



THE CITY OF WINNIPEG

TENDER

TENDER NO. 26-2022

**2022 LOCAL STREET RENEWAL PROGRAM – KEENLEYSIDE STREET AND
VARIOUS OTHER LOCATIONS**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 2022 Local Street Renewal Program – Keenleyside Street and Various Other Locations

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, April 28, 2022.
B2.2 The Contract Administrator or the Manager of Materials may extend the Submission Deadline by issuing an addendum at any time prior to the time and date specified in B2.1.

B3. ENQUIRIES

B3.1 All enquiries shall be directed to the Contract Administrator identified in D4.1.
B3.2 If the Bidder finds errors, discrepancies or omissions in the Tender, or is unsure of the meaning or intent of any provision therein, the Bidder shall notify the Contract Administrator of the error, discrepancy or omission, or request a clarification as to the meaning or intent of the provision at least five (5) Business Days prior to the Submission Deadline.
B3.3 Responses to enquiries which, in the sole judgment of the Contract Administrator, require a correction to or a clarification of the Tender will be provided by the Contract Administrator to all Bidders by issuing an addendum.
B3.4 Responses to enquiries which, in the sole judgment of the Contract Administrator, do not require a correction to or a clarification of the Tender will be provided by the Contract Administrator only to the Bidder who made the enquiry.
B3.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B3 unless that response or interpretation is provided by the Contract Administrator in writing.
B3.6 Any enquiries concerning submitting through MERX should be addressed to:
MERX Customer Support
Phone: 1-800-964-6379
Email: merx@merx.com

B4. CONFIDENTIALITY

B4.1 Information provided to a Bidder by the City or acquired by a Bidder by way of further enquiries or through investigation is confidential. Such information shall not be used or disclosed in any way without the prior written authorization of the Contract Administrator. The use and disclosure of the confidential information shall not apply to information which:
(a) was known to the Bidder before receipt hereof; or
(b) becomes publicly known other than through the Bidder; or
(c) is disclosed pursuant to the requirements of a governmental authority or judicial order.
B4.2 The Bidder shall not make any statement of fact or opinion regarding any aspect of the Tender to the media or any member of the public without the prior written authorization of the Contract Administrator.

B5. ADDENDA

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

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

B6. SUBSTITUTES

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

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

B7. BID COMPONENTS

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

B8. BID

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

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

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

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

B9. PRICES

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

B9.1.1 Prices stated on Form B: Prices shall not include any costs which may be incurred by the Contractor with respect to any applicable funding agreement obligations as outlined in D32. Any such costs shall be determined in accordance with D32.

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.

B10. DISCLOSURE

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

B10.2 The Persons are:

- (a) N/A

B11. CONFLICT OF INTEREST AND GOOD FAITH

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

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

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

that could or would be seen to:

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

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

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

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

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

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

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

B12. QUALIFICATION

B12.1 The Bidder shall:

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

- (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.
- B12.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) be responsible and not be suspended, debarred or in default of any obligations to the City. A list of suspended or debarred individuals and companies is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <https://www.winnipeg.ca/matmgt/Templates/files/debar.pdf>
- B12.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:
- (a) have successfully carried out work similar in nature, scope and value to the Work; and
- (b) be fully capable of performing the Work required to be in strict accordance with the terms and provisions of the Contract; and
- (c) have a written workplace safety and health program if required pursuant to The Workplace Safety and Health Act (Manitoba);
- (d) have completed the Accessible Customer Service online training required by the Accessibility for Manitobans Act (AMA) (see B12.5 and **D7**)
- 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 Further to B12.3(d), the Bidder acknowledges they and all Subcontractors have obtained training required by the Accessibility for Manitobans Act (AMA) available at <http://www.accessibilitymb.ca/training.html> for anyone that may have any interaction with the public on behalf of the City of Winnipeg.
- B12.6 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.
- B12.7 The Bidder shall provide, on the request of the Contract Administrator, full access to any of the Bidder's equipment and facilities to confirm, to the Contract Administrator's satisfaction, that the Bidder's equipment and facilities are adequate to perform the Work.

B13. BID SECURITY

- B13.1 The Bidder shall include in its Bid Submission bid security in the form of a digital bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in Form G1: Bid Bond and Agreement to Bond, available on The City of Winnipeg, Corporate Finance, Materials Management Division website at <https://www.winnipeg.ca/MatMgt/templates/files/eBidsecurity.pdf>.
- B13.2 Bid security shall be submitted in a digital format meeting the following criteria:
- (a) The version submitted by the Bidder must have valid digital signatures and seals;
 - (b) The version submitted by the Bidder must be verifiable by the City with respect to the totality and wholeness of the bond form, including: the content; all digital signatures and digital seals; with the surety company, or an approved verification service provider of the surety company.
 - (c) The version submitted must be viewable, printable and storable in standard electronic file formats compatible with the City, and in a single file. Allowable formats include pdf.
 - (d) The verification may be conducted by the City immediately or at any time during the life of the bond and at the discretion of the City with no requirement for passwords or fees.
 - (e) The results of the verification must provide a clear, immediate and printable indication of pass or fail regarding B13.2(a).
- B13.3 Bonds failing the verification process will not be considered to be valid and the bid shall be determined to be non-responsive in accordance with B17.1(a).
- B13.4 Bonds passing the verification process will be treated as original and authentic.
- B13.4.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.
- B13.5 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly formed with the successful Bidder and the contract securities are furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.
- B13.6 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Tender.

B14. OPENING OF BIDS AND RELEASE OF INFORMATION

- B14.1 Bids will not be opened publicly.
- B14.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the MERX website at www.merx.com.
- B14.3 After award of Contract, the name(s) of the successful Bidder(s) and their Contract amount(s) will be available on the MERX website at www.merx.com.
- B14.4 The Bidder is advised that any information contained in any Bid may be released if required by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law or by City policy or procedures (which may include access by members of City Council).
- B14.4.1 To the extent permitted, the City shall treat as confidential information, those aspects of a Bid Submission identified by the Bidder as such in accordance with and by reference to Part 2, Section 17 or Section 18 or Section 26 of The Freedom of Information and Protection of Privacy Act (Manitoba), as amended.

B15. IRREVOCABLE BID

- B15.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid/Proposal.
- B15.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly formed and the contract securities have been furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid/Proposal.

B16. WITHDRAWAL OF BIDS

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

B17. EVALUATION OF BIDS

- B17.1 Award of the Contract shall be based on the following bid evaluation criteria:
- (a) compliance by the Bidder with the requirements of the Tender, or acceptable deviation therefrom (pass/fail);
 - (b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B12 (pass/fail);
 - (c) Total Bid Price;
 - (d) economic analysis of any approved alternative pursuant to B6.
- B17.2 Further to B17.1(a), the Award Authority may reject a Bid as being non-responsive if the Bid is incomplete, obscure or conditional, or contains additions, deletions, alterations or other irregularities. The Award Authority may reject all or any part of any Bid, or waive technical requirements or minor informalities or irregularities, if the interests of the City so require.
- B17.3 Further to B17.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is qualified.
- B17.4 Further to B17.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit prices for each item shown on Form B: Prices.
- B17.4.1 Further to B17.1(a), in the event that a unit price is not provided on Form B: Prices, the City may determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.
- B17.4.2 Bidders are advised that the calculation indicated in B17.4 will prevail over the Total Bid Price entered in MERX.

B18. AWARD OF CONTRACT

- B18.1 The City will give notice of the award of the Contract or will give notice that no award will be made.
- B18.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be qualified, and the Bids are determined to be responsive.
- B18.2.1 Without limiting the generality of B18.2, the City will have no obligation to award a Contract where:
- (a) the prices exceed the available City funds for the Work;
 - (b) the prices are materially in excess of the prices received for similar work in the past;
 - (c) the prices are materially in excess of the City's cost to perform the Work, or a significant portion thereof, with its own forces;

- (d) only one Bid is received; or
- (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.

- B18.3** If funding for the Work is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, Bidders are advised that the terms of D32 shall immediately take effect upon confirmation of such funding, regardless of when funding is confirmed.
- 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.

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:

- (a) Asphalt Resurfacing and Associated Works
 - (i) Countryside Way from Norris Road to the end of Countryside Way
- (b) Asphalt Pavement Reconstruction and Associated Works
 - (i) Keenleyside Street from Nairn Avenue to Talbot Avenue
- (c) Concrete Pavement Rehabilitation and Associated works
 - (i) Keenleyside Street from Talbot Avenue to Beach Avenue;
 - (ii) Flett Avenue from Antrim Road to Reay Crescent;
 - (iii) Mattinee Bay from Donwood Drive to Donwood Drive;
 - (iv) McCalman Avenue from Donwood Drive to Donwood Drive;
 - (v) Menno Bay from Antrim Road to Antrim Road; and
 - (vi) Simpson Avenue from Louelda Street to Moncton Avenue
- (d) Sewer Repairs and Associated Works
 - (i) Keenleyside Street from Nairn Avenue to Talbot Avenue
 - (ii) Keenleyside Street from Talbot Avenue to Beach Avenue;
 - (iii) Mattinee Bay from Donwood Drive to Donwood Drive;
 - (iv) McCalman Avenue from Donwood Drive to Donwood Drive;
 - (v) Menno Bay from Antrim Road to Antrim Road; and
 - (vi) Simpson Avenue from Louelda Street to Moncton Avenue

D3.2 The major components of the Work are as follows:

- (a) Asphalt Resurfacing and Associated Works
 - (i) Ditching;
 - (ii) Adjustment of culverts;
 - (iii) Concrete private access renewal;
 - (iv) Planing of existing asphalt;
 - (v) Excavation;
 - (vi) Compaction of existing sub-grade;
 - (vii) Placement of geotextile fabric and geogrid;
 - (viii) Placement of sub-base material;
 - (ix) Placement of base course material;
 - (x) Placement of asphalt pavement (Type 1A, 80mm thickness);
 - (xi) Placement of asphalt pavement tie-ins (Type 1A);

- (xii) Placement of topsoil; and
- (xiii) sodding/seeding
- (b) Asphalt Pavement Reconstruction and Associated Works
 - (i) Removal of existing sidewalk;
 - (ii) Renewal of existing concrete sidewalk;
 - (iii) Regrading of existing interlocking paving stones;
 - (iv) Removal of existing pavement;
 - (v) Removal of existing curb;
 - (vi) Grouting of existing manholes;
 - (vii) Installation of catch basins and sewer service pipe;
 - (viii) Installation of subdrains;
 - (ix) Abandon existing catch basins;
 - (x) Remove existing catch basins;
 - (xi) Excavation;
 - (xii) Compaction of existing sub-grade;
 - (xiii) Adjustment of existing pavement and boulevard structures;
 - (xiv) Insulation of water services;
 - (xv) Placement of geotextile fabric and geogrid;
 - (xvi) Placement of sub-base material;
 - (xvii) Construction of barrier curb for asphalt pavement (SD-200A), utilizing slip-form paving equipment;
 - (xviii) Construction of lip curb for asphalt pavement;
 - (xix) Construction of curb ramp for asphalt pavement;
 - (xx) Construction of modified barrier curb for asphalt pavement;
 - (xxi) Construction of 150mm concrete pavement (reinforced);
 - (xxii) Placement and compaction of 50mm sub-base material as backfill behind barrier curb for asphalt pavement within excavated area;
 - (xxiii) Placement and compaction of suitable site material as backfill behind barrier curb for asphalt pavement within excavated area;
 - (xxiv) Construction of barrier curb;
 - (xxv) Construction of concrete sidewalk;
 - (xxvi) Installation of detectable warning surface tiles;
 - (xxvii) Placement of sidewalk blocks;
 - (xxviii) Placement of base course material;
 - (xxix) Boulevard restoration and sod;
 - (xxx) Placement of asphalt pavement (Type III, 70mm thickness);
 - (xxxi) Placement of asphalt pavement (Type 1A, 50mm thickness); and
 - (xxxii) Placement of asphalt pavement tie-ins (Type 1A).
- (c) Concrete Pavement Rehabilitation and Associated Works
 - (i) Planing of existing asphalt and at intersections as required;
 - (ii) Renewal of existing sidewalks as required;
 - (iii) Construction of concrete sidewalk;
 - (iv) Construction of monolithic concrete sidewalk;
 - (v) Installation of detectable warning surface tiles;
 - (vi) Removal of existing curb as required;
 - (vii) Planing of existing curb as required;
 - (viii) Grouting of existing manholes;

- (ix) Replacement of manhole risers;
 - (x) Replacement of catch basin leads;
 - (xi) Connection to existing sewers;
 - (xii) Manhole replacements;
 - (xiii) External point repair on existing sewer;
 - (xiv) Abandon existing drainage inlets;
 - (xv) Removal of existing catch pit;
 - (xvi) Installation of catch pits and drainage connection pipes;
 - (xvii) Full depth concrete repairs of existing slabs and joints;
 - (xviii) Adjustment of existing pavement and boulevard structures;
 - (xix) Renewal of existing barrier curb as required;
 - (xx) Construction of modified barrier curb;
 - (xxi) Boulevard restoration and sod;
 - (xxii) Placement of asphalt scratch coat (Type 1A);
 - (xxiii) Installation of pavement repair fabric;
 - (xxiv) Placement of asphalt pavement (Type 1A); and
 - (xxv) Placement of asphalt pavement tie-ins (Type 1A).
- (d) Sewer Repairs and Associated Works
- (i) External point repair of existing sewers;
 - (ii) Sewer manhole replacement;
 - (iii) Replace pre-cast concrete risers and brick risers;
 - (iv) Patching pre-cast concrete risers & brick risers;
 - (v) Patching of manholes; and
 - (vi) Sewer and sewer service video inspection.

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is:

Richard Weibel, C.E.T.
Project Coordinator

Telephone No. 204 805 0104

Email Address rweibel@winnipeg.ca

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

D5. CONTRACTOR'S SUPERVISOR

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

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

D6. NOTICES

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

D7. ACCESSIBLE CUSTOMER SERVICE REQUIREMENTS

- D7.1 The Accessibility for Manitobans Act (AMA) imposes obligations on The City of Winnipeg to provide accessible customer service to all persons in accordance with the Customer Service Standard Regulation ("CSSR") to ensure inclusive access and participation for all people who live, work or visit Winnipeg regardless of their abilities.
- D7.1.1 The Contractor agrees to comply with the accessible customer service obligations under the CSSR and further agrees that when providing the Goods or Services or otherwise acting on the City of Winnipeg's behalf, shall comply with all obligations under the AMA applicable to public sector bodies.
- D7.1.2 The accessible customer service obligations include, but are not limited to:
- (a) providing barrier-free access to goods and services;
 - (b) providing reasonable accommodations
 - (c) reasonably accommodating assistive devices, support persons, and support animals;
 - (d) providing accessibility features e.g. ramps, wide aisles, accessible washrooms, power doors and elevators
 - (e) inform the public when accessibility features are not available;
 - (f) providing a mechanism or process for receiving and responding to public feedback on the accessibility of all goods and services; and
 - (g) providing adequate training of staff and documentation of same.

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 format 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 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.
- 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 two million dollars (\$2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability, broad form property damage cover and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;
 - (b) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than \$2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence;
 - (c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or materials intended to enter into and form part of any installation.
- D11.2 Deductibles shall be borne by the Contractor.
- D11.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in the C4.1 for the return of the executed Contract Documents, as applicable.
- D11.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

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.
 - (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 two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the C4.1 for the return of the executed Contract Documents, if applicable.

D14. DETAILED WORK SCHEDULE

- D14.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least five (5) 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 The detailed work schedule shall consist of the following:
- (a) a Gantt chart for the Work based on the C.P.M. schedule acceptable to the Contract Administrator.

D14.3 Further to D14.2(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.

D15. REQUIREMENTS FOR SITE ACCESSIBILITY PLAN

D15.1 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.

D15.2 The Accessibility Plan shall demonstrate how the Contractor will accommodate the safe passage of pedestrians and cyclists in accordance with the Manual of Temporary Traffic Control, the Contract Drawings, Staging Plans, and Streets By-Law No. 1481/77 at all times for the duration of the Construction. Unless noted in the Contract, the Accessibility Plan must include a written plan for the following:

- (a) How the Contractor will maintain at least one crossing in each direction for each intersection (one north/south crosswalk and one east/west crosswalk).
- (b) How the Contractor will maintain access to bus stops within the site.
- (c) How the Contractor will maintain access to pedestrian corridors and half signals.
- (d) How the Contractor will maintain cycling facilities.
- (e) How the Contractor will maintain access to residents and businesses unless otherwise noted in the Contract.
- (f) Any required detour signage at adjacent crossings to facilitate sidewalk or active transportation pathway closures.

D15.3 The Accessibility Plan may also include figures, sketches, or drawings to demonstrate the proposed plan.

D15.4 The Accessibility Plan shall include written details on how the Contractor intends to review, maintain, and document all items related to the Accessibility Plan on-site during Construction, including, but not limited to:

- (a) Signage
- (b) Temporary Ramping
- (c) Transit Stops
- (d) Detour Signage

D15.5 At minimum, the Contractor shall review the site conditions on a daily basis to ensure that all features related to the Accessibility Plan are in place. The site review is intended to correct deficiencies as a result of unforeseen events such as wind, traffic, or the general public. Deficiencies that are direct result of the Contractors actions must be corrected immediately.

D15.6 Any changes to the Accessibility Plan must be approved by the Contract Administrator.

D15.7 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the site has been maintained.

D15.8 Deficiencies as a direct result of actions by the Contractor that are not immediately corrected and/or failure to produce records that demonstrate that the site was maintained in compliance with the Accessibility Plan may result in a pay adjustment via the monthly Progress Payment. 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 or bi-weekly site meeting.
- (b) Second Offence – A field instruction to immediately correct the site will be issued by the Contract Administrator.

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

SCHEDULE OF WORK

D16. COMMENCEMENT

- D16.1 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.
- D16.2 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 D5.2.
 - (iv) the Safe Work Plan specified in D10;
 - (v) evidence of the insurance specified in D11;
 - (vi) the contract security specified in D12;
 - (vii) the subcontractor list specified in D13;
 - (viii) the detailed work schedule specified in D14;
 - (ix) the Requirements for Site Accessibility Plan specified in D15; and
 - (x) the direct deposit application form specified in D29
 - (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.
- D16.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the award letter.
- D16.4 The City intends to award this Contract by June 10, 2022.

D17. WORKING DAYS

- D17.1 Further to C1.1(tt);
 - D17.1.1 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.
 - D17.1.2 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.
 - D17.1.3 When the Work includes two or more major types of Work that can be performed under different atmospheric conditions, the Contract Administrator shall consider all major types of Work in determining whether the Contractor was able to work in assessing Working Days.
 - D17.1.4 Saturdays and Sundays will be considered a Working Day if the Contractor is working at least seven (7) hours on Site and the Contract Administrator deems that the Contract Administrator's staff is also required on Site.

D18. RESTRICTED WORK HOURS

- D18.1 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.

D18.2 The Contractor shall not be allowed to occupy a Traffic Lane on the Priority 1 Streets during Peak Traffic hours between 07:00 – 09:00 and 15:00 – 18:00 Monday through Friday.

D19. WORK BY OTHERS

D19.1 Further to C6.25, the Contractor's attention is directed to the fact that other Contractors, the personnel of Utilities and the staff of the City may be working within the project limit, approach roadway, adjacent roadways or right-of-way. The activities of these agencies may coincide with the Contractors execution of work and it will be the Contractor's responsibility to cooperate to the fullest extent with other personnel working in the area, and such cooperation is an obligation of the Contractor under the terms of Contract.

D19.2 Work by others on or near the Site will include but not necessarily be limited to:

- (a) City of Winnipeg Traffic Signals – work on traffic signals at intersections;
- (b) City of Winnipeg Geomatics Branch – various works on survey monuments;
- (c) Manitoba Hydro Gas Division – lowering and/or rock wrapping of gas main and services;
- (d) Manitoba Hydro – supply and installation of new street lighting hardware and the energizing of new street light; and
- (e) Canada Post – installation of temporary mailboxes.

D19.3 Further to D19.1 the Contractor shall cooperate and coordinate all activities with all parties performing required Work by Others. The Contractor must include and accommodate Work by Others identified in D19.2 or additional parties, in their construction schedule as per D14 and accommodate the necessary area on Site required for the Work by Others to complete the Work.

D20. SEQUENCE OF WORK

D20.1 Further to C6.1, the sequence of work shall comply with the following:

D20.1.1 Providing that the Work on each street is completed in a similar order to the order that the Work was commenced in, the Contractor will be permitted to have a maximum of three (3) streets under construction at any one time. Completion of a street means that all of the necessary concrete, asphalt including approaches and landscaping Work is completed to the satisfaction of the Contract Administrator.

D20.1.2 Where the Contractor utilizes two (2) or more crews that work independently on the same major component of the Work as identified in D3, the Contract Administrator may approve an increase to the maximum number of streets under construction at any time.

D20.1.3 The Contractor will not be permitted to plane the road surface, and then open to traffic without approval by the Contract Administrator. Planing is limited to lanes under construction or as approved by the Contract Administrator.

D20.1.4 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

D20.1.5 Immediately following the completion of asphaltic concrete works, the Contractor shall clean up the site and remove all plant, surplus material, waste and debris, other than that left behind by the city or other contractors.

D20.1.6 The work on Keenleyside Street from Nairn Avenue to Talbot Avenue will be divided into two stages. The work will be divided as follows:

- (a) **Stage I – Nairn Avenue to Talbot Avenue**
 - (i) The contractor shall complete all work related to sidewalk renewals on the West side of Keenleyside Street, while maintaining pedestrian access on the East side of Keenleyside Street.
 - (ii) The contractor shall complete all work related to sidewalk renewals on the East side of Keenleyside Street, while maintaining pedestrian access on the West side of Keenleyside Street.
 - (iii) Any section of sidewalk or approach that is used for pedestrian access, that can not be completed in Stage 1, must be backfilled and compacted maintained for temporary pedestrian access until work can be completed.
 - (iv) All work related to sidewalk renewals must be completed to the satisfaction of the Contract Administrator before beginning Stage 2.
- (b) **Stage 2 – Nairn Avenue to Talbot Avenue**
 - (i) The contractor shall complete all remaining work as outlined in D3.2(b).

D21. SUBSTANTIAL PERFORMANCE

- D21.1 The Contractor shall achieve Substantial Performance within seventy (70) consecutive Working Days of the commencement of the Work as specified in D16.
- 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 seventy five (75) consecutive Working Days of the commencement of the Work as specified in D16.
- 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 Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:
 - (a) Substantial Performance – Three Thousand Five Hundred dollars (\$3,500.00);
 - (b) Total Performance – One Thousand dollars (\$1,000.00).
- 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. COVID-19 SCHEDULE DELAYS

D24.1 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.

D24.2 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.

D24.3 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.

D24.4 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 D24.3. Failure to provide this notice will result in no additional time delays being considered by the City.

D24.5 The Work schedule, including the durations identified in D18 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.

D24.6 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.

D24.7 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.

D25. SCHEDULED MAINTENANCE

D25.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

- (a) Sod Maintenance as specified in CW 3510-R10;
- (b) Seed Maintenance as specified in CW 3520-R7; and
- (c) Reflective Crack Maintenance as specified in CW 3250-R7.

D25.2 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

D26. JOB MEETINGS

- D26.1 Regular weekly job meetings will be held at the site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, 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.
- D26.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

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

- D27.1 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).

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

- D28.1 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

D29. PAYMENT

- D29.1 Further to C12, the City shall make payments to the Contractor by direct deposit to the Contractor's banking institution, and by no other means. Payments will not be made until the Contractor has made satisfactory direct deposit arrangements with the City. Direct deposit application forms are at https://winnipeg.ca/finance/files/Direct_Deposit_Form.pdf.

WARRANTY

D30. WARRANTY

- D30.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) years thereafter for asphalt resurfacing as described in D3.1 (a), concrete rehabilitations as described in D3.1 (c) and sewer repairs as described in D3.1 (d), and two (2) years thereafter for pavement reconstruction Works as described in D3.1 (b), unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.
- D30.2 Notwithstanding C13.2 or D30.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if:
- (a) a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use.
- D30.2.1 In such case the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

DISPUTE RESOLUTION

D31. DISPUTE RESOLUTION

- D31.1 The entire text of C21.4 is deleted, and amended to read: "Intentionally Deleted"
- D31.2 The entire text of C21.5 is deleted, and amended to read:
- (a) If Legal Services has determined that the Disputed Matter may proceed in the Appeal Process, the Contractor must, within ten (10) Business Days of the date of the Legal Services Response Letter, submit his written Appeal Form, in the manner and format set out on the City's Materials Management Website, to the Chief Administrative Officer, and to the Contract Administrator. The Contractor may not raise any other disputes other than the Disputed Matter in his Appeal Form.
- D31.3 Further to C21, prior to the Contract Administrator's issuance of a Final Determination, the following informal dispute resolution process shall be followed where the Contractor disagrees with any opinion, determination, or decision of the Contract Administrator ("Dispute"):
- (a) In the event of a Dispute, attempts shall be made by the Contract Administrator and the Contractor's equivalent representative to resolve Disputes within the normal course of project dealings between the Contract Administrator and the Contractor's equivalent representative.
 - (b) Disputes which in the reasonable opinion of the Contract Administrator or the Contractor's equivalent representative cannot be resolved within the normal course of project dealings as described above shall be referred to a without prejudice escalating negotiation process consisting of, at a minimum, the position levels as shown below and the equivalent Contractor representative levels:
 - (i) The Contract Administrator;
 - (ii) Supervisory level between the Contract Administrator and applicable Department Head;
 - (iii) Department Head.
- D31.3.1 Names and positions of Contractor representatives equivalent to the above City position levels shall be determined by the Contractor and communicated to the City at the pre-commencement or kick off meeting.
- D31.3.2 As these negotiations are not an adjudicative hearing, neither party may have legal counsel present during the negotiations.
- D31.3.3 Both the City and the Contractor agree to make all reasonable efforts to conduct the above escalating negotiation process within twenty (20) Business Days, unless both parties agree, in writing, to extend that period of time.
- D31.3.4 If the Dispute is not resolved to the City and Contractor's mutual satisfaction after discussions have occurred at the final escalated level as described above, or the time period set out in D31.3.3, as extended if applicable, has elapsed, the Contract Administrator will issue a Final Determination as defined in C1.1(v), at which point the parties will be governed by the Dispute Resolution process set out in C21.

THIRD PARTY AGREEMENTS

D32. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

- D32.1 In the event that funding for the Work of the Contract is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, the following terms and conditions shall apply, as required by the applicable funding agreements.
- D32.2 Further to D32.1, in the event that the obligations in D32 apply, actual costs legitimately incurred by the Contractor as a direct result of these obligations ("Funding Costs") shall be

determined by the actual cost to the Contractor and not by the valuation method(s) outlined in C7.4. In all other respects Funding Costs will be processed in accordance with Changes in Work under C7.

D32.3 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.

D32.4 Modified Insurance Requirements

D32.4.1 If not already required under the insurance requirements identified in D11, the Contractor will be required to provide wrap-up liability insurance in an amount of no less than two million dollars (\$2,000,000) inclusive per occurrence. Such policy will be written in the joint names of the City, Contractor, Consultants and all sub-contractors and sub-consultants and include twelve (12) months completed operations. The Government of Manitoba and its Ministers, officers, employees, and agents shall be added as additional insureds.

D32.4.2 If not already required under the insurance requirements identified in D11, the Contractor will be required to provide builders' risk insurance (including boiler and machinery insurance, as applicable) providing all risks coverage at full replacement cost, or such lower level of insurance that the City may identify on a case-by-case basis, such as an installation floater.

D32.4.3 The Contractor shall obtain and maintain third party liability insurance with minimum coverage of two million dollars (\$2,000,000.00) per occurrence on all licensed vehicles operated at the Site. In the event that this requirement conflicts with another licensed vehicle insurance requirement in this Contract, then the requirement that provides the higher level of insurance shall apply.

D32.4.4 Further to D11.3, insurers shall provide satisfactory Certificates of Insurance to the Government of Manitoba prior to commencement of Work as written evidence of the insurance required. The Certificates of Insurance must provide for a minimum of thirty (30) days' prior written notice to the Government of Manitoba in case of insurance cancellation.

D32.4.5 All policies must be taken out with insurers licensed to carry on business in the Province of Manitoba.

D32.5 Indemnification By Contractor

D32.5.1 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.

D32.5.2 The Contractor agrees that in no event will Canada or Manitoba, their respective officers, servants, employees or agents be held liable for any damages in contract, tort (including negligence) or otherwise, for:

- (a) any injury to any person, including, but not limited to, death, economic loss or infringement of rights;
- (b) any damage to or loss or destruction of property of any person; or
- (c) any obligation of any person, including, but not limited to, any obligation arising from a loan, capital lease or other long term obligation;

in relation to this Contract or the Work.

D32.6 Records Retention and Audits

D32.6.1 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.

D32.6.2 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 D32.6.1 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.

D32.7 Other Obligations

D32.7.1 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.

D32.7.2 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.

D32.7.3 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.

D32.7.4 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.

D32.7.5 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.

D32.7.6 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. 26-2022

2022 Local Street Renewal Program – Keenleyside Street and Various Other Locations which is by reference made part hereof and is hereinafter referred to as the "Contract".

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

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

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

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

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

_____ day of _____, 20____.

SIGNED AND SEALED
in the presence of:

(Witness as to Principal if no seal)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

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

FORM H2: 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. 26-2022

2022 Local Street Renewal Program – Keenleyside Street and Various Other Locations

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

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

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

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

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
	Cover Sheet	A1
SE-22-01	Countryside Way from Sta 1+00 to Sta 2+00	A1
SE-22-02	Countryside Way from Sta 2+00 to Sta 3+00	A1
SE-22-03	Countryside Way from Sta 3+00 to Sta 3+80	A1
SE-22-04	Countryside Way from Sta 3+80 to Sta 4+85	A1
SE-22-05	Countryside Way from Sta 4+85 to Sta 5+95	A1
SE-22-06	Flett Avenue from Sta 1+00 to Sta 2+10	A1
SE-22-07	Flett Avenue from Sta 2+10 to Sta 3+30	A1
SE-22-08	Flett Avenue from Sta 3+30 to Sta 4+04	A1
SE-22-09	Keenleyside Street from Sta 0+97 to Sta 2+00	A1
SE-22-10	Keenleyside Street from Sta 2+00 to Sta 3+30	A1
SE-22-11	Keenleyside Street from Sta 3+30 to Sta 3+86	A1
SE-22-12	Mattinee Bay from Sta 1+00 to Sta 2+00	A1
SE-22-13	Mattinee Bay from Sta 2+00 to Sta 3+10	A1
SE-22-14	Mattinee Bay from Sta 3+10 to Sta 4+00	A1
SE-22-15	Mattinee Bay from Sta 4+00 to Sta 4+96	A1
SE-22-16	McCalman Avenue from Sta 1+00 to Sta 2+20	A1
SE-22-17	McCalman Avenue from Sta 2+20 to Sta 3+40	A1
SE-22-18	McCalman Avenue from Sta 3+40 to Sta 4+40	A1
SE-22-19	Menno Bay from Sta 1+00 to Sta 2+20	A1
SE-22-20	Menno Bay from Sta 2+20 to Sta 3+30	A1
SE-22-21	Menno Bay from Sta 3+30 to Sta 3+79	A1
SE-22-22	Simpson Avenue from Sta 1+00 to Sta 2+20	A1
SE-22-23	Simpson Avenue from Sta 2+20 to Sta 3+30	A1
SE-22-24	Simpson Avenue from Sta 3+30 to Sta 4+31	A1

E2. MOBILIZATION AND DEMOBILIZATION PAYMENT

DESCRIPTION

- E2.1 This Specification shall cover all operations relating to the mobilization and demobilization of the Contractor to the project location(s).
- E2.2 The Work to be done by the Contractor under this Specification shall include the furnishing of all superintendence, overhead, labour, materials, equipment, tools, supplies, and all things necessary for and incidental to the satisfactory performance and completion of all Works as hereinafter specified.
- E2.3 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

- E2.4 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(s);
 - (v) 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.
- E2.5 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

- E2.6 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.
- E2.6.1 Further to B9, B17, C12 and E2.6, should the lump sum price exceed 5% of the Total Bid Price the lump sum price will be reduced to 5% of the Total Bid Price, the Total Bid Price will be determined using the reduced lump sum price and payment will be based on the reduced lump sum price.
- E2.7 Payment for Mobilization:
- (a) 60% of the lump-sum price will be paid to the contractor for Mobilization on the first Progress Estimate for the Contract.
- E2.8 Payment for Demobilization:

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

E2.9 Pay Reduction for Accessibility Plan

- (a) The Demobilization payment will be reduced by the number of pay adjustments incurred in accordance with D15 and as determined by the Contract Administrator.

E2.10 Mobilization and Demobilization will be paid only once (to a maximum of 100%), regardless of the number of times the Contractor mobilizes to the site and/or sites.

E3. GEOTECHNICAL REPORT

E3.1 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'.

E4. PROTECTION OF EXISTING TREES

E4.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing boulevard trees within the limits of the construction area:

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

E4.2 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his/her designate.

E4.3 No separate measurement or payment will be made for the protection of trees.

E4.4 Except as required in clause E4.1(c) and E4.1(e), Elm trees shall not be pruned at any time between April 1 and July 31.

E5. TRAFFIC CONTROL

E5.1 Further to clauses 3.6, 3.7 and 3.8 of CW 1130:

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

- (b) In accordance with the Manual of Temporary Traffic Control on City Streets (MTTC), the Contractor ("Construction Agency" in the Manual) shall be responsible for placing, maintaining and removing the appropriate temporary traffic control devices as specified by the MTTC, the Contract Drawings, Staging Plans and Traffic Management Plans or by the Traffic Management Branch of the City of Winnipeg Public Works Department. The Contractor shall bear all costs associated with the placement of temporary traffic control devices by their own forces or Subcontractor.
- (c) Traffic signage drawings as shown in Appendix 'D' and are to be used as a guideline for the temporary traffic control requirements.
- (d) In addition, the Contractor shall be responsible for removing, placing and maintaining all regulatory signing including but not limited to:
 - (i) Parking restrictions;
 - (ii) Stopping restrictions;
 - (iii) Turn restrictions;
 - (iv) Diamond lane removal;
 - (v) Full or directional closures on a Regional Street;
 - (vi) Traffic routed across a median;
 - (vii) Full or directional closure of a non-regional street where there is a requirement for regulatory signs (turn restrictions, bus stop relocations, etc.) to implement the closure.
- (e) 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.

E5.2 Further to E5.1(d), the Contractor shall make arrangement with the Contract Administrator to supply regulatory signs as required.

E5.3 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the site has been maintained.

E5.4 Further to E5.1(d) and E5.1(e) 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. The Contractor shall make arrangements to drop off the stockpiled materials to Traffic Services at 495 Archibald Street.

E5.5 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.

E5.6 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. In this event the Contractor shall bear costs charged to the project by the Traffic Services Branch of the City of Winnipeg in connection with the required Works.

E6. TRAFFIC MANAGEMENT

E6.1 Further to clause 3.7 of CW 1130:

- (a) Single lane closures on intersecting and/or adjoining Regional Streets shall only be permitted during non-peak periods when required for construction activities when approved by the Traffic Management Branch. Storage/parking of materials, equipment or vehicles is not permitted on Regional Streets at any time unless approved by the Contract Administrator, in consultation with the Traffic Management Branch.

E6.1.1 The Contractor shall schedule construction activities to meet the following:

- (a) Keenleyside Street from Nairn Avenue to Talbot Avenue:
 - (i) Closed to all traffic. The Contractor shall sign the street "Road Closed – No Exit" in accordance with the Manual of Temporary Traffic Control

- (ii) Eastbound Nairn Avenue shall be signed “no left turn” at Keenleyside Street
 - (b) Keenleyside Street from Talbot Avenue to Beach Avenue:
 - (i) A minimum of one lane for local access traffic shall be maintained along this street during construction;
 - (ii) Intersecting streets and back lane access shall be maintained at all times.
 - (c) Countryside Way from Norris Road to the end of Countryside Way:
 - (i) A minimum of one lane for local access traffic shall be maintained along this street during construction;
 - (ii) Intersecting streets access shall be maintained at all times
 - (d) Flett Avenue from Antrim Road to Reay Crescent:
 - (i) A minimum of one lane for local access traffic shall be maintained along this street during construction;
 - (ii) Intersecting streets access shall be maintained at all times.
 - (e) Mattinee Bay from Donwood Drive to Donwood Drive:
 - (i) A minimum of one lane for local access traffic shall be maintained along this street during construction;
 - (ii) Intersecting streets access shall be maintained at all times
 - (f) McCalman Avenue from Donwood Drive to Donwood Drive:
 - (i) A minimum of one lane for local access traffic shall be maintained along this street during construction;
 - (ii) Intersecting streets and back lane access shall be maintained at all times
 - (g) Menno Bay from Antrim Road to Antrim Road:
 - (i) A minimum of one lane for local access traffic shall be maintained along this street during construction;
 - (ii) Intersecting streets access shall be maintained at all times.
 - (h) Simpson Avenue from Louelda Street to Moncton Avenue:
 - (i) A minimum of one lane for local access traffic shall be maintained along this street during construction;
 - (ii) Intersecting streets and back lane access shall be maintained at all times
- E6.1.2 Should the Contractor be unable to maintain an existing access to a residence or business, he/she shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.
- E6.1.3 Pedestrian and ambulance/emergency vehicle access must be maintained at all times.
- E6.1.4 Intersecting local street, median opening and private approach access shall be maintained at all times unless joint/slab repairs or planing/paving operations require temporary closure. Temporary closures are to be staggered such that consecutive intersections are not closed at the same time. Traffic on intersecting regional/collector streets (list streets) shall be maintained at all times unless planing/paving operations require temporary complete closures. Temporary complete closures shall be no longer than 10 minutes during asphalt planing/paving operations and shall be completed during off peak hours.
- E6.1.5 Flag persons may be necessary to maintain the flow of traffic during certain work operations. No further payment will be provided for this Work.

E7. REFUSE AND RECYCLING COLLECTION

- E7.1 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 E7.2 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.

E7.2 Collection Schedule:

Keenleyside Street from Nairn Avenue to Beach Avenue

Collection Day(s): **Monday**
Collection Time: **7:00am**
Common Collection Area: **Back lane collection**

Countryside Way from Norris Road to the end of Countryside Way.

Collection Day(s): **Thursday**
Collection Time: **7:00am**
Common Collection Area: **Front street collection**

Flett Avenue from Antrim Road to Reay Crescent

Collection Day(s): **Monday**
Collection Time: **7:00am**
Common Collection Area: **Front street collection**

Mattinee Bay from Donwood Drive to Donwood Drive.

Collection Day(s): **Monday**
Collection Time: **7:00am**
Common Collection Area: **Front street collection**

McCalman Avenue from Donwood Drive to Donwood Drive

Collection Day(s): **Monday**
Collection Time: **7:00am**
Common Collection Area: **Back lane collection**

Menno Bay from Antrim Road to Antrim Road.

Collection Day(s): **Monday**
Collection Time: **7:00am**
Common Collection Area: **Front street collection**

Simpson Avenue from Louelda Street to Moncton Avenue.

Collection Day(s): **Monday**
Collection Time: **7:00am**
Common Collection Area: **Back lane collection**

E7.3 No measurement or payment will be made for the work associated with this specification.

E8. WATER OBTAINED FROM THE CITY

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

E9. SURFACE RESTORATIONS

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

E10. INFRASTRUCTURE SIGNS

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

E11. SUPPLY AND INSTALLATION OF PAVEMENT REPAIR FABRIC

DESCRIPTION

E11.1 General

- E11.1.1 This specification covers the supply and installation of pavement repair fabrics for reinforcement of asphalt layers, distribution of loads, and reducing reflective cracking distresses.

E11.2 Definitions

- E11.2.1 Pavement Repair Fabric composed of fiberglass strands coated with an elastomeric polymer and formed into a grid structure.

- E11.2.2 Minimum Average Roll Value (MARV) is Property value calculated as typical minus two 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.

- E11.2.3 Apertures are the open spaces formed between the interconnected network of longitudinal and transverse ribs of a fabric.

- E11.2.4 Type A Pavement Repair Fabric is composed of fiberglass strands coated with an elastomeric polymer and formed into a grid structure. It will be used for either localized repair reinforcement (i.e. at joints and cracks) or full width asphalt reinforcement to minimize both thermal and stress related reflective cracking.

- E11.2.5 Type B Pavement Repair Fabric is high strength fabric in the cross-machine direction and will be used for localized repair reinforcement (i.e. at joints and cracks) where severe cracking conditions and heavy loadings are expected.

E11.3 Referenced Standard Construction Specifications

- E11.3.1 CW 3110 – Sub-Grade, Sub-Base and Base Course Construction
- E11.3.2 CW 3410 – Asphaltic Concrete Pavement Works

E11.3.3 Approved Products for Surface Works

MATERIALS

E11.4 Approved Products

E11.4.1 Use only those materials listed as Approved Products for Surface Works. The Approved Products 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_Products_Surface_Works.pdf .

E11.5 Material Identification

E11.5.1 Pavement Repair Fabric shall be labelled 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.

E11.6 Storage and Handling

E11.6.1 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.

E11.6.2 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.

E11.6.3 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.

E11.7 Certification

E11.7.1 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 accredited a third party testing facility.

E11.7.2 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.

E11.7.3 All testing and data shall be in accordance with approved ASTM standards. Data reported in accordance with other standards will not be accepted.

E11.8 Pavement Repair Fabric Properties

E11.8.1 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.

E11.8.2 The axis with the least strength will be taken as the ultimate strength of the fabric for any given property.

E11.8.3 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

E11.8.4 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

E11.8.5 All physical property requirements are Minimum Average Roll Values (MARV) determined in accordance with ASTM 4759. Values not labelled as MARV will not be accepted.

E11.8.6 Aperture sizes shall be as follows:

- (i) Between 10 mm and 14 mm for pavement repair fabric immediately below or within Type 1A asphalt layer.
- (ii) Between 19 mm and 25.4 mm for pavement repair fabric immediately below or within Type III asphalt layer.

E11.8.7 If the fabric has a rectangular aperture size, the smaller dimension shall be used to establish the suitable Pavement Repair Fabric.

CONSTRUCTION METHODS

E11.9 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.

E11.10 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.

- E11.11 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.
- E11.12 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.
- E11.13 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 be permitted on tight radii to prevent ripples.
- E11.14 Transverse joints shall be overlapped 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.
- E11.15 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.
- E11.16 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 leveling course.
- E11.17 Roller tires shall be kept clean to the satisfaction of the Contract Administrator.
- E11.18 If bonding of the fabric is not readily achieved, it shall be removed and replaced at the Contractor's expense.
- E11.19 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.
- E11.20 Protect the Pavement Repair Fabric until placement of the finished asphalt topping.
- E11.21 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.
- E11.22 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.
- E11.23 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.
- E11.24 Leveling course or overlay layer shall be a minimum thickness of 40 mm. Place and compact asphalt over the Pavement Repair Fabric in accordance with CW 3410.

QUALITY ASSURANCE TESTING

- E11.25 The Contract Administrator shall test the adhesion for pavement repair fabric in field during construction is as follows:
- E11.25.1 Place approximately 1 m² of fabric on a prepared surface that is representative of the project conditions.
- E11.25.2 Activate self-adhesive glue by rolling with a rubber-tired roller or by applying adequate pressure to fully activate the pressure-sensitive adhesive.

- E11.25.3 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.
- E11.25.4 A 9 kg pull is required without pulling the grid free or creating ripples in the fabric.
- E11.26 The minimum frequency shall be one test, then test every 2000 square meters.

MEASUREMENT AND PAYMENT

- E11.27 Supply and installation of Pavement Repair Fabric will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Supply and Install 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.
- E11.28 Only material placed within the designated limits will be included in the payment for "Supply and Install Pavement Repair Fabric".
- E11.29 No measurement or payment will be made for Pavement Repair Fabric removed and replaced due to improper installation or damaged materials.
- E11.30 No measurement or payment will be made for transverse and longitudinal overlap.

E12. SUPPLY AND INSTALL WATERMAIN AND WATER SERVICE INSULATION

DESCRIPTION

- E12.1 Notwithstanding 3.12 of CW 2110, this specification covers the supply and installation of insulation in roadway excavations over watermains and water services.
- E12.2 Referenced Standard Construction Specifications
- (a) CW 2030 – Excavation Bedding and Backfill
 - (b) CW 3110 – Sub –grade, Sub-base and Base Course Construction
- E12.3 Referenced Standard Details
- (a) SD-018 - Watermain and Water Service Insulation

MATERIALS

- E12.4 Acceptable insulation is:
- (a) Extruded Polystyrene rigid foam insulation – Type 4, 4" in thickness.
DOW - Roofmate or Highload 40
Owen's Corning - Foamular 350 or Foamular 400.
2" X 48" X 96", 2" X 24" X 96", 4" X 24" X 96"
- E12.5 Sand Bedding :
- (a) In accordance with CW 2030

CONSTRUCTION METHODS

- E12.6 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.

- E12.7 Thickness of insulation is 100 mm (4"). If using 50 mm (2") panels 2 layers are required. Total width of insulation to be as directed by the Contract Administrator. Place sufficient full width panels to meet or exceed the specified width.
- E12.8 Place insulation panels adjacent to each other over the specified area with no gaps between panels and less than 15mm of elevation difference along the adjoining edges. Where 2" thick panels are being used, offset the top layer to prevent the panel joints from aligning with the joints in the lower layer.
- E12.9 Use full panels of insulation where possible. Where necessary cut insulation panels to obtain coverage to specified lengths. Insulation pieces shall be a minimum of dimension of 300 mm in width or length.
- E12.10 Take appropriate measures to ensure panels are not displaced when installing geotextiles and during backfilling operations.

MEASUREMENT AND PAYMENT

- E12.11 Watermain and Water Service Insulation shall be measured on an area basis and paid for at the Contract Unit Price per square metre of "Watermain and Water Service Insulation". The area to be paid for shall be the total square meters of watermain and water service insulation supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.
- (a) Excavation of the roadway subgrade in accordance with E12.6 will not be measured for payment and will be included in the payment for "Watermain and Water Service Insulation".

E13. SOFT EXCAVATION TO EXPOSE UNDERGROUND UTILITIES

DESCRIPTION

- E13.1 This Specification covers the soft excavation to expose underground utilities to determine the depth of the underground utility and whether it will interfere with installation of proposed Works on site.
- E13.2 These underground utilities include, but are not limited to, City of Winnipeg Traffic Signal cables, Manitoba Hydro cables, Manitoba Hydro gas pipes, MTS cables, existing sewers, and existing watermains.

MATERIALS

- E13.3 Backfill Material
- (a) Backfill material for backfill of shafts after hydro-excavation has been completed shall consist of sand in accordance with Specification CW 2030.

CONSTRUCTION METHODS

- E13.4 Prior to commencement of any construction Works adjacent to underground utilities, the Contractor shall use soft digging or hand excavation to expose underground utilities.
- E13.5 Once the elevation of the top of pipe or duct has been determined the resulting excavation shall be backfilled with bedding sand to the elevation of existing ground.

MEASUREMENT AND PAYMENT

- E13.6 Soft excavation to expose underground utilities will be considered incidental to the Work. No measurement and payment will be made within this section.

E14. CONSTRUCTION OF BARRIER CURB FOR ASPHALT PAVEMENT

DESCRIPTION

E14.1 This Specification covers the construction of Barrier Curb for Asphalt Pavement on Atlantic Avenue.

GENERAL

E14.2 Referenced Standard Construction Specifications and Standard Detail Drawings:

- (a) CW 3110 – Sub-grade, Sub-base and Base Course Construction
- (b) CW 3310 – Portland Cement Concrete Pavement Works
- (c) CW 3240 – Renewal of Existing Curbs
- (d) Standard Detail Drawings SD-200A (Appendix C)

CONSTRUCTION METHODS

E14.3 Further to CW 3310, the contractor shall construct the barrier curb for asphalt pavement as per Standard Detail Drawing SD-200A.

E14.4 Construction of Barrier Curb for Asphalt Pavement – Standard Detail Drawing SD-200A

E14.4.1 Place and compact 50mm sub-base material for roadway in accordance with the Standard Detail Drawing SD-200A and Specification CW 3110.

E14.4.2 Supply and install 20M tie-bars into sub-base material as shown on the Standard Detail Drawing SD-200A.

E14.4.3 Drill holes into the sub-base at a maximum depth of 150mm, with a drilling diameter of 2mm greater than the diameter of the tie bar.

E14.4.4 Supply and install 2-10M longitudinal deformed bars for reinforcement as shown on the Standard Detail Drawing SD-200A.

E14.4.5 Supply and install 2-19.1mm dowels at transverse joints every 6.0 meters as shown on the Standard Detail Drawing SD-200A. All dowels shall be thoroughly lubricated with asphaltic cut-back.

E14.4.6 Provide a minimum of 40mm cover between reinforcing steel and the finished concrete surface.

E14.4.7 Transverse joints will be saw cut every 3.0 meters. Transverse joints are to be saw cut to a maximum depth of 25mm, so as to not saw cut into the 10M longitudinal deformed bars and 19.1mm dowels.

E14.4.8 Construct Lip Curb for Asphalt Pavement (40mm ht) at private approaches in accordance with Standard Detail Drawing SD-202B. Install 1-10M longitudinal deformed bar for reinforcement and 1-19.1mm dowel only required for lip curb for asphalt pavement at transverse joint.

E14.4.9 Construct Modified Barrier Curb for Asphalt Pavement (180mm ht) in accordance with Standard Detail Drawing SD-203B and SD-200A. Install 20M tie-bars into sub-base material, 2-10M longitudinal deformed bars for reinforcement and 2-19.1mm dowels at transverse joint.

E14.4.10 Construct Ramp Curb for Asphalt Pavement (8-12mm ht) at sidewalk ends in accordance with Standard Detail Drawing SD-229C. Install 1-10M longitudinal deformed bar for reinforcement and 1-19.1mm dowel only required for lip curb for asphalt pavement at transverse joint.

E14.4.11 Place concrete utilizing slip-form paving equipment in accordance with Specification CW 3310 unless otherwise directed by the Contract Administrator.

- E14.4.12 Place and compact 50mm sub-base material as backfill behind barrier curb for asphalt pavement within excavated area approximately 150mm deep or as directed by the Contract Administrator. Place and compact suitable site material as backfill behind barrier curb to allow for 100mm of topsoil and sod below top of barrier curb. Care must be taken so as to not disturb the new Barrier curb for asphalt pavement during placing and compaction of 50mm sub-base material and suitable site material.

MEASUREMENT AND PAYMENT

- E14.5 Construction of barrier curb for asphalt pavement shall be measured on a length basis and paid for at the Contract Unit Price per metre of "Construction of Barrier Curb for Asphalt Pavement". The length to be paid for shall be the total number of meters supplied and installed in accordance with this Specification, accepted and measured by the Contract Administrator.
- E14.6 Construction of lip curb for asphalt pavement shall be measured on a length basis and paid for at the Contract Unit Price per metre of "Construction of Lip Curb for Asphalt Pavement". The length to be paid for shall be the total number of meters supplied and installed in accordance with this Specification, accepted and measured by the Contract Administrator.
- E14.7 Construction of modified barrier curb for asphalt pavement shall be measured on a length basis and paid for at the Contract Unit Price per metre of "Construction of Modified Barrier Curb for Asphalt Pavement". The length to be paid for shall be the total number of meters supplied and installed in accordance with this Specification, accepted and measured by the Contract Administrator.
- E14.8 Construction of ramp curb for asphalt pavement shall be measured on a length basis and paid for at the Contract Unit Price per metre of "Construction of Ramp Curb for Asphalt Pavement". The length to be paid for shall be the total number of meters supplied and installed in accordance with this Specification, accepted and measured by the Contract Administrator.
- E14.9 The supply and installation of 20M tie-bars, 10M longitudinal deformed bars and 19.1mm dowels is incidental to "Construction of Barrier Curb for Asphalt Pavement", "Construction of Lip Curb for Asphalt Pavement", "Construction of Modified Barrier Curb for Asphalt Pavement", and "Construction of Ramp Curb for Asphalt Pavement." No measurement or payment will be made.
- E14.10 Supply and placement of 50mm sub-base material for backfill to be paid for as per payment item "50mm Granular B".
- E14.11 Supply and placement of suitable site material for backfill to be paid for as per payment item "Placing Suitable Site Material".

E15. CONCRETE CONSTITUENT MATERIALS, MIX DESIGN REQUIREMENTS, AND HOT AND COLD WEATHER CONCRETING MATERIAL

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

E16. TREE REMOVAL

DESCRIPTON

- E16.1 The Contractor is to note that the tree removal is to include the removal of the tree as shown on the drawings, as well as the root masses associated with the tree.

CONSTRUCTION METHODS

- E16.2 As per CW 3010.

MEASUREMENT AND PAYMENT

- E16.3 Tree removal will be paid for at the Contract Unit Price per each for "Tree Removal", measured on a per unit basis, which price shall be payment in full for completing all operations herein

described and all other items incidental to the work included in this Specification, measured and accepted by the Contract Administrator.

E17. PRUNING OF EXISTING TREES AND SHRUBS

DESCRIPTION

E17.1 Provide all labour, materials, methods, equipment and accessories for pruning of existing trees and shrubs within the limit of Work.

QUALITY ASSURANCE

E17.2 Pruning of trees shall be provided by a person with a Manitoba Arborists Certificate with demonstrable experience sourcing and Work.

E17.3 Contact the City of Winnipeg Forestry Branch at 204-986-2004 to arrange an on site meeting to review trees to be pruned. Meeting to include the Contract Administrator.

PRUNING METHODOLOGY

E17.4 Prune horizontal and vertical within the limits of construction to ensure construction equipment can be operated without interfering with trees to remain.

E17.5 Prune as required to remove dead, broken or damaged limbs.

E17.6 Prune back to healthy growth while maintaining balanced crown shape.

E17.7 Employ clean sharp tools.

E17.8 Make cuts smooth and flush with outer edge of branch collar near the main stem or branch.

E17.9 Cuts must be smooth and sloping to prevent accumulation of water on cut.

E17.10 Do not leave little stumps ("horns") on trunks or main branches.

E17.11 Prune according to accepted horticultural practices as outline in "The Pruning Manual", Publication No. 1505-1977 by Agriculture Canada.

MEASUREMENT AND PAYMENT

E17.12 No payment shall be made for pruning of existing trees. Pruning of existing trees shall be considered incidental to the Work.

E18. REMOVAL AND DISPOSAL OF EXISTING CULVERTS

DESCRIPTION

E18.1 This Specification covers the removal and disposal of the existing corrugated steel pipe culverts.

CONSTRUCTION METHODS

E18.2 As per CW 3610-R5

MEASUREMENT AND PAYMENT

E18.3 No payment shall be made for the removal and disposal of existing culverts. Removal of existing culverts shall be considered incidental to the Work.

APPENDIX 'A' - GEOTECHNICAL REPORT

GEOTECHNICAL REPORT FOR:

Keenleyside Street from Nairn Avenue to Talbot Avenue – Asphalt Pavement Reconstruction

PAVEMENT CORES FOR:

Countryside Way from Norris Road to the end of Countryside Way – Asphalt Resurfacing

Keenleyside Street from Talbot Avenue to Beach Avenue – Rehabilitation

Flett Avenue from Antrim Road to Reay Crescent – Rehabilitation

Mattinee Bay from Donwood Drive to Donwood Drive – Rehabilitation

McCalman Avenue from Donwood Drive to Donwood Drive – Rehabilitation

Menno Bay from Antrim Road to Antrim Road – Rehabilitation

Simpson Avenue from Louelda Street to Moncton Avenue – Rehabilitation

The geotechnical report is provided to aid in the Contractor's evaluation of the existing pavement structure and/or soil conditions. The information presented is considered accurate at the locations shown on the Drawings and at the time of drilling. However, variations in pavement structure and/or soil conditions may exist between test holes and fluctuations in groundwater levels can be expected seasonally and may occur as a result of construction activities. The nature and extent of variations may not become evident until construction commences.



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"Engineering and Testing Solutions That Work for You"

December 21, 2021

File No.: 21-037-01

City of Winnipeg
(Engineering Public Works)
106-1155 Pacific Avenue
Winnipeg, MB
R3E 3P1

ATTENTION: Richard Weibel, C.E.T.

RE: Contract 1 - 2022 Local Street Renewal Program 21-R-01A

1.0 Introduction

ENG-TECH Consulting Limited (ENG-TECH) was retained to complete geotechnical investigations inclusive of test holes and pavement cores for partial fulfilment of the Contract 1 - 2022 Local Street Renewal Program 21-R-01A. The test holes and pavement cores were conducted on the requested streets as follows:

- Three (3) pavement cores on Menno Bay.
- Two (2) pavement cores on Flett Ave.
- Two (2) pavement cores on Simpson Ave between Louelda Street and Moncton Ave.
- Three (3) pavement cores on Countryside Way.
- Three (3) pavement cores on Matinee Bay.
- Three (3) pavement cores on Keenleyside St, between Nairn Ave and Talbot Ave.
- One (1) pavement core on Keenleyside St, between Talbot Ave. and Beach Ave.
- Two (2) pavement cores on McCalman Ave between Kent Rd and Chester St.
- Three (3) test holes, between Nairn Ave and Talbot Ave.

The geotechnical investigation field work and laboratory program was conducted in accordance with the Site Investigation Requirements for Public Works Street Projects.

2.0 Scope of Work

The scope of work for the project was as follows:

- Clear all underground public services at the location of the test holes.
- Control and maintain closure of one (1) lane of traffic in adherence to the Manual of Temporary Traffic Control.
- Recover a total of nineteen (19) cores drilled through the existing pavement structure at the locations previously mentioned using a 150 mm diameter diamond core barrel and retain the

cores for identification, measurements and photographs.

- Drill three (3) 125 mm diameter test holes to 2.5 m below the surface of the pavement structure, classify the underlying soils from samples collected at regular intervals from the auger flights, and retain the samples for laboratory testing.
- Conduct a laboratory testing program consisting of moisture contents, Atterberg Limits, particle size analyses and California Bearing Ratio (CBR) on select samples between depths of 0.6 m to 2.5 m below the pavement structure, and from each soil type observed.
- Provide a report outlining the work conducted, including test hole and pavement core summary tables, site plans showing the test hole and pavement core locations using UTM coordinates, specimen photographs, test hole summary logs, and laboratory test results.

3.0 Field Program

ENG-TECH conducted the coring and test hole drilling program on November 18th, 19th and 26th, 2021 across all site locations previously stated. The cores were obtained using a 150 mm diameter diamond core barrel owned and operated by ENG-TECH, whereas the test holes were drilled using 125 mm diameter solid stem continuous flight augers using a B40 truck mounted drill rig owned and operated by Maple Leaf Drilling Ltd. The test holes were advanced to 2.5 m below the pavement structure on Keenleyside Ave at the locations as shown on Pavement Core and Test Hole Location Plan Figure 1. Soil samples were collected off the auger flights, as measured from the bottom of the pavement structure, at depth intervals of 0.6, 0.9, 1.2, 1.6, 2.0, and 2.5 m as specified in the Site Investigation Requirements for Public Works Street Projects. After sample collection the test holes were backfilled with soil auger cuttings and granular fill. Core hole apertures were repaired with either compacted cold mix asphalt or Versaspeed 100 Rapid Hardening Repair Mortar at pavement core locations to match existing road surface type and elevation. The stratigraphy at the location of the test holes and core thicknesses are outlined on Summary of Pavement Structure and Core Structure Tables (Tables 6, 7 and 9) and on the attached test hole summary logs. The pavement core locations, test holes, UTM coordinates and offsets from the curbs are shown on Coring and Drilling Location Plan Figure 1, Coring Location Plan Figure 2 and Summary of Pavement Core Structure Tables (Tables 1 to 8).

4.0 Laboratory Program

The soil samples collected were retained for testing in ENG-TECH'S laboratory. The moisture content of each sample was determined and select samples were tested for particle size and Atterberg Limits. The moisture content, particle size and Atterberg Limit test results are summarized on Table 9 and in the attached test hole summary logs. The Particle Size Analysis and Liquid Limit, Plastic Limit and Plasticity Index of Soils results are shown on separate reports appended.

A standard proctor (moisture-density relationship) and California Bearing Ratio (CBR) were determined on a composite sample from three (3) test holes located on Keenleyside Street. The results are shown on the enclosed Moisture-Density Relationship and California Bearing Ratio Reports.

The pavement structure core thicknesses were measured and photographed. Photographs of each core are shown in the attached Photographs 1 to 19.

4.1 Soil Stratigraphy Summary


Keenleyside Avenue

The pavement structure ranged from 178 mm to 185 mm. As measured from the bottom of the pavement structure, there is typically 1 m to 1.2 m of high plastic (fat) clay underlain by a 1.0 m to 1.2 m thick layer of low plastic (lean) clay, respectively. At approximately 2.2 m there is a layer of high plastic clay to depth explored.

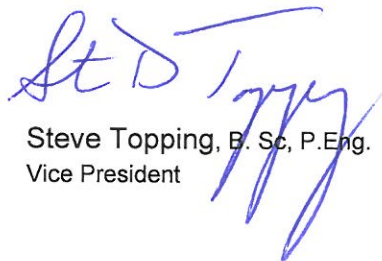
5.0 Closure

ENG-TECH trusts this is all the information required. If you have any questions, please contact the undersigned.

Sincerely,
ENG-TECH Consulting Limited



Darci Babisky, C.E.T.
Operations Manager - Laboratory



Steve Topping, B. Sc, P.Eng.
Vice President

ST/DB/dt/kd

Email: rweibel@winnipeg.ca
ehansen@winnipeg.ca
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Attachments: Table 1 – Summary of Pavement Structure – Menno Bay
Table 2 – Summary of Pavement Core Structure – Flett Ave
Table 3 - Summary of Pavement Core Structure – Simpson Ave between Louelda Street and Moncton Ave
Table 4 - Summary of Pavement Core Structure – Countryside Way
Table 5 - Summary of Pavement Core Structure – Matinee Bay
Table 6 - Summary of Pavement Core Structure – Keenleyside Street between Nairn Ave and Talbot Ave
Table 7 - Summary of Pavement Core Structure – Keenleyside Street between Talbot Ave and Beach Ave
Table 8 - Summary of Pavement Core Structure – McCalman Avenue between Kent Rd and Chester St
Table 9 – Summary of Pavement Structure – Keenleyside Street between Nairn Ave and Beach Ave
Figure 1 – Test Hole and Coring Location Plan – Keenleyside St, Menno Bay, Fett Ave and Simpson Ave
Figure 2 – Pavement Coring Location Plan– Countryside Way, Matinee Bay and McCalman Ave
Photograph of Cores (19)
Test Hole Summary Logs (3 pages)
Atterberg Limits, Plastic Index and Plasticity Index of Soil Reports Ref. No.'s 21-37-2 and 3
Particle Size Analysis Reports Ref. No.'s 21-37-1-4 and 5
Moisture-Density Relationship Report Ref. No. 21-37-1-6
California Bearing Ratio Report Ref. No. 21-37-1-7



City of Winnipeg – Contract 1 – 2022 Local Street Renewal Program 21-R-01A Tables

Table 1 Summary of Pavement Core Structure Menno Bay			
Pavement Core No.	Test Hole Location	Pavement Surface	
		Type	Thickness (mm)
PC No. 1	Eastbound Lane In front of 79 Menno Bay, 2.0 m East of curb Northing: 5531767; Easting: 0637974	Concrete	160
PC No. 2	Westbound Lane In front of 42 Menno Bay, 4.0 m South of curb Northing: 5531701; Easting: 0638007	Concrete	152
PC No. 3	Westbound Lane In front of 7 Menno Bay, 2.0 East of Curb Northing: 5531712; Easting: 0638093	Concrete	144

Table 2 Summary of Pavement Core Structure Flett Avenue			
Pavement Core No.	Test Hole Location	Pavement Surface	
		Type	Thickness (mm)
PC No. 4	Eastbound Lane In front of 46 Flett Avenue, 2.0 m North of Curb Northing: 5531722; Easting: 0638336	Concrete	164
PC No. 5	Westbound Lane In front of 15 Flett Avenue, 2.5 m South of curb Northing: 5531724; Easting: 0638481	Concrete	169

Table 3 Summary of Pavement Core Structure Simpson Avenue between Louelda Street and Moncton Avenue			
Pavement Core No.	Test Hole Location	Pavement Surface	
		Type	Thickness (mm)
PC No. 6	Westbound Lane In front of 1015 Simpson Avenue, 2.5 m South of Curb Northing: 5530771; Easting: 0638609	Concrete	156
PC No. 7	Eastbound Lane In front of 1075 Simpson Avenue, 2.0 m North of curb Northing: 5530661; Easting: 0638820	Concrete	155

Table 4 Summary of Pavement Core Structure Countryside Way			
Pavement Core No.	Test Hole Location	Pavement Surface	
		Type	Thickness (mm)
PC No. 8	Westbound Lane In front of 76 Countryside Way, 4.0 m South of Edge of Pavement Northing: 5533916; Easting: 0641252	Asphalt	68
PC No. 9	Eastbound Lane In front of 147 Countryside Way, 2.0 m East of Edge of Pavement Northing: 5533826; Easting: 0641289	Asphalt	75
PC No. 10	Westbound Lane 60.7 m from Morris Road, 2.5 South of Edge of Pavement Northing: 5534039; Easting: 0641070	Asphalt	69

Table 5 Summary of Pavement Core Structure Matinee Bay			
Pavement Core No.	Test Hole Location	Pavement Surface	
		Type	Thickness (mm)
PC No. 11	Westbound Lane In front of 11 Matinee Bay, 2.0 m East of curb Northing: 5534033; Easting: 0638499	Concrete	148
PC No. 12	Westbound Lane In front of 51 Matinee Bay, 2.0 m South of curb Northing: 5531701; Easting: 0638007	Concrete	146
PC No. 13	Eastbound Lane In front of 96 Matinee Bay, 1.75 m East of Curb Northing: 5533986; Easting: 0638570	Concrete	163

Table 6 Summary of Pavement Core Structure Keenleyside Street between Nairn Avenue and Talbot Avenue			
Pavement Core No.	Test Hole Location	Pavement Surface	
		Type	Thickness (mm)
PC No. 14	Northbound Lane In front of 1035 Nairn Avenue, 1.3 m West of curb Northing: 5529357; Easting: 0637893	Concrete	185
PC No. 15	Southbound Lane In front of 52 Keenlyside Street, 2.5 m East of curb Northing: 5529428; Easting: 0637904	Concrete	178
PC No. 16	Southbound Lane In front of 912 Talbot Avenue, 2.0 m East of Curb Northing: 5529504; Easting: 067924	Concrete	181

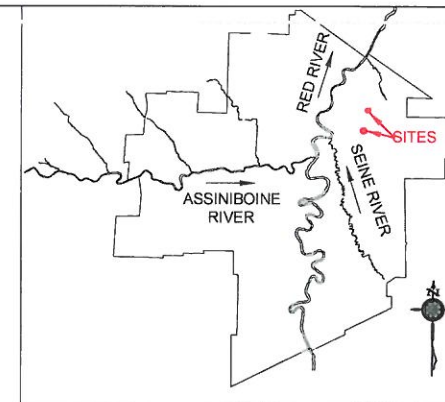
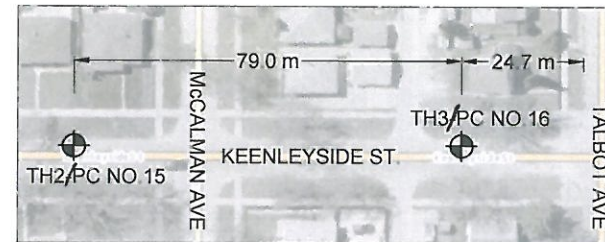
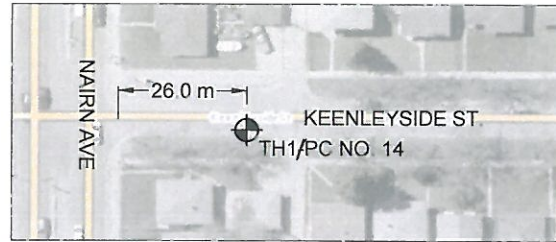
Table 7 Summary of Pavement Core Structure Keenleyside Street between Talbot Avenue and Beach Avenue			
Pavement Core No.	Test Hole Location	Pavement Surface	
		Type	Thickness (mm)
PC No. 17	Northbound Lane 44.4 m from Talbot Avenue, 1.5 m West of curb Northing: 5529577; Easting: 0637946	Concrete	165

Table 8 Summary of Pavement Core Structure McCalman Avenue between Kent Road and Chester Street			
Pavement Core No.	Test Hole Location	Pavement Surface	
		Type	Thickness (mm)
PC No. 18	Eastbound Lane In front of 934 McCalman Avenue, 2.0 m North of curb Northing: 5529501; Easting: 0637508	Concrete	235
PC No. 19	Westbound Lane In front of 877 McCalman Avenue, 1.0 m South of curb Northing: 5529557; Easting: 0637316	Concrete	175

Table 9
 Summary of Pavement Structure
 Keenleyside Street between Nairn Avenue and Beach Avenue

Test Hole	GPS Coordinates		Pavement Surface		Pavement Structure Material		Subgrade Description	Sample Depth (m)	Moisture Content (%)	Hydrometer Analysis				Atterberg Limits		
	UTM	14U	Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
1	5529357	0637893	Concrete	185	Clay	1300		0.6	35.1	-	-	-	-	-	-	-
								0.9	33.4	-	-	-	-	-	-	-
								1.2	31.1	-	-	-	-	-	-	-
								1.6	23.2	-	-	-	-	-	-	-
								2.0	26.0	-	-	-	-	-	-	-
								2.5	31.7	-	-	-	-	-	-	-
2	5529428	0637904	Concrete	178	Clay	1300	Fat Clay	0.6	32.8	0.0	2.0	14.2	83.8	93	26	67
								0.9	29.4	-	-	-	-	-	-	
								1.2	25.4	-	-	-	-	-	-	
								1.6	23.2	-	-	-	-	-	-	
								2.0	25.1	-	-	-	-	-	-	
								2.5	43.5	-	-	-	-	-	-	
3	5529504	0637924	Concrete	181	Clay	1000		0.6	29.2	-	-	-	-	-	-	-
								0.9	28.3	-	-	-	-	-	-	
							Lean Clay	1.2	21.8	0.1	3.0	58.9	38.0	40	16	24
								1.6	25.5	-	-	-	-	-	-	
								2.0	42.8	-	-	-	-	-	-	
								2.5	49.4	-	-	-	-	-	-	

Note: No water seepage was encountered in the test holes.



KEYMAP

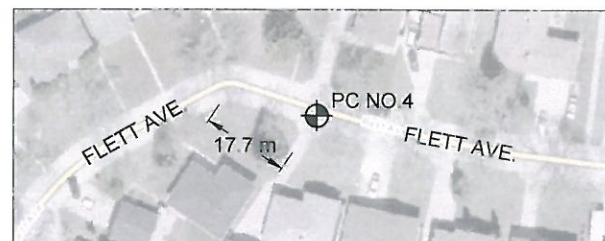
(TH1-TH3, PC NO.17) KEENLEYSIDE ST. - BETWEEN NAIRN AVE. AND BEACH AVE.

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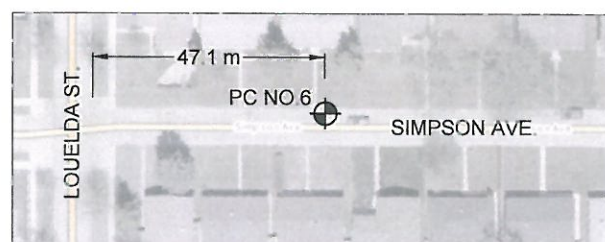
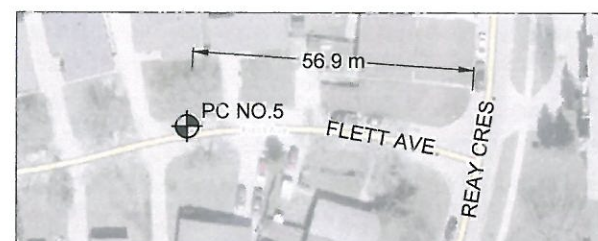
(PC NO.1 - PC NO.3) MENNO BAY

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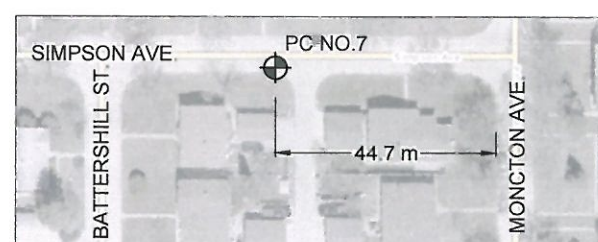
(PC NO.4 - PC NO.5) FLETT AVE.

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(PC NO.6 - PC NO.7) SIMPSON AVE. - BETWEEN LOUELDA ST. AND MONCTON AVE.

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HOLE NUMBER	UTM COORDINATE NOVEMBER 18, 19 AND 26, 2021		OFFSET FROM CURB
	UTM	14U	
TH1/PC NO.14	5529357	637893	1.3 m WEST OF CURB
TH2/PC NO.15	5529428	637904	2.5 m EAST OF CURB
TH3/PC NO.16	5529504	637924	2.0 m EAST OF CURB
PC NO.17	5529577	637946	1.5 m WEST OF CURB
PC NO.1	5531767	637974	2.0 m EAST OF CURB
PC NO.2	5531701	638007	4.0 m SOUTH OF CURB
PC NO.3	5531712	638093	2.0 m EAST OF CURB
PC NO.4	5531722	638336	2.0 m NORTH OF CURB
PC NO.5	5531724	638481	2.5 m SOUTH OF CURB
PC NO.6	5530771	638609	2.5 m SOUTH OF CURB
PC NO.7	5530661	638820	2.0 m NORTH OF CURB

LEGEND

NOTES

- ALL ELEVATIONS ARE IN METERS UNLESS OTHERWISE NOTED.
- ENG-TECH CORED SAMPLES ON NOVEMBER 18, 19 AND 26, 2021
- ENG-TECH CONDUCTED GEOTECHNICAL INVESTIGATIONS ON NOVEMBER 26, 2021

NO.	DATE	ISSUE / REVISION
0	DEC. 2021	REVIEW / APPROVAL

420 Turenne Street
Winnipeg, MB
R2J 3W8
Phone: (204) 233-1694
Fax: (204) 235-1579

ENG STAMP:

CLIENT:
CITY OF WINNIPEG

PROJECT:
CONTRACT 1 - 2022 LOCAL STREETS RENEWAL PROGRAM 21-R-01A

DWG DESCRIPTION:
CORING AND DRILLING LOCATION PLAN

SCALE:
1:1500

DRAWN BY:
DT

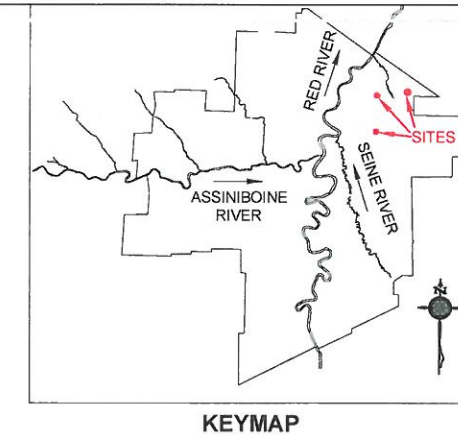
DATE:
DECEMBER 2021

FILE No.:
21-037-01

CLIENT DWG/FIG. No.:

ENG-TECH DWG/FIG. No.:
1 OF 2

LEGEND



KEYMAP

NOTES

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NO.	DATE	ISSUE / REVISION
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420 Turenne Street
Winnipeg, MB
R2J 3W8
Phone: (204) 233-1694
Fax: (204) 235-1579

ENG. STAMP:

ENGINEERS
GEOSCIENTISTS
MANITOBA
Certificate of Authorization
ENG-TECH Consulting Limited
No. 2475

CLIENT:
CITY OF WINNIPEG

PROJECT:
CONTRACT 1 - 2022 LOCAL STREETS RENEWAL PROGRAM 21-R-01A

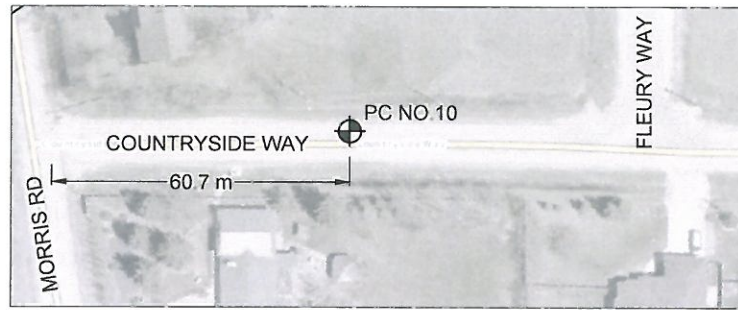
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CORING LOCATION PLAN

SCALE:
1:1500

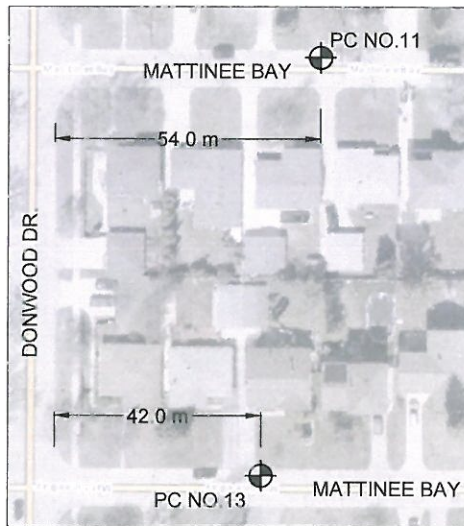
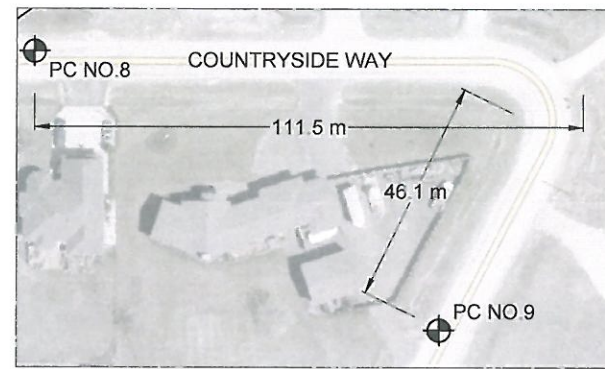
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FILE No.: 21-037-01 CLIENT DWG/FIG. No.:

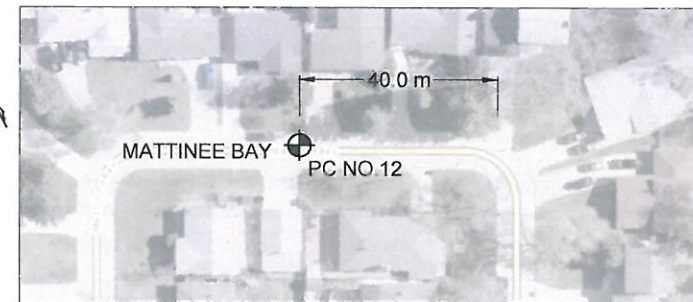
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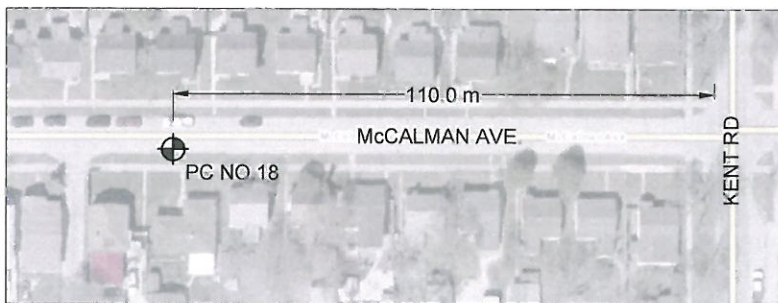
(PC NO. 8 - PC NO. 10) COUNTRYSIDE WAY
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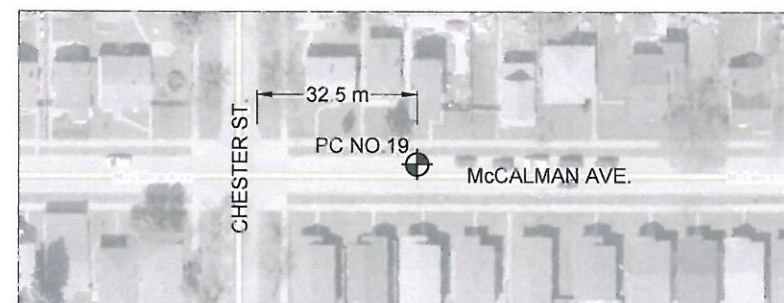
(PC NO. 11 - PC NO. 13) MATTINEE BAY
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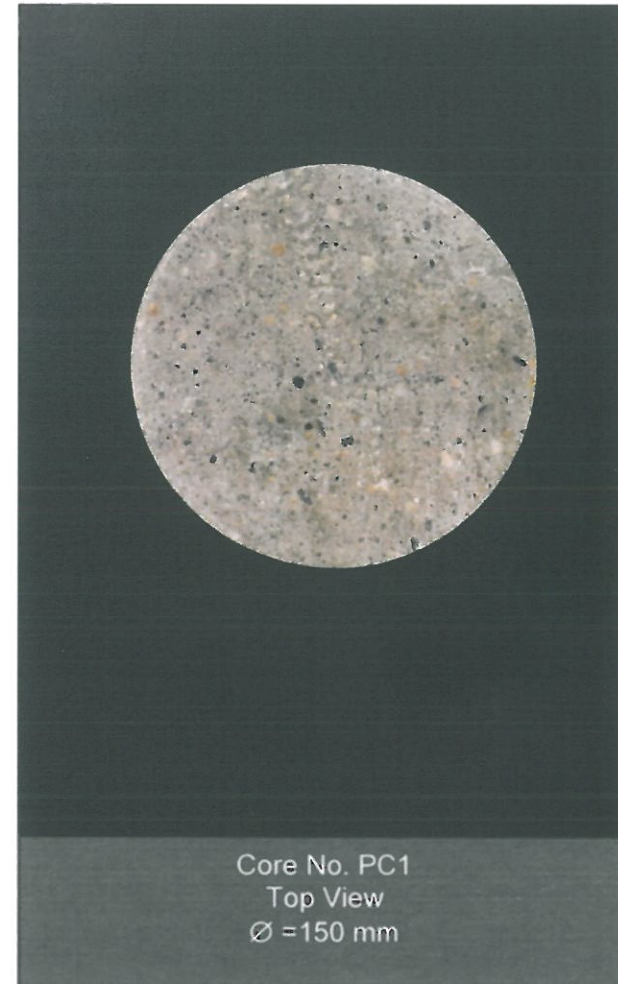
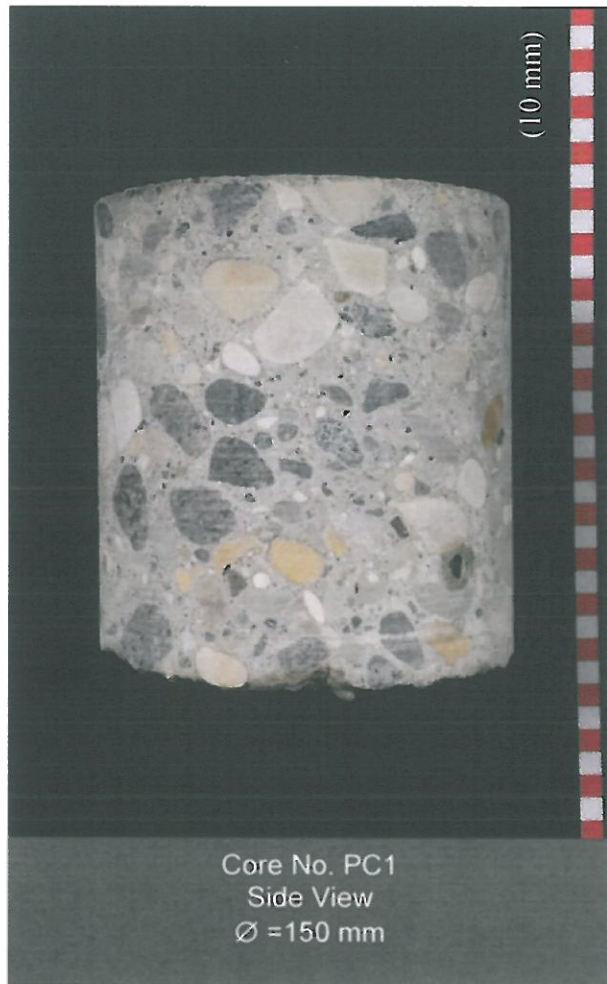
HOLE NUMBER	UTM COORDINATE NOVEMBER 18, 19 AND 26, 2021		OFFSET FROM CURB
	UTM	14U	
PC NO. 8	5533916	641252	4.0 m SOUTH OF EDGE OF PAVEMENT
PC NO. 9	5533826	641289	2.0 m EAST OF EDGE OF PAVEMENT
PC NO. 10	5534039	641070	4.0 m SOUTH OF EDGE OF PAVEMENT
PC NO. 11	5534033	638499	2.0 m EAST OF CURB
PC NO. 12	5534112	638585	2.0 m SOUTH OF CURB
PC NO. 13	5533986	638570	1.75 m EAST OF CURB
PC NO. 18	5529501	637508	2.0 m NORTH OF CURB
PC NO. 19	5529557	637316	1.0 m SOUTH OF CURB



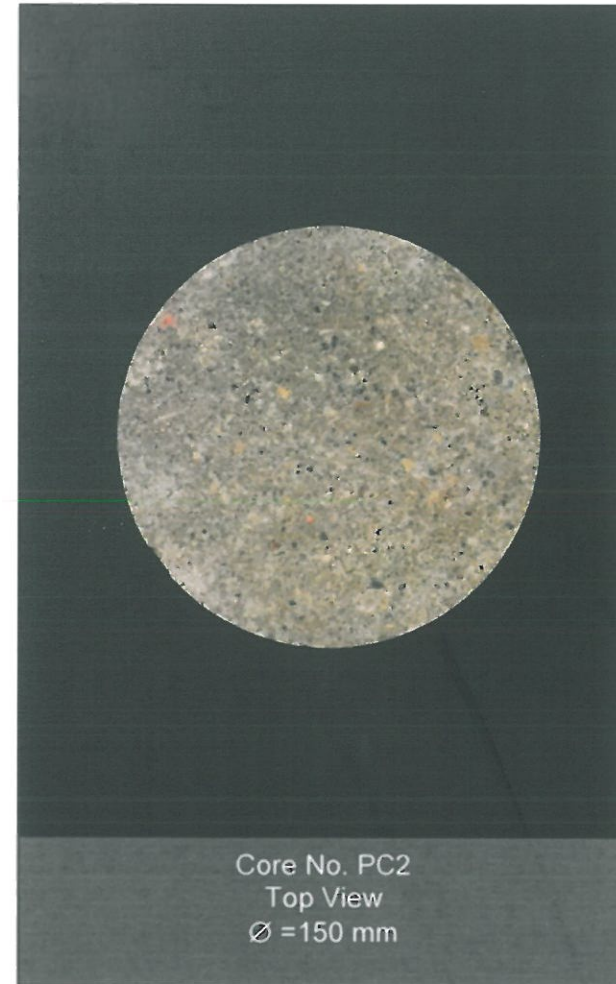
(PC NO. 18 - PC NO. 19) McCALMAN AVE. - BETWEEN KENT RD. AND CHESTER ST.
IMAGES © 2021 CITY OF WINNIPEG WEBSITE (winnipeg.ca)



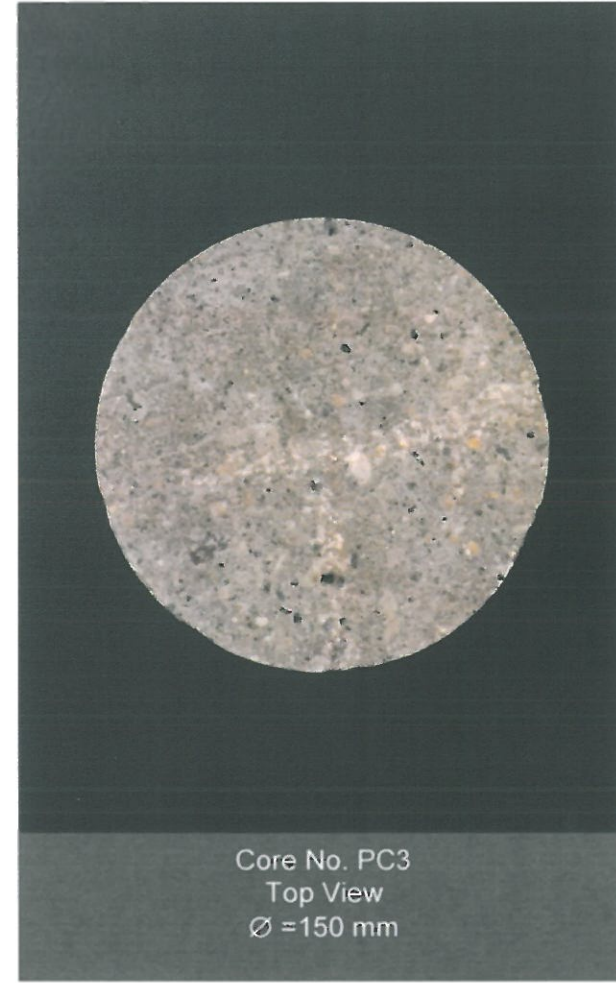
Photograph 1: Specimens from Menno Bay



Photograph 2: Specimens from Menno Bay



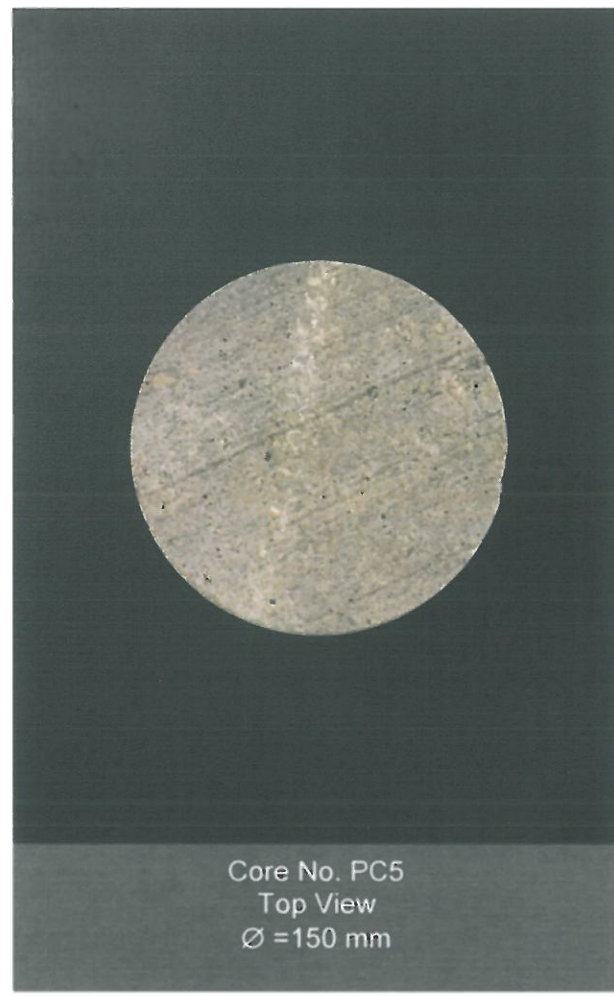
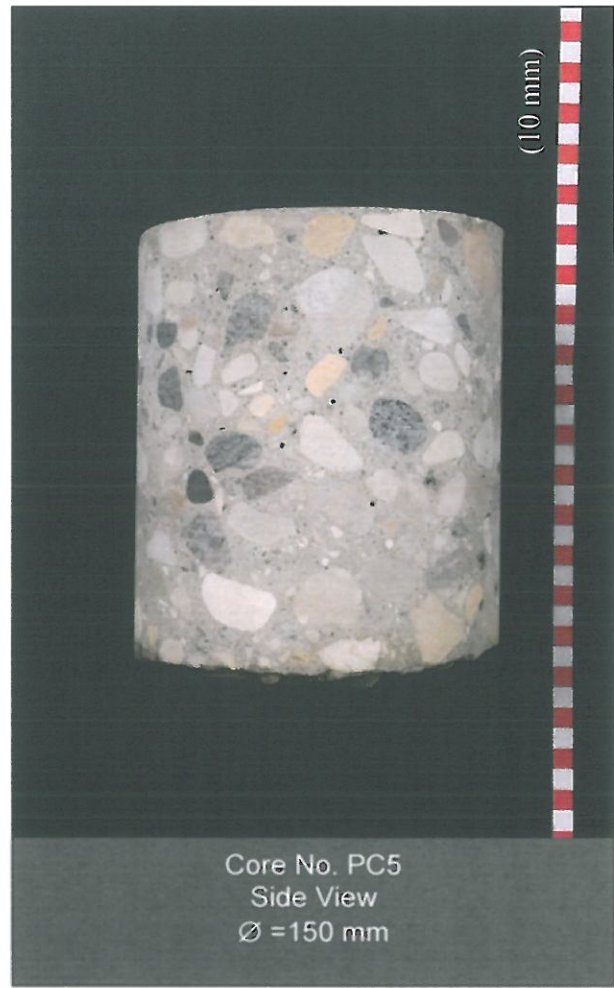
Photograph 3: Specimens from Menno Bay



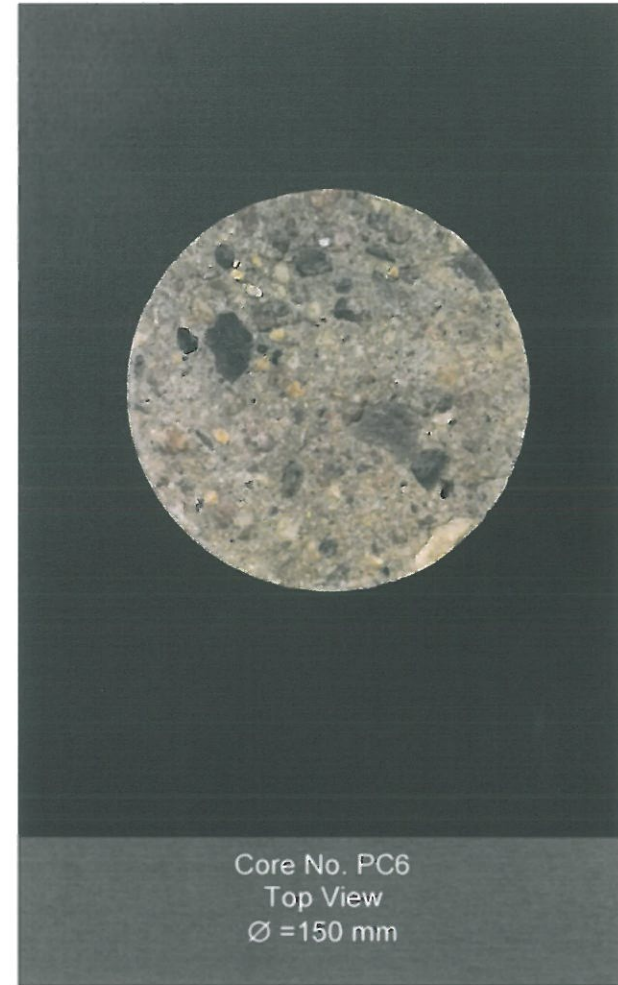
Photograph 4: Specimens from Flett Avenue



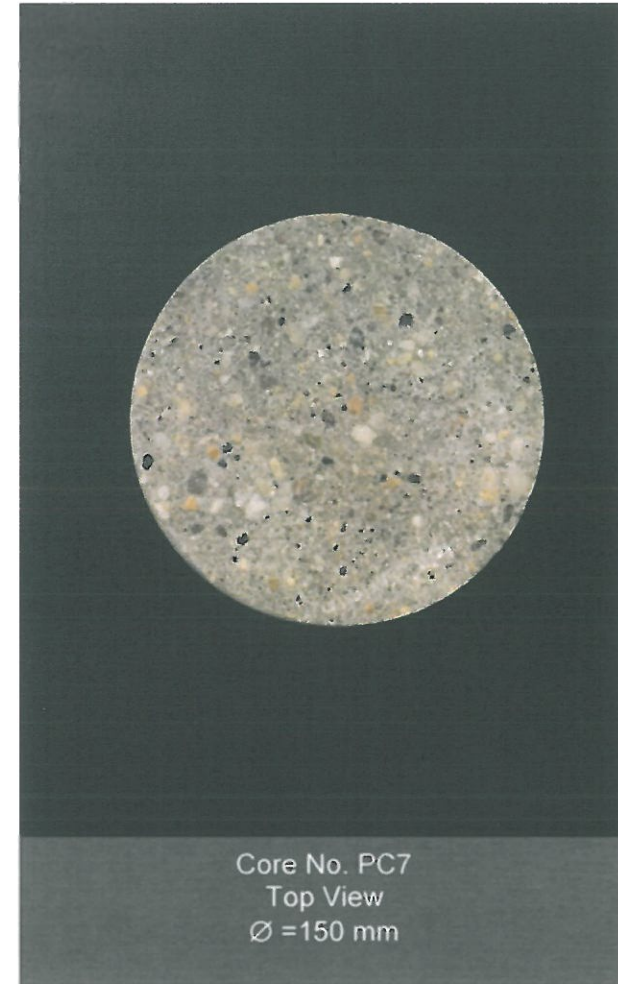
Photograph 5: Specimens from Flett Avenue



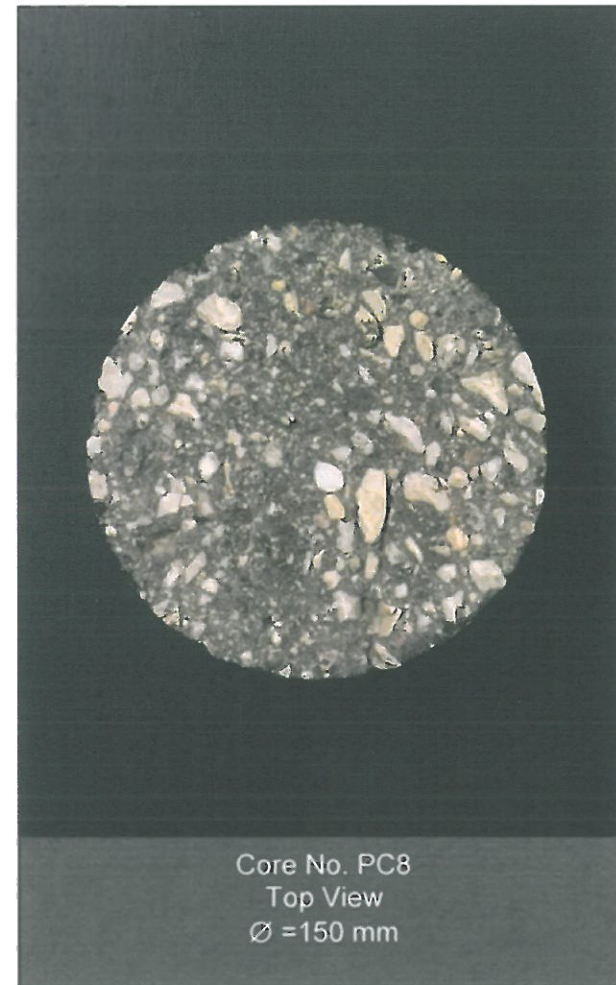
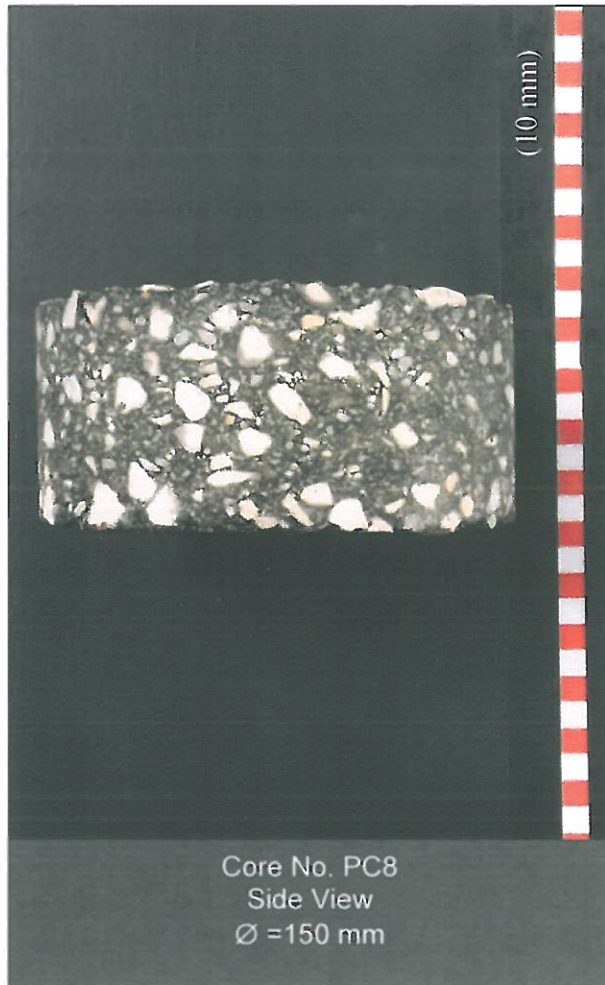
Photograph 6: Specimens from Simpson Avenue



Photograph 7: Specimens from Simpson Avenue



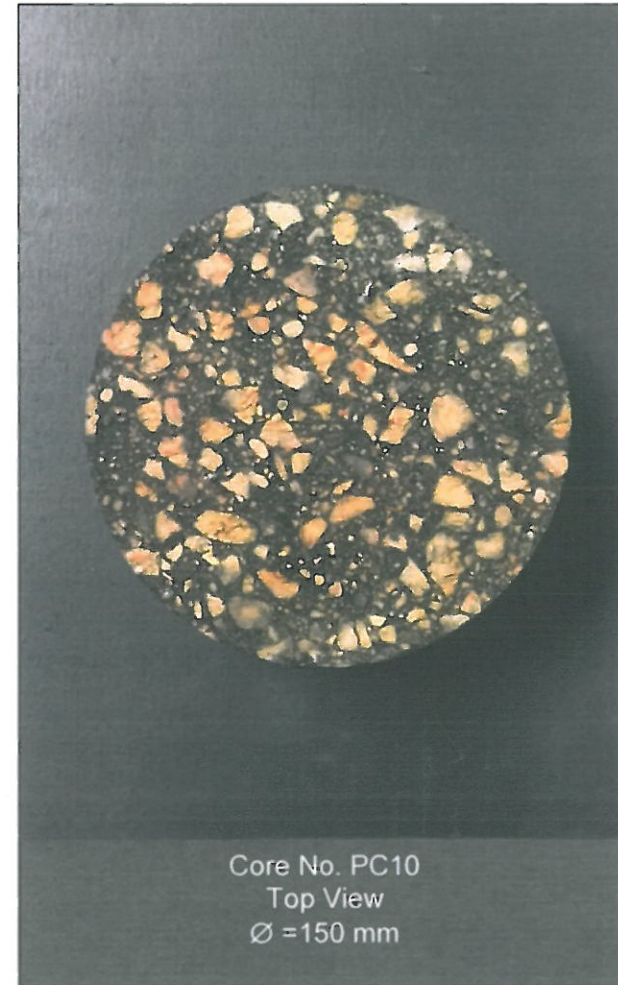
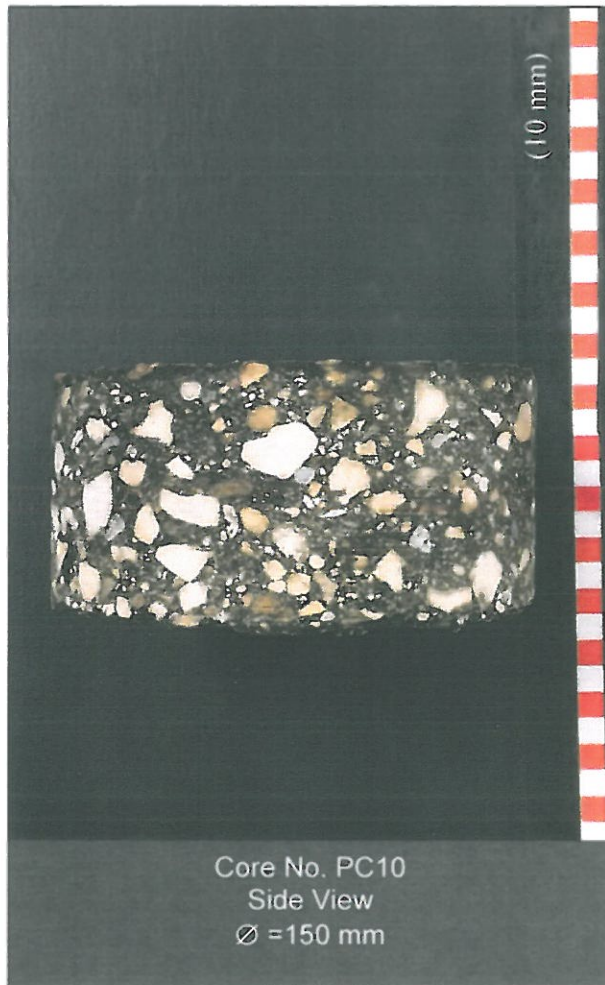
Photograph 8: Specimens from Countryside Way



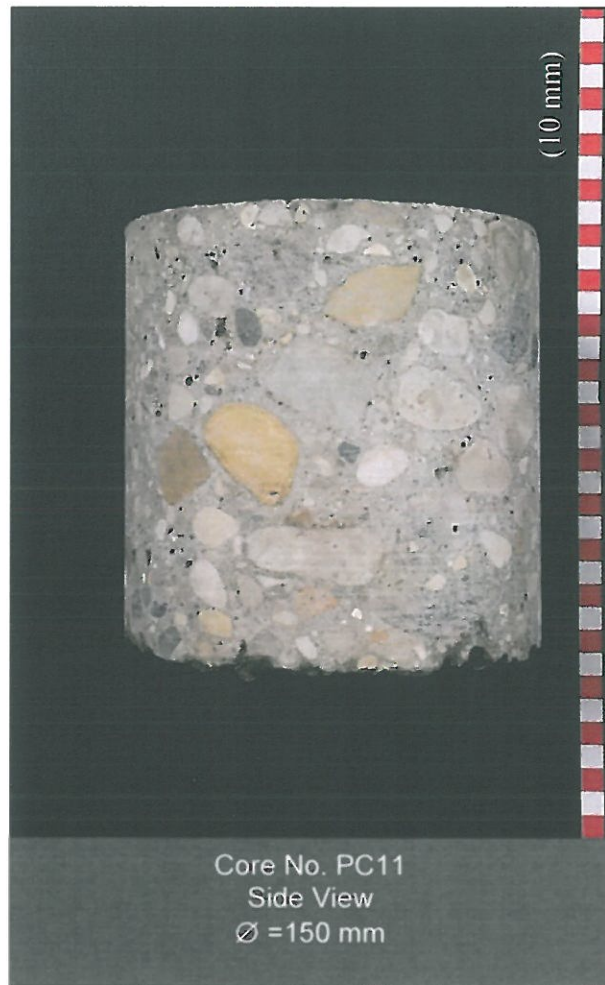
Photograph 9: Specimens from Countryside Way



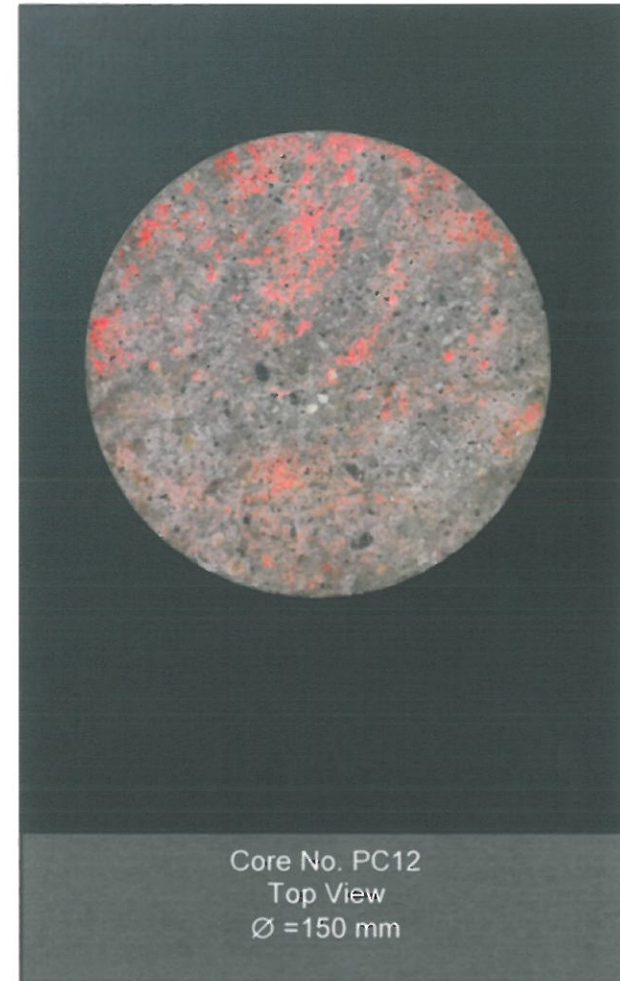
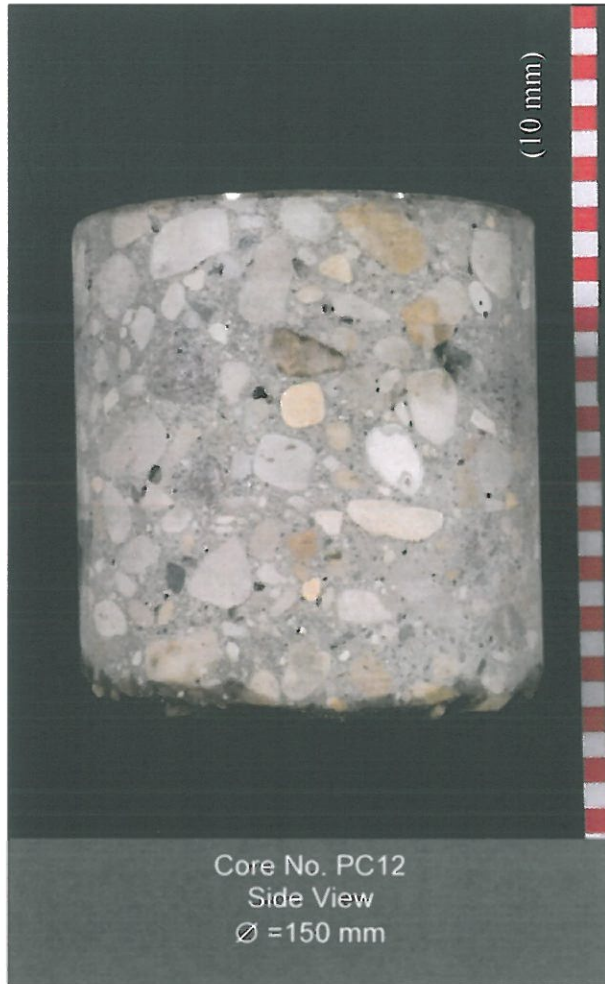
Photograph 10: Specimens from Countryside Way



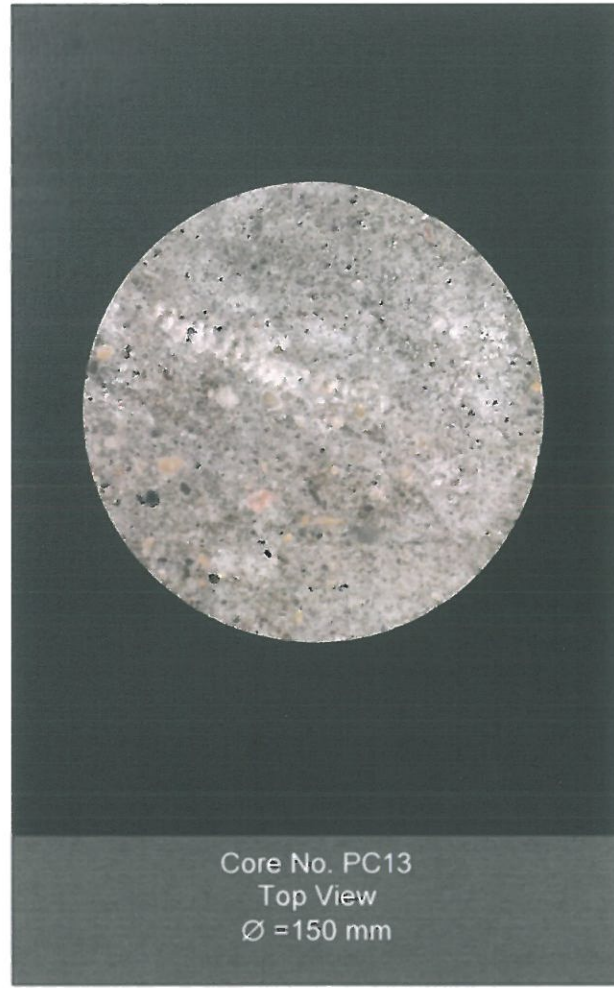
Photograph 11: Specimens from Matinee Bay



Photograph 12: Specimens from Matinee Bay



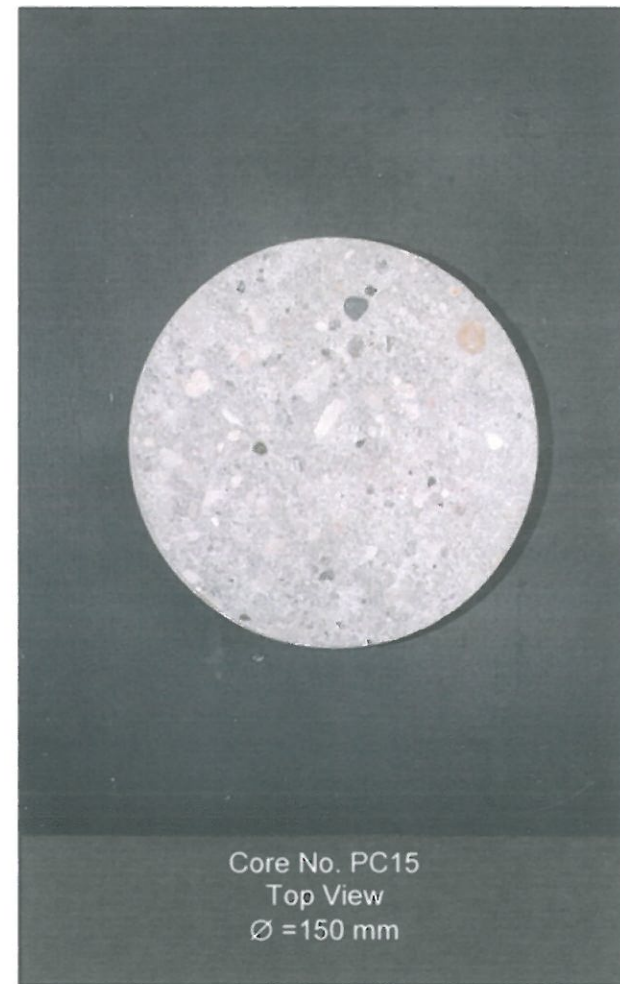
Photograph 13: Specimens from Matinee Bay



Photograph 14: Specimens from Keenleyside Street



Photograph 15: Specimens from Keenleyside Street



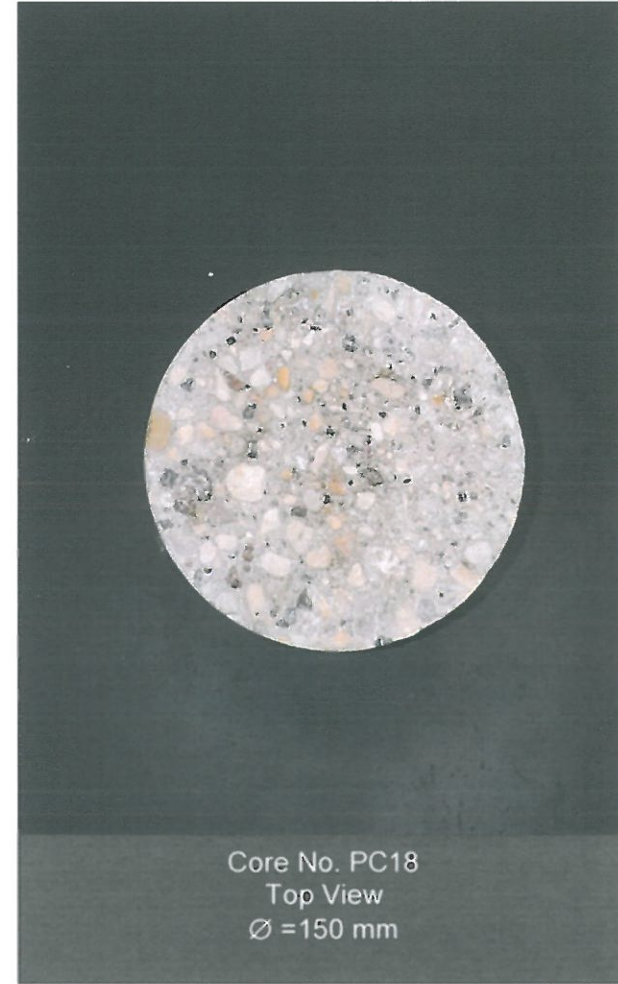
Photograph 16: Specimens from Keenleyside Street



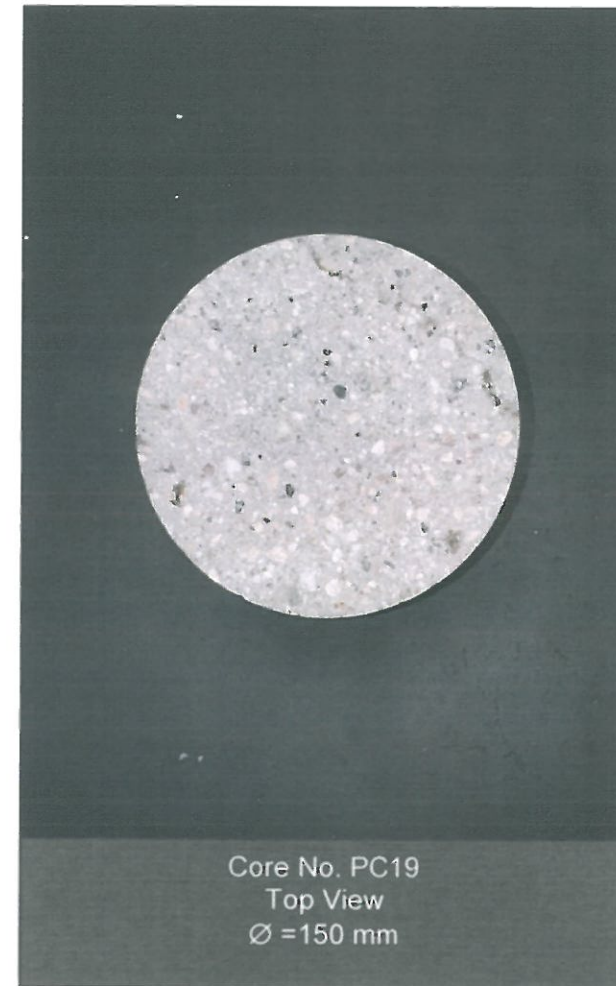
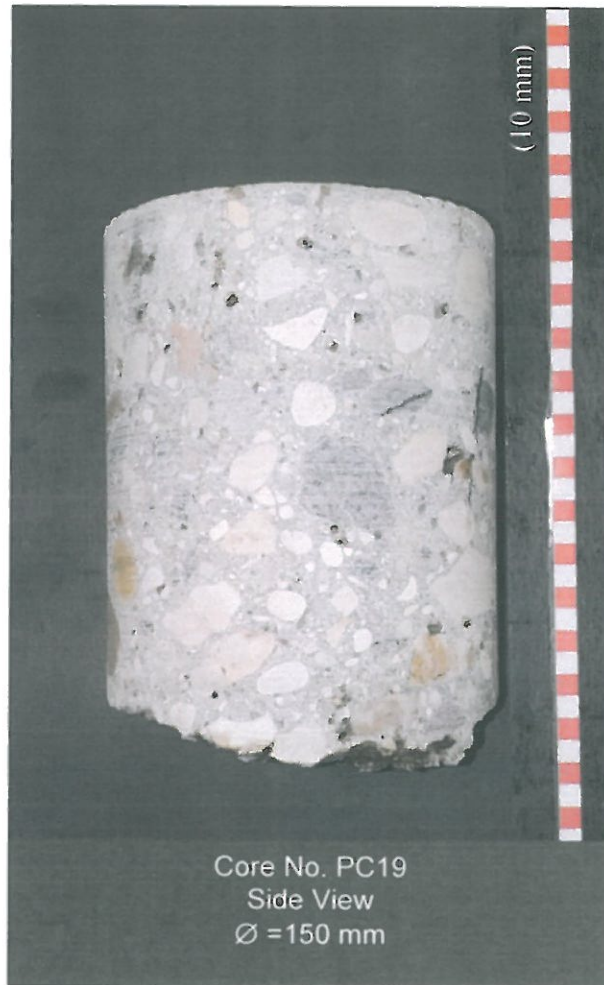
Photograph 17: Specimens from Keenleyside Street



Photograph 18: Specimens from McCalman Avenue



Photograph 19: Specimens from McCalman Avenue





Engineering And Testing
Solutions That Work For You

Test Hole #: TH2
Client: City of Winnipeg
Site: Keenleyside Street, Winnipeg, MB
Location: See Figure 1
Project: Contract 1 - 2022 Local Street Renewal Program 21-R-01A

File No.: 21-073-01
Date Drilled: November 26, 2021
Grade Elevation: ---
Water Elevation: ---

SUBSURFACE PROFILE				SAMPLE DATA				SHEAR STRENGTH (kPa)			
Depth (m)	Soil Symbol	Description	Sample Depth from Pavement Bottom (m)	Sample No.	Sample Type	Moisture Content (%)	Blows/300 mm	Moisture Content (%)			
								PL	LL	UC	
0.0		Ground Surface Concrete (178 mm)	0.2								
0.0 - 0.9		Fat Clay - dark grey to black, moist, high plastic, very stiff, trace silt.									
0.9 - 1.8		- below 0.9 m, brown, with silt, trace sand.		S1	S	32.8				120	
1.8 - 2.5		Lean Clay - light brown, moist, low plastic, soft, trace sand.		S2	S	29.4				120	
				S3	S	25.4				96	
				S4	S	23.2				12	
				S5	S	25.1				12	
		Clay - light brown, moist, high plastic, stiff, some sand, some silt.		S6	S	43.5				72	
2.5 - 3.0		End of Test Hole - test hole completed at 2.5 m below pavement. - no seepage or sloughing was observed immediately after completion of drilling. - test hole backfilled with auger cuttings and bentonite, and patched at surface with Versaspeed 100 Rapid Hardening Mortar Repair..	-3.0								

ENG- TECH Consulting Limited

Logged by: DT

Reviewed by: *SDY*

Drilled By: Mapple Leaf Drilling Ltd.

Drill Rig: Truck Mounted B40

Auger Size: 125 mm

Completion Depth: 2.5 m

Completion Elevation: ---

Sheet: 1 of 1

SAMPLE TYPE



SPLIT BARREL



SHELBY TUBE



AUGER CUTTINGS



SPLIT SPOON



Engineering And Testing
Solutions That Work For You

Test Hole #: TH1
Client: City of Winnipeg
Site: Keenleyside Street, Winnipeg, MB
Location: See Figure 1
Project: Contract 1 - 2022 Local Street Renewal Program 21-R-01A

File No.: 21-037-01
Date Drilled: November 26, 2021
Grade Elevation: ---
Water Elevation: ---

SUBSURFACE PROFILE				SAMPLE DATA				SHEAR STRENGTH (kPa)					
Depth (m)	Soil Symbol	Description	Sample Depth from Pavement Bottom (m)	Sample No.	Sample Type	Moisture Content (%)	Blows/300 mm	Moisture Content (%)					
								PL	X	LL	P. Pen	Torvane	UC
0.0		Ground Surface Concrete (185 mm)	0.2										
0.0		Clay - dark grey to black, moist, high plastic, very stiff, trace silt.											
1.0		- below 1.0 m, brown, with silt, trace sand.		S1	SPLIT BARREL	35.1					96		
				S2	SPLIT BARREL	33.4					120		
			-1.0	S3	SPLIT BARREL	31.1					96		
		Lean Clay - light brown, moist, low plastic, soft, trace sand.		S4	SPLIT BARREL	23.2					12		
2.0				S5	SPLIT BARREL	26.0					12		
		Clay - light brown, moist, high plastic, stiff, some sand, some silt.		S6	SPLIT BARREL	31.7					72		
3.0		End of Test Hole - test hole completed at 2.5 m below pavement. - no seepage or sloughing was observed immediately after completion of drilling. - test hole backfilled with auger cuttings and bentonite, and patched at surface with Versaspeed 100 Rapid Hardening Mortar Repair.	-3.0										

ENG-TECH Consulting Limited
 Logged by: DT
 Reviewed by: *DT*

Drilled By: Mapple Leaf Drilling Ltd.
 Drill Rig: Truck Mounted B40
 Auger Size: 125 mm

Completion Depth: 2.5 m
 Completion Elevation: ---
 Sheet: 1 of 1

SAMPLE TYPE SPLIT BARREL SHELBY TUBE AUGER CUTTINGS SPLIT SPOON



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Test Hole #: TH3

Client: City of Winnipeg

Site: Keenleyside Street, Winnipeg, MB

Location: See Figure 1

Project: Contract 1 - 2022 Local Street Renewal Program 21-R-01A

File No.: 21-037-01

Date Drilled: November 26, 2021

Grade Elevation: ---

Water Elevation: ---

SUBSURFACE PROFILE				SAMPLE DATA				SHEAR STRENGTH (kPa)				
Depth (m)	Soil Symbol	Description	Sample Depth from Pavement Bottom (m)	Sample No.	Sample Type	Moisture Content (%)	Blows/300 mm	Moisture Content (%)				
								PL	X	LL	P. Pen	Torvane
0.0		Ground Surface Concrete (181 mm)	0.2									
0.0		Clay - dark grey to black, moist, very stiff, high plastic, trace silt.										
1.0		Lean Clay - light brown, moist, low plastic, soft, trace sand.										
1.0			-0.8	S1	SPLIT SPOON	29.2				96		
1.0			-1.0	S2	SPLIT SPOON	28.3				120		
1.0			-1.2	S3	SPLIT SPOON	21.8				12		
1.0			-1.8	S4	SPLIT SPOON	25.5				12		
2.0			-2.0	S5	SPLIT SPOON	42.8				12		
2.0		Clay - light brown, moist, high plastic, some sand, some silt.										
2.0			-2.5	S6	SPLIT SPOON	49.4				72		
3.0		End of Test Hole - test hole completed at 2.5 m below pavement. - no seepage or sloughing was observed immediately after completion of drilling. - test hole backfilled with auger cuttings and bentonite, and patched at surface with Versaspeed 100 Rapid Hardening Mortar Repair.	-3.0									

ENG-TECH Consulting Limited

Logged by: DT

Reviewed by: *SDT*

Drilled By: Mapple Leaf Drilling Ltd.

Drill Rig: Truck Mounted B40

Auger Size: 125 mm

Completion Depth: 2.5 m

Completion Elevation: ---

Sheet: 1 of 1

SAMPLE TYPE



SPLIT BARREL



SHELBY TUBE



AUGER CUTTINGS



SPLIT SPOON



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LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS



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City of Winnipeg
 Public Works Department
 106 - 1155 Pacific Avenue
 Winnipeg, Manitoba R3E 3P1

File No.: 21-037-01
 Ref. No.: 21-37-1-2

Attention: Richard Weibel, C.E.T.

Project: CONTRACT 1 - 2022 LOCAL STREET RENEWAL PROGRAM 22-R-01A

Source: Keenleyside Street

Test Hole No.: 2

Sample No.: 1

Depth: 0.6 m

Date Sampled: Nov 26/21

Sampling Method: Auger cutting

Sampled By: ENG-TECH (Dai Tran)

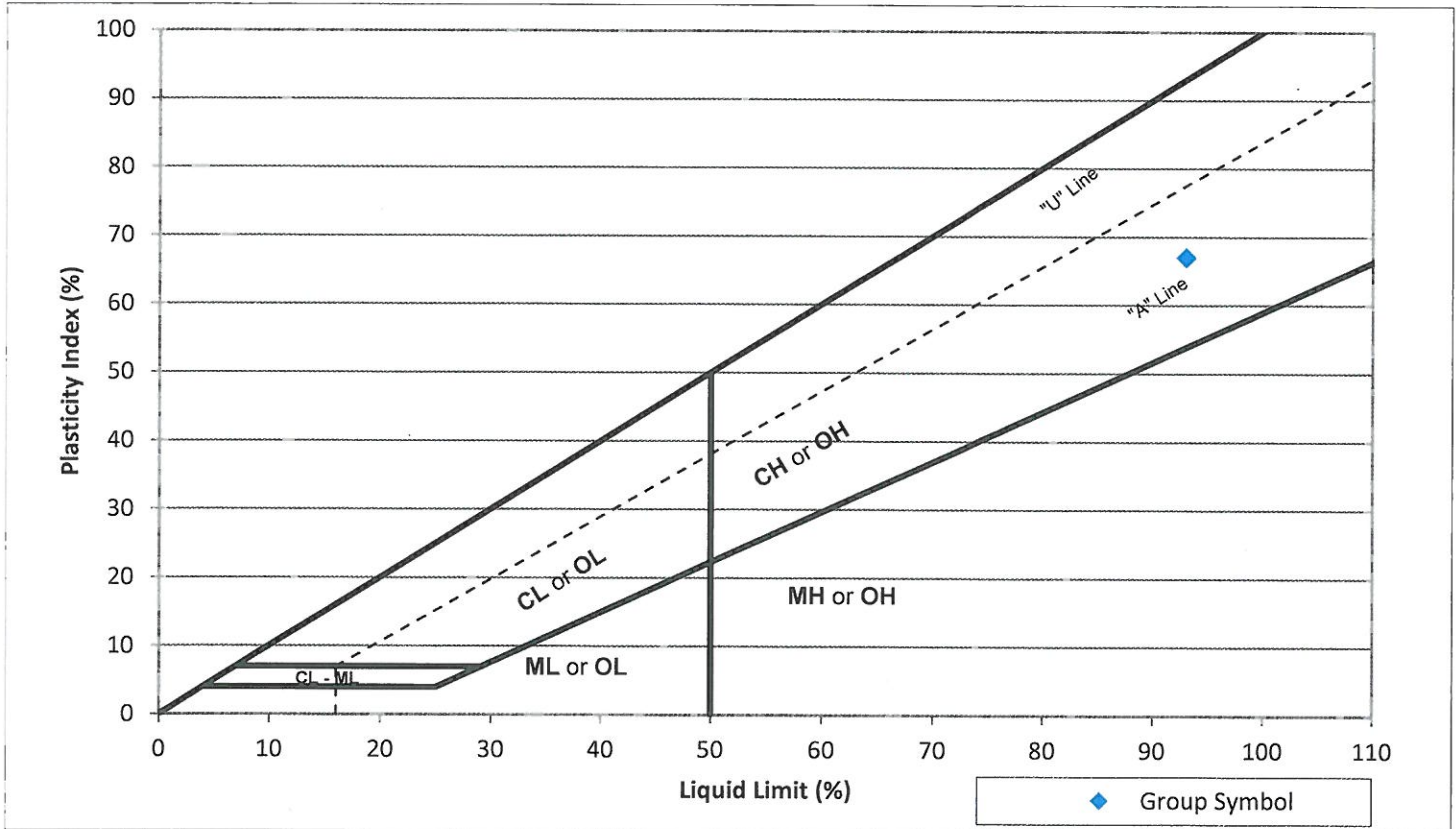
Date Received: Nov 26/21

Date Tested: Dec 1/21

Tested By: ENG-TECH (Owais Iqbal)

Method: ASTM D4318 - A (Multipoint)

Drying Method: Air



Liquid Limit (%): 93 Plastic Limit (%): 26 Plasticity Index (%): 67

Percentage of sand particles retained on 0.425mm sieve: 1.6

Classification: ASTM D2487: CH, fat clay
 ASTM D3282: A-7-6 (75)

Comments:

As received moisture content: 32.8%

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Per

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LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS



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 Public Works Department
 106 - 1155 Pacific Avenue
 Winnipeg, Manitoba R3E 3P1

File No.: 21-037-01
 Ref. No.: 21-37-1-3

Attention: Richard Weibel, C.E.T.

Project: CONTRACT 1 - 2022 LOCAL STREET RENEWAL PROGRAM 22-R-01A

Source: Keenleyside Street

Test Hole No.: 3

Sample No.: 3

Depth: 1.2 m

Date Sampled: Nov 26/21

Sampling Method: Auger cutting

Sampled By: ENG-TECH (Dai Tran)

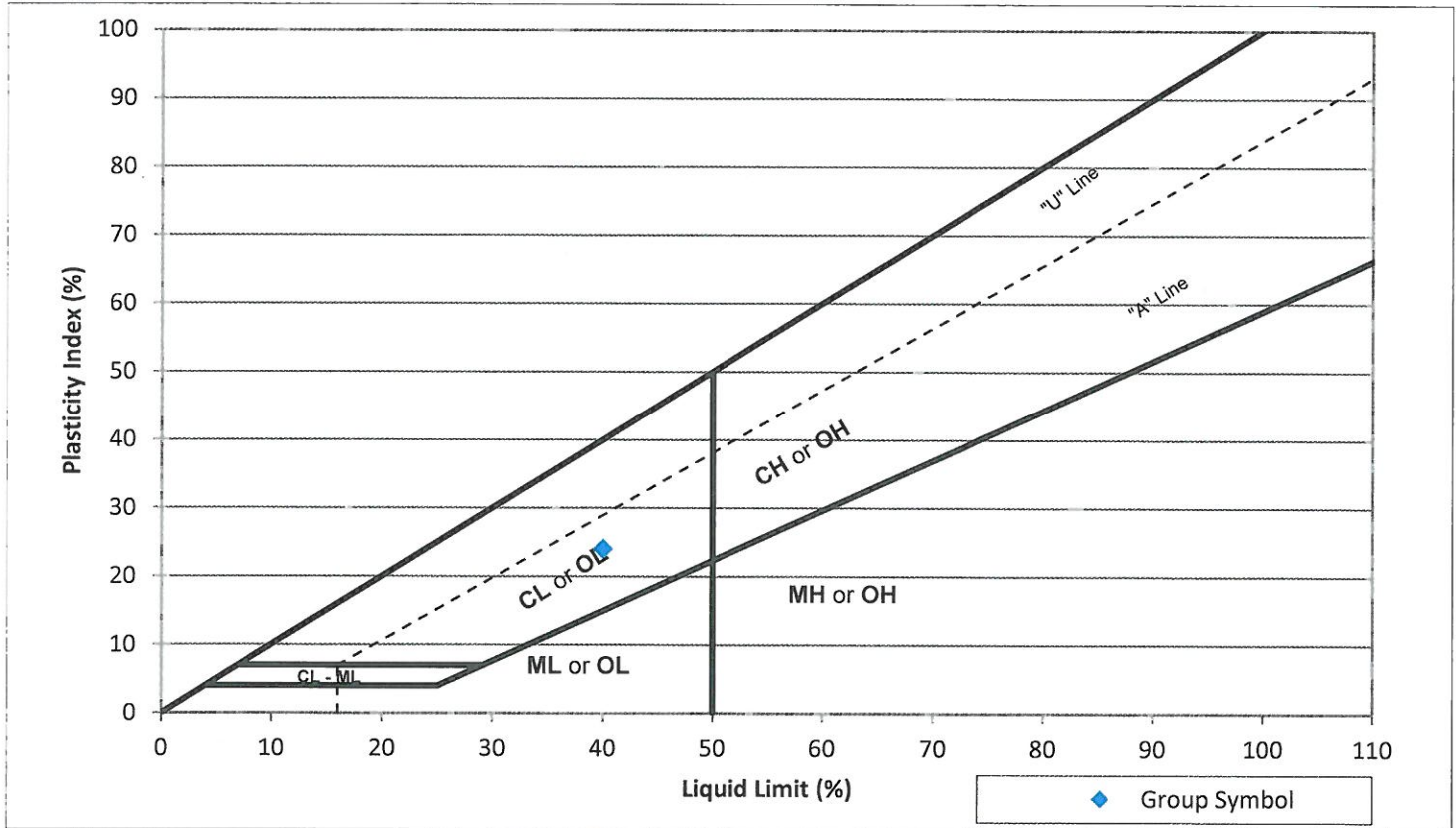
Date Received: Nov 26/21

Date Tested: Dec 1/21

Tested By: ENG-TECH (Owais Iqbal)

Method: ASTM D4318 - A (Multipoint)

Drying Method: Air



Liquid Limit (%): 40 Plastic Limit (%): 16 Plasticity Index (%): 24

Percentage of sand particles retained on 0.425mm sieve: 1.9

Classification: ASTM D2487: CL, lean clay
 ASTM D3282: A-6 (17)

Comments:

As received moisture content: 21.8%

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PARTICLE SIZE ANALYSIS

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 Public Works Department
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 Winnipeg, Manitoba R3E 3P1

File No.: 21-037-01

Ref. No.: 21-37-1-4

Attention: Richard Weibel, C.E.T.

Project: CONTRACT 1 - 2022 LOCAL STREET RENEWAL PROGRAM 22-R-01A

Source: Keenleyside Street

Test Hole No.: 2

Sample No.: 1

Depth: 0.6 m

Date Sampled: Nov 26/21

Sampling Method: Auger cutting

Sampled By: ENG-TECH (Dai Tran)

Date Received: Nov 26/21

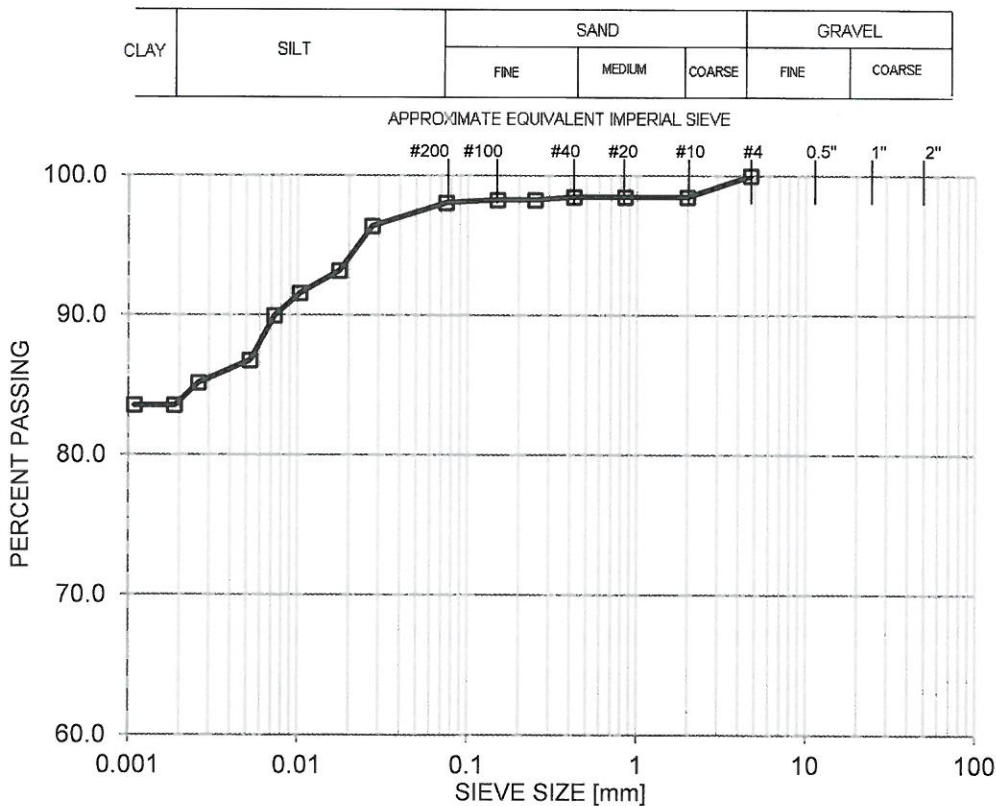
Date Tested: Dec 2/21

Tested By: ENG-TECH (Owais Iqbal)

Method: ASTM D7928 & D6913

Dispersion Device: Apparatus A: Humboldt Mechanical Analysis Stirrer

Dispersion Time (min.): 1



Percent of: GRAVEL (0.0 %), SAND (2.0 %), SILT (14.2 %), CLAY (83.8 %)

Sample Description: ASTM D2487: CH, fat clay
 ASTM D3282: A-7-6 (75)

Comments: As received moisture content: 32.8%.

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PARTICLE SIZE ANALYSIS

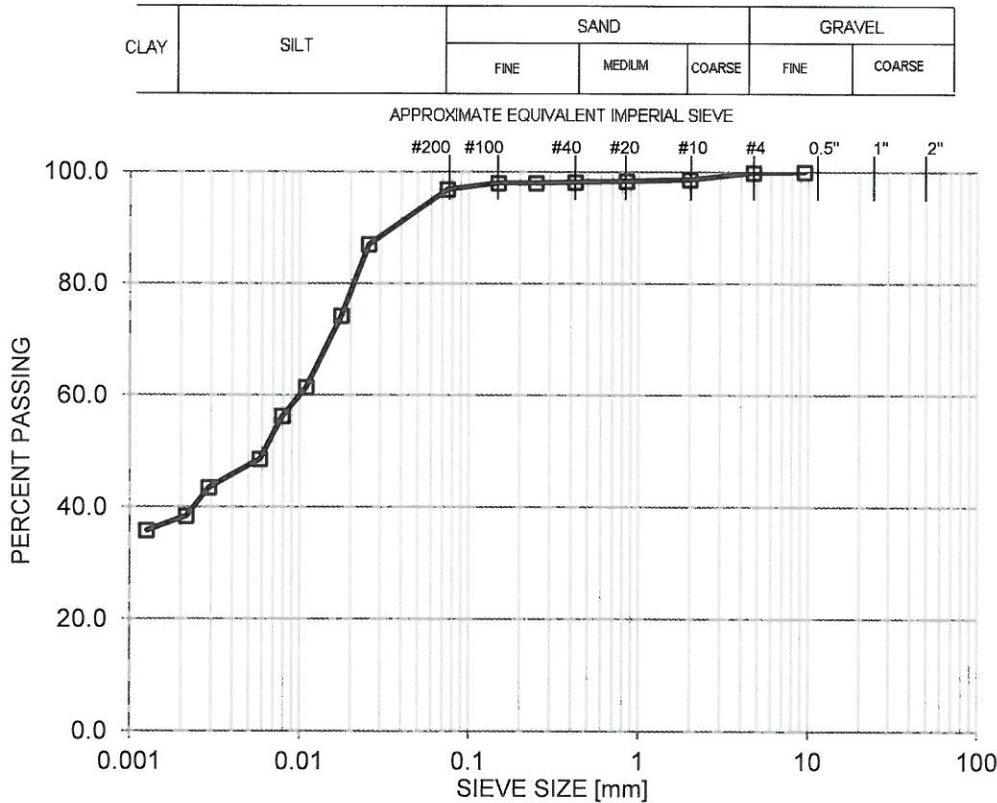
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 Public Works Department
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File No.: 21-037-01
 Ref. No.: 21-37-1-5

Attention: Richard Weibel, C.E.T.
Project: CONTRACT 1 - 2022 LOCAL STREET RENEWAL PROGRAM 22-R-01A

Source: Keenleyside Street
Test Hole No.: 3 **Sample No.:** 3 **Depth:** 1.2 m
Date Sampled: Nov 26/21 **Sampling Method:** Auger cutting **Sampled By:** ENG-TECH (Dai Tran)
Date Received: Nov 26/21 **Date Tested:** Dec 2/21 **Tested By:** ENG-TECH (Owais Iqbal)
Method: ASTM D7928 & D6913
Dispersion Device: Apparatus A: Humboldt Mechanical Analysis Stirrer **Dispersion Time (min.):** 1



SIEVE SIZE (mm)	PERCENT PASSING
9.5	100.0
4.75	99.9
2.0	98.6
0.850	98.3
0.425	98.1
0.250	98.0
0.150	98.0
0.075	96.8
0.026	86.9
0.018	74.2
0.011	61.4
0.008	56.3
0.006	48.6
0.003	43.5
0.002	38.4
0.001	35.8

Percent of: GRAVEL (0.1 %), SAND (3.0 %), SILT (58.9 %), CLAY (38.0 %)

Sample Description: ASTM D2487: CL,lean clay
 ASTM D3282: A-6 (17)

Comments: As received moisture content: 21.8%.

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**MOISTURE-DENSITY
 RELATIONSHIP**



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 Engineering Public Works
 106 - 1155 Pacific Avenue
 Winnipeg, Manitoba R3E 3P1

File No.: 21-037-01

Ref. No.: 21-37-1-6

Attention: Richard Weibel, C.E.T.

Project: CONTRACT 1 – 2022 LOCAL STREET RENEWAL PROGRAM 22-R-01A

Compaction Standard Method ASTM D698 ASTM D1557 Preparation Method: Moist

Dry Density kg/m ³	1447	1491	1503	1471	
Moisture Content (%)	22.1	23.7	26.0	27.7	

Compaction Method: Manual

Date Sampled: Nov 26/21

Maximum Dry Density = 1508 kg/m³ Corrected = - kg/m³
 Optimum Moisture = 25.2 % Corrected = - %

Sampled By: ENG-TECH (Dai Tran)

Date Received: Nov 26/21

Date Tested: Dec 2/21

As Received Moisture Content (%): 37.3

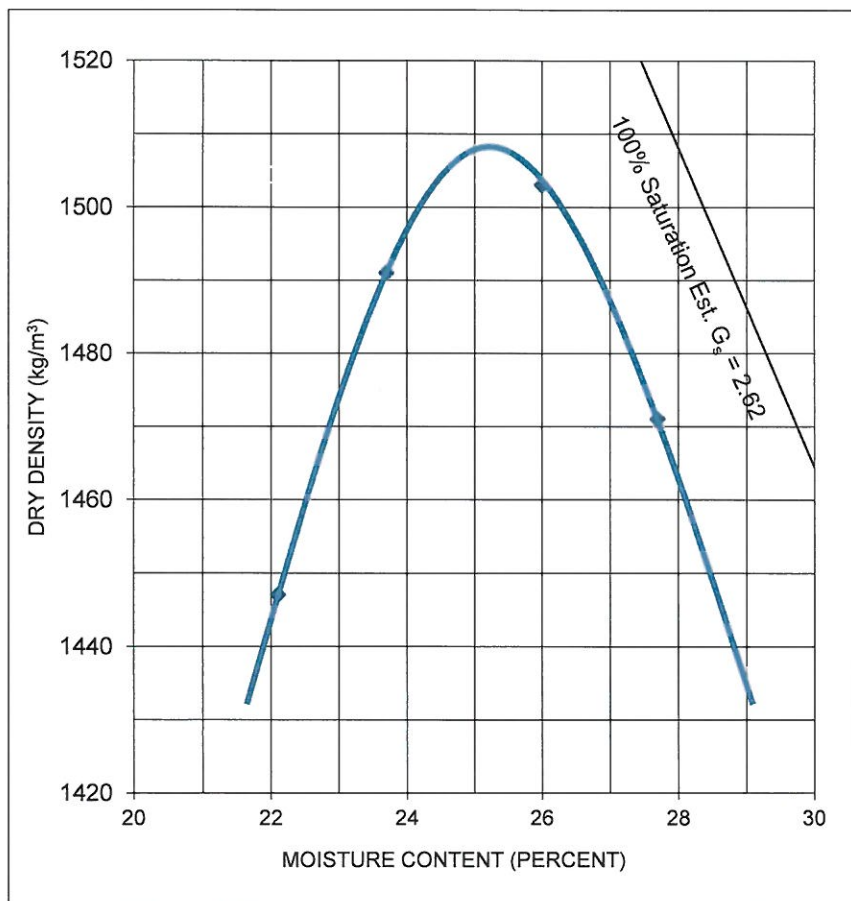
Test Method: A

Material Oversize
 4.75 mm = 0.2 %
 19.0 mm = - %

Source:
 Composite samples of TH1, TH2 and TH3 from Keenleyside Street

Soil Description:
 CH, clay, high plastic, brown, silt sizes, trace sand, trace gravel

Comments:



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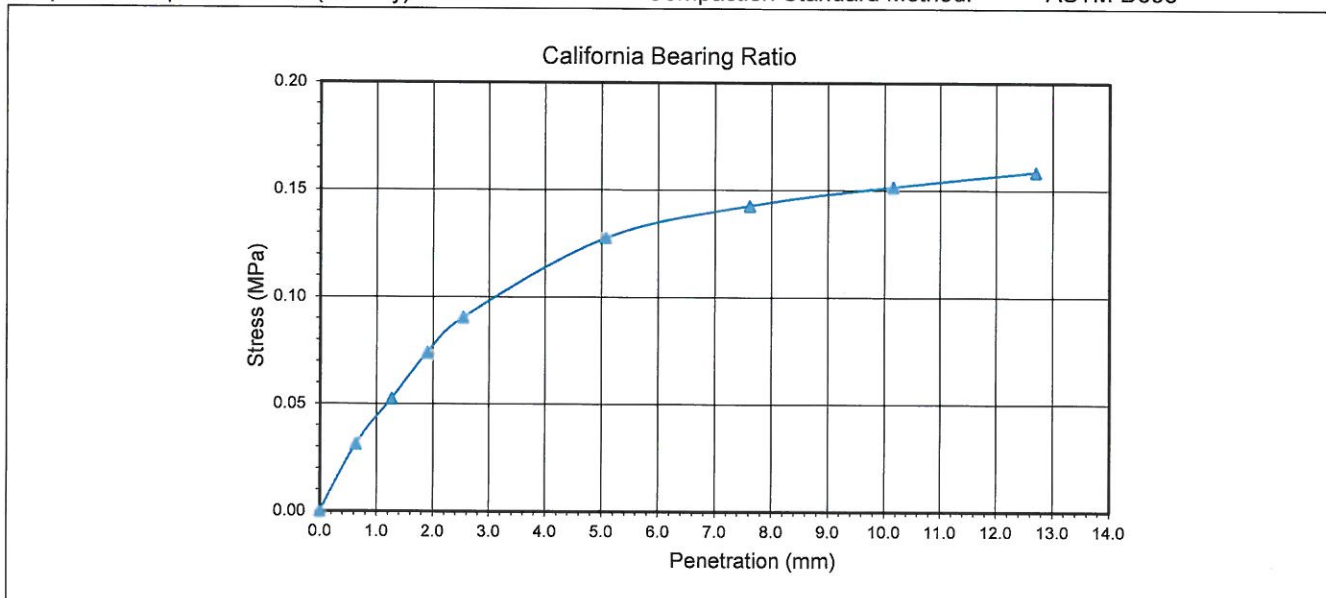
File No.: 21-037-01

Ref. No.: 21-37-1-7

Attention: Richard Weibel, C.E.T.

Project: CONTRACT 1 – 2022 LOCAL STREET RENEWAL PROGRAM 22-R-01A

Source:	Composite sample of TH1, TH2 and TH3 from Keenleyside Street	Date Sampled:	Nov 26/21
Material Type:	Clay sub-grade	Time Sampled:	-
Material Description:	CH, clay, high plastic, brown, trace gravel	Date Received:	Nov 26/21
Sampled By:	ENG-TECH (Dai Tran)	Date Tested:	Dec 8/21
Immersion Period:	95 hours	Tested By:	ENG-TECH (Rey Batac)
Required Compactive Effort (Density):	95%	Compaction Standard Method:	ASTM D698



Test Data					
	Soaked		Unsoaked		
Dry Density: As Compacted;	1441	kg/m ³	-	kg/m ³	
Moisture Content: As Compacted;	25.3	%	-	%	
Moisture Content: Top 25 mm;	40.3	%	-	%	
CBR Values: 2.54mm (0.1in);	1.3	%	-	%	
CBR Values: 5.08mm (0.2in);	1.2	%	-	%	
Sample Expansion:	4.8	% of Initial Height	Oversize Correction:	0.2	%
			Surcharge Mass:	4.54	kg

Comments: The test was conducted using a 95.6% standard compactive effort.

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**APPENDIX 'B' - CONCRETE CONSTITUENT MATERIALS, MIX DESIGN
REQUIREMENTS, AND HOT AND COLD WEATHER CONCRETING MATERIAL**

 PUBLIC WORKS DEPARTMENT • SERVICE DES TRAVAUX PUBLICS Engineering Division • Division de l'ingénierie	<u>Effective Date:</u>
	DIVISION 4
E-Spec	Concrete Constituent Materials, Mix Design Requirements, and Hot and Cold Weather Concreting

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1.0 DESCRIPTION

1.1 General

- 1.1.1 PORTLAND CEMENT CONCRETE PAVEMENT WORKS shall be in accordance with CW3310-R17, PORTLAND CEMENT CONCRETE PAVEMENT WORKS, except as otherwise specified herein.
- 1.1.2 This specification covers Portland cement concrete constituent materials and design requirements for the preparation of Portland Cement Concrete for all concreting operations relating to the construction of pavements, curbs, gutters, private approaches, bull-noses, median slabs, median, safety median and boulevard splash strips, sidewalk and other related concrete works.
- 1.1.3 This specification also covers hot and cold weather concreting.
- 1.1.4 Replace 2.0 Definitions of CW 3310-R17, PORTLAND CEMENT CONCRETE PAVEMENT WORKS with 1.2 of this specification.
- 1.1.5 Replace 5.3 Portland Cement Concrete Constituent Materials of CW 3310-R17, PORTLAND CEMENT CONCRETE PAVEMENT WORKS with 2.0 MATERIALS of this specification.
- 1.1.6 Replace 6.0 Design Requirements of CW 3310-R17, PORTLAND CEMENT CONCRETE PAVEMENT WORKS with 3.0 DESIGN REQUIREMENTS of this specification.
- 1.1.7 Replace 9.8. Weather Conditions of CW 3310-R17, PORTLAND CEMENT CONCRETE PAVEMENT WORKS with 4.0 HOT AND COLD WEATHER CONCRETING of this specification.
- 1.1.8 Replace 13.0 Basis of Payment of CW 3310-R17, PORTLAND CEMENT CONCRETE PAVEMENT WORKS with 5.1 BASIS OF PAYMENT FOR CW 3310-R17 of this specification.
- 1.1.9 Replace 13.0 Basis of Payment of CW 3230-R8, FULL-DEPTH PATCHING OF EXISTING PAVEMENT SLABS AND JOINTS with 5.2 BASIS OF PAYMENT FOR CW 3230-R8 of this specification.
- 1.1.10 Replace 13.0 Measurement and Payment for CW 3235-R9, RENEWAL OF EXISTING MISCELLANEOUS CONCRETE SLABS with 5.3 MEASUREMENT AND PAYMENT FOR CW 3235-R9 of this specification.
- 1.1.11 Replace 4.0 Measurement and Payment for CW 3240-R10, RENEWAL OF EXISTING CURBS with 5.4 MEASUREMENT AND PAYMENT FOR CW 3240-R10 of this specification.
- 1.1.12 Replace 13.0 Basis of Payment for CW 3325-R5, PORTLAND CEMENT CONCRETE SIDEWALK with 5.5 BASIS OF PAYMENT FOR CW 3325-R5 of this specification.
- 1.1.13 This specification also replaces 2.0 Definitions, 5.3 Portland Cement Concrete Constituent Materials, 6.0 Design Requirements, 9.8. Weather Conditions, and 13.0 Basis of Payment of CW3310-R17, PORTLAND CEMENT CONCRETE PAVEMENT WORKS where other

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specifications (e.g. CW3230-R8, CW3235-R9, CW3240-R10, CW3325-R5) reference CW3310-R17, PORTLAND CEMENT CONCRETE PAVEMENT WORKS.

- 1.1.14 All requirements and tests shall be in accordance with the latest edition of CSA A23.1-19/CSA A23.2-19, except as otherwise specified herein.

1.2 **Definitions**

- 1.2.1 Reinforced Concrete Pavement - A Portland Cement Concrete pavement with distributed steel reinforcement in the pavement slab and with deformed tie bars across longitudinal joints and smooth dowels across transverse contraction joints. Distributed steel reinforcement consists of smooth or deformed bars.
- 1.2.2 Plain-Dowelled Pavement - A Portland Cement Concrete pavement with no reinforcing steel in the pavement slab and with deformed tie bars across longitudinal joints and smooth dowels across transverse contraction joints.
- 1.2.3 Type 1 Concrete shall be used for expressways, major arterials, minor arterials, industrial/commercial collectors, residential major collectors, residential minor collectors, and industrial/commercial local pavements.
- 1.2.4 Type 2 Concrete shall be used for residential roads and alleys, curb and gutter sections, curbs, commercial approaches, residential approaches, miscellaneous concrete slab and splash strips. Type 1 Concrete can be used instead of Type 2 Concrete.
- 1.2.5 Type 3 is early opening concrete and shall be used for 24 hours early opening after placement.
- 1.2.6 Type 4 is early opening concrete and shall be used for 72 hours early opening after placement.
- 1.2.7 Type 5 Concrete shall be used for Sidewalks. Type 1 or Type 2 Concrete can be used instead of Type 5 Concrete.
- 1.2.8 Type 6 Concrete is cold weather concreting and shall replace all other concrete types for all applications when cold weather exists, except Type 8.
- 1.2.9 Type 7 is concrete for restoration of utility pavement cuts.
- 1.2.10 Type 8 is concrete for temporary restoration.
- 1.2.11 Coarseness Factor - A measure of the coarseness of the combined aggregate materials being incorporated into the concrete mix, defined as the percentage of all plus 2 500 sieve particles, which are also retained on the 10 000 sieve. Coarseness Factor = 100 (cumulative % retained on 10 000 Sieve divided by the cumulative % retained on 2 500 Sieve).
- 1.2.12 Hot weather is defined as one or a combination of the ambient air temperature being at or above 27 °C, or when there is a probability of the temperature rising above 27 °C during the concrete placing period (as forecast by the nearest official meteorological office), or the evaporation rate that exceeds 0.75 kg/m² /h due to high concrete temperature (maximum temperature of 32 °C for fresh concrete), low relative humidity and high wind speed that tends to impair the quality of freshly mixed or hardened concrete by accelerating the rate of moisture loss and rate of cement hydration, or otherwise causing detrimental results.

1.2.13 Cold weather is defined as a period when there is a probability of the ambient air temperature falling below 5 °C within 24 hours of placing or the average daily temperature for three consecutive days has fallen to, or is expected to fall, below 5°C as forecast by the nearest official meteorological office. The daily temperature is the mean temperature which is the average of the maximum and minimum temperature during the period from midnight to midnight.

1.2.14 The protection period is the time required to prevent concrete from being affected by exposure to cold weather and to develop a minimum compressive strength of 24 MPa. Concrete compressive strength shall be determined by maturity meters and field cured cylinders. In no case shall the protection period be less than seven (7) days.

2.0 MATERIALS

2.1 Concrete Constituent Materials

2.1.1 Aggregates

2.1.1.1 Aggregate shall consist of crushed stone or gravel or a combination of these materials conforming to the requirements of this Specification.

2.1.1.2 Each of the fine- and coarse-fractions of the combined aggregate shall meet all the requirements of CSA A23.1, Table 10 (FA1) and Table 11, respectively and shall be handled and weighed separately to maintain uniformity. The supplier shall provide the City of Winnipeg, Research and Standards Engineer with test data in accordance with CSA A23.2-30A to demonstrate that the material will produce concrete of acceptable quality that meets all the relevant requirements of this Specification.

2.1.1.3 The combined aggregate gradation and allowable deviations shall comply with the requirements in Table CW 3310.1.

TABLE CW 3310.1 - Combined Aggregate Gradation Limits and Allowable Deviations

Sieve Size	Percent of Total Dry Weight Passing Each Sieve	Allowable Deviation From The Job Mix Formula, % By Mass Passing Sieve
28 000	100%	-
20 000	90% - 100%	± 2%
14 000	75% - 95%	± 2%
10 000	60% - 75%	± 3%
5 000	35% - 50%	± 3%
2 500	27% - 35%	± 2%
1 250	20% - 30%	± 2%
630	10% - 20%	± 2%
315	5% - 10%	± 2%
160	1% - 4%	± 1%
80	0% - 2%	± 1%

2.1.1.4 The fineness modulus of fine aggregate shall be not less than 2.3 nor more than 3.1.

2.1.1.5 Aggregates shall conform to CSA-A23.1, Clauses 4.2.3.1 to 4.2.3.6. Each of the fine- and coarse-fractions shall comply with the physical requirements in Table CW 3310.2 and the test results shall be provided with the mix design submittal.

TABLE CW 3310.2 - Limits for Deleterious Substances and Physical Properties of Aggregates

Material	Parameter	Test Method	Maximum Limits	Frequency of Test
coarse aggregate	Clay lumps	CSA A23.2-3A	0.25%	2 years
	Low density granular material	CSA A23.2-4A	0.5%	2 years
	Material finer than 80 µm	CSA A23.2-5A	1.0%	1 year
	Relative density and absorption	CSA A23.2-12A	Note*	1 year
	Flat and elongated particles	CSA A23.2-13B	25%	1 year
	- Flat particles		40%	
	- Elongated particles			
	Petrographic examination** – PN	CSA A23.2-15A	125	1 year
	Unconfined freeze-thaw	CSA A23.2 24A	6%	Twice per season
	Alkali-silica reactivity	CSA A23.2-25A	0.15%	2 years
Alkali-carbonate reactivity	CSA A23.2-26A	Note*	1 year	
Micro-Deval	CSA A23.2-29A	17%	Twice per season	
fine aggregate	Clay lumps	CSA A23.2-3A	1%	2 years
	Low density granular material	CSA A23.2-4A	0.5%	2 years
	Material finer than 80 µm	CSA A23.2-5A	3.0%	1 year
	Organic impurities	CSA A23.2-7A	free from injurious amounts	2 years
	Petrographic examination**	CSA A23.2-15A	Note**	1 year
	Micro-Deval	CSA A23.2-23A	20%	1 year
	Alkali-silica reactivity	CSA A23.2-25A	0.15%	2 years

- *No acceptance/rejection values; however, the results shall be submitted.
- **Petrographic examinations shall be used to calculate the petrographic number (PN), to provide an appraisal of the physical-mechanical quality of coarse aggregate. Determination of PNs applies solely to coarse aggregates and should not be used for fine aggregates. The petrographic report for the fine aggregate shall include a comment on the suitability of the material for use in the production of concrete mix.
- The Coarseness Factor of the combined aggregate shall be between 45 and 65.
- Quarried limestone and dolomite shall not be acceptable as concrete aggregate materials.

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2.2 Hydraulic Cement

2.2.1 Hydraulic Cement shall be either General Use (GU) or General Use Limestone (GUL) conforming to the requirements of the latest edition of CSA A3001. High-early-strength Portland cement (HE) may also be used for cold weather concreting only. Cement shall be kept in weather tight storage that will protect it from moisture and contamination, and in such a manner as to permit inspection, sampling and identification, where required, of each lot.

2.3 Supplementary Cementing Materials

2.3.1 Fly ash shall conform to the requirements of CSA A3001 Class F. Fly ash shall be added to concrete mixtures as a separate constituent material. The use of blended hydraulic cement is not permitted.

2.4 Water

2.4.1 Potable water, which is water suitable for human consumption, is permitted to be used as mixing water in concrete without testing. Non-potable water and combined water shall conform to ASTM C1602M, Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete. The concrete supplier shall maintain documentation on the characteristics of the mixing water in compliance with the requirements of Tables 1 and 2 in ASTM C1602M. Testing to verify compliance with the requirements in Table 1 shall be conducted on the Type 1 hand placement paving mix with fly ash. The testing frequency for mixing water shall be in accordance with Appendix X1 of ASTM C1602M. Information on the testing frequency of the concrete mixing water shall be included in the concrete suppliers' quality control program. The source(s) of concrete mixing water and test data indicating compliance with ASTM C1602M shall be provided with the Mix Design Statement submitted to the City of Winnipeg, Research and Standards Engineer.

2.5 Admixtures

2.5.1 Air-Entraining Admixture

2.5.1.1 The air-entraining admixture shall conform to the requirements of ASTM C260, Standard Specification for Air-Entraining Admixtures for Concrete.

2.5.2 Chemical Admixtures

2.5.2.1 Chemical admixtures shall conform to the requirements of ASTM C494, Standard Specification for Chemical Admixtures for Concrete. Chloride-based chemical admixtures will not be permitted under any circumstances.

2.5.3 Cold-Weather Admixture Systems

2.5.3.1 Cold-weather admixture systems shall conform to the requirements of ASTM C1622, Standard Specification for Cold-Weather Admixture Systems.

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3.0 DESIGN REQUIREMENTS

3.1 Concrete Suppliers

- 3.1.1 The City of Winnipeg, Research and Standards Engineer will maintain a list of approved concrete suppliers. To obtain approval, concrete suppliers must annually submit the following information to the Research and Standards Engineer prior to April 1st:
- 3.1.1.1 Concrete suppliers Approval Guidelines and Application is available at the City of Winnipeg, Corporate Finance, Material Management Division website at: <https://www.winnipeg.ca/matmgt/Spec/Default.stm>
 - 3.1.1.2 Names of suppliers and sources for all materials and admixtures
 - 3.1.1.3 Concrete mix designs with unique mix design codes signed and dated by person selecting the mix proportions
 - 3.1.1.4 Copy of valid Concrete Manitoba certificate for concrete batch plant
 - 3.1.1.5 Copies of valid scale calibration reports for the concrete batch plant
 - 3.1.1.6 Test data for aggregates (in accordance with clause 2.1.1)
 - 3.1.1.7 The mill certificate for the cement and fly ash including chemical and physical composition and analysis, fly ash source and name of supplier.
 - 3.1.1.8 Sieve analysis test reports for the individual aggregates and the combined aggregate gradations to be used in the concrete. The sieve analysis test reports shall be representative of the material to be used during concrete production.
 - 3.1.1.9 Performance data from trial batches prior to construction to demonstrate the concrete mix will achieve the performance criteria in Table CW 3310.3.



Table CW 3310.3: Performance Criteria and Testing

	Time (day)	Type 1	Type 2	Type 3, and Type 6	Type 4	Type 5	Type 7**	Type 8
A minimum of one (1) set* of concrete compressive strength tests for the slipform paving mix with and without fly ash according to CSA A23.2-9C	@ 1	--	--	20 MPa	--	--	--	--
	@ 3	15 MPa	15 MPa	--	20 MPa	--	--	--
	@ 7	20 MPa	20 MPa	--	--	--	--	--
	@ 28	35 MPa	32 MPa	35 MPa	35 MPa	--	--	--
A minimum of two (2) sets* of concrete compressive strength tests for the hand placement paving mix with and without fly ash according to CSA A23.2-9C	@ 1	--	--	20 MPa	--	--	--	--
	@ 3	15 MPa	15 MPa	24 MPa	20 MPa	12 MPa	20 MPa	12 MPa
	@ 7	20 MPa	20 MPa	--	--	--	--	--
	@ 28	35 MPa	32 MPa	35 MPa	35 MPa	30 MPa	35 MPa	30 MPa
Air-void test according to ASTM C457	@ 28	See Note***						
Rapid chloride penetrability test (RCPT) according to CSA A23.2-23C	@ 56	See Note ****						

*Each set contains at least three (3) cylinders at each specified date. The average of each set shall be equal to or greater than the specified strength, with no single result less than 85% of the specified strength.

** Type 7 is concrete for restoration of utility pavement cuts and shall be adjusted to meet the specified strength for other types based on the application and shall include set retarders or hydration stabilizers to extend the discharge time to 150 min.

***A minimum of one sample for air-void test at 28 days shall be performed for each cement for Type 1, Type 2, and Type 3 with fly ash, and Type 6. The air-void test shall meet the following requirements:

- Spacing factor shall not exceed 230 µm, with no single value greater than 260 µm; and,
- Air content shall be greater than or equal to 5.0% and less than 8.0%.

****A minimum of two samples for rapid chloride penetrability test shall be performed for Type 1, Type 2 and Type 3 for mixes with and without fly ash. For Type 1 and Type 3, the average penetrability shall be equal to or less than 1250 coulombs at 56 days based on the charge passed, with no single result greater than 1500 coulombs for mixes with and without fly ash. For Type 2, the average of chloride ion penetrability shall be equal to or less than 1500 coulombs at 56 days based on the charge passed, with no single result greater than 1750 coulombs.

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- 3.1.1.10 Quality control program for all materials, including a proposed sampling and testing plan with minimum sampling and testing frequencies;
- 3.1.1.11 The laboratory(s) to be used and its credentials;
- 3.1.1.12 The quality control personnel and their qualifications; and,
- 3.1.1.13 Frequency of production equipment inspection, verification of calibration, and any certification of the production facility.
- 3.1.2 The City of Winnipeg, Research and Standards Engineer will conduct inspections at least once a year during production. Samples of materials may be taken and tested.
- 3.1.3 Testing for qualification or acceptance purposes shall be done in accordance with this Specification and the applicable test procedures and standard practices of CSA A23.2. There shall be no charge for any materials taken for testing purposes.
- 3.1.4 Changes in the source of any concrete constituent materials will not be permitted without approval of the City of Winnipeg, Research and Standards Engineer. For new sources, all materials shall be tested.
- 3.1.5 Once approved, all concrete shall be supplied in accordance with the approved Mix Design Statement. No changes in the concrete mix designs will be permitted without written permission from the City of Winnipeg, Research and Standards Engineer.



3.2 Concrete Properties

3.2.1 The Mix Design Statements for all concrete types shall be submitted to the City of Winnipeg, Research and Standards Engineer for approval. The concrete mix shall be proportioned such as to yield concrete having the required workability, strength and durability in Table CW 3310.4.

Table CW 3310.4: Concrete Properties

	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8
Minimum Cementitious Content (kg/m ³)	360	340	360	360	320	400	340	300
Maximum Supplementary Cementing Materials – Fly Ash** (%) (see Note 2)	20%	20%	15%	20%	15%	0%	20%	20%
Maximum Water/Cementitious Ratio								
- Slip form paving	0.4	0.4	0.4	0.4	-	0.35	-	-
- Hand placement	0.42	0.42	0.42	0.42	0.42	0.36	0.42	0.45
Slump (mm)								
- Slip form paving	50 ± 20	50 ± 20	50 ± 20	50 ± 20	-	50 ± 20	-	-
- Hand placement	70 ± 20	70 ± 20	70 ± 20	70 ± 20	80 ± 20	70 ± 20	100 ± 20	100 ± 20
Nominal Maximum Aggregate Size (mm)	20	20	20	20	20	20	20	20
Air Content (%)	5-8	5-8	5-8	5-8	5-8	5-8	5-8	5-8
Minimum Compressive Strength (MPa)								
- @ 1 days	-	-	20	-	-	20	Note 1*	-
- @ 3 days	15	15	-	20	-	24		-
- @ 7 days	-	-	-	-	-	-		-
- @ 28 days	35	32	Note 1*	Note 1*	30	Note 1*		30
Maximum Rapid Chloride Penetrability Test*** (coulombs) @ 56 days. (see Note 3)	1500	1750	Note 1*	Note 1*	-	Note 1*	-	-

*The concrete shall meet Type 1 or Type 2 based on the application.

**The use of fly ash in concrete mix will be permitted. The Contractor will have the option to replace cement up to but not exceeding the above limits, by weight of total cementitious materials, depending on the concrete type. The use of fly ash will be permitted when the average daily temperature is 10°C and rising for the next five (5) consecutive days of placement as forecast by the nearest official meteorological office. The use of fly ash will not be permitted when the average daily temperature is below 10°C and the average daily temperature for more than five (5) consecutive days has fallen to, or is expected to fall, below 10°C within fourteen (14) days of placement as forecast by the nearest official meteorological office unless authorized in writing by the City of Winnipeg, Research and Standards Engineer.

***The concrete supplier shall develop and submit maturity relationships for Type 1 and Type 6 mixes.

***Rapid chloride penetrability test will be required where there is evidence of concrete damage as a result of inadequate curing and adverse weather conditions, including hot weather, wind, rain, sleet, snow and cold weather. The Contract Administrator shall be allowed access to all sampling locations and reserves the right to take samples for testing at any time.

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3.3 Plant Quality Control

- 3.3.1 The concrete supplier shall provide quality control for the plant to ensure all materials meet the approved mix designs. This information shall be submitted bi-weekly and will be monitored by the City of Winnipeg, Research and Standards Engineer. Failure to submit the quality control results shall be cause for immediate suspension of the concrete supplier.
- 3.3.2 A new mill certificate for cement and fly ash shall be provided monthly during production.
- 3.3.3 Check tests of any concrete constituent materials may be undertaken by a Testing Laboratory designated by the City of Winnipeg, Research and Standards Engineer. The concrete supplier shall be equipped with a suitable means or device for obtaining a representative sample of the cement and fly ash. The device shall enable the sample to be readily taken in proximity to the cement or fly ash weigh hopper and from a container or conveyor holding only cement or fly ash to prevent contamination. Any materials which fails to comply with the requirements of CSA A3001 will be rejected, notwithstanding any certificate of acceptance that may have been previously given. Materials that has been rejected must be removed immediately by the concrete supplier.

4.0 HOT AND COLD WEATHER CONCRETING

- 4.1 The Contractor shall be responsible for taking all necessary measures to protect freshly laid concrete from adverse weather conditions, including hot weather, wind, rain, sleet, snow and cold weather, except as otherwise specified herein.
- 4.1.1 Hot weather concreting
- 4.1.1.1 When the ambient air temperature is at or above 27 °C, or when there is a probability of the temperature rising above 27 °C during the placing period (as forecast by the nearest official meteorological office), the Contractor shall provide-protection for the concrete from the effects of hot and/or drying weather conditions.
- 4.1.1.2 When drying conditions are greater than or equal to 0.75 kg/m²/hr as estimated by use of Figure D1, Appendix D, Guidelines for Curing and Protection of CSA A23.1, the plastic concrete surface shall be protected from drying by application of an evaporation retardant. The evaporation retardant shall be applied according to the manufacturer's recommendations.
- 4.1.2 Cold weather concreting
- 4.1.2.1 When there is a probability of the air temperature falling below 5 °C within 24 h of placing or the average daily temperature for more than three successive days is fallen to, or is expected to fall, below 5°C as forecast by the nearest official meteorological office, cold weather concreting requirements shall apply.
- 4.1.2.2 Concrete shall be placed on unfrozen base material, free of water, snow, and ice. Frozen base material will be identified by measuring the surface temperature using infrared thermometers or similar devices. If the surface temperature is less than or equal to 0°C, the base will be considered frozen. The Contractor shall use suitable heating methods to maintain the base temperature above 0°C. Salt shall not be used to thaw ice, snow, or frost.

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- 4.1.2.3 Type 6 Concrete shall be used for cold weather concreting.
- 4.1.2.4 Where less than 30 cubic meters of concrete will be placed, the Contractor shall protect the concrete using a minimum of one layer of insulated tarp with R-value more than 5 for a minimum of seven (7) days after completion of placing operations unless otherwise specified by the Contract Administrator.
- 4.1.2.5 Where 30 cubic meters of concrete or more will be placed, a minimum of three maturity meters shall be used. One maturity meter shall be placed in the final 4 m of paving, and the two other maturity meters shall be placed at locations designated by the Contract Administrator. Each maturity meter shall be capable of recording the time and temperature at three depths, ½ inch below the surface, mid slab and ½ inch above the bottom of the pavement. Locations where the maturity meters are placed shall be protected in the same manner as the rest of the concrete.
- 4.1.2.6 The Contract Administrator shall provide all necessary wires and connectors for maturity meters. The Contractor shall be responsible for the placement, protection, and maintenance of all wires and connectors. No additional measurement or payment will be made for the placement, protection, and maintenance of all wires and connectors.
- 4.1.2.7 The Contractor shall maintain the internal concrete temperature above 10 °C during the protection period, a minimum of seven (7) days after completion of placing operations, and until the concrete has developed a minimum compressive strength of 24 MPa. Temperature and concrete compressive strength shall be determined by maturity meters and field cured cylinders. A minimum of four (4) readings for temperature shall be collected in the first three (3) days and then two times daily thereafter.
- 4.1.2.8 The Contractor shall provide suitable protection methods to the Contract Administrator for approval such as insulation (blankets and boards), heating systems such as electric blankets and hydronic heating systems, unheated or heated enclosures, or a combination of the methods to maintain the internal concrete temperature above 10 °C. In no case shall the protection method be less than one layer of insulated tarp with R-value more than 5.
- 4.1.2.9 If the internal concrete temperature at any location in the concrete falls below 10 °C but not less than 5°C during the curing period, supplemental heat shall be introduced immediately.
- 4.1.2.10 If the internal concrete temperature at any location in the concrete falls below 5 °C during the curing period, cores shall be collected and tested at 28 days. The cores will be tested in accordance with ASTM C856, Standard Practice for Petrographic Examination of Hardened Concrete and CSA A23.2-14C, Obtaining and testing drilled cores for compressive strength testing. Concrete damaged by frost, as determined by the compressive strength test or Petrographic analysis, shall be removed and replaced at the Contractor's expense. All costs associated with coring, transmittal of cores, and petrographic examination and compressive testing shall be borne by the Contractor regardless of the outcome of the examination.
- 4.1.2.11 If the internal concrete temperature at any location in the concrete falls below 0 °C during the curing period, concrete shall be removed and replaced by the Contractor at his own expense.
- 4.1.2.12 The protection method shall not be completely removed until the concrete has cooled to the

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temperature differential given in CSA A23.2, Table 20. The Contractor shall provide suitable methods for gradual cooling to the Contract Administrator for approval such as loosening the forms while maintaining cover with plastic sheeting or insulation, gradual decrease in heating inside an enclosure, or turning off the heat and allowing the enclosure to slowly equilibrate to ambient temperature. If the concrete cracks due to a sudden temperature change, concrete shall be removed and replaced by the Contractor at his own expense.

4.1.2.13 Concrete damaged as a result of inadequate protection against weather conditions shall be removed and replaced by the Contractor at his own expense.

4.1.2.14 No additional measurement or payment will be made for cold weather concreting

5.0 BASIS OF PAYMENT

5.1 BASIS OF PAYMENT FOR CW 3310-R17

5.1.1 Concrete Pavements, Median Slabs, Bull-noses and Safety Median

5.1.1.1 Construction of concrete pavements, median slabs, bull-noses and safety median 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 performing all operations herein described and all other items incidental to the work included in this Specification. The unit price shall be reduced for deficiencies in pavement thickness as per Clause 5.3 of this Specification.

Items of Work:

- i. "Construction of 250 mm Type (*) Concrete Pavement (**)(****)"
- ii. "Construction of 230 mm Type (*) Concrete Pavement (**)(****)"
- iii. "Construction of 200 mm Type (*) Concrete Pavement (**)(****)"
- iv. "Construction of 150 mm Type (*) Concrete Pavement (**)(****)"
- v. "Construction of Type (*) Concrete Median Slabs (****)"
- vi. "Construction of Monolithic Type (*) Concrete Median Slabs (****)"
- vii. "Construction of Type (*) Concrete Safety Medians (****)"
- viii. "Construction of Monolithic Type (*) Concrete Curb and Sidewalk (****)"
- ix. "Construction of Monolithic Type (*) Concrete Bull-noses"

* Specify the Concrete Type

** Specify either Reinforced or Plain-Dowelled

*** Specify Slip Form Paving if required

**** Specify referenced Standard Detail

5.1.2 Concrete Pavements for Early Opening

5.1.2.1 Construction of concrete pavements for early opening 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 performing all operations herein described and all other items incidental to the work included in this Specification. The unit price shall be reduced for deficiencies in pavement thickness as per Clause 5.3 of this Specification.

Items of Work:

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- i. "Construction of 250 mm Type (*) Concrete Pavement for Early Opening (**)(***)"
- ii. "Construction of 230 mm Type (*) Concrete Pavement for Early Opening (**)(***)"
- iii. "Construction of 200 mm Type (*) Concrete Pavement for Early Opening (**)(***)"
- iv. "Construction of 150 mm Type (*) Concrete Pavement for Early Opening (**)(***)"

* Specify either Type 3 or Type 4

** Specify either Reinforced or Plain-Dowelled

*** Specify Slip Form Paving if required

5.1.3 Pavement Thickness Tolerances

5.1.3.1 At the option of the Contract Administrator, pavement thickness may be determined by coring pavement sections representing each day's pour and determining the pavement thickness by averaging the depth of the cores.

5.1.3.2 Pavement found deficient in thickness by more than five (5%) percent shall be paid for at the reduced price. The reduced price = P_R x contract price;

P_R is in % and T_D is in %

Where: $P_R = 100 - [(T_D - 5) / 5] \times 25$

Where: T_D = thickness deficiency greater than or equal to 5%, up to 10%.

5.1.3.3 When the pavement thickness is deficient by more than ten (10%) percent and the judgement of the Contract Administrator is that the area of such deficiency should not be removed and replaced, payment will be fifty (50%) percent of Contract Unit Price.

5.1.3.4 The cost of initial cores will not be paid for by the Contractor. Additional cores requested by the Contractor to determine the extent of areas deficient in thickness, shall be paid for by the Contractor.

5.1.4 Concrete Curbs, Curb and Gutter, and Splash Strips

5.1.4.1 Construction of concrete curbs, curb and gutter, and splash strips will be paid for at the Contract Unit Price per 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 performing all operations herein described and all other items incidental to the work included in this Specification.

Items of Work:

- i. "Construction of Type (*) Concrete Barrier Curb (**)"
- ii. "Construction of Type (*) Concrete Modified Barrier Curb (**)"
- iii. "Construction of Type (*) Concrete Curb and Gutter (**)"
- iv. "Construction of Type (*) Concrete Mountable Curb (**)"
- v. "Construction of Type (*) Concrete Lip Curb (**)"
- vi. "Construction of Type (*) Concrete Curb Ramp (**)"
- vii. "Construction of Type (*) Concrete Safety Curb (**)"
- viii. "Construction of Type (*) Concrete Splash Strips (***)"

* Specify the Concrete Type

** Specify height, type and Referenced Standard Detail

***Specify height, monolithic or separate, type, width, and referenced Standard Detail

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5.1.4.2 No measurement or payment shall be made for supply or placement of bonding grout for concrete curbs.

5.1.4.3 Drilled curb ramp tie bars are to be paid in accordance with CW 3230.

5.1.5 Dowel Assemblies

5.1.5.1 Supply and installation of dowel assemblies will be paid for at the Contract unit Price per metre for "Supply and Installation of Dowel Assemblies", measured as specified herein, 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 included in this Specification.

5.1.6 Drilled Tie Bars and Dowels

5.1.6.1 Supply and installation shall be in accordance with clause 9.2.3 of CW 3310-R17.

5.2 BASIS OF PAYMENT FOR CW 3230-R8

5.2.1 Full Slab Replacement

5.2.1.1 Replacement of complete slabs 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.

Items of Work: Slab Replacement

- i. 250mm Type (*) Concrete Pavement (**)
- ii. 230mm Type (*) Concrete Pavement (**)
- iii. 200mm Type (*) Concrete Pavement (**)
- iv. 150mm Type (*) Concrete Pavement (**)

* Specify the Concrete Type

** Specify either Reinforced or Plain-Dowelled

5.2.2 Full Depth Partial Slab Patches

5.2.2.1 Full-depth partial slab patches will be paid for at the Contract Unit Price per square metre for "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.

Items of Work: Partial Slab Patches

- i. 250mm Type (*) Concrete Pavement (**)
- ii. 230mm Type (*) Concrete Pavement (**)
- iii. 200mm Type (*) Concrete Pavement (**)
- iv. 150mm Type (*) Concrete Pavement (**)

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- * Specify the Concrete Type
- ** Specify class of patch

5.2.3 Dowels in Drilled Holes

5.2.3.1 Installation of dowels into hardened concrete will be paid for at the Contract Unit Price for "Drilled Dowels", 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.

*Specify diameter(s) of dowels

5.2.4 Tie Bars in Drilled Holes

5.2.4.1 Installation of tie bars into hardened concrete will be paid for at the Contract Unit Price for "Drilled Tie Bars"* 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.

*Specify size(s) of tie bars.

5.3 MEASUREMENT AND PAYMENT FOR CW 3235-R9

5.3.1 Removal of Miscellaneous Concrete Slabs

5.3.1.1 Removal of miscellaneous concrete slabs will be measured on an area basis and paid for at the Contract Unit Price per square metre for the "Items of Work" listed here below. The area to be paid for will be the total number of square metres of existing miscellaneous concrete slabs removed in accordance with this specification, accepted and measured by the Contract Administrator.

Items of Work:

Miscellaneous Concrete Slab Removal

- i.) Median Slab
- ii.) Monolithic Median Slab
- iii.) Safety Median
- iv.) 100mm Sidewalk
- v.) 150mm Reinforced Sidewalk
- vi.) Bullnose
- vii.) Monolithic Curb and Sidewalk

5.3.2 Installation of Miscellaneous Concrete Slabs

5.3.2.1 Installation of miscellaneous concrete slabs will be measured on an area basis and paid for at the Contract Unit Price per square metre for the "Items of Work" listed here below. The area to be paid for will be the total number of square metres of miscellaneous concrete slabs installed in accordance with this specification, accepted and measured by the Contract Administrator.

Items of Work:



Miscellaneous Concrete Slab Installation

- i.) Type (*) Concrete Median Slab**
- ii.) Type (*) Concrete Monolithic Median Slab**
- iii.) Type (*) Concrete Safety Median**
- iv.) Type (*) Concrete 100mm Sidewalk**
- v.) Type (*) Concrete 150mm Reinforced Sidewalk***
- vi.) Type (*) Concrete Bullnose**
- vii.) Type (*) Concrete Monolithic Curb and Sidewalk**

* Specify the Concrete Type

** referenced Standard Detail to be specified

*** renewal area to be specified

5.3.2.2 All costs for installing sign support clamps and constructing isolations for boulevard and median appurtenances will be included in the payment for the "Items of Work" listed for miscellaneous concrete slab installation.

5.3.2.3 All costs for excavation, sub-grade compaction, placement of sub-base, placement of leveling course and backfill materials, slabs installation and boulevard grading to the limits as identified in Section 3.2 of this specification will be included in the payment for the "Items of Work" listed for Installation of Miscellaneous Concrete Slabs.

5.3.2.4 Additional base course over and above leveling course material will be paid in accordance with CW 3110.

5.3.3 Miscellaneous Concrete Slab Renewal

5.3.3.1 Miscellaneous concrete slab renewal will be measured on an area basis and paid for at the Contract Unit Price per square metre for the "Items of Work" listed here below. The area to be paid for will be the total number of square metres of existing miscellaneous concrete slabs removed and installed in accordance with this specification, accepted and measured by the Contract Administrator.

Items of Work:

Miscellaneous Concrete Slab Renewal

- i.) Type (*) Concrete Median Slab**
- ii.) Type (*) Concrete Monolithic Median Slab**
- iii.) Type (*) Concrete Safety Median**
- iv.) Type (*) Concrete 100mm Sidewalk* (***)
- v.) Type (*) Concrete 150mm Reinforced Sidewalk (***)
- vi.) Type (*) Concrete Bullnose**
- vii.) Type (*) Concrete Monolithic Curb and Sidewalk**

* Specify the Concrete Type

** referenced Standard Details to be specified.

*** renewal area to be specified.

- a.) Less than 5 sq. m
- b.) 5 sq. m to 20 sq. m
- c.) Greater than 20 sq. m

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5.3.3.2 All costs for the slab removal, excavation, sub-grade compaction, placement of leveling course and backfill materials, slabs installation and boulevard grading to the limits as identified in Section 3.3 of this specification will be included in the payment for the “Items of Work” listed for Miscellaneous Concrete Slab Renewal.

5.3.3.3 Additional base course over and above leveling course material will be paid in accordance with CW 3110.

5.3.3.4 All costs for installing sign support clamps and constructing isolations for boulevard and median appurtenances will be included in the payment for the “Items of Work” listed for Miscellaneous Concrete Slab Renewal.

5.3.4 Adjustment of Precast Concrete Sidewalk Blocks

5.3.4.1 Adjustment of precast concrete sidewalk blocks will be measured on an area basis and paid at the Contract Unit Price per square metre for “Adjustment of Precast Sidewalk Blocks”. The area to be paid for will be the total number of square metres of precast concrete sidewalk blocks adjusted to grade in accordance with this specification, accepted and measured by the Contract Administrator.

5.3.4.2 No measurement or payment will be made for any precast sidewalk blocks damaged or lost during replacement.

5.3.5 Supply of Precast Concrete Sidewalk Blocks

5.3.5.1 Supply of precast concrete sidewalk blocks will be measured on an area basis and paid at the Contract Unit Price per square metre for “Supply of Precast Sidewalk Blocks”. The area to be paid for will be the total number of square metres of precast concrete sidewalk blocks supplied in accordance with this specification, accepted and measured by the Contract Administrator.

5.3.6 Removal of Precast Concrete Sidewalk Blocks

5.3.6.1 Removal of precast concrete sidewalk blocks will be measured on an area basis and paid at the Contract Unit Price per square metre for “Removal of Precast Sidewalk Blocks”. The area to be paid for will be the total number of square metres of precast concrete sidewalk blocks removed in accordance with this specification, accepted and measured by the Contract Administrator.

5.4 **MEASUREMENT AND PAYMENT FOR CW 3240-R10**

5.4.1 Concrete Curb Removal

5.4.1.1 Concrete curb removal will be measured on a length basis and paid for at the Contract Unit Price per metre for the “Items of Work” listed here below. The length to be paid for will be the total number of metres of concrete curb removed in accordance with this specification, accepted and measured by the Contract Administrator.

Items of Work:

Concrete Curb Removal

i.) Barrier*

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- ii.) Modified Barrier*
- iii.) Curb and Gutter
- iv.) Mountable Curb
- v.) Lip Curb
- vi.) Modified Lip Curb
- vii.) Curb Ramp
- viii.) Safety Curb
- ix.) Splash Strips**

* Integral or Separate to be specified.

** Monolithic or Separate.

5.4.1.2 Removal of existing asphalt material immediately in front of the curb that is required for installation will be included in the payment for the "Items of Work" listed for Concrete Curb Removal when the asphalt overlay is not identified to be removed.

5.4.2 Concrete Curb Installation

5.4.2.1 Concrete curb installation will be measured on a length basis and paid for at the Contract Unit Price per metre for the "Items of Work" listed here below. The length to be paid for will be the total number of metres of concrete curb or splash strip installed in accordance with this specification, accepted and measured by the Contract Administrator.

Items of Work:

Concrete Curb Installation

- i.) Type (*) Concrete Barrier**
- ii.) Type (*) Concrete Modified Barrier**
- iii.) Type (*) Concrete Curb and Gutter**
- iv.) Type (*) Concrete Mountable Curb**
- v.) Type (*) Concrete Lip Curb**
- vi.) Type (*) Concrete Modified Lip Curb**
- vii.) Type (*) Concrete Curb Ramp**
- viii.) Type (*) Concrete Safety Curb**
- ix.) Type (*) Concrete Splash Strips***

* Specify the Concrete Type

** reveal height, type and reference to Standard Detail to be specified.

*** reveal height, monolithic or separate, type, width and reference to Standard Detail to be specified.

5.4.2.2 The placement and compaction of asphalt material immediately in front of the curb will be included in the payment for the "Items of Work" listed for Concrete Curb Installation when the asphalt overlay is not identified to be removed.

5.4.2.3 No payment will be made for leveling course.

5.4.2.4 Base course will be paid in accordance with CW 3110.

5.4.2.5 Supply and placement of bonding grout for concrete curbs will not be measured for payment.

5.4.3 Concrete Curb Renewal

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5.4.3.1 Concrete curb renewal will be measured on a length basis and paid for at the Contract Unit Price per metre for the "Items of Work" listed here below. The length to be paid for will be the total number of metres of concrete curb or splash strip removed and installed in accordance with this specification, accepted and measured by the Contract Administrator.

Items of Work:

Concrete Curb Renewal

- i.) Type (*) Concrete Barrier** (***)
- ii.) Type (*) Concrete Modified Barrier**
- iii.) Type (*) Concrete Curb and Gutter** (***)
- iv.) Type (*) Concrete Mountable Curb**
- v.) Type (*) Concrete Lip Curb**
- vi.) Type (*) Concrete Modified Lip Curb**
- vii.) Type (*) Concrete Curb Ramp**
- viii.) Type (*) Concrete Safety Curb**
- ix.) Type (*) Concrete Splash Strips (***) (****)

* Specify the Concrete Type

* reveal height, type and referenced Standard Detail to be specified.

** renewed length to be specified.

- a.) Less than 3 m
- b.) 3 m to 30 m
- c.) Greater than 30 m

*** reveal height, monolithic or separate, type, width and reference to Standard Detail to be specified.

5.4.3.2 All costs for removal, excavation, sub-grade compaction, leveling course and backfill materials, curb installation and boulevard grading to the limits as identified in Section 3.4 of this specification will be included in the payment for the "Items of Work" listed for Concrete Curb Renewal.

5.4.3.3 Base course will be paid in accordance with CW 3110.

5.4.3.4 For installation lengths greater than 30 metres, the length will include breaks for approaches, isolations or fixed obstacles such as light standards or poles.

5.4.3.5 Curb ramp tie bars are to be paid in accordance with CW 3230.

5.4.3.6 Supply and placement of bonding grout for concrete curbs will not be measured for payment.

5.5 BASIS OF PAYMENT FOR CW 3325-R5

5.5.1 Concrete Sidewalks

5.5.1.1 Construction of concrete sidewalks will be paid for at the Contract Unit Price per square metre for "100 mm Type (*) Concrete Sidewalk", 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.

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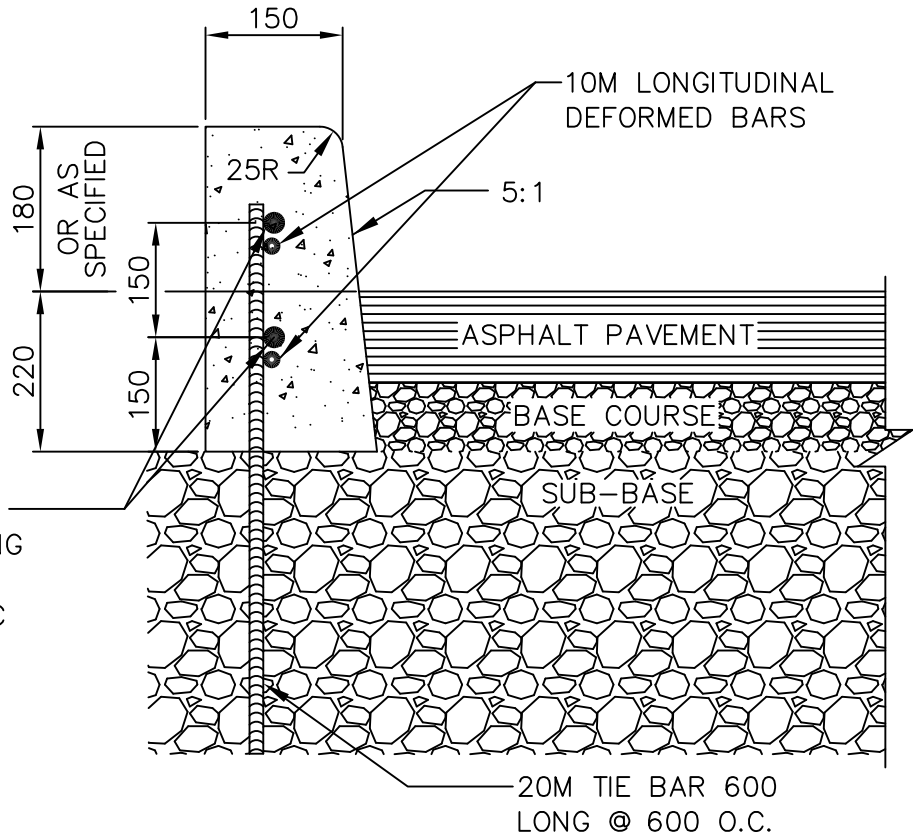
5.5.2 Leveling Course

5.5.2.1 No payment shall be made for leveling course.

5.5.3 Excavation, Sub-grade Compaction, and Base Course

5.5.3.1 Excavation, sub-grade compaction, and additional base course shall be paid for in accordance with Specification CW 3110.

**APPENDIX 'C' - BARRIER CURB FOR ASPHALT PAVEMENT STANDARD DETAIL
SD-200A**



FOR CONSTRUCTION JOINTS:
 2-19.1mm DOWELS 450 LONG
 PLACED EVERY 6m;
 LUBRICATED WITH ASPHALTIC
 CUT-BACK.

- NOTE: 1. REDUCE CURB HEIGHT TO 40.
 APPLICABLE FOR PRIVATE
 APPROACHES ON LOCAL RESIDENTIAL
 STREETS. REF SD-202B
2. TRANSVERSE SAW CUT EVERY 3m OR AT PAVEMENT JOINTS.
3. TRANSVERSE SAW CUTS ARE TO BE A MAXIMUM DEPTH OF 25mm.



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Reference Spec. No.
 CW 3240

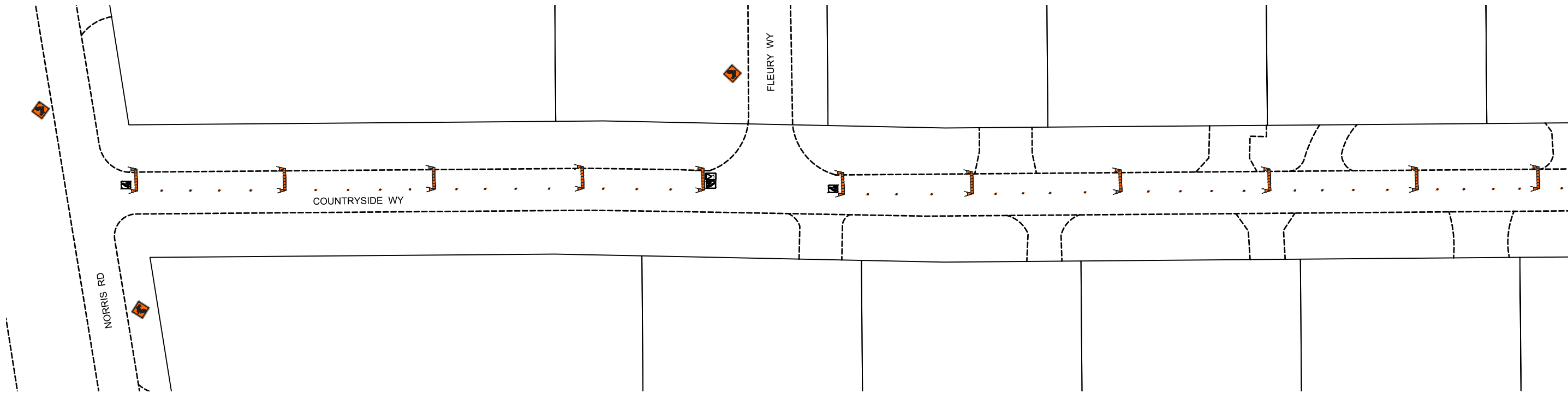
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BARRIER CURB FOR ASPHALT
 PAVEMENT

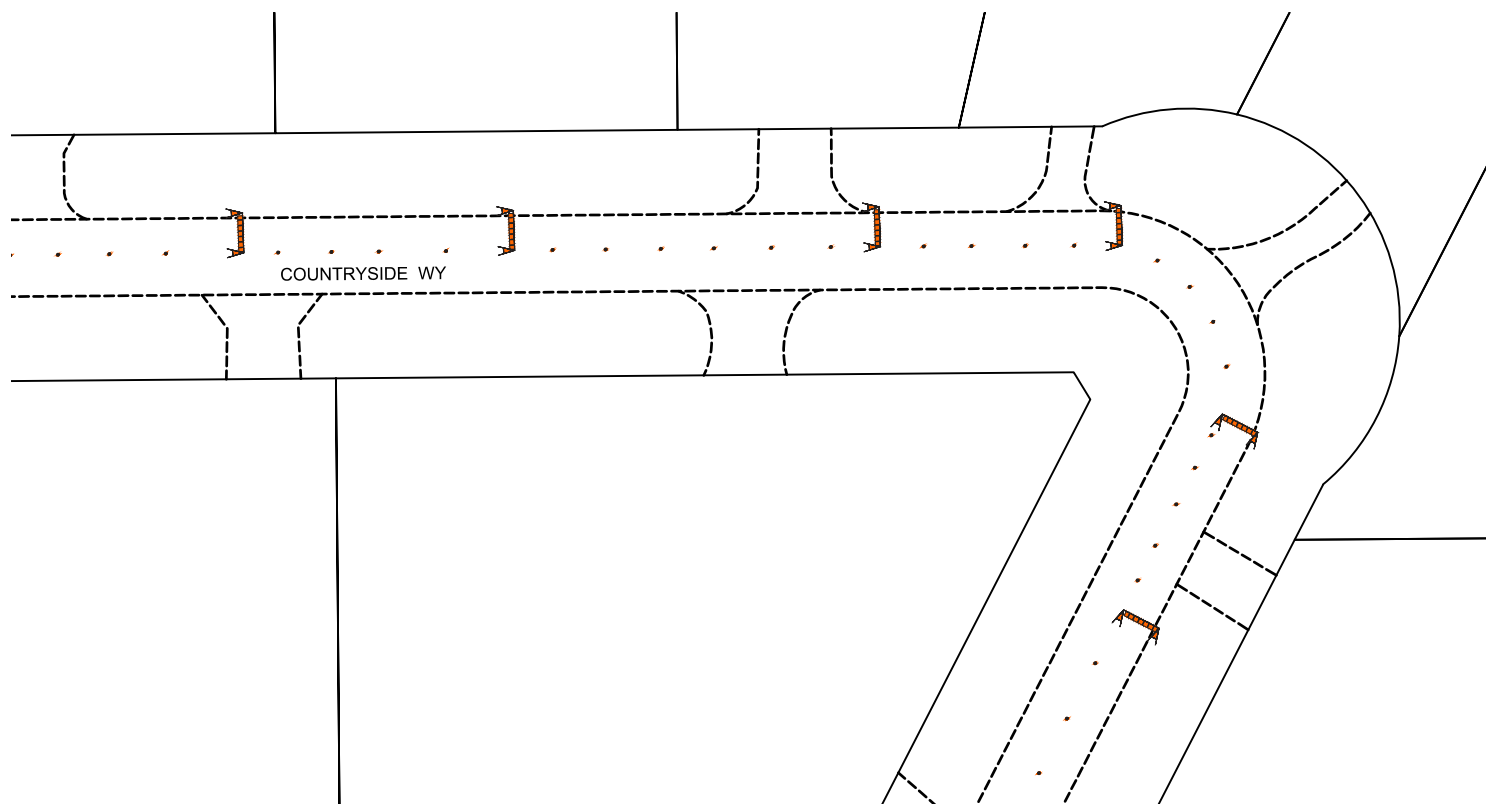
Designed By:	Drawn By: A.P.	Scale : N.T.S.
Checked By:	Date: 20-02-26	Drawing No.
Approved: ASSET MANAGEMENT BRANCH		SD-200A

APPENDIX 'D' – TRAFFIC SIGNAGE DRAWINGS

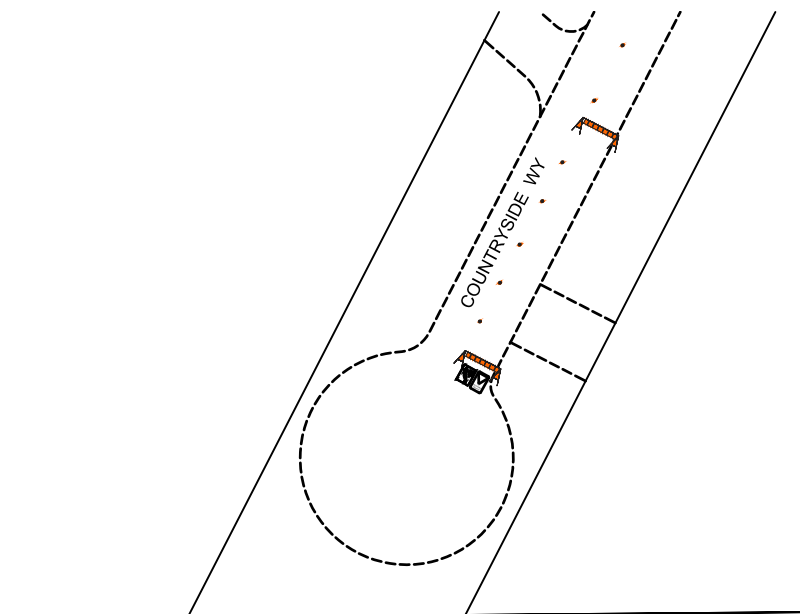
TEMPORARY TRAFFIC SIGNAGE DETAIL 'A'



TEMPORARY TRAFFIC SIGNAGE DETAIL 'B'



TEMPORARY TRAFFIC SIGNAGE DETAIL 'C'



TRAFFIC SIGNAGE

- TC-2 ROADWORK
- RB-11 (L/R) TURN PROHIBITED
- C 46 SIDEWALK CLOSED
- RB 25(L) KEEP LEFT/RIGHT
- ROAD CLOSED BARRICADE
- BARRICADE
- POLY POST
- TC 17 YIELD TO ONCOMING TRAFFIC



NOTES:

1. ALL TRAFFIC SIGNAGE AND TEMPORARY TRAFFIC CONTROL TO CONFORM WITH THE LATEST REVISION OF THE CITY OF WINNIPEG MANUAL OF TEMPORARY TRAFFIC CONTROL ON CITY STREETS.
2. CONTRACTOR SHALL MAINTAIN SAFE PEDESTRIAN ACCESS AND CROSSING. WHERE SIDEWALKS ARE LOCATED ON BOTH SIDES OF THE STREET, CONTRACTOR MUST MAINTAIN PEDESTRIAN ACCESS ON ONE SIDE AT ALL TIME.
3. CONSTRUCTION IS TO BE COMPLETED LANE AT A TIME WITH TRAFFIC TO BE MAINTAINED IN BOTH DIRECTIONS. WHEN CONSTRUCTION IS COMPLETE IN FIRST LANE, TRAFFIC WILL BE MOVED TO THE COMPLETED LANE AND TRAFFIC CONTROL WILL BE MIRRORED.
4. PARKING TO BE REMOVED AT THE TIME OF CONSTRUCTION.
5. CONTRACTOR SHALL MAINTAIN AT LEAST ONE EAST/WEST BOUND AND ONE NORTH/SOUTH BOUND CROSSING AT EACH INTERSECTION AT ALL TIMES.

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PUBLIC WORKS DEPARTMENT

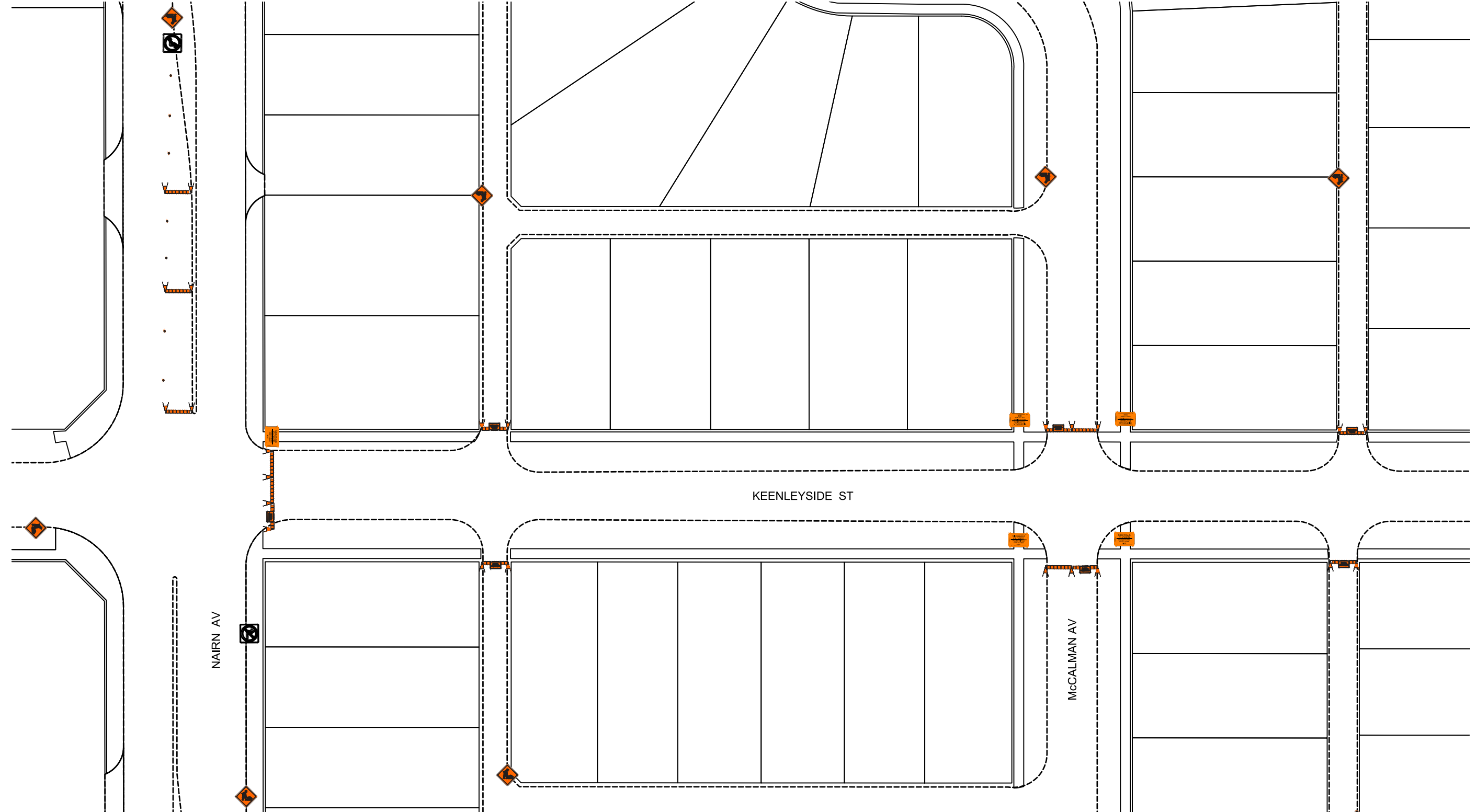
26-2022 LOCAL STREET RENEWALS
COUNTRYSIDE WAY
TEMPORARY TRAFFIC SIGNAGE

SHEET 1 OF 8

1

ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE

TEMPORARY TRAFFIC SIGNAGE DETAIL 'A'



KEENLEYSIDE ST

NAIRN AV

McCALMAN AV

TRAFFIC SIGNAGE

- TC-2 ROADWORK
- RB-11 (L/R) TURN PROHIBITED
- C 46 SIDEWALK CLOSED
- RB 25(L) KEEP LEFT/RIGHT



- ROAD CLOSED BARRICADE
- BARRICADE
- POLY POST
- TC 17 YIELD TO ONCOMING TRAFFIC



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3. ROAD IS TO BE CLOSED IN BOTH DIRECTIONS FOR THE DURATION OF CONSTRUCTION.
4. PARKING TO BE REMOVED AT THE TIME OF CONSTRUCTION.

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PUBLIC WORKS DEPARTMENT

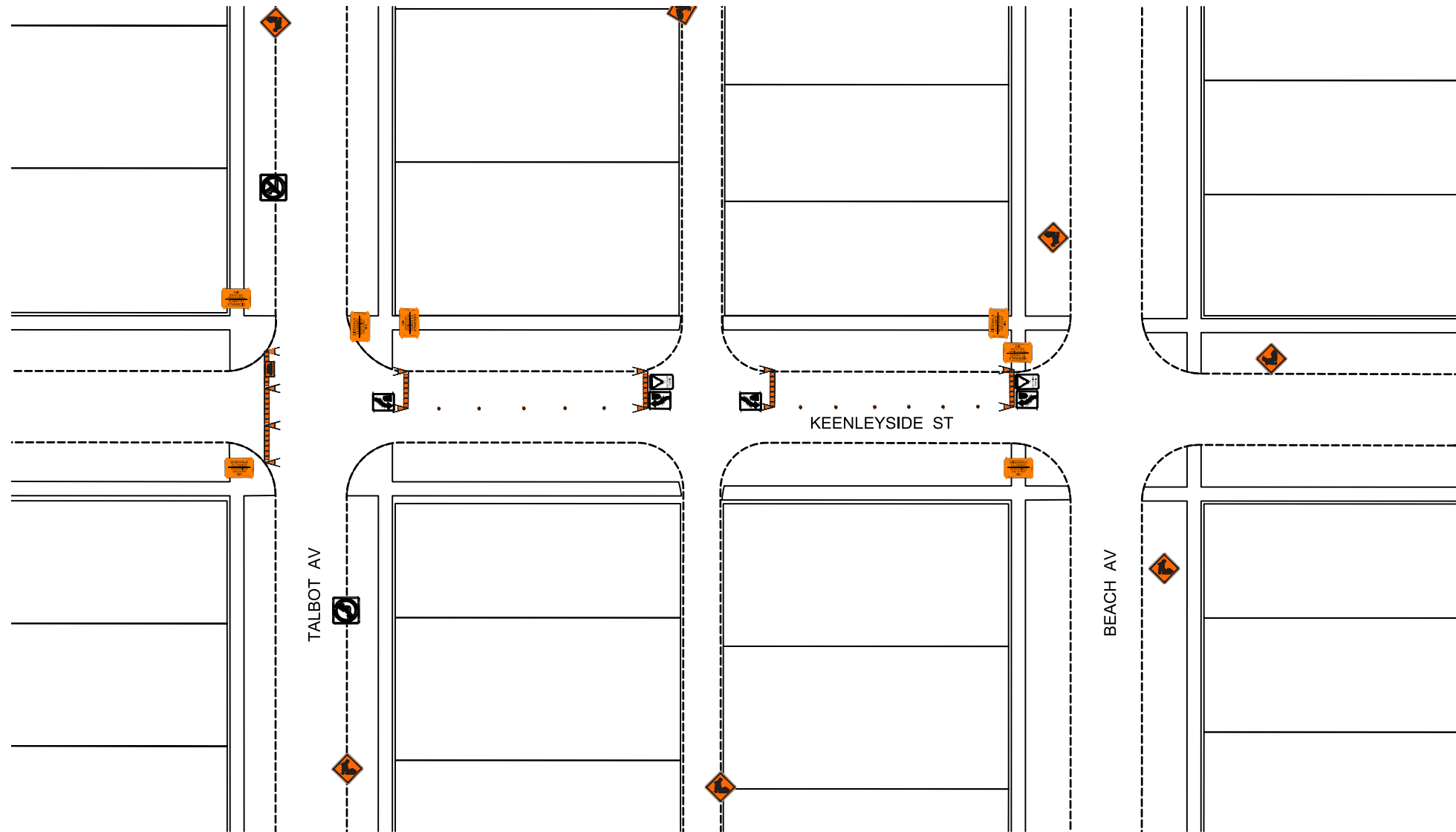
26-2022 LOCAL STREET RENEWALS
KEENLEYSIDE STREET
TEMPORARY TRAFFIC SIGNAGE

SHEET 2 OF 8

ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE



TEMPORARY TRAFFIC SIGNAGE DETAIL 'B'



TRAFFIC SIGNAGE

- TC-2 ROADWORK
- RB-11 (L/R) TURN PROHIBITED
- C 46 SIDEWALK CLOSED
- RB 25(L) KEEP LEFT/RIGHT
- ROAD CLOSED BARRICADE
- BARRICADE
- POLY POST
- TC 17 YIELD TO ONCOMING TRAFFIC



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PUBLIC WORKS DEPARTMENT

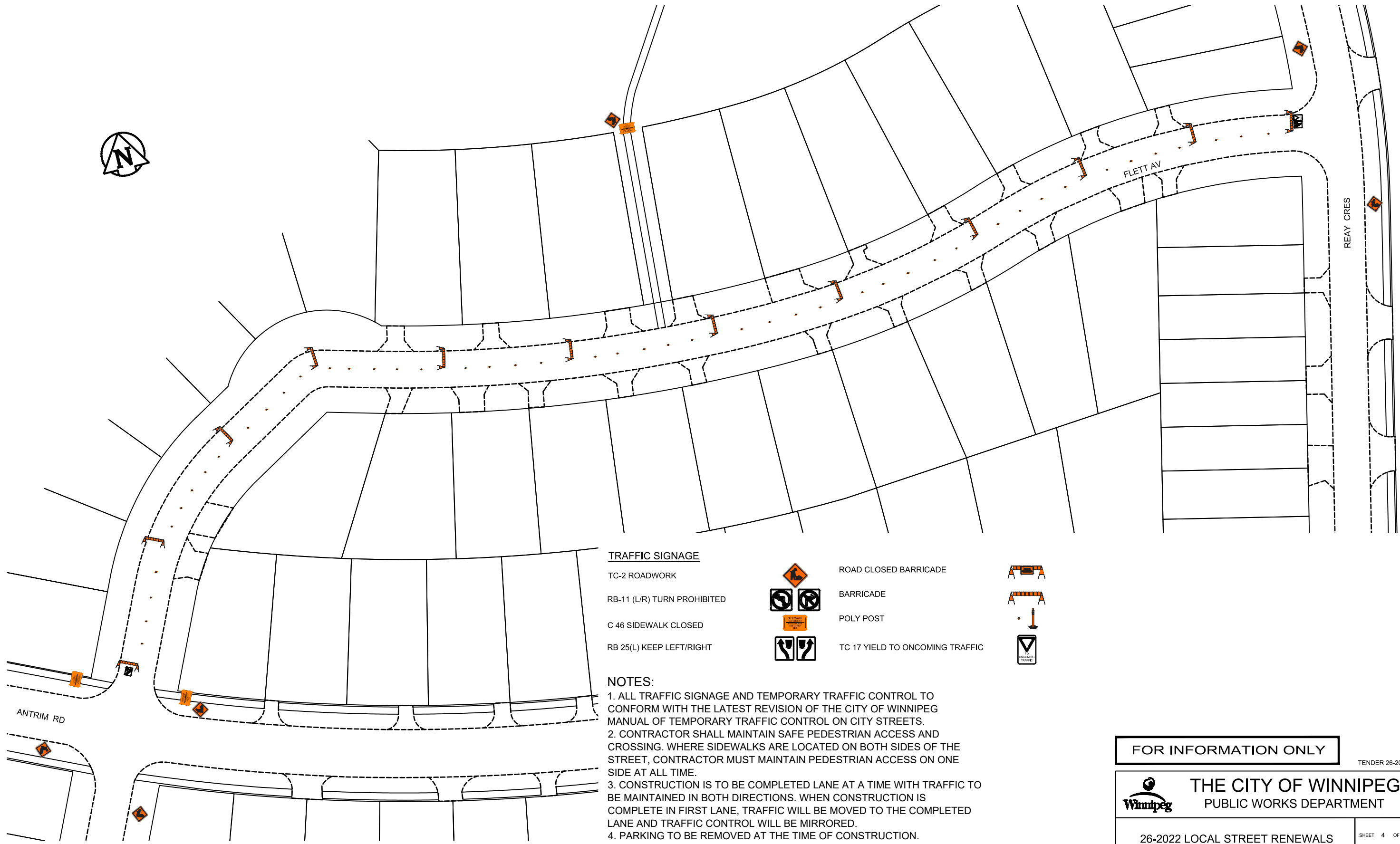
26-2022 LOCAL STREET RENEWALS
KEENLEYSIDE STREET
TEMPORARY TRAFFIC SIGNAGE

SHEET 3 OF 8

3

ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE

TEMPORARY TRAFFIC SIGNAGE DETAIL 'A'



TRAFFIC SIGNAGE

TC-2 ROADWORK

RB-11 (L/R) TURN PROHIBITED

C 46 SIDEWALK CLOSED

RB 25(L) KEEP LEFT/RIGHT



ROAD CLOSED BARRICADE

BARRICADE

POLY POST

TC 17 YIELD TO ONCOMING TRAFFIC



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PUBLIC WORKS DEPARTMENT

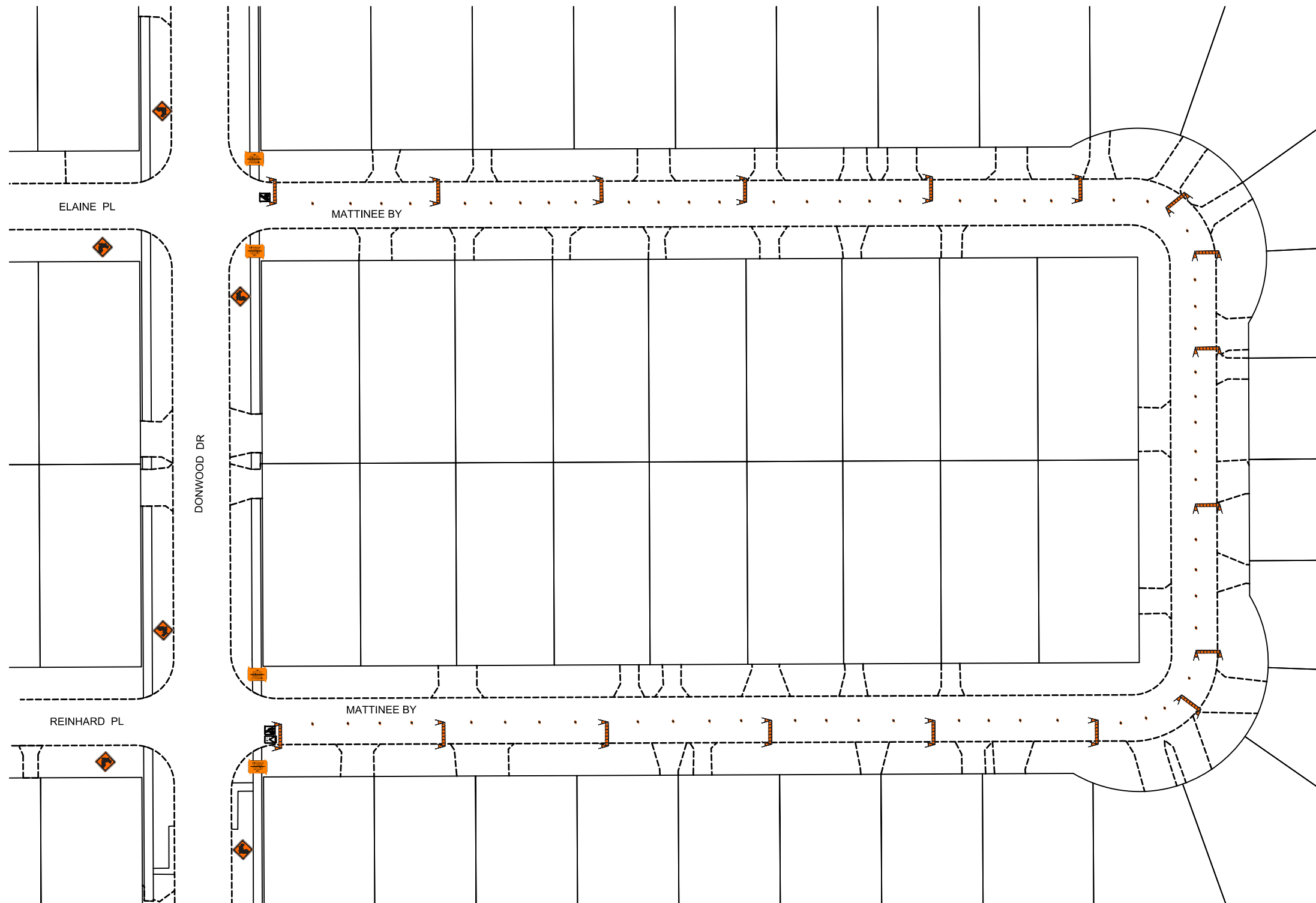
26-2022 LOCAL STREET RENEWALS
FLETT AVE
TEMPORARY TRAFFIC SIGNAGE

SHEET 4 OF 8

4

ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE

TEMPORARY TRAFFIC SIGNAGE DETAIL 'A'



TRAFFIC SIGNAGE

- TC-2 ROADWORK
- RB-11 (L/R) TURN PROHIBITED
- C 46 SIDEWALK CLOSED
- RB 25(L) KEEP LEFT/RIGHT
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26-2022 LOCAL STREET RENEWALS

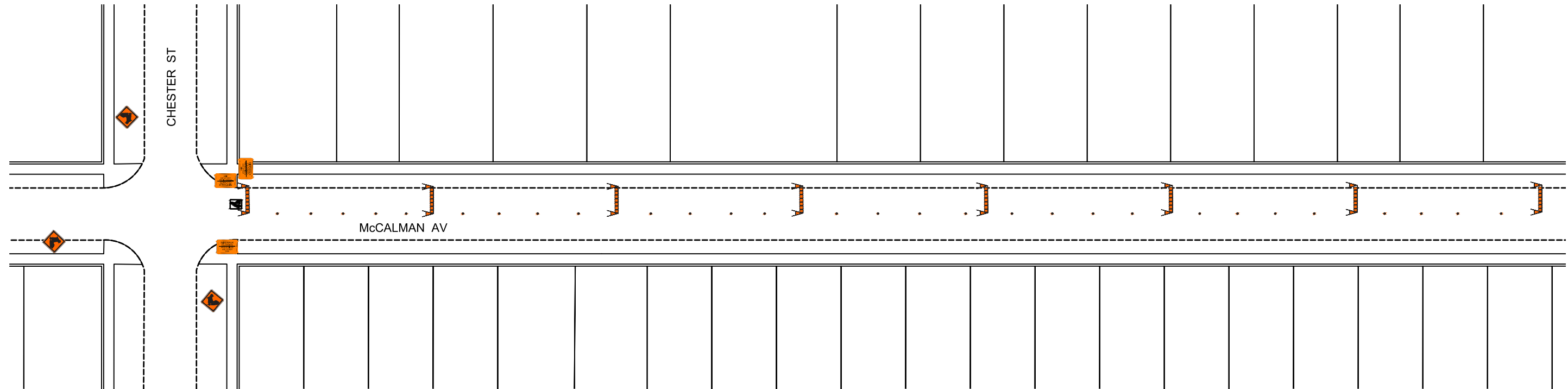
SHEET 5 OF 8

MATTINEE BAY
TEMPORARY TRAFFIC SIGNAGE

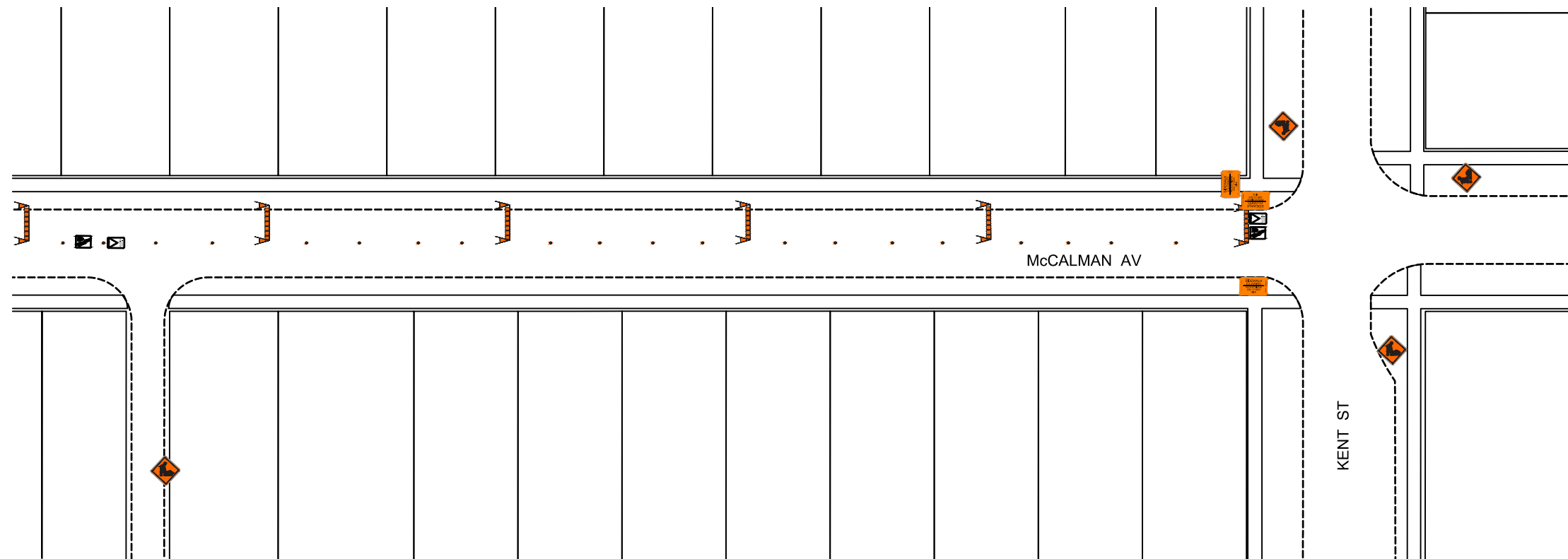
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ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE

TEMPORARY TRAFFIC SIGNAGE DETAIL 'A'



TEMPORARY TRAFFIC SIGNAGE DETAIL 'B'



TRAFFIC SIGNAGE

- TC-2 ROADWORK
- RB-11 (L/R) TURN PROHIBITED
- C 46 SIDEWALK CLOSED
- RB 25(L) KEEP LEFT/RIGHT
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- BARRICADE
- POLY POST
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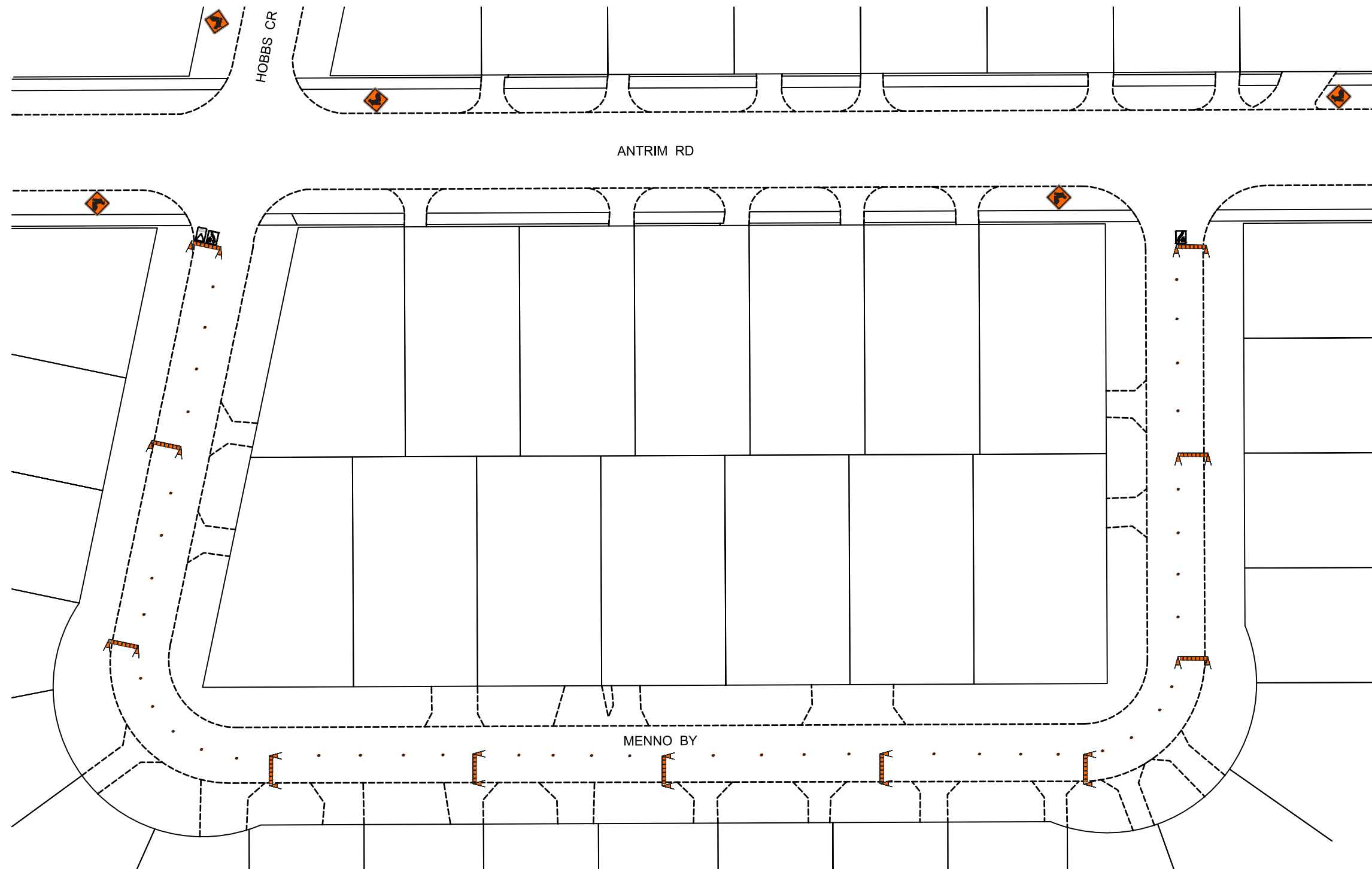
SHEET 6 OF 8

McCALMAN AVENUE
TEMPORARY TRAFFIC SIGNAGE

6

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TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE

TEMPORARY TRAFFIC SIGNAGE DETAIL 'A'



TRAFFIC SIGNAGE

- TC-2 ROADWORK
- RB-11 (L/R) TURN PROHIBITED
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PUBLIC WORKS DEPARTMENT

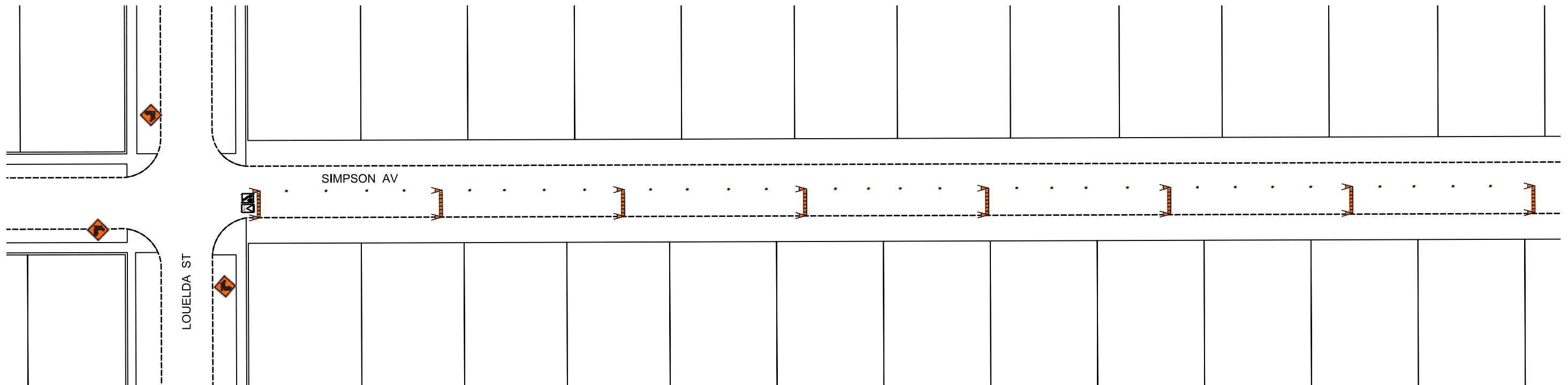
26-2022 LOCAL STREET RENEWALS
MENNO BAY
TEMPORARY TRAFFIC SIGNAGE

SHEET 7 OF 8

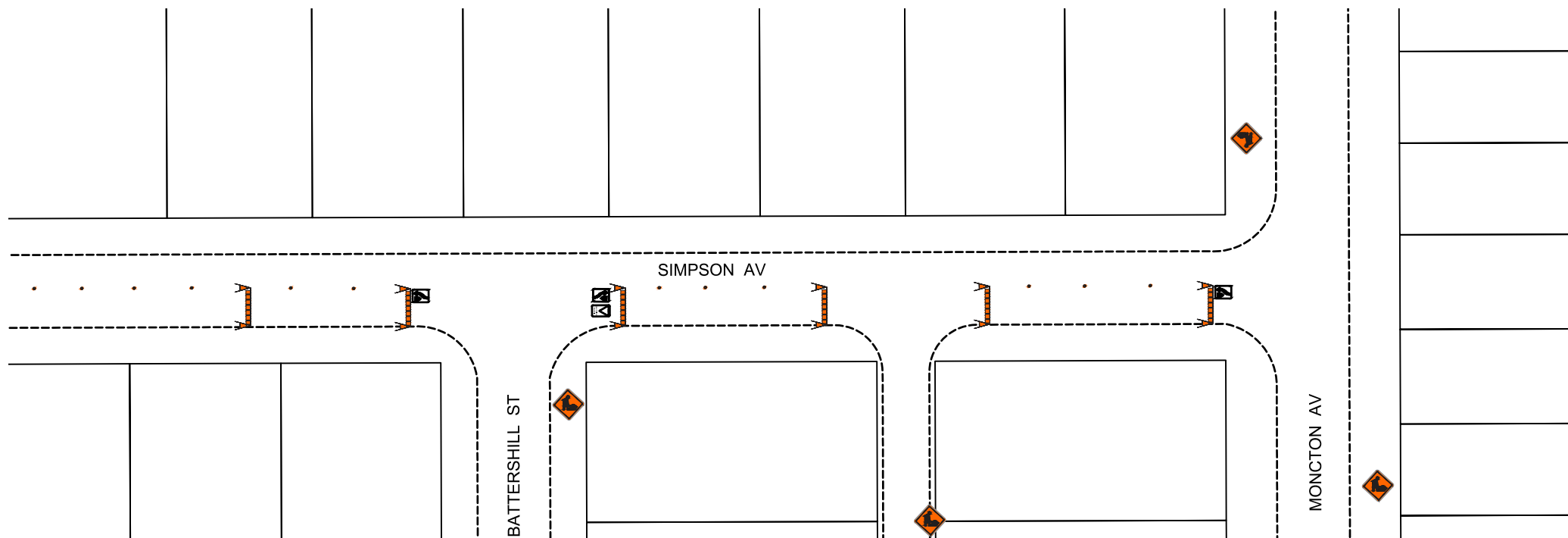
ENGINEERING DIVISION
TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE

7









TEMPORARY TRAFFIC SIGNAGE DETAIL 'A'



TEMPORARY TRAFFIC SIGNAGE DETAIL 'B'



TRAFFIC SIGNAGE

- TC-2 ROADWORK 
- RB-11 (L/R) TURN PROHIBITED 
- C 46 SIDEWALK CLOSED 
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- BARRICADE 
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TECHNOLOGY SERVICES BRANCH
106 - 1155 PACIFIC AVE

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26-2022 LOCAL STREET RENEWALS
SIMPSON AVENUE
TEMPORARY TRAFFIC SIGNAGE

SHEET 8 OF 8

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