.

MEASUREMENT AND PAYMENT

E39.27 Electrical Works for Totem Foundations will be measured on a per unit basis and paid for at the Contract Unit Price per each unit for “Electrical Works for Totem Foundation”. The price shall be payment in full for completing all operations herein described and all other items incidental to the Work included in this Specification.

E40. TEMPORARY WOODEN TRANSIT STOP RAMPS

DESCRIPTION

E40.1 This Specification covers the production, supply and placement of temporary bus stop platforms. They are intended to be portable and moveable to accommodate construction activity through areas where Transit stops are located and passenger loading is temporarily required from a lane that is not adjacent to a curb or sidewalk on the right hand side of a Transit bus.

E40.2 These stops are intended to enable a wheelchair to navigate up a ramp to a platform that is high enough to accommodate the use of Transit low floor buses such that the wheelchair user can enter the bus directly from the top of the platform.

E40.3 These are not required at all locations where Transit stops currently exist. Some Transit stops will be relocated to locations where a curb and sidewalk are available, temporarily suspended, or relocated outside of the construction area.

CONSTRUCTION METHODS

E40.4 The stops shall be constructed as determined by the Contractor with the following criteria:

(a) a durable structure that can be moved by machines on site;

(b) timber based or better Materials;

(c) surface for platform and ramp shall be either plywood or timber decking with zero (0) gap at the time of install;

(d) one hundred twenty-seven (127) mm (five (5) inches) to 177.8 mm (seven (7) inches) in total height;

(e) include one (1) ramp with eight (8%) to ten percent (10%) grade;

(f) all connections to be secured with screws;

(g) Top of platform to be two (2.0) m by two (2.0) m minimum measure from outside edges of top of platform; and

(h) Platform to be plumb, Contractor to place shims or level course as required, and temporary affix to base, sub-base course, or existing pavement at two (2) points.

E40.5 The stops shall be placed at locations approved by Transit and the Contract Administrator in consultation with the Contractor to accommodate construction staging.

MEASUREMENT AND PAYMENT

E40.6 Temporary Wooden Transit Stop Ramps will be measured on a per unit basis and paid for at the Contract Unit Price for "Temporary Transit Stop Ramps". The units will be paid for each unit supplied and placed in accordance with this Specification and as measured and accepted by the Contract Administrator. Placing the stops and relocating will be incidental.

E41. WORKING NEAR WATERWAYS

E41.1 The Contractor shall comply with all rules and regulations stated in the City of Winnipeg Planning, Property and Development Waterway Permit to be provided in advance of construction.

E41.2 The Work on Churchill Drive is adjacent to the Red River and must not impact the stability of the riverbank.

CONSTRUCTION METHODS

E41.3 Due to the susceptibility to movement, the following conditions must be met for the project duration within the identified Churchill Drive riverbank area:

(a) no material shall be stockpiled between the curb and the riverbank;

(b) no equipment shall be parked between the curb and the riverbank;

(c) equipment used for excavation shall work from the roadway only;

(d) no heavy equipment permitted for subgrade compaction, spreading and placement of granular and compaction of granular. A skid-steer would be acceptable to use; and

(e) paving equipment may be used for the asphalt path but cannot be parked in the area when not in use. During paving operations, the asphalt supply truck shall not drive between the curb and the riverbank.

MEASUREMENT AND PAYMENT

E41.4 No measurement or payments shall be made for working on/around the riverbank.

E42. GREEN BIKE LANE TREATMENT

DESCRIPTION

E42.1 This Specification covers the supply and installation of Green Methyl Methacrylate Area (MMA) Bike Lane Treatment as referred to in:

(a) Contract Drawings;

(b) Appendix 'F' – CycleGrip MMAX Specification – Methyl Methacrylate Bike Lane Treatment; and

(c) Appendix 'G' – Application Instructions – MMAX Area Markings.

MATERIAL

E42.2 CycleGrip® MMAX kit – includes CycleGrip® MMAX Resin (green), CycleGrip® MMAX Aggregate and Catalyst.

E42.3 Source:

Available from:
ENNIS-FLINT
Attention: Deryk Upton
Ph: 604-315-8765
Email: dupton@ennisflint.com
Web: www.ennisflint.com

CONSTRUCTION METHODS

E42.4 Surface is to be prepared in accordance with the Manufacturer's instructions.

E42.5 Treatment is to be installed in accordance with the Manufacturer's instructions.

MEASUREMENT AND PAYMENT

E42.6 Supply and installation of MMA bike lane treatment will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Green Bike Lane Treatment". The area to be paid for will be the total number of square metres of MMA bike lane treatment supplied and installed in accordance with this Specification, as accepted and measured by the Contract Administrator.

E43. DOWELS AND TIE BARS

E43.1 Further to Section 9.2.3 of CW 3310, no measurement of payment will be made for dowels or tie bars that are drilled along a construction joint between new sections of concrete constructed as part of this Contract. Dowels or tie bars that are drilled into new concrete pavement will be considered incidental to the construction of the concrete pavement.

E44. SALVAGING OF OVERHEAD SIGN SUPPORT STRUCTURES

DESCRIPTION

E44.1 This Specification shall cover the removal, salvage, hauling and unloading of all overhead sign support structures (OHSS's) as noted on the Contract Drawings.

E44.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, Materials, equipment, tools, supplies and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E44.3 The Work under this Specification shall include the following items, or as otherwise directed by the Contract Administrator:

E44.3.1 Removal/salvage of the existing OHSS's along with attenuation unit for the structure located on Jubilee Avenue in the north boulevard between Pembina Highway and Riverside Drive.

E44.3.2 Temporary storage of the OHSS components (if required) until such point they are hauled to the City of Winnipeg Bridge Yard.

E44.3.3 Hauling/unloading of the existing OHSS's to the City of Winnipeg's yard.

SUBMITTALS

E44.4 The Contractor shall submit the following to the Contract Administrator, in accordance with the Specification:

E44.4.1 OHSS Removal Method Statement at least three (3) Calendar Days prior to any OHSS removal works identifying the means and methods to be utilized to remove the structure.

CONSTRUCTION METHODS

E44.5 Removal

E44.5.1 The Contractor shall exercise great care to not damage any portion of the OHSS and attenuation unit being removed. The Contractor will be responsible for repairing any damage to the existing OHSS's to the Contract Administrator's satisfaction caused as a result of the Contractor's removal/hauling/unloading operations.

E44.5.2 The OHSS's shall be lifted and secured with nylon ropes or other approved methods. Use of steel chains and steel hooks against hot-dip galvanized or powder coated surfaces will not be permitted. The structure components (shaft and arm etc.) shall be placed on timber blocking and secured with nylon ropes during their transportation to the City of Winnipeg Bridge Yard.

E44.6 Hauling and Unloading

E44.6.1 The Contractor shall deliver all salvaged OHSS and attenuation unit components, including all miscellaneous bolts, washers, nuts, etc. to the City of Winnipeg's Bridge Yard at 960 Thomas Avenue. Access into the compound will be through Gate B1 and entry into the bridge yard will be through Gate B2.

(a) The Contractor shall provide a minimum of twenty-four (24) hours' notice prior to delivery of the OHSS components. The Contractor shall coordinate with:

Mike Terleski, CET
Bridge Operations Technologist
Public Works
P: 204-986-5004
M: 204-794-8510

(b) The Contractor shall be responsible for unloading of all OHSS components at the City of Winnipeg Bridge Yard as directed by the City's representative, including the provision of all necessary labour, Materials and equipment to unload the components.

MEASUREMENT AND PAYMENT

E44.7 Removal/salvaging, hauling and unloading of the OHSS will be paid for at the Contract Lump Sum Prices for "Remove OHSS and Attenuation Unit". The payment will be considered full payment for supplying all Materials and for performing all operations herein described and all other items incidental to the Work.

E45. REMOVAL AND SALVAGING OF FENCING

DESCRIPTION

E45.1 General

E45.1.1 This Specification covers the removal and salvaging of existing "Transit" aluminum fencing.

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

CONSTRUCTION METHODS

E45.2 Removal of Existing Aluminum Fence

E45.2.1 The Contractor shall remove fencing as indicated on the Drawings including any gates, posts, concrete post foundations associated with fencing. The post holes remaining following the removal of the fencing shall be backfilled and compacted to the satisfaction of the Contract Administrator. All concrete rubble shall be removed by the Contractor.

E45.3 Salvaging of Existing Aluminum Fence

E45.3.1 The Contractor shall be responsible for removing fencing, debris and waste from the Work area and providing salvaged materials delivered to the Transit Department at 421 Osborne Street as arranged through the Contract Administrator.

MEASUREMENT AND PAYMENT

E45.4 Removal and Salvaging of Aluminum Fence

E45.4.1 The removal and disposal of existing aluminum fencing will be measured on a per linear basis and paid for at the Contract Unit Price per metre for “Aluminum Fence Removal”. The length to be paid for will be the total number of metres of steel fence removed and disposed in accordance with this Specification, accepted and measured by the Contract Administrator.

E45.4.2 Backfilling post holes, removing and disposing of fence posts, concrete post foundations and concrete rubble shall be considered incidental to “Aluminum Fence Removal” and no separate measurement or payment will be made.

E46. REINSTATING PRIVATE WALKS

DESCRIPTION

E46.1 Further to CW 3325, CW 3330 and CW 3235 this Specification covers the reinstatement of private walks following regrading of private property.

E46.2 Vertical geometry improvements will require regrading into private property necessitating renewal of existing private walks to meet the requirements of the 2015 City of Winnipeg Accessibility Standards.

CONSTRUCTION METHODS

E46.3 Private lots will be regraded as directed by the Contract Administrator.

E46.4 Renewal limits for private walks will be provided by the Contract Administrator.

E46.5 Private walks are to be reinstated using the same Materials as the existing walks (e.g., concrete, paving stones or pre-case concrete blocks).

E46.5.1 Concrete private walks are to be installed as per CW 3325 – R5.

E46.5.2 Paving Stone private walks are to be installed as per CW 3330 – R5.

(a) Existing paving stones are to be carefully removed and stockpiled for reinstallation.

(b) Where the pre-existing paving stones cannot be salvaged or are damaged, the Contractor is to supply new pavers that match the existing pavers in shape and colour.

E46.6 Precast Sidewalk Blocks private walks are to be installed as per CW 3232 – R9.

(a) Existing sidewalk blocks are to be carefully removed and stockpiled for reinstallation.

(b) Where the pre-existing sidewalk blocks cannot be salvaged or are damaged, the Contractor is to supply new sidewalk blocks.

MEASUREMENT AND PAYMENT

E46.7 Reinstating private walks will be measured on an area basis and paid for that the Contract Unit Prices under the item for "Private Walks". The area to be paid for shall be the total number of square metres formed and placed in accordance with this Specification and as measured and accepted by the Contract Administrator.

E46.8 Regrading of private property will be paid as per CW 3110.

E47. TRAFFIC SIGNALS MATERIALS

E47.1 In addition to CW 3620 3.11.12, Joining of conduit will not be allowed except:

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

E47.2 In place of CW 3620 3.11.13, Joining of conduit shall use an approved oversize coupler to connect nominal size 38.1 mm (1.5 inches) or 50.8 mm (two (2) inches) LDPE pipe, IPEX Series 75, installation to follow manufacture's recommendations.

(a) Approved Products:

(i) Plasson Universal Slip Repair Coupler 60-64, Product Code: 176100060064 for use with nominal 50.8 mm (two (2) inches) LDPE.

(ii) Plasson Universal Slip Repair Coupler 48-51, Product Code: 176100048051 for use with nominal 38.1 mm (1.5 inches) LDPE.

(b) Substitutes will not be allowed except:

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

E47.3 As per CW 3620 4.11.5, No measurement or payment shall be made for Joining of Conduit.

E47.4 Removal of CW 3620 2.10.1 (b) Conduit coupling pipe and gear clamps.

E48. SERVICE BOX PRE-CAST

DESCRIPTION

E48.1 This Specification covers the use and installation of a service box pre-cast 431.8 mm (seventeen (17) inches) by seven hundred sixty-two (762) mm (thirty (30) inches) by 457.2 mm (eighteen (18) inches) and 330.2 mm (thirteen (13) inches) by 609.6 mm (twenty-four (24) inches) by 457.2 mm (eighteen (18) inches).

MATERIALS

E48.2 Materials shall be as per section 2 of CW 3620.

CONSTRUCTION METHODS

E48.3 Install Pre-Cast Service Box in grass boulevards/medians, and hard surfaced medians or as shown on the Drawings or as directed by the Contract Administrator.

E48.4 Fill bottom of excavation with compacted limestone base course material to set precast service box to grade.

E48.5 Install Pre-Cast Service Box on top of the compacted granular fill material to pavement, sidewalk or boulevard finish grade.

E48.6 All conduits must be bundled into a group in the centre of the Pre-Cast Service Box. Install plastic plugs prior to back fill.

E48.7 Backfill around Pre-Cast Service Box exterior. Back fill shall conform to requirements of SD-342.

E48.8 Pre-Cast Service box shall meet the grade of the sidewalk or boulevard given provided by Contract Administrator.

MEASUREMENT AND PAYMENT

E48.9 Installation of Service Boxes shall be measured on a unit basis and paid for at the Contract Unit Price per unit for "Items of Work" listed below. The number of units to be paid for shall be the total number of Service Boxes installed in accordance with this Specification, accepted and measured by the Contract Administrator.

(a) Service Box Pre-Cast.

E49. INSTALLATION OF EARLY OPEN CONCRETE BASES

DESCRIPTION

E49.1 This Specification shall cover the installation of Early Open Concrete Bases.

MATERIALS

E49.2 Supply concrete for bases in accordance with CW 2160, Table CW 2160.1 Design Requirements for Concrete Used for Underground Structures, for Type A Structures (monolithic sewers and reinforced structures).

E49.3 Further to E49.2, the supplied concrete shall achieve a minimum compressive strength of twenty-two (22) MPa at forty-eight (48) hours.

E49.4 City Supplied Materials shall be as per Section 2.10 of CW 3620 and E47.

CONSTRUCTION METHODS

E49.5 Construction Methods for the installation of Early Open Concrete Bases shall be as per Section 3.7 of CW 3620.

MEASUREMENT AND PAYMENT

E49.6 Installation of Concrete Bases shall be measured on a unit basis and paid for at the Contract Unit Price per unit for "Items of Work" listed below. The number of units to be paid for shall be the total number of concrete bases installed in accordance with this Specification, accepted and measured by the Contract Administrator.

(a) **Items of Work**:

(i) Signal Pole Base Early Open – Type A;
(ii) Signal Pole Base Early Open – Type OD;
(iii) Signal Pole Base Early Open – Type G; and
(iv) Signal Pole Base Early Open – Type J.

E49.7 Payment for the items of Work in this Section includes the supply and installation of ready mix or mixed concrete on site.

E49.8 Payment for the items of Work listed above includes the supply and installation of grounding rods (electrodes) installed with the concrete bases.

E49.9 Payment for the items of Work listed above includes boring.

E49.10 Payment for the items of Work listed above includes top ring forms.

E50. INSTALLATION OF PRE-CAST TYPE PM BASES

E50.1 Pre-Cast Type PM concrete bases shall be supplied by The Contractor including anchor bolts.

E50.2 Fabrication and installation shall be in accordance with SD-315.A.

E50.3 Payment of Pre-Cast Type PM bases shall be per base installed.

E50.4 Note: No measurement or payment will be made for the supply of associated material or equipment associated with this Specification.

E51. JUBILEE CONCRETE PAVEMENT REMOVAL

E51.1 Further to Section 6.1.4 of CW 3110, no additional payment will be made for pavement removal over three hundred (300) mm in thickness. The Bidder shall review the Geotechnical Report found in Appendix 'A' when providing pricing.

E52. REPLACE AND RENEW EXISTING CONCRETE CURB AND PRE-CAST PAVER EDGING AT 895 JUBILEE

DESCRIPTION

E52.1 This Specification covers the replacement and renewal of the existing concrete curb and pre-cast paver edging at 895 Jubilee Avenue as shown on the Contract Drawings.

E52.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, Materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

CONSTRUCTION METHODS

E52.3 Remove pre-cast paver edging, concrete curb, and wooden fence at locations as shown on the Drawings or as directed by the Contract Administrator.

E52.4 Ensure the removal methods do not chip, damage or undercut the adjacent furnishings that are to remain.

E52.5 Replace pre-cast paver edging and concrete curb as shown on the Drawings or as directed by the Contract Administrator. Supply and replacement of damaged pre-cast paver edging shall be incidental to the cost. Replacement pre-cast paver edging shall be of similar colour and dimensions as the pre-cast paver edging.

E52.6 Dispose of removed paving stone, concrete curb and wooden fence Materials in accordance with clause 3.4 of CW 1130.

MEASUREMENT AND PAYMENT

E52.7 Replace and Renew Existing Concrete Curb and Pre-Cast Paver Edging at 895 Jubilee will not be measured and paid for at the Contract Lump Sum Price for "Replace and Renew Existing Concrete Curb and Pre-Cast Paver Edging at 895 Jubilee", which price shall be paid in full for supplying all Materials and for performing all operations required to complete the Work and all other items incidental to the Work.

E53. PAVING STONE REMOVAL

DESCRIPTION

E53.1 This Specification covers the removal of paving stones.

E53.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, Materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E53.3 Referenced Specifications and Drawings:

(a) The latest version of the City of Winnipeg Standard Construction Specifications.

(i) CW 3235 – Renewal of Existing Miscellaneous Concrete Slabs.

CONSTRUCTION METHODS

E53.4 Remove paving stones at locations as shown the Drawings or as directed by the Contract Administrator.

E53.5 Ensure the removal methods do not chip, damage or undercut the adjacent slabs that are to remain.

E53.6 Resaw-cut chipped, damaged or undercut slabs beyond the removal limits as directed by the Contract Administrator at the Contractors own expense.

E53.7 Remove the paving stones around existing curb stops and water valves by hand methods.

E53.8 Dispose of removed paving stone materials in accordance with clause 3.4 of CW 1130.

MEASUREMENT AND PAYMENT

E53.9 Paving stone removal will be measured on an area basis and paid for at the Contract Unit Price per square metre for “Paving Stone Removal”. The area to be paid for will be the total number of square metres of existing brick paving stone removed in accordance with this Specification, accepted and measured by the Contract Administrator.

E54. REPAIR MANHOLE BENCHING

DESCRIPTION

E54.1 General

E54.1.1 This Specification covers the repair of benching in existing manholes.

CONSTRUCTION METHODS

E54.2 Repair Manhole Benching

E54.2.1 The Contractor shall remove and dispose of existing loose or crumbling benching mortar to the satisfaction of the Contract Administrator.

E54.2.2 The Contractor shall bench and channel the manhole floor with mortar or concrete in accordance with CW 2130, SD-010 and SD-011. Flow channels shall curve smoothly and provide a smooth transition between inlet and outlet pipes.

MEASUREMENT AND PAYMENT

E54.3 Repair of manhole benching will be measured on a unit basis and paid for at the Contract Unit Price for “Repair Benching”. The number to be paid for shall be the total number of manholes that have been repaired in accordance with this Specification, accepted and measured by the Contract Administrator.

E55. DEMOLITION AND EXCAVATION OF EXISTING CONCRETE STAIRCASE

DESCRIPTION

E55.1 This Specification shall cover all operations relating to the Site preparation and demolition of the existing concrete staircase to be replaced with a new steel staircase.

CONSTRUCTION METHODS

E55.2 General

(a) Demolition shall take place as shown on the Drawings.

(b) The Contractor shall take great care when demolishing the existing concrete staircase adjacent to the Churchill Pump Station building exterior. The Contractor will be held solely liable for any damages or claims resulting from the demolition operations.

MEASUREMENT AND PAYMENT

E55.3 Demolition and Excavation

(a) Demolition of the existing reinforced concrete staircase will not be measured and paid for at the Contract Lump Sum Price for "Demolition and Excavation of Jubilee Staircase", which price shall be paid in full for supplying all Materials and for performing all operations required to complete the Work and all other items incidental to the Work. The Lump Sum price shall include excavation, recycling, backfilling and subgrade preparation as shown on the Drawings.

E56. STAIRCASE CONCRETE FOUNDATION

DESCRIPTION

E56.1 This Specification shall cover all operations relating to the preparation of Portland Cement structural concrete for, and all concreting operations related to, the construction of reinforced concrete foundation as specified herein and as shown on the Drawings.

E56.2 This Specification shall cover all operations relating to the supply, fabrication, delivery, and placement of hot-dip galvanized reinforcement, and associated bar accessories, as specified herein and as shown on the Drawings.

E56.3 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, Materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E56.4 References

E56.4.1 The latest edition and subsequent revisions of the following:

(a) ASTM F3125 – Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated one hundred twenty (120) ksi (eight hundred thirty (830) MPa) and one hundred fifty (150) ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.

(b) ASTM A767 – Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.

(c) CSA A23.1/CSA A23.2 – Concrete Materials and methods of concrete construction/Test methods and standard practices for concrete.

(d) CSA A23.3 – Design of concrete structures.

(e) CSA G30.18 – Carbon steel bars for concrete reinforcement.

MATERIALS AND EQUIPMENT

E56.5 General

(a) All Materials supplied under this Specification shall be of a type approved by the Contract Administrator, and shall be subject to inspection and testing by the Contract Administrator.

(b) The Contractor shall be responsible for the supply, safe storage and handling of all Materials as set forth in this Specification. All Materials shall be handled in a careful and workmanlike manner, to the satisfaction of the Contract Administrator.

E56.6 Concrete and Reinforcing bars

(a) Concrete and reinforcement bars shall take place as shown on the Drawings.

(b) Construction shall take place as shown on the Drawings.

(c) All forming is incidental to the unit price Bid for the Specification.

(d) All steel reinforcing shall conform to the requirements of the latest version of CSA Standard CAN/CSA G30.18, Grade 400W, Billet-Steel Bars for Concrete Reinforcement.

(e) All bars shall be hot-dip galvanized in accordance with the latest ASTM A767 for a minimum net retention of six hundred ten (610) g/m^2.

(f) Verify dimensions of reinforced concrete foundation prior to construction.

(g) Meet existing grades and slopes unless otherwise indicated on the Drawings. Notify the Contract Administrator where this requirement will not result in positive drainage.

E56.7 Pre-set Anchors and Anchor Bolts

(a) All pre-set anchors shall be National Concrete Accessories Type DGR-1, stainless steel or equal as accepted by the Contract Administrator. The pre-set anchors shall be supplied and installed by the Contractor as shown on the Drawings

E56.8 Submittals

(a) The Contractor shall prepare and submit for review and approval, at least ten (10) Business Days prior to the commencement of any scheduled Work on the Site, reinforcement Shop Drawings including bar schedules for the reinforcement required for the concrete Works on the Drawings.

(b) Shop Drawings shall indicate placing of reinforcement and:

(i) Bar bending details;

(ii) Lists;

(iii) Quantities of reinforcement;

(iv) Sizes, spacing's, locations of reinforcement and mechanical splices if approved by Consultant with identifying code marks to permit correct placement without reference to structural Drawings;

(v) Detail lap lengths and bar development lengths to CAN/CSA-A23.3, unless otherwise indicated; and

(vi) Details of all anchor bolts and sets.

MEASUREMENT AND PAYMENT

E56.9 Staircase Foundation

(a) Constructing the staircase reinforced concrete foundation will not be measured and paid for at the Contract Lump Sum Price for "Staircase Concrete Foundation", which price shall be paid in full for supplying all Materials and for performing all operations required to complete the Work and all other items incidental to the Work. The Lump Sum price shall include the furnishing of all superintendence, overhead, labour, Materials, reinforcement bars, pre-set anchors and anchor bolts, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Work as hereinafter specified.

E57. STEEL STAIRCASE

DESCRIPTION

E57.1 This Specification shall cover all operations relating to the supply and installation of the steel staircase and all miscellaneous hot dip galvanized steel items including rail bases and other items associated with the Work as specified herein and as shown on the Drawings.

E57.2 Reference Specifications and Drawings

E57.2.1 The latest edition and subsequent revisions of the following:

(a) ASTM A123 – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

(b) ASTM D412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension.

(c) ASTM D2240 – Standard Test Method for Rubber Property – Durometer Hardness.

(d) ASTM F3125 – Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated one hundred twenty (120) ksi (eight hundred thirty (830) MPa) and one hundred fifty (150) ksi (one thousand forty (1,040) MPa) Minimum Tensile Strength, Inch and Metric Dimensions.

(e) CAN/CSA S16 – Design of Steel Structures.

(f) CAN/CSA G40.20/G40.21 – General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

(g) CAN/CSA G164 – Hot Dip Galvanizing of Irregularly Shaped Articles.

(h) CSA W59 – Welded Steel Construction (Metal Arc Welding).

(i) CSA W47.1 – Certification of Companies for Fusion Welding of Steel Structures.

MATERIALS AND EQUIPMENT

E57.3 Material for the Steel Staircase shall take place as shown on the Drawings.

E57.4 Hot-dip galvanizing of all steel sections shall be in accordance with ASTM A123 and CAN/CSA-G164 for a minimum net retention of seven hundred (700) g/m^2.

E57.5 Elastomeric pads shall conform to ASTM D2240 and ASTM D412, low temperature Grade 4 or 5 with a Shore A durometer hardness of 50.

CONSTRUCTION METHODS

E57.6 Layout

E57.6.1 Before fabrication and/or installation of the steel staircase, the Contractor shall satisfy himself of all required enclosure section dimensions, by field measurements.

E57.7 Fabrication

E57.7.1 No fabrication shall commence until permission to do so has been received from the Contract Administrator.

E57.7.2 All fabrication shall be carried out in accordance with this Specification and the Drawings.

E57.7.3 The Fabricator shall fabricate the entire steel staircase in sections, to permit the installation of the steel sections onto the concrete.

E57.7.4 The punching of identification marks on the members will not be allowed.

E57.7.5 Any damage to members during fabrication shall be drawn to the attention of the Contract Administrator in order that the Contract Administrator may accept remedial measures.

E57.7.6 Dimensions and fabrication details which control the field matching of parts shall receive very careful attention in order to avoid field adjustment.

E57.7.7 Splice members are not allowed unless noted otherwise or with a written consent of Consultant.

E57.7.8 Components of the staircase and enclosures shall be joined by means of bolt, cap screws, and welds as shown on the Drawings.

E57.7.9 Site welding shall not be permitted unless acceptable to the Contract Administrator.

E57.7.10 Seal all hollow structural sections with suitable cap plates or by welding all around to adjoining members.

E57.8 Connection to Existing Building

E57.8.1 Connection to existing building shall take place as shown on the Drawings.

E57.9 Submittals

E57.9.1 The Contractor shall submit to the Contract Administrator for review and approval, at least ten (10) Business Days prior to the commencement of any scheduled Work on the Site, a proposed schedule, including methods and sequence of operations.

E57.9.2 The Contractor shall submit mill certificates and copies of the welding procedures which he intends to use, for examination and acceptance by the Contract Administrator.

(a) Such procedures shall be accompanied by documentary proof that they have been qualified previously by the Canadian Welding Bureau at the plant where the Work is to be carried out.

(b) The procedures shall include the following information: joint type, welding process, welding position, base metal Specification, welding consumable Specification and size, preheat requirements, amperage and voltage requirements, speed, polarity, and welding equipment, including a description of travel for automatic welding.

MEASUREMENT AND PAYMENT

E57.10 Supply and Installation of steel staircase including Site installation will not be measured and paid for at the Contract Lump Sum Price for “Steel Staircase”, which price shall be paid in full for supplying all Materials and for performing all operations required to complete the Work and all other items incidental to the Work included in this Specification, accepted and measured by the Contract Administrator.

E58. REMOVABLE ALUMINUM HANDRAIL

DESCRIPTION

E58.1 This Specification shall cover all operations relating to the supply and installation of the aluminum handrail and all miscellaneous aluminum items including anchorage system and other items associated with the Work as specified herein and as shown on the Drawings.

E58.2 Reference Specifications and Drawings

E58.2.1 The latest edition and subsequent revisions of the following:

(a) CAN/CSA W47.2 – Certification of Companies for Fusion Welding of Aluminum.

(b) CAN/CSA W59.2 – Welded Aluminum Construction.

(c) CAN/CSA S157 – Strength Design in Aluminum.

(d) ASTM D1187 – Standard Specification for Asphalt-Base Emulsions for use as Protective Coatings and Metal.

MATERIALS AND EQUIPMENT

E58.3 Material for the Aluminum Handrail

E58.3.1 Extruded Shapes or Drawn Tubing for Rails and Posts shall take place as shown on the Drawings.

E58.4 Bituminous Paint

E58.4.1 Bituminous paint shall be an alkali-resistant coating and conform to the requirements of ASTM D1187. Supply of bituminous paint shall be considered incidental to the supply of aluminum handrail.

E58.5 Handrail Anchorage System

E58.5.1 The handrail anchorage system shall be M12 Philips Red Head, or equivalent, as shown on the Drawings.

E58.6 Aluminum Filler Alloys for Welded Construction

E58.6.1 Aluminum filler alloys for welded construction shall be one (1) of the following: ER4043, ER5183, ER5356, ER5554, ER5556, or ER5654.

CONSTRUCTION METHODS

E58.7 Layout

E58.7.1 Before fabrication and/or installation of the aluminum handrail, the Contractor shall satisfy himself of all required aluminum rail and enclosure section dimensions, by field measurements.

E58.8 Fabrication

E58.8.1 General

(a) No fabrication shall commence until permission to do so has been received from the Contract Administrator.

(b) All fabrication shall be carried out in accordance with this Specification and the Drawings.

(c) The Fabricator shall fabricate the entire aluminum handrail in sections, to permit the installation of the rail sections onto the steel and concrete.

(d) The punching of identification marks on the members will not be allowed.

(e) Any damage to members during fabrication shall be drawn to the attention of the Contract Administrator in order that the Contract Administrator may accept remedial measures.

(f) Dimensions and fabrication details which control the field matching of parts shall receive very careful attention in order to avoid field adjustment.

(g) Components of the railings and enclosures shall be joined by means of bolt, cap screws, and welds as called for on the Drawings.

E58.8.2 Cutting

(a) Material thirteen (13) mm thick or less may be sheared, sawn, or cut with a router. Materials more than thirteen (13) mm thick shall be sawn or routed. Cut edges shall be true and smooth and free from excessive burrs or ragged breaks. Re-entrant cuts shall be avoided whenever possible. If used, they shall be filleted by drilling prior to cutting. Flame cutting of aluminum alloys is not permitted.

E58.8.3 Welding

(a) Welded construction shall conform to the requirements of the latest edition and all subsequent revisions of CAN/CSA W59.2, Welded Aluminum Construction and W47.2, Certification of Companies for Fusion Welding of Aluminum.

(b) Welding will be done by qualified welders using the Metal Inert Gas (MIG) process. All areas to be welded should be thoroughly cleaned with a suitable solvent followed by wire brushing if surfaces are heavily oxidized. The size of fillet for equal leg fillet welds is defined as the leg length of the largest isosceles right angle triangle which can be inscribed within the fillet weld section. Welds must penetrate into the root corner. All butt welds should have full penetration to ensure maximum strength. Defective welds should be repaired by chipping out the defective area and rewelding. Particular care must be paid to the elimination of craters and cold starts.

(c) Welders and procedure should be qualified as agreed between the Contract Administrator and the Fabricator. The minimum requirements for mechanical test results of joints butt welded with Alcan 56S filler alloy shall be two hundred fifty-nine (259) MPa for Alcan D45S-H1 1A and one hundred sixty-five (165) MPa for Alcan B51S-T4 alloy. In addition to the mechanical tests, soundness tests should be made as follows:

(i) Guided Bend Test: All bend tests should be fully guided through an angle of 1800. Root, face, and side bend tests in Alcan D54S parent alloy welded in Alcan 56S filler wire require a bend radius of 2T where T is the thickness of the material. For Alcan B51S parent alloy welded with 56S filler wire, a bend radius of 4T is required. Root bend and face bend specimens on material ten (10) mm thick and less should be three hundred five (305) mm long and a minimum of twenty-five (25) mm in width and cut from a plate having a minimum butt weld length of four hundred fifty (450) mm. No test piece should be taken within twenty-five (25) mm of the ends of the weld. Side bend tests should be carried out on material over ten (10) mm in thickness.

(ii) Specimens should be ten (10) mm in width. Longitudinal edges should be given in two (2) mm radius. There should be no crack greater than three (3) mm in length. If a crack starts from an edge, the specimen should be disregarded.

(iii) Fracture Test: The butt-welded joint shall have a notch not exceeding two (2) mm in depth sawn on the four (4) sides of the weld bend and the weld broken. Inspection of the fracture should reveal no gas pockets or inclusions greater than two (2) mm in diameter and the area lost due to scattered gas, porosity or voids should not exceed three percent (3%) of the area under inspection.

E58.9 Installation of Aluminum Handrail

E58.9.1 The aluminum handrail shall be brought on-site and accurately installed as shown on the Drawings.

E58.9.2 The rails shall be set true to the line and grade as shown on the Drawings or as required by the Contract Administrator.

E58.9.3 The material shall be carefully handled so that no parts will be bent, broken or otherwise damaged. Hammering which will damage or distort the member is not permitted. The Contractor shall report to the Contract Administrator any corrective measures.

E58.9.4 Field welding shall not be permitted unless acceptable to the Contract Administrator. The rail posts shall be set inside hot-dip-galvanized steel vertical rail bases that are welded to steel stair case, as required, to achieve the correct elevation and grade.

E58.10 Submittals

E58.10.1 The Contractor shall submit to the Contract Administrator for review and approval, at least ten (10) Business Days prior to the commencement of any scheduled Work on the Site, a proposed schedule, including methods and sequence of operations.

E58.10.2 Proposed Shop Drawings shall show all fabrication details of the aluminum handrail. Fabrication shall take place as shown on the Drawings.

E58.10.3 The Contractor shall submit mill certificates and copies of the welding procedures which he intends to use, for examination and acceptance by the Contract Administrator.

(a) Such procedures shall be accompanied by documentary proof that they have been qualified previously by the Canadian Welding Bureau at the plant where the Work is to be carried out.

(b) The procedures shall include the following information: joint type, welding process, welding position, base metal Specification, welding consumable Specification and size, preheat requirements, amperage and voltage requirements, speed, polarity, and welding equipment, including a description of travel for automatic welding.

MEASUREMENT AND PAYMENT

E58.11 Supply and Installation of Aluminum Handrail

E58.11.1 Supply and Installation of aluminum handrail including anchorage system will not be measured and paid for at the Contract Lump Sum Price for "Removable Aluminum Handrail", which price shall be paid in full for supplying all Materials and for performing all operations required to complete the Work and all other items incidental to the Work included in this Specification, accepted and measured by the Contract Administrator.

E59. INSTALLATION OF STREET LIGHTING AND ASSOCIATED WORK

E59.1 Definitions

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

MANITOBA HYDRO CENTRAL STORES means Manitoba Hydro's Waverley Service and Reclaim Centre – 1840 Chevrier Boulevard – Winnipeg, Manitoba.

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

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

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

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

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

WORK CLEARANCE means an ELECTRICAL AND/OR NATURAL GAS FACILITIES LOCATE form issued by each of Manitoba Hydro's Customer Service Centre (CSC) affected to permit Work to commence (Permit to Work).

E59.2 Description

E59.2.1 The Work shall consist of the supply of all supervision, labour, Materials (except as indicated under MATERIAL SUPPLIED BY MANITOBA HYDRO below) insurance, tools, backfill and equipment (and their maintenance), transportation, fuel, oil, meals and lodging, mobilization and de-mobilization, and warranty of workmanship as required to install and remove temporary Overhead Feeds, remove existing street light poles as required, install

new street light poles and associated underground cables/conduits, all in accordance with the requirements specified in the Tender documents.

E59.3 Work Locations

E59.3.1 The proposed street light installation and removals are shown on construction Drawings and are as follows:

(a) Jubilee Avenue; and

(b) Pembina Highway.

E59.4 Coordination of Work

E59.4.1 The Contractor shall provide a minimum of ten (10) Working Days' notice to Manitoba Hydro prior to the start of construction. The Work shall be conducted and coordinated with Manitoba Hydro in a manner to ensure street lighting is maintained at all times for the duration of the Work. The construction Drawings provide the Proposed Sequence of Construction.

E59.4.2 The Contractor shall obtain Work Clearance from Manitoba Hydro's Customer Service Centre(s) (CSC) affected prior to the Work commencing. No additional compensation shall be paid to the Contractor for delays obtaining Work Clearance for any reason.

E59.4.3 Manitoba Hydro's CSC will provide the Limits of Approach applicable to the Contractor on the Work Clearance form.

E59.5 Orientation

E59.5.1 Prior to the commencement of the proposed Work, the Contractor's crew foremen, electricians, and other key personnel shall attend one (1) day of orientation provided by Manitoba Hydro for various operations such as cable handling, cable splicing/termination, installation of street light poles, concrete bases, luminaires and various other construction standards and procedures. The Contractor will be responsible for all costs associated with personnel salaries, travel, sustenance and overheads, etc., during training.

E59.6 Pre-Construction Meeting

E59.6.1 Prior to the commencement of the Work, the Contractor shall attend a pre-construction meeting with Manitoba Hydro. The agenda for this meeting shall include but not be limited to the following:

(a) reference the Contractor's Safe Work Procedures;

(b) Prime Contractor;

(c) materials;

(d) sequence of construction;

(e) communication plan;

(f) any training requirements and qualifications;

(g) Drawing and Project review;

(h) a review of the Contractor's proposed Work schedule; and

(i) any and all other topics of clarification that the Contractor and the Contract Administrator may wish to discuss.

E59.6.2 The Contractor's cost to attend this pre-construction meeting shall be incorporated into the unit prices for the Work.

E59.7 Qualifications and Certification

E59.7.1 The Contractor's Crew Foreman, installers and other key Contractor's Personnel shall possess the necessary certification, licensing, training, experience and familiarity with safety rules, procedures and hazards relating to the Work. Journeyman Power Line

Technician (PLT), Journeyman Lineman, Journeyman Cableman or Journeyman Electricians shall be required to perform portions of this Work.

E59.7.2 Journeyman Power Line Technician (PLT), Journeyman Cableman and Journeyman Lineman are also required to possess a "Limited Specialized Trade Licence – 'M-P' Licence – Power Line" issued by the Province of Manitoba.

E59.7.3 Manitoba "Safe Work" Bulletin M&E010 dated January 5, 2011 regarding Electrician Licenses discusses the requirements for a "Limited Specialized Trade Licence – 'M-P' Licence – Power Line".

For more information contact:
Manitoba
Mechanical and Engineering Branch
500-401 York Avenue
Winnipeg, Manitoba R3C 0P8
Tel. 204-945-3373
Fax 204-948-2309

E59.7.4 Licensed Journeyman Electricians or Journeyman PLT or Journeyman Cableman or Journeyman Lineman ARE REQUIRED for all cable handling operations included but not limited to: disconnecting cables in the handhole, installation and removal of temporary overhead feeds, installation and connection of ground rods, streetlight cable splices, termination of streetlight cables in handholds and at luminaires. The Contractor shall employ sufficient qualified personnel on its crews to conform to the Electrician's Licensing Act. The Contractor shall be prepared to provide proof of licences to Manitoba Hydro upon request.

E59.7.5 The Contractor shall assess the hazards associated with the Work and have documented Safe Work Procedures to perform the Work. It is the Contractor's responsibility to train employees on these procedures. The Contractor shall be prepared to provide proof of training to Manitoba Hydro upon request.

E59.8 Referenced Standard Construction Specifications

E59.8.1 In addition to these Specifications, the Work to be performed by the Contractor relative to the installation and/or replacement of street lighting poles, concrete bases and associated cabling shall be in accordance with the following:

(a) Manitoba Hydro sixty-six (66) kV 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; and

(e) collectively, the "Standards".

E59.8.2 Revisions and updates to the Manitoba Hydro sixty-six (66) kV and Below Standards are issued periodically and the latest issued version of the Standard will apply. For the convenience of the Contractor for Bidding purposes, excerpts of the Manitoba Hydro sixty-six (66) kV and Below Standards have been included as Appendix 'J'.

E59.8.3 In some cases, Municipal, Provincial or Federal laws or this Technical Specification may be more stringent than the CSA Standards. Whenever conflict exists, the Contractor shall comply with the most stringent requirements applicable at the place of the Work.

E59.9 Tools, Equipment and Materials

E59.9.1 The Contractor shall be required to provide all tools and equipment required for performing the specified tasks. Equipment shall be in good operating condition, shall be properly maintained using original equipment manufacturer replacement parts and shall be provided with letters of testing/inspection from the manufacturer when requested. Where the equipment is provided as a kit with multiple parts and tools, the kit shall be complete with

all parts required to perform the designed task. Contractor fabricated tools or equipment will not be accepted for use.

E59.9.2 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

E59.9.3 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; and

(c) Insulated wire cutters – used for cutting cable ends square.

E59.9.4 Alternative equipment manufacturers may be considered upon request by the Contractor and shall be approved for use by Manitoba Hydro prior to use.

E59.10 Material Supplied by Manitoba Hydro

E59.10.1 Manitoba Hydro shall supply all street light poles, concrete bases, breakaway bases, luminaires, street light arms, ground rods, compression sleeves, grommets, nuts, electrical cables, conduits, relays, cable guards, Gel-caps and all other Materials noted in the Standards. The Contractor shall sign receipts indicating the location on which the Materials are to be used. The material shall be picked up by the Contractor from the following locations:

(a) Manitoba Hydro Central Stores (contact personnel will be provided to the successful Contractor).

E59.10.2 Materials requested will be supplied to the Contractor by Manitoba Hydro upon presentation of Manitoba Hydro's Stores Material Order Form. The Contractor shall assume all responsibilities for the loading, unloading, transportation, proper handling, secure storage and working of the Materials and shall make replacements at its own expense in case any material is damaged, stolen or lost due to improper handling, storage or poor workmanship.

E59.10.3 The Contractor shall, at the time of Materials release, check and confirm the quantity of Materials. Shortages, discrepancies, or damages to Materials shall be immediately reported in writing to Manitoba Hydro.

E59.10.4 After commencing performance of the Work, the Contractor shall continually monitor all material required for the timely completion of the Work and shall report additional material requirements to Manitoba Hydro a minimum of seventy-two (72) hours prior to Materials being required to perform the Work. No additional compensation shall be paid as a result of delays due to material shortages where additional material requirements were not reported a minimum of seventy-two (72) hours prior to being required for the Work on an active project.

E59.11 Material Supplied by Contractor

E59.11.1 The Contractor shall be responsible to furnish gravel, sand, 19.05 mm (¾ inch) down limestone, 6.35 mm (¼ inch) down limestone, protective hose (i.e. typically 50.8 mm (two (2) inch) fire hose), duct seal and pit-run material for backfilling around street light poles

and around cables as per the Standards. The cost of furnishing the above listed Materials shall be incorporated into the unit prices for the Work.

E59.12 Surplus, Reclaim and Scrap Material

E59.12.1 Upon completion of the Work, the Contractor shall, at its own expense, deliver to Manitoba Hydro Central Stores, all Surplus Materials furnished by Manitoba Hydro and not used in the Work, regardless of the location of said material at that time.

E59.12.2 In addition, the Contractor shall, at its own expense, deliver to Manitoba Hydro Central Stores all Reclaim Materials from the Work specifically HPS luminaires. Manitoba Hydro shall be responsible for the proper disposal of Reclaim HPS luminaires. The HPS bulb shall remain installed and unbroken in the Reclaim luminaire. The Contractor shall handle the Reclaim luminaires with care and shall avoid breaking the bulb or refractor.

E59.12.3 Manitoba Hydro's preference is to recycle as much Scrap Material as practicable. The Contractor is responsible to remove the Scrap Material, transport to the recycler or Manitoba Hydro approved disposal site, pay for any disposal fees and may retain any recycling value.

E59.13 De-Energization and Lockout

E59.13.1 **Manitoba Hydro** – Where a standard is supplied from an Overhead Source, Manitoba Hydro's staff shall be responsible to disconnect and isolate the street light standard or standards between the standard and Overhead Source. Some street light standards may be temporarily fed from an Overhead Source. This Overhead Source shall be disconnected and removed by Manitoba Hydro staff prior to commencing with the Work. The streetlight circuits will not be Locked Out by Manitoba Hydro.

E59.13.2 **The Contractor** – The Contractor shall assess the hazards associated with the Work and employ its own Safe Work Procedure for the Work to be performed. The Contractor's Safe Work Procedure shall include provisions that the street light circuits will not be Locked Out by Manitoba Hydro. The Contractor's Safe Work Procedure shall achieve Lock Out or techniques equivalent to Lock Out.

E59.13.3 The Contractor shall complete a job planning form (an example is included as Appendix 'N') on a daily basis before any Work commences and provide Manitoba Hydro with copies of the job plans if requested.

E59.14 Temporary Overhead Feeds

E59.14.1 Manitoba Hydro in consultation with the Contractor will determine if temporary lighting will be provided by the existing street lights or from the new street lights.

E59.14.2 When using the existing poles for temporary lighting, Manitoba Hydro shall remove an Overhead Source in accordance with DE-ENERGIZATION AND LOCKOUT section above, prior to the Contractor installing a #4 duplex overhead conductor between the existing poles. The #4 duplex overhead conductor will normally be attached to the tenon of the davit arm near the luminaire with a pre-form grip. Older poles may require a spool insulator be attached to the pole using a pre-form grip to support the #4 duplex overhead conductor. A short length of 2C/#12 copper conductor is connected to the terminals of the luminaire brought out and connected to the #4 duplex overhead conductor. The final span to the Overhead Source shall be installed by Manitoba Hydro.

E59.14.3 When using the new poles for temporary lighting, the Contractor shall install the new bases, poles and #4 duplex overhead conductor. The #4 duplex overhead conductor will be attached to the tenon of the davit arm near the luminaire with a pre-form grip. A short length of 2C/#12 copper conductor is connected to the terminals of the luminaire brought out and connected to the #4 duplex overhead conductor. The final span to the Overhead Source shall be installed by Manitoba Hydro.

E59.14.4 All material used to provide the temporary overhead feed shall be returned to Manitoba Hydro. Care shall be taken to coil and tag Reclaim conductor for reuse. If used, insulators shall be handled carefully to prevent breakage.

E59.15 Safe Excavation

E59.15.1 The Work shall be performed in accordance with the requirements of Manitoba Hydro's Safe Excavation and Safety Watch Guidelines (latest revision) included as Appendix 'K' and Manitoba Workplace Safety and Health Regulation 217 latest revision.

E59.16 Safe Handling

E59.16.1 The Contractor shall apply handling techniques in accordance with Manitoba Workplace Health and Safety Regulation 217 (latest revision).

E59.17 Electrical Cables and Conduits

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

(b) Cable reels shall not be dropped and must be handled and placed/stored in an upright position at all times and shall not be laid flat for any purpose or reason. Cable reels shall be adequately supported on hard surface to prevent the reel from sinking into the ground that can cause undue stress on the cables. Cable reels should be inspected for damages prior to use. If a cable reel is found to be defective, such defect shall be reported immediately to Manitoba Hydro.

(c) The Contractor shall place all material and string the cables in such a manner as to cause the least interference with normal use of the land, street or roadway. All material shall be unloaded in a manner to preserve its condition, prevent loss and/or theft and permit easy access for Manitoba Hydro's inspection.

(d) The Contractor shall provide Manitoba Hydro's inspector sufficient opportunity, in the sole discretion of Manitoba Hydro, to inspect the Work.

E59.18 Precast Concrete Bases

E59.18.1 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.

E59.18.2 Precast Concrete Bases are extremely heavy. Approximate weight of pre-cast concrete bases are found in the Standards. The Contractor shall only use equipment rated for such weight.

E59.19 Street Light Poles and Arms

E59.19.1 The Contractor shall handle, store, transport, and provide proper load securement for the poles and arms in a manner to prevent damage.

E59.20 Luminaires

E59.20.1 The Contractor shall handle, store, transport and unload the luminaires in their original packaging and in a manner to prevent damage.

E59.21 Small Material

E59.21.1 Photo electric cells, shorting caps, shims, nut covers and associated supplies shall be kept in a suitable warehouse provided by the Contractor at its own expense. Photo electric cells shall be transported and stored in such a manner as to prevent breakage.

E59.22 Care of Materials

E59.22.1 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.

E59.23 Wire and Cable Reel Storage

E59.23.1 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.

E59.23.2 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) 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.

E59.24 Reel Handling

E59.24.1 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 (1) 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.

E59.24.2 When using a hoist, install a mandrel through the reel arbour hole and attach a sling. Use a spreader bar approximately 152.4 mm (six (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.

E59.24.3 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.

E59.24.4 Returnable reels shall be returned promptly to Manitoba Hydro Central Stores and in no case later than three (3) days after the completion of the Work unless otherwise mutually agreed between the Contractor and Manitoba Hydro.

E59.25 Pressurized Water/Vacuum Excavation

E59.25.1 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.

E59.25.2 The Work shall be performed in accordance with the requirements of Manitoba Hydro's Safe Excavation and Safety Watch Guidelines (latest revision) included as Appendix 'K'.

E59.26 Removal Street Light Pole from Existing Base

E59.26.1 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.

E59.26.2 The Contractor shall furnish all labour, supplies and Materials (except as indicated in the Section "MATERIAL SUPPLIED BY MANITOBA HYDRO") necessary for the removal of the street light pole from the existing base. Care shall be taken to preserve the luminaire. The luminaire shall be reinstalled on the new street light pole or returned to Manitoba Hydro's stores as instructed by the Manitoba Hydro.

E59.26.3 The Contractor shall be responsible to transport all Surplus and Reclaim Materials to Manitoba Hydro Central Stores and transport and dispose of all Scrap material as set forth in this Specification.

E59.27 Removal of Base and Direct Buried Street Light Pole

E59.27.1 This shall include all excavation, whether by auger, pressurized water/vacuum excavation, by hand, or by other methods which may be necessary to remove a base or direct buried street light pole. The base may be poured in place concrete, steel power installed or precast concrete.

E59.27.2 The Contractor shall be responsible to transport all Surplus and Reclaim Materials to Manitoba Hydro Central Stores and transport and dispose of all Scrap material as set forth in this Specification.

E59.27.3 The Contractor is responsible to supply all backfill material as specified in the Standards and carry out all backfill, compacting and leveling of all excavations and voids for removed bases and direct buried street light poles so as to be ready for top soil and seed or sod or as directed by Manitoba Hydro.

E59.28 Installation of Foundation – Concrete Base

E59.28.1 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.

E59.28.2 The Contractor shall furnish all labour, supplies and material (except as indicated in the Section "Material Supplied by Manitoba Hydro") necessary to install a new or replace a concrete base. Excavation for the precast concrete base shall be to a diameter and depth specified in Standard CD 300-6. All excess material is to be removed by the Contractor.

E59.28.3 The concrete base shall be set on a bed of 19.05 mm (¾ inch) down limestone. The concrete base backfill material shall be compacted in lifts no more than one hundred fifty (150) mm. Backfill material shall be 19.05 mm (¾ inch) down limestone. Compacting of backfill material shall be done using a hydraulic tamper. Alternative tamping methods shall be approved by Manitoba Hydro. Underground cables entering the concrete base shall be protected by a length of protective hose supplied by the Contractor and a layer of sand surrounding the cables to protect it from the limestone. The concrete base shall be installed level in all four (4) directions. Final grade must be established prior to installing the concrete bases.

E59.28.4 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.

E59.28.5 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.

E59.28.6 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) m beyond the top of the hand hole.

E59.29 Base Mounted Street Light Poles

E59.29.1 This shall include all Work required to install the street light pole on the concrete base as set forth in this Specification.

E59.29.2 The Contractor shall furnish all labour, supplies and material (except as indicated in the Section "Material Supplied by Manitoba Hydro") necessary for the installation of the pole (straight shaft or davit) on the concrete base.

E59.29.3 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.

E59.29.4 The Contractor shall level the street light pole in all 4 directions. Leveling shims may be used.

E59.29.5 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.

E59.29.6 Unless otherwise specified, excess underground cable and 2C-12 wire shall be left inside the hand hole with the hand hole cover loosely installed.

E59.29.7 Existing street light poles may have street signs attached. The Contractor shall remove the signs from the existing pole and temporarily reattach the signs to the new pole. The Contractor shall notify Manitoba Hydro of the location where the signs have been removed.

E59.30 Luminaires and Associated Wiring

E59.30.1 The Contractor shall furnish labour, supplies and material (except as indicated in the Section "Material Supplied by Manitoba Hydro") necessary to install the luminaire and associated wiring. Unless otherwise specified, the luminaire shall be installed with a tilt of zero (0) degrees. The Contractor shall install a length of two (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) m of 2C-12 wire shall be left at the hand hole. Impact equipment (air or electric) shall not be used to tighten luminaire mounting bolts. The Contractor shall be liable for damage due to over tightening.

E59.30.2 The Contractor shall verify the luminaire voltage matches the source voltage as shown on the construction Drawings. If luminaire voltage does not match the source voltage, the Contractor shall re-wire the luminaire in accordance with the wiring diagram provided. Note: Not applicable for LED luminaires.

E59.30.3 As specified on the construction drawings, the luminaire will require either a photo electric cell (PEC) or shorting cap installed. When installing the PEC the eye shall be oriented north. The Contractor shall also install the appropriate wattage bulb in the luminaire. Note: Bulb installation not applicable for LED luminaires.

E59.31 Break Away Bases

E59.31.1 Break away bases shall be installed in accordance with Standard CD 300-10. The height of the concrete base above grade shall not exceed fifty (50) mm. 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.

E59.31.2 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.

E59.32 Splicing/Connecting Cables

E59.32.1 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 ‘N’). Termination in the hand hole may include the installation of an inline fuse holder.

E59.32.2 The Contractor shall furnish all labour, supplies and material (except as indicated in the Section "Material Supplied by Manitoba Hydro") necessary to splice/terminate the street light conductor(s).

E59.33 Excavation

E59.33.1 The Contractor shall furnish all labour, supplies and material (except as indicated in the Section "Material Supplied by Manitoba Hydro") necessary for the completion and maintenance of grade and line of the street light cables and conduit including water control if found to be necessary. The trench shall be graded to conform to the street light cables and conduit so that the street light cables and conduit rest firmly on a smooth surface throughout its length. All stones or other objects which, in the opinion of Manitoba Hydro might damage the street light cable jacket and conduit shall be removed. Where the presence of rock or other condition prevent a satisfactory bed for the cables, one hundred fifty (150) mm of well-tamped, clean soil or 6.35 mm (¼ inch) 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.

E59.33.2 Trenches shall be dug to such a depth that will provide a minimum cover of six hundred (600) mm from final grade in sodded areas and one thousand (1,000) mm in roadways in accordance with Standard CD 305 1.

E59.34 Laying Cables

E59.34.1 Cables are to be lowered in the trench in an orderly fashion so as to maintain a consistent path and straight alignment. All cables shall be lowered in a continuous run (NO SPLICING) and in accordance with the construction drawings; and shall maintain the necessary separation, where required. All cables shall be of continuous runs and capped and sealed if they are not being installed in the pole at that time. Cables shall not be dragged over paved surfaces.

E59.34.2 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.

E59.34.3 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.

E59.34.4 During installation, under no circumstance is the cable to be subjected to a bending radius tighter than that detailed in the Standards.

E59.34.5 Where specified in the Standards or on the construction drawings, the Contractor shall install the street light cable in a conduit.

E59.35 Installing Conduit and Cable by Boring (Horizontal Directional Drilling)

E59.35.1 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.

E59.35.2 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 three hundred (300) mm clearance from the existing facility all in accordance with Manitoba Hydro Safe Excavation and Safety Watch Guidelines (latest revision) included as Appendix ‘K’. Maximum pulling tensions on any streetlight cable shall be limited to 2.9 kN/0.65 kips.

E59.35.3 Drilling fluids and associated waste Materials shall be disposed of in a manner that minimizes environmental effects.

E59.35.4 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.

E59.36 Buried Utility Crossings

E59.36.1 All buried obstructions are not necessarily shown on the reference Drawings and the locations of those indicated are approximate only.

E59.36.2 The Contractor shall determine the location of all buried obstructions and shall notify the appropriate authorities and obtain all necessary permits prior to excavation, trenching and directional drilling near or across such obstructions. All buried obstructions where the new buried cable route crosses other utilities including but not limited to gas, water, sewer, telephone and electric lines shall be exposed as per each utilities guidelines by the Contractor, including the use of Pressurized Water/Vacuum Equipment (PW/VE) where

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

E59.36.3 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.

E59.36.4 The Contractor shall be responsible to supply all backfill material and carry out all backfill, compacting and leveling of all excavations so as to be ready for topsoil and seed or sod or as directed by Manitoba Hydro.

E59.37 Bending Cables/Conduits and Installation into Standards

E59.37.1 It is desired to reduce to a minimum the required number of bends and to lay the cables/conduits to conform to the contour of the ground and maintain a normal covering. This shall be accomplished by cutting the trench slightly deeper in approaches to road crossings and drainage ditches. It is intended that the Contractor shall eliminate unnecessary bending by operating the trenching machine at various depths rather than by finishing grading the trench by hand whenever practical.

E59.37.2 Sharp bends of the cables/conduits shall be avoided at all times. All bends shall meet the requirements set out in this Specification. If excessive bending was exerted on any cable, the cable shall be replaced at the Contractor's cost. During installation, under no circumstance is the cable to be subjected to a bending radius tighter than that detailed in the Standards. At street light poles the Contractor shall install the ends of the cables into the plastic pipe preinstalled in the concrete base. Care shall be taken to prevent damage to the insulation or jacket of the conductors. Underground cables entering the concrete base shall be protected by a length of protective hose supplied by the Contractor and by a layer of sand surrounding the cables to protect it from the limestone. The cable shall be left long enough to extend one (1) m beyond the hand hole. The street light cable in the trench shall be installed in conduit for mechanical protection and the ends sealed with duct seal supplied by the Contractor. Care shall be taken to prevent damaging the cable where it exits the conduit. The conduit shall only be installed into the concrete base if conduit sizes make it practicable.

E59.37.3 Unless otherwise directed, excess underground cable and 2C-12 wire shall be left inside the hand hole with the hand hole cover loosely installed.

E59.38 Backfill

E59.38.1 All backfilling material within three hundred (300) mm of the cables/conduits shall be clean, free of sod, vegetation, organic material, stones or other debris, and of a consistency as to not create significant voids or air spaces around the cables/conduits. Other backfilling material shall be free of stones greater than one hundred fifty (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, 6.35 mm (¼ inch) down crushed limestone shall be placed all around the cables for a depth of at least three hundred (300) mm. The completed backfill shall be at least equal in compaction to undisturbed soil or as directed by Manitoba Hydro. Backfill material is to be placed and compacted in lifts not exceeding three hundred (300) mm. All excess material is to be removed by the Contractor.

E59.38.2 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 three hundred (300) mm above the cable before machine tamping may be used. The Contractor shall

level all excavations so as to be ready for topsoil and seed or sod or as directed by the Manitoba Hydro. Should settlement occur in the excavation and cause a depression in the surface, the Contractor shall repair the surface to the satisfaction of the Manitoba Hydro at the Contractor's cost.

E59.38.3 Excavations remaining where poles have been removed shall be backfilled with spoil, pit run gravel or 19.05 mm (¾ inch) down limestone and compacted in lifts of one hundred fifty (150) mm as directed by Manitoba Hydro. The top three hundred (300) mm of the excavation shall be backfilled with topsoil.

E59.38.4 Excavations remaining where utility crossings have been exposed shall be backfilled with sand or clean spoil and compacted in lifts of one hundred fifty (150) mm. The top three hundred (300) mm of the excavation shall be backfilled with topsoil.

E59.38.5 Backfill of all excavations shall be in accordance with City of Winnipeg Standard Construction Specification CW 2030 (latest revision), to the satisfaction of the authority having jurisdiction and Manitoba Hydro.

E59.39 Defective Work and Warranty

E59.39.1 If any portion of the Work fails to comply with the requirements of this Specification, fails within the Warranty period, or if the final tests prove or indicate the existence of any fault or defect in the Work, or any part thereof, Manitoba Hydro may forthwith re-execute or make good the faulty or defective Work or alter the same to make it comply with requirements of the Specification at the Contractor's expense. Manitoba Hydro shall give the Contractor notice together with particulars of such failure, fault or defect, Manitoba Hydro's cost to re-execute or make good the faulty or defective Work and the Cost shall be deducted from the Contract.

E59.39.2 At the completion of the Work for each location, Manitoba Hydro shall prepare and issue a Network Commissioning Report, to the Contractor. The Network Commissioning Report shall be dated indicating the commencement of the Warranty period for the Work performed at the location.

E59.40 As-built Drawing

E59.40.1 The Contractor shall provide an as-built drawing or mark-up drawing to Manitoba Hydro which accurately displays the "as built" location of the buried street light cables, conduits and street light poles.

E59.41 Measurement and Payment

E59.41.1 Removal of 7.62 m (twenty-five (25) feet) to 10.668 m (thirty-five (35) feet) 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 7.62 m (twenty-five (25) feet) to 10.668 m (thirty-five (35) feet) street light pole and precast, poured in place concrete, steel power installed base or direct buried including davit arm, luminaire and appurtenances". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including removal of the pole, base, luminaire, appurtenances, use of pressurized water/vacuum excavation, transportation of Reclaim, Surplus and Scrap material, payment of associated disposal fees and all other items incidental to the Work included in the Specification.

E59.41.2 Removal of 13.716 m (forty-five (45) feet) 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 13.716 m (forty-five (45) feet) street light pole and precast, poured in place concrete, steel power installed base or direct buried including davit

arm, luminaire and appurtenances". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including removal of the pole, base, luminaire, appurtenances, use of pressurized water/vacuum excavation, transportation of Reclaim, Surplus and Scrap material, payment of associated disposal fees and all other items incidental to the Work included in the Specification.

E59.41.3 Installation of Conduit and #4 AL C/N or 1/0 AL Triplex Streetlight Cable in Conduit by Open Trench Method.

(a) This pay item will be measured on a linear metre basis and paid for at the Contract Unit Price per linear metre for "Installation of Conduit and #4 AL C/N or 1/0 AL Triplex streetlight cable in Conduit by open trench method." The number of meters to be paid for at the Contract Unit Price shall be measured and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of the conduit, pulling cable into the conduit, backfilling the trench, buried utility crossings, use of pressurized water/vacuum excavation and all other items incidental to the Work included in the Specification.

E59.41.4 Installation of fifty (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 fifty (50) mm conduit or conduits by boring method complete with cable insertion (#4 AL C/N or 1/0 AL Triplex)." The number of meters to be paid for at the Contract Unit Price shall be measured and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of fifty (50) mm 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.

E59.41.5 Installation of cable (#4 AL C/N or 1/0 AL Triplex) by boring method.

(a) This pay item will be measured on a linear metre basis and paid for at the Contract Unit Price per linear metre for "Installation of cable(s) (#4 AL C/N or 1/0 AL Triplex) by boring method." The number of meters to be paid for at the Contract Unit Price shall be measured and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of the cable or cables by boring method, buried utility crossings, use of pressurized water/vacuum excavation and all other items incidental to the Work included in the Specification.

E59.41.6 Installation of 7.62 m (twenty-five (25) feet) to 10.668 m (thirty-five (35) feet) 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 7.62 m (twenty-five (25) feet) to 10.668 m (thirty-five (35) feet) pole, davit arm and precast concrete base including luminaire and appurtenances." The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of the pole, davit arm, base, luminaire, appurtenances, placing the cable(s) into the base, use of pressurized water/vacuum excavation and all other items incidental to the Work included in the Specification.

E59.41.7 Installation of 13.716 m (forty-five (45) feet) 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 13.716 m (forty-five (45) feet) pole, davit arm and precast concrete base including luminaire and appurtenances." The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described

including installation of the pole, davit arm, base, luminaire, appurtenances, placing the cable(s) into the base, use of pressurized water/vacuum excavation and all other items incidental to the Work included in the Specification.

E59.41.8 Installation of One (1) 3.048 m (ten (10) foot) Ground Rod at Every Third Street Light, at the End of a Street Light Circuit or Anywhere Else as Shown on the Design Drawings. Trench #4 Ground Wire up to one (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) 3.048 m (ten (10) foot) ground rod at every third street light, at the end of a street light circuit or anywhere else as shown on the design drawings. Trench #4 ground wire up to one (1) m from rod location to new street light and connect (hammerlock) to top of the ground rod." The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including install one (1) 3.048 m (ten (10) foot) 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.

E59.41.9 Installation of Lower three (3) m of Cable Guard, Ground Lug, Cable Up Pole, and First three (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 three (3) m of Cable Guard, ground lug, cable up pole, and first three (3) m section of ground rod per Standard CD 315-5". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installing the lower section of cable guard, ground lug, ground rod, coiling cable(s) up the pole and all other items incidental to the Work included in the Specification.

E59.41.10 Installation and Connection of Externally-Mounted Relay and PEC Per Standards CD 315-12 and CD 315 13.

(a) This pay item will be measured on a unit basis and paid for at the Contract Unit Price per unit for "Installation and connection of externally-mounted relay and PEC per Standards CD 315-12 and CD 315-13".The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including mounting the relay, PEC, wiring as per the schematic and all other items incidental to the Work included in the Specification.

E59.41.11 Termination of 2/C #12 Copper Conductor to Street Light Cables Per Standard CD310-4, CD310-9 or CD310-10.

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

E59.41.12 Splicing #4 AL C/N or two (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 two (2) single conductor street light cables". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including splicing the #4 AL C/N or two (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.

E59.41.13 Splicing 1/0 AL Triplex Cable or three (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 three (3) single conductor street light cables". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including splicing the 1/0 Al triplex cable or set of three (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.

E59.41.14 Installation of Break-Away Base and Reaction Plate on Base-Mounted Poles up to 10.668 m (thirty-five (35) feet).

(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 10.668 m (thirty-five (35) feet)". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including installation of the reaction plate, break-away base and all other items incidental to the Work included in the Specification.

E59.41.15 Installation of Overhead Span of #4 Duplex Between New or Existing Streetlight Poles and Connect Luminaire to Provide Temporary Overhead Feed.

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

E59.41.16 Removal of Overhead Span of #4 Duplex Between New or Existing Streetlight Poles to Remove Temporary Overhead Feed.

(a) This pay item will be measured on a per span basis and paid for at the Contract Unit Price per span for "Removal of Overhead Span of #4 duplex Between New or Existing Streetlight Poles to Remove Temporary Overhead Feed". The number of units to be paid for at the Contract Unit Price shall be verified and accepted by the Manitoba Hydro. The Price shall be payment in full for performing all operations herein described including removal of the #4 duplex overhead conductor, spool insulator(s) and all other items incidental to the Work included in the Specification.

E59.41.17 Expose Underground Cable Entrance of Existing Streetlight Pole and Install New Streetlight Cable(s).

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