THE CITY OF WINNIPEG

TENDER

TENDER NO. 201-2025

2025 Local Streets Renewal Program 25-R-08 – Middle Gate and Various Other Locations

TABLE OF CONTENTS

Appendix 'A' - Geotechnical Report
Appendix 'B' – Standard Detail Drawings
Appendix 'C' – Manitoba Hydro Allowable Excavation Around Existing Poles
Appendix 'D' – Manitoba Hydro Safe Excavation & Safety Watch Guidelines
Appendix 'E' – Special Provision for Asphalt Pavement Works

PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 2025 Local Street Renewal Program - Local Streets Package 25-R-08 – Middle Gate and Various Other Locations

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, April 17, 2025.

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

B3. SITE INVESTIGATION

B3.1 Further to C3.1, the Bidder may view the Site without making an appointment.

B3.2 The Bidder is responsible for inspecting the Site, the nature of the Work to be done and all conditions that might affect their Bid or their performance of the Work and shall assume all risk for conditions existing or arising in the course of the Work which have been or could have been determined through such inspection.

B3.3 Special attention shall be paid to the existing driveway surface type. Adjustments and replacement of existing paving stones and stamped concrete will be required. Stamped concrete is present at the following addresses: 135 Middle Gate (private sidewalk), 129 East Gate (private approach) and 89 East Gate (private approach).

B4. ENQUIRIES

B4.1 All enquiries shall be directed to the Contract Administrator identified in D6.1.

B4.2 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.

B4.3 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.

B4.4 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.

B4.5 The Bidder shall not be entitled to rely on any response or interpretation received pursuant to B4 unless that response or interpretation is provided by the Contract Administrator in writing.

B4.6 Any enquiries concerning submitting through MERX should be addressed to:
MERX Customer Support
Phone: 1-800-964-6379
Email: merx@merx.com

B5. CONFIDENTIALITY

B5.1 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.

B5.2 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.

B6. ADDENDA

B6.1 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.

B6.2 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.

B6.3 Addenda will be available on the MERX website at www.merx.com.

B6.4 The Bidder is responsible for ensuring that they have 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.

B6.5 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.

B6.6 Notwithstanding B4, enquiries related to an Addendum may be directed to the Contract Administrator indicated in D6.

B7. SUBSTITUTES

B7.1 The Work is based on the Plant, Materials and methods specified in the Tender.

B7.2 Substitutions shall not be allowed unless application has been made to and prior approval has been granted by the Contract Administrator in writing.

B7.3 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.

B7.4 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.

B7.5 The Contract Administrator, after assessing the request for approval of a substitute, may in their 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.

B7.6 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.

B7.6.1 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 they wish to inform.

B7.7 If the Contract Administrator approves a substitute as an “approved equal”, any Bidder may use the approved equal in place of the specified item.

B7.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base their 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 B18.

B7.9 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.

B8. BID COMPONENTS

B8.1 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.

B8.2 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.

B8.3 The Bid shall be submitted electronically through MERX at www.merx.com.

B8.3.1 Bids will **only** be accepted electronically through MERX.

B8.4 Bidders are advised that inclusion of terms and conditions inconsistent with the Tender document, including the General Conditions, will be evaluated in accordance with B18.1(a).

B9. BID

B9.1 The Bidder shall complete Form A: Bid/Proposal, making all required entries.

B9.2 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 their own name, their 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 their own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.

B9.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B9.2.

B9.3 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.

B9.4 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 their 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 their duly authorized officer or officers;

(d) if the Bidder is carrying on business under a name other than their 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.

B9.4.1 The name and official capacity of all individuals signing Form A: Bid/Proposal should be entered below such signatures.

B9.5 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.

B10. PRICES

B10.1 The Bidder shall state a price in Canadian funds for each item of the Work identified on Form B: Prices.

B10.1.1 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 obligation as outlined in D3. Any such costs shall be determined in accordance with D3.

B10.2 The quantities listed on Form B: Prices are to be considered approximate only. The City will u se said quantities for the purpose of comparing Bids.

B10.3 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.

B10.4 Payments to Non-Resident Contractors are subject to Non-Resident Withholding Tax pursuant to the Income Tax Act (Canada).

B10.5 The Bidder shall enter the Total Bid Price from Form B: Prices into the Total Bid Price field in MERX.

B10.5.1 Bidders are advised that the calculation indicated in B18.4 will prevail over the Total Bid Price entered in MERX.

B11. DISCLOSURE

B11.1 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.

B11.2 The Persons are:

(a) N/A

B11.3 Additional Material:

(a) N/A

B12. CONFLICT OF INTEREST AND GOOD FAITH

B12.1 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.

B12.2 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 their 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.

B12.3 In connection with their Bid, each entity identified in B12.2 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.

B12.4 Without limiting B12.3, the City may, in their 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 their 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 their sole discretion, to avoid or mitigate the impact of such Conflict of Interest.

B12.5 Without limiting B12.3, 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 their sole discretion:

(a) disqualify a Bidder that fails to disclose a perceived, potential or actual Conflict of Interest of the Bidder or any of their 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 their 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 B12.4 to avoid or mitigate a Conflict of Interest; and

(d) disqualify a Bidder if the Bidder, or one of their 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.

B12.6 The final determination of whether a perceived, potential or actual Conflict of Interest exists shall be made by the City, in their sole discretion.

B13. QUALIFICATION

B13.1 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.

B13.2 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, Purchasing Division website at https://www.winnipeg.ca/matmgt/Templates/files/debar.pdf

B13.3 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 B13.5 and D8)

B13.4 Further to B13.3(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, Purchasing Division website at http://www.winnipeg.ca/matmgt/.

B13.5 Further to B13.3(d), the Bidder acknowledges they and all Subcontractors have obtained training required by the Accessibility for Manitobans Act (AMA) available at Accessibility Training for anyone that may have any interaction with the public on behalf of the City of Winnipeg.

B13.6 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.

B13.7 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.

B14. BID SECURITY

B14.1 The Bidder shall include in their 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 at Form_G1_Bid_Bond_&_Agreement_to_Bond.

B14.2 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 B14.2(a).

B14.3 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 B18.1(a).

B14.4 Bonds passing the verification process will be treated as original and authentic.

B14.4.1 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.

B14.5 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.

B14.6 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.

B15. OPENING OF BIDS AND RELEASE OF INFORMATION

B15.1 Bids will not be opened publicly.

B15.2 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.

B15.3 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.

B15.4 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).

B15.4.1 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.

B16. IRREVOCABLE BID

B16.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid/Proposal.

B16.2 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.

B17. WITHDRAWAL OF BIDS

B17.1 A Bidder may withdraw their Bid without penalty prior to the Submission Deadline.

B18. EVALUATION OF BIDS

B18.1 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 B13 (pass/fail);

(c) Total Bid Price;

(d) economic analysis of any approved alternative pursuant to B7.

B18.2 Further to B18.1(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.

B18.3 Further to B18.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in their Bid or in other information required to be submitted, that they are qualified.

B18.4 Further to B18.1(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.

B18.4.1 Further to B18.1(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.

B18.4.2 Bidders are advised that the calculation indicated in B18.4 will prevail over the Total Bid Price entered in MERX.

B19. AWARD OF CONTRACT

B19.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B19.2 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.

B19.2.1 Without limiting the generality of B19.2, 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 their 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.

B19.3 The Work of this Contract is contingent upon Council approval of sufficient funding in the 2025 Capital Budget. If the Capital Budget approved by Council does not include sufficient funding for the Work, the City will have no obligation to award a Contract.

B19.4 Where an award of Contract is made by the City, the award shall be made to the qualified B idder submitting the lowest evaluated responsive Bid, in accordance with B18.

B19.4.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of their Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C1. GENERAL CONDITIONS

C1.1 The *General Conditions for Construction* (Revision 2020-01-31) are applicable to the Work of the Contract.

C1.1.1 The *General Conditions for Construction* are available on the Information Connection page at The City of Winnipeg, Corporate Finance, Purchasing Division website at http://www.winnipeg.ca/matmgt/gen_cond.stm

C1.2 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) Pavement Reconstruction
  (i) East Gate - Blanchard Ave to Middle Gate
  (ii) West Gate - Blanchard Ave to Middle Gate
  (iii) Middle Gate - East Gate/West Gate to Cornish Ave
  (iv) Blanchard Ave - West Gate to Middle Gate

(b) Concrete Sidewalk Construction
  (i) Blanchard Ave - West Gate to East Gate
  (ii) East Gate & West Gate south of Blanchard Ave (as identified)
  (iii) Middle Gate - East Gate/West Gate to Cornish Ave (as identified)

(c) Catch Basin / Catch Pit / Manhole Renewal
  (i) Various locations on the streets identified above

(d) Water and Waste Work:
  (i) East Gate & West Gate south of Blanchard Ave
  (ii) Middle Gate from East Gate/West Gate to Cornish Ave

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

(a) Pavement Reconstruction and Related Works
  (i) Full depth removal of existing pavement & curbs & private approaches
  (ii) Excavation to sub-grade
  (iii) Subgrade compaction
  (iv) Repair of existing sewer and manholes as required
  (v) Installation of sub-drains
  (vi) Renewal of catch basins/catchpits and connection pipe
  (vii) Replacement of standard frames for manholes and catch basins as required
  (viii) Insulation of water services
  (ix) Placement of geotextile fabric
  (x) Placement of geogrid
  (xiii) Installation of sub-base and base course materials
  (xiv) Adjustment of drainage inlets, water main valves, curb stops and manholes
  (xv) Construction of 150 mm barrier curb for asphalt pavements – utilizing slip-form paving equipment (SD-200A)

(xvi) Construction of existing 150 mm concrete pavement (reinforced) on private approaches (or as shown on the Drawings) complete with monolithic 75 mm lip curb (SD-202CA)

(xvii) Construction of modified barrier curb for asphalt pavements (SD-203C)

(xviii) Construction of curb ramp for asphalt pavements (SD-229FA)

(xix) Renewal of sidewalk slabs

(xx) Installation of new sidewalk

(xxi) Boulevard restoration and sod

(xxii) Placement of asphalt pavement (Type MS2, 60 mm thickness)

(xxiii) Placement of asphalt pavement (Type MS1, 50 mm thickness)

(xxiv) Adjustment of existing catch basins, manholes and appurtenances

(xxv) Reflective crack maintenance

(b) Water and Waste Work:

(i) Repair of sewer as required

(ii) Inspection of sewer repairs

(iii) Replacement of manhole benching as required

(iv) Replacement of existing concrete risers as required

(v) Patching of existing manholes as required

D4. SITE INVESTIGATION DUE DILIGENCE AND RISK

D4.1 Notwithstanding C3.1, the Contractor acknowledges that the site investigation reports and other site information included in this Tender have been provided to it and may be relied upon by the Contractor to the extent that the Contractor uses Good Industry Practice in interpreting such report(s) and site information and carries out the Work in accordance with Good Industry Practice based upon such report(s) and the information contained in them and such other site information. In the event that a site condition related to:

(a) the location of any utility which can be determined from the records or other information available at the offices of any public authority or person, including a municipal corporation and any board or commission thereof, having jurisdiction or control over the utility;

(b) the Site conditions, including but not limited to subsurface hazardous materials or other concealed physical conditions;

(c) the location, nature, quality or quantity of the materials to be removed or to be employed in the performance of the Work;

(d) the nature, quality or quantity of the Plant needed to perform the Work;

(e) all matters concerning access to the Site, power supplies, location of existing services, utilities or materials necessary for the completion of the Work; and

(f) all other matters which could in any way affect the performance of the Work;

that could not have been “properly inferable”, “readily apparent” and readily discoverable” using Good Industry Practice by the Contractor, results in additional Work which is a direct result of this newly discovered site condition, such additional Work will be considered by the City under Changes in Work.

D5. DEFINITIONS

D5.1 When used in this Tender:

(a) “**Supply Chain Disruption”** means an inability by the Contractor to obtain goods or services from third parties necessary to perform the Work of the Contract within the schedule specified therein, despite the Contractor making all reasonable commercial

efforts to procure same. Contractors are advised that increased costs do not, in and of themselves, amount to a Supply Chain Disruption;

D6. CONTRACT ADMINISTRATOR

D6.1 The Contract Administrator is Tetra Tech, represented by:

Jeff Crang, P.Eng., PTOE

Senior Transportation Engineer

Telephone No. 431.554.5718
Email Address jeff.crang@tetratech.com

D6.2 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.

D7. CONTRACTOR'S SUPERVISOR

D7.1 At the pre-construction meeting, the Contractor shall identify their designated supervisor and any additional personnel representing the Contractor and their respective roles and responsibilities for the Work.

D7.2 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 D7.1 or an alternate can be contacted twenty-four (24) hours a day to respond to an emergency.

D8. ACCESSIBLE CUSTOMER SERVICE REQUIREMENTS

D8.1 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.

D8.1.1 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.

D8.1.2 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) informing 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.

D9. UNFAIR LABOUR PRACTICES

D9.1 Further to C3.2, the Contractor declares that in bidding for the Work and in entering into this Contract, the Contractor and any proposed Subcontractor(s) conduct their respective business in accordance with established international codes embodied in United Nations Universal Declaration of Human Rights (UDHR) https://www.un.org/en/about-us/universal-declaration-of-

human-rights International Labour Organization (ILO) https://www.ilo.org/global/lang--en/index.htm conventions as ratified by Canada.

D9.2 The City of Winnipeg is committed and requires its Contractors and their Subcontractors, to be committed to upholding and promoting international human and labour rights, including fundamental principles and rights at work covered by ILO eight (8) fundamental conventions and the United Nations Universal Declaration of Human Rights which includes child and forced labour.

D9.3 Upon request from the Contract Administrator, the Contractor shall provide disclosure of the sources (by company and country) of the raw materials used in the Work and a description of the manufacturing environment or processes (labour unions, minimum wages, safety, etc.).

D9.4 Failure to provide the evidence required under D9.3, may be determined to be an event of default in accordance with C18.

D9.5 In the event that the City, in its sole discretion, determines the Contractor to have violated the requirements of this section, it will be considered a fundamental breach of the Contract and the Contractor shall pay to the City a sum specified by the Contract Administrator in writing ("Unfair Labour Practice Penalty"). Such a violation shall also be considered an Event of Default, and shall entitle the City to pursue all other remedies it is entitled to in connection with same pursuant to the Contract.

D9.5.1 The Unfair Labour Practice Penalty shall be such a sum as determined appropriate by the City, having due regard to the gravity of the Contractor's violation of the above requirements, any cost of obtaining replacement goods/ services or rectification of the breach, and the impact upon the City's reputation in the eyes of the public as a result of same.

D9.5.2 The Contractor shall pay the Unfair Labour Practice Penalty to the City within thirty (30) Calendar Days of receiving a demand for same in accordance with D9.5. The City may also hold back the amount of the Unfair Labour Practice Penalty from payment for any amount it owes the Contractor.

D9.5.3 The obligations and rights conveyed by this clause survive the expiry or termination of this Contract, and may be exercised by the City following the performance of the Work, should the City determine, that a violation by the Contractor of the above clauses has occurred following same. In no instance shall the Unfair Labour Practice Penalty exceed the total of twice the Contract value.

D10. FURNISHING OF DOCUMENTS

D10.1 Upon award of the Contract, the Contractor will be provided with 'Issued for Construction' Contract Documents electronically, including Drawings in PDF format only.

SUBMISSIONS

D11. AUTHORITY TO CARRY ON BUSINESS

D11.1 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.

D12. SAFE WORK PLAN

D12.1 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.

D12.2 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, Purchasing Division website at http://www.winnipeg.ca/matmgt/safety/default.stm

D12.3 Notwithstanding B13.4 at any time during the term of the Contract, the City may, at their 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.

D13. INSURANCE

D13.1 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) 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; and

(c) Property insurance for all mobile offices, portable toilets, machinery and equipment.

D13.2 Deductibles shall be borne by the Contractor.

D13.3 All policies shall be taken out with insurers duly licensed to carry on business in the Province of Manitoba.

D13.4 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.

D13.5 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

D14. CONTRACT SECURITY

D14.1 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, 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 Form_H2_Labour_and_Material_Bond, in an amount equal to fifty percent (50%) of the Contract Price.

D14.1.1 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 D14.1.1(b).

D14.1.2 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 their discretion, exercised reasonably, allows.

D14.1.3 Digital bonds passing the verification process will be treated as original and authentic.

D14.2 The Contractor shall provide the Contract Administrator identified in D6 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.

D14.3 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 D14.1(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.

D15. SUBCONTRACTOR LIST

D15.1 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.

D16. DETAILED WORK SCHEDULE

D16.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the General Conditions for the return of the executed Contract Documents, as applicable.

D16.2 The detailed work schedule shall consist of the following:

(a) a computer-generated critical path method (C.P.M.) schedule for the Work; using Microsoft Project - copy of the schedule to be provided by email to the Contract Administrator

(b) a Gantt chart for the Work based on the C.P.M. schedule - copy of the Gantt chart to be provided by email to the Contract Administrator

all acceptable to the Contract Administrator.

D16.3 Further to D16.2(b), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

D16.4 Further to D16.2(a), the C.P.M. schedule shall clearly identify the start and completion dates of all of the following activities/tasks making up the Work as well as showing those activities/tasks on the critical path:

(a) Stage 1A - complete Roadway Reconstruction work, including curbs and private approaches (***except for asphalt paving***) on East Gate - South of Blanchard Ave

(b) Stage 1B - complete Roadway Reconstruction work, including curbs and private approaches (***except for asphalt paving***) on West Gate - South of Blanchard Ave

(c) Stage 1C - complete Roadway Reconstruction work, including curbs and private approaches (***except for asphalt paving***) on Middle Gate - South of Blanchard Ave

(d) Stages 1D, 1E, 1F – complete asphalt paving on above streets (***one street at-a-time***)

(e) Stage 2 – complete Roadway Reconstruction and new sidewalk construction on Blanchard Ave.

(f) Stage 3 – complete Roadway Reconstruction on Middle Gate works – North of Blanchard Ave.

NOTE:

While work is underway on one street, all other streets on the Project must remain open and available for parking and access to residences. As the granular base is completed on each street, private approaches shall also be accessible for homeowner access. Construction materials and equipment may not encroach outside of the street segment being worked on.

D16.5 Following completion of each Stage 1 substage (1A, 1B and 1C), local traffic only shall be permitted on a limited basis to access private approaches by driving on the base course, if requested. Any damage to the base course or curbs caused by such access shall be repaired by the Contractor prior to asphalt paving in Stages 1D, 1E and 1F. This work shall be considered incidental to the work of this Contract.

D16.6 Immediately prior to asphalt paving in each Stage the butt joint(s) at the limits of each stage shall be saw cut to provide a clean edge for the new and old asphalt to match. This clean edge shall be protected while paving and re-sawn if damaged. This work shall be considered incidental to the work of this Contract.

D17. REQUIREMENTS FOR SITE ACCESSIBILITY PLAN

D17.1 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.

D17.2 The Accessibility Plan shall demonstrate how the Contractor will accommodate the safe passage of pedestrians, cyclists and vehicles (as specified in D17.5 or as requested by residents) 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 for pedestrians.

(c) How the Contractor will maintain access to residents and businesses unless otherwise noted in the Contract.

(d) Any required detour signage at adjacent crossings to facilitate sidewalk closures.

D17.3 The Accessibility Plan may also include figures, sketches, or drawings to demonstrate the proposed plan.

D17.4 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) Detour Signage

D17.5 Notwithstanding the general requirements of the Site Accessibility Plan the Contractor shall accommodate residents as follows:

(a) Continuous access to 134 West Gate. This residence has two private approaches and only one may be closed at-a-time. While the north approach is closed, the resident must be permitted to enter/exit via the south approach. While the south approach is closed, the resident must be permitted to enter/exit via the north approach. This will necessitate the resident's vehicle or their caregivers travelling on the roadway base course at times.

(b) Continuous access to 162 West Gate. This residence has a single private approach and closure of the access cannot exceed two days. This will necessitate the resident's vehicle or their caregivers travelling on the roadway base course at times and utilizing 24-hour concrete when the driveway is installed.

(c) Pedestrian access to the residents and guests of 135 Middle Gate on September 13, 2025. The existing sidewalk shall either be intact or the new sidewalk completed for the event that is taking place.

(d) Pedestrian and vehicular access to the residents and guests of 64 Middle Gate on July 25, 2025. The existing sidewalk shall either be intact or the new sidewalk completed for the event that is taking place. The roadway and the driveway at 64 Middle Gate shall either be in its existing asphalt surface or reconstructed to the compacted and graded base course level.

D17.6 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.

D17.7 Any changes to the Accessibility Plan must be approved by the Contract Administrator.

D17.8 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the site has been maintained.

D17.9 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.

D17.10 There shall be no claim for construction delay for the accommodation of pedestrians or vehicles to residences or damage caused to the Work by these vehicles.

SCHEDULE OF WORK

D18. COMMENCEMENT

D18.1 The Contractor shall not commence any Work until they are in receipt of an award letter from the Award Authority authorizing the commencement of the Work.

D18.2 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 D11;

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

(iii) the twenty-four (24) hour emergency response phone number specified in D7.2.

(iv) the Safe Work Plan specified in D12;

(v) evidence of the insurance specified in D13;

(vi) the contract security specified in D14;

(vii) the subcontractor list specified in D15;

(viii) the detailed work schedule specified in D16;

(ix) the Requirements for Site Accessibility Plan specified in D17; and

(x) the direct deposit application form specified in D32

(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.

D18.3 The Contractor shall commence the Work on the Site a minimum of five (5) Working Days after receipt of the award letter, but no later than July 2, 2025, as directed by the Contract Administrator and weather permitting. Upon commencement, the Contractor shall work with full crews and in a continuous manner. Working Days, in accordance with the definition, shall be charged continuously upon commencement.

D18.4 The City intends to award this Contract by May 23, 2025.

D18.4.1 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D19. WORKING DAYS

D19.1 Further to C1.1(tt);

D19.1.1 The Contract Administrator will determine daily if a Working Day has elapsed and will record their 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 they agree with the Contract Administrator's determination of the Working Days assessed for the report period.

D19.1.2 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.

D19.1.3 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.

D20. RESTRICTED WORK HOURS

D20.1 Further to 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.

D21. WORK BY OTHERS

D21.1 Further to C6.25, the Contractor's attention is directed to the fact that other Contractors, the p ersonnel 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.

D21.2 Work by others on or near the Site will include but not necessarily be limited to:

(a) Manitoba Hydro - Street lighting renewal is required on East Gate, Middle Gate and West gate, The Street lighting work is anticipated to be provided to the Contractor as a Change in Work. However, Hydro may be performing the following tasks:

(i) Supply and inspection of new street lighting hardware, de-energizing existing streetlights and re-energizing the new street light plant once approved by Manitoba Hydro; and

(ii) Relocation of existing street light poles, bases and cabling as required

(b) Bell/MTS – adjustment of manhole frames and covers

(c) City of Winnipeg Traffic Services – provision of sign clamps / bases.

(d) Manitoba Hydro Gas – rock wrapping and/or lowering for gas crossings where required. The Contractor is responsible for coordinating this work with Manitoba Hydro Gas. Gas services will be lowered if required in roadwork reconstruction locations. This work shall be coordinated immediately after excavation has taken place.

(e) Manitoba Hydro Distribution – street lighting cables, bases and poles removal, replacement and repair, and safety watch as required.

(f) City of Winnipeg Geomatics Branch – the Contractor is to acquire locates from the Geomatics Branch. If any permanent geomatics infrastructure is required to be disturbed during construction activities, the Contractor is to notify the Contract Administrator for documentation.

D21.3 Further to D21.1 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 D21.2 or additional parties, in their construction schedule as per D16 and accommodate the necessary area on Site required for the Work by Others to complete the Work.

D22. SEQUENCE OF WORK

D22.1 Further to C6.1, the sequence of work shall comply with the following:

D22.1.1 The sequence of Work on each stage or substage noted in D16.4 does not need to follow the order specified, however Stage 2 and Stage 3 shall be completed between July 2 and August 31, 2025. If Stage1A, 1B or 1C are started prior to July 2 any opened excavation must be completed at least to the base course level prior to moving to Phase 2 or 3.

D22.1.2 The Contractor will not be permitted to have more than one (1) street 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.

D22.1.3 Placing the topsoil and finished grading of all boulevard areas shall be completed prior to commencing construction of asphaltic concrete pavement, including scratch courses.

D23. CRITICAL STAGES

D23.1 The Contractor shall achieve critical stages of the Work in accordance with the following r equirements:

(a) Stage 2 and Stage 3 work must take place after July 2, 2025 and be substantially complete by Aug 29, 2025.

(b) The Contractor may commence work on Stage 1 prior to July 2, 2025, however, any street started prior to July 2, 2025 must be completed up to the base course level and all residents and their vehicles provided full access before July 2, 2025.

D23.2 When the Contractor considers the Work associated with each Stage to be Substantially completed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Completion. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.

D23.3 The date on which each Stage of the Work has been accepted by the Contract Administrator as being completed to the requirements of the Contract is the date on which completion of each Stage has been achieved.

D24. SUBSTANTIAL PERFORMANCE

D24.1 The Contractor shall achieve Substantial Performance within seventy (70) consecutive Working Days of the commencement of the Work as specified in D18.

D24.2 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.

D24.3 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.

D25. TOTAL PERFORMANCE

D25.1 The Contractor shall achieve Total Performance within seventy-five (75) consecutive Working Days of the commencement of the Work as specified in D18.

D25.2 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.

D25.3 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.

D26. LIQUIDATED DAMAGES

D26.1 If the Contractor fails to achieve any Critical Stage, Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:

(a) Critical Stage (per stage) – four thousand dollars ($4,000.00);

(b) Substantial Performance – four thousand dollars ($4,000.00);

(c) Total Performance – one thousand dollars ($2,000.00).

D26.2 The amount specified for liquidated damages in **Error! Reference source not found.** is based on a genuine pre-estimate of the City's damages in the event that the Contractor does not achieve Substantial Performance by the day fixed herein for same.

D26.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D27. SUPPLY CHAIN DISRUPTION SCHEDULE DELAYS

D27.1 The City acknowledges that the schedule for this Contract may be impacted by the Supply Chain Disruption. Commencement and progress of the Work shall be performed by the Contractor with due consideration to the delivery requirements and schedule identified in the Contract, in close consultation with the Contract Administrator.

D27.2 If the Contractor is delayed in the performance of the Work by reason of the Supply Chain Disruption, 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.

D27.3 A minimum of seven (7) Calendar Days prior to the commencement of Work, the Contractor shall declare whether a Supply Chain Disruption will affect the start date. The Contractor shall provide sufficient evidence that the delay is directly related to ordering of Material or Goods, production and/or manufacturing schedules or availability of staff as appropriate.

D27.4 For any delay related to Supply Chain Disruption 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 D27.3. Failure to provide this notice will result in no additional time delays being considered by the City.

D27.5 The Work schedule, including the durations identified in D203 to D25 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.

D27.6 Where Work not previously identified is being carried over solely as a result of delays related to Supply Chain Disruption, 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 Supply Chain Disruption, a partial consideration of the cost of temporary works will be considered by the Contract Administrator.

D27.7 Any time or cost implications as a result of Supply Chain Disruption and in accordance with the above, as confirmed by the Contract Administrator, shall be documented in accordance with C7.

D28. SCHEDULED MAINTENANCE

D28.1 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) Reflective Crack Maintenance as specified in CW 3250-R7

D28.2 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

D29. JOB MEETINGS

D29.1 Regular weekly job meetings will be held on site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

D29.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever they deem it necessary.

D30. PRIME CONTRACTOR – THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA)

D30.1 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).

D31. THE WORKPLACE SAFETY AND HEALTH ACT (MANITOBA) – QUALIFICATIONS

D31.1 Further to B13.4, 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 their sole discretion and acting reasonably, require updated proof of compliance, as set out in B13.4.

MEASUREMENT AND PAYMENT

D32. PAYMENT

D32.1 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.

D33. FUEL PRICE ADJUSTMENT

D33.1 The Contract is subject to a fuel price adjustment which will be calculated monthly based on eligible Work completed utilizing the following mathematical formulas;

(a) where the price of fuel has increased - ((CFI/BFI)-1.15) x Q x FF; and

(b) where the price of fuel has decreased - ((CFI/BFI)-0.85) x Q x FF; where

(i) BFI = base fuel index

(ii) CFI = current fuel index

(iii) FF = fuel factor

(iv) Q = monetary value of Work applied in the calculation.

D33.1.1 Eligible Work will be determined in accordance with D33.5.

D33.1.2 The base fuel index (BFI) will be the retail price of fuel identified on the Submission Deadline based on latest published "Monthly average retail prices for gasoline and fuel by geography" for Winnipeg, published by Statistics Canada, Table 18-10-0001-01. The BFI is a blended rate based on 15% regular unleaded gasoline at self-service filling stations and 85% diesel fuel at self-service filling stations.

D33.1.3 The current fuel index (CFI) based on the above blended rate will be determined for each monthly progress estimate and applied on the following progress estimate as a change order once rates are published by Statistics Canada.

D33.1.4 A Fuel Factor (FF) rate of the monetary value of all eligible Work completed that month based on the Contract unit prices will be used to calculate the assumed apportioned cost of fuel.

D33.2 Fuel cost adjustments may result in additional payment to the Contractor or credit to the City within the Contract by way of a monthly change order.

D33.3 The fuel escalation or de-escalation adjustment will not be applied if the CFI is within ±15% of the BFI.

D33.4 Fuel escalation adjustments will not be considered beyond the Substantial Performance/Critical Stages except where those dates/Working Days are adjusted by change order. Fuel de-escalation adjustments will apply for Work that extends beyond the dates/Working Days specified for Substantial Performance/Critical Stages.

D33.5 The Fuel Factor (FF) rates will be set as follows:

(a) The Fuel Factor rate shall be set at 2.7% of the monetary value of all Work based on unit prices.

D34. ADJUSTMENTS FOR CHANGES IN LAWS, TAXES OR TARIFFS

D34.1 Further to C12.4 and subject to C6.13, the Contract Price shall be adjusted if any change in a law or tax imposed under the Excise Act, the Excise Tax Act, the Customs Act, the Customs Tariff, The Mining Tax Act (Manitoba), or The Retails Sales Tax Act (Manitoba), by an act of the Congress of the United States of America, or by Executive Order by the President of the United States under the International Emergency Economic Powers Act of the United States of America or similar legislation:

(a) Occurs after the Submission Deadline;

(b) Applies to Material; and

(c) Affects the cost of the Material to the Contractor.

D34.2 Further to C12.5, if a change referred to the C12.4 occurs, the Contract Price shall be increased or decreased by an amount equal to the amount that is established, by an examination of the relevant records of the Contractor, to be the increase or decrease in the cost incurred that is directly attributable to that change, and which the Contractor has proven to the Contract Administrator represents the minimum amount of increase necessary in order to obtain necessary Material or Plant. For the avoidance of doubt, the Contractor shall be required to provide satisfactory proof that it has investigated alternative options for obtaining equivalent Material or Plant and reducing or eliminating the increase in Contract Price, up to and including entering into purchase agreements with vendors located in other jurisdictions, in order for Contractor to be able to avail itself of the increase in Contract Price permitted.

WARRANTY

D35. WARRANTY

D35.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire two (2) years thereafter, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

DISPUTE RESOLUTION

D36. DISPUTE RESOLUTION

D36.1 If the Contractor disagrees with any opinion, determination, or decision of the Contract Administrator, the Contractor shall act in accordance with the Contract Administrator's opinion, determination, or decision unless and until same is modified by the process followed by the parties pursuant to D35.

D36.2 The entire text of C21.4 is deleted, and amended to read: "Intentionally Deleted"

D36.3 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 their written Appeal Form, in the manner and format set out on the City's Purchasing 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 their Appeal Form.

D36.4 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.

D36.4.1 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.

D36.4.2 As these negotiations are not an adjudicative hearing, neither party may have legal counsel present during the negotiations.

D36.4.3 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.

D36.4.4 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 D36.4.3, 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.

INDEMNITY

D37. INDEMNITY

D37.1 Indemnity shall be as stated in C17.

D37.2 Notwithstanding C17.1, the Contractor shall save harmless and indemnify the City in the amount of twice the Contract Price or five million dollars ($5,000,000), whichever is greater, against all costs, damages or expenses arising from actions, claims, demands and proceedings, by whomsoever brought, made or taken as a result of negligent acts or negligent omissions of the Contractor, their Subcontractors, employees or agents in the performance or purported performance of the Work, and more particularly from:

(a) accidental injury to or death of any person whether retained by or in the employ of the contractor or not, arising directly or indirectly by reason of the performance of the Work, or by reason of any trespass on or damage to property;

(b) damage to any property owned in whole or in part by the City, or which the City by duty or custom is obliged, directly or indirectly, in any way or to any degree, to construct, repair or maintain;

(c) damage to, or trespass or encroachment upon, property owned by persons other than the City;

(d) any claim for lien or trust claim served upon the City pursuant to The Builders' Liens Act;

(e) failure to pay a Workers Compensation assessment, or Federal or Provincial taxes;

(f) unauthorized use of any design, device, material or process covered by letters patent, copyright, trademark or trade name in connection with the Work;

(g) inaccuracies in any information provided to the City by the Contractor.

D37.3 Further to C17, The City shall save harmless and indemnify the Contractor in the amount of twice the Contract Price or five million dollars ($5,000,000), whichever is greater, against all costs, damages or expenses arising from actions, claims, demands and proceedings, by whomsoever brought, made or taken as a result of negligent acts or negligent omissions of the City, their employees or agents in the performance of its obligation under the Contract.

THIRD PARTY AGREEMENTS

D38. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

D38.1 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.

D38.2 Further to D38.1, in the event that the obligations in D38 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.

D38.3 For the purposes of D38:

(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.

D38.4 Modified Insurance Requirements

D38.4.1 If not already required under the insurance requirements identified in D13, 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 their Ministers, officers, employees, and agents shall be added as additional insureds.

D38.4.2 If not already required under the insurance requirements identified in D13, 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.

D38.4.3 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.

D38.4.4 Further to D13.4, 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.

D38.4.5 All policies must be taken out with insurers licensed to carry on business in the Province of Manitoba.

D38.5 Indemnification By Contractor

D38.5.1 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.

D38.5.2 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.

D38.6 Records Retention and Audits

D38.6.1 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.

D38.6.2 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 D38.6.1 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.

D38.7 Other Obligations

D38.7.1 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.

D38.7.2 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.

D38.7.3 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.

D38.7.4 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.

D38.7.5 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.

D38.7.6 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 J: SUBCONTRACTOR LIST
(See D15)

2025 LOCAL STREET RENEWAL PROGRAM – MIDDLE GATE AND VARIOUS OTHER LOCATIONS

Portion of the Work	Name	Address
Supply of Materials:		
Concrete		
Asphalt		
Base course		
Catch basins and catch pits		
Frames and covers		
Pipes and fittings		
Geotextile / Geogrid		
Topsoil and Sod		
Installation/Placement:		
Concrete		
Asphalt		
Base course and sub-base		
Catch basins and catch pits		
Topsoil and Sod		

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 their 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, Purchasing 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 and Standard Details (SD's) identified on the Drawings and within Appendix 'B' 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 B7. 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 B7.

E1.4 The following are applicable to the Work:

Drawing No.	Drawing Name/Title	Drawing (Original) Sheet Size
	Cover Sheet-P3593-0	A1
C0001	Middle Gate-Asphalt Reconstruction-Plan and Profile-West Gate to Sta 2+110	A1
C0002	Middle Gate-Asphalt Reconstruction-Plan and Profile-Sta 2+110 to Sta 2+260	A1
C0003	Middle Gate-Asphalt Reconstruction-Plan and Profile-Sta 2+260 to Stat 2+410	A1
C0004	Middle Gate-Asphalt Reconstruction-Plan and Profile-Sta 2+410 to Cornish Ave	A1
C0005	West Gate-Asphalt Reconstruction-Plan and Profile-Blanchard Ave to Sta 1+125	A1
C0006	West Gate-Asphalt Reconstruction-Plan and Profile-Sta 1+125 To Sta 1+280	A1
C0007	East Gate-Asphalt Reconstruction-Plan and Profile-Sta 1+280 To Sta 1+630	A1
C0008	East Gate-Asphalt Reconstruction-Plan and Profile-Sta 1+630 To Blanchard Ave	A1
C0009	Blanchard Ave-Asphalt Reconstruction-Plan and Profile-West Gate to Middle Gate	A1
C0010	Blanchard Ave-Sidewalk Construction-Plan and Profile-Middle Gate to East Gate	A1
C0011	Middle Gate Cross Sections	A1
C0012	West Gate, East Gate and Blanchard Ave Cross Sections and Details	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 B10, B18, 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 D17 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. SAFETY CURB CONSTRUCTION

DESCRIPTION

E3.1 This Specification covers the construction of safety curb near the intersection of Middle Gate and Cornish Ave.

E3.2 All work shall be completed in accordance with Specification CW 3310-R19 and Standard Detail SD-206CA appended to this Tender.

CONSTRUCTION METHODS

E3.3 At this location, on either side of Middle Gate, south of Cornish Ave. there are two large stone gateway pillars, currently protected by safety curbs. During reconstruction of this street, the safety curbs shall remain and the existing asphalt roadway removed, being careful to not disturb or damage the curb or the stone pillars.

E3.4 At the south limit of the safety curbs, there are transition sections from full height safety curb to standard barrier curb. These transition sections shall be saw cut and removed.

E3.5 New full height safety curb shall be constructed to match the existing safety curbs and extended further south as laid out by the Contract Administrator and then transition to match the new barrier curbs also being constructed under this Contract.

E3.6 The new safety curb shall be constructed as shown on SD-206CA within Appendix ‘B’.

E3.7 New safety curb shall be tied horizontally to the existing safety curbs by drilling and installing two 19.1 mm dowels into 200 mm deep holes.

MEASUREMENT AND PAYMENT

E3.8 New safety curb shall be measured and paid for at the Contract Unit Price per lineal metre for “Construction of Type 2 Concrete Safety Curb (330 mm reveal ht)” including all saw-cutting, removal of existing transition sections, reinforcing steel, concrete and all other miscellaneous materials.

E4. GEOTECHNICAL REPORT

E4.1 Further to C3.1, the geotechnical report is provided to aid the Contractor’s evaluation of the existing soil conditions. The geotechnical report is contained in Appendix ‘A’.

E5. OFFICE FACILITIES

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

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

(b) The building shall be conveniently located near the site of the Work and connected to Hydro.

(c) The building shall have a minimum floor area of 20 square metres, 2.4 metres height, with a minimum of 2 windows for cross-ventilation and a door entrance with a secure lock.

(d) The building shall be suitable for all weather use. It shall be equipped with electric heat and air conditioning such that the room temperature can be maintained between 18°C and 24°C.

(e) The building shall be adequately lighted with LED fixtures and a minimum of 3 electrical duplex outlets.

(f) The building shall be furnished with suitable table and a minimum of 8 chairs

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

(h) The field office building and the portable toilet shall be cleaned on a weekly basis immediately prior to each site meeting. The Contract Administrator may request additional cleaning when they deem it necessary.

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

E5.3 The office facilities shall be on-site and connected to Hydro at least 24 hours prior to the date of commencement of the Work, up to the date of Substantial Performance.

E6. PROTECTION OF EXISTING TREES

E6.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing boulevard trees within the limits of the Work:

(a) The Contractor shall not stockpile materials and soil or park vehicles and equipment on boulevards within 2 metres of trees.

(b) All boulevard trees within the limits of the Work have been identified to be at risk and 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 to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.

E6.2 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or their designate.

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

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

E7. TRAFFIC CONTROL

E7.1 Further to 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) The Contractor shall submit a Traffic Management Plan for review by the Contractor Administrator five (5) days prior to the commencement of construction.

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

(i) Parking restrictions;

(ii) Stopping restrictions;

(iii) Turn restrictions;

(iv) 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.

E7.2 Upon request from the Contract Administrator, the Contractor shall provide records demonstrating that the site has been maintained.

E7.3 Further to E7.1(d) and E7.1(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.

E7.4 Any changes to the approved Traffic Management Plan must be submitted to the Contract Administrator a minimum of five (5) Working Days prior to the required change for approval.

E7.5 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.

E8. TRAFFIC MANAGEMENT

E8.1 Maintain unrestricted traffic flow on all streets of this project except for the one street being worked on. Ensure that no materials or equipment will impede private approach access or parking outside of the one street being worked on. When no work is being performed on site, non-essential lane closures will not be permitted.

E8.2 The Contractor shall sign the street that is closed "Road Closed – No Exit" in accordance with the Manual of Temporary Traffic Control.

E8.3 Intersecting local street and private approach access shall be maintained at all times unless 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 streets

shall be maintained at all times unless paving operations require temporary complete closures. Temporary complete closures shall be no longer than 10 minutes during asphalt paving operations and shall be completed during off peak hours.

E8.4 Construct new pavement in the Blanchard/Middle Gate intersection in stages such that traffic can continue to flow through the intersection

E8.5 Flag persons may be necessary to maintain the flow of traffic during certain work operations.

E8.6 Should the Contractor be unable to maintain pedestrian or vehicular access to a residence or business, they shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of 24 hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.

E8.7 Pedestrian access must be maintained at all times.

E8.8 Ambulance/emergency vehicle access must be maintained at all times. In an emergency the Contractor shall allow emergency vehicles to travel on the subgrade or unfinished base. There shall be no claim for construction delay during an emergency or damage caused to the Work by emergency vehicles.

E9. REFUSE AND RECYCLING COLLECTION

E9.1 While access to refuse and/or recycling collection vehicles is restricted, on collection day(s) the Contractor shall move all of the affected property owners refuse and/or recycling bins to a nearby common area, prior to the established time, in accordance with E9.1 to permit the normal collection vehicles to empty the bins. Immediately following refuse and recycling collection the Contractor shall return the refuse and recycling bins to the addresses marked on the bins.

E9.2 Collection Schedule:

East Gate – South of Blanchard

Collection Day(s): Friday

Collection Time: 9:00 AM

Common Collection Area: Corner of East Gate & Blanchard

Middle Gate – South of Blanchard

Collection Day(s): Friday

Collection Time: 9:00 AM

Common Collection Area: Corner of Middle Gate & Blanchard

West Gate – South of Blanchard

Collection Day(s): Friday

Collection Time: 9:00 AM

Common Collection Area: Corner of West Gate & Blanchard

Middle Gate – North of Blanchard

Collection Day(s): Friday

Collection Time:	9:00 AM
Common Collection Area:	Corner of Middle Gate & Blanchard

Blanchard Avenue

Collection Day(s):	Friday
Collection Time:	9:00 AM
Common Collection Area:	Corner of Blanchard & West Gate

E9.3 No measurement or payment will be made for the work associated with this specification.

E10. SOFT EXCAVATION TO EXPOSE UNDERGROUND UTILITIES

DESCRIPTION

E10.1 This Specification covers the soft excavation (hydro-excavation) to expose underground utilities to determine the depth of underground utilities and whether they will interfere with installation of proposed Works on site.

E10.2 These underground utilities include, but are not limited to, Manitoba Hydro cables, Manitoba Hydro gas pipes, BellMTS cables and ducts, existing sewers and existing watermains.

MATERIALS

E10.3 Backfill material for backfill of shafts after hydro-excavation has been completed shall consist of bedding sand in accordance with Specification CW 2030.

CONSTRUCTION METHODS

E10.4 The Contractor shall arrange for all required utility locations, safety watches and other required notifications.

E10.5 The Contractor shall provide the Contract Administrator with a minimum of 24 hours advanced notice prior to conducting utility exposures.

E10.6 At least 5 business days prior to commencement of any construction Works adjacent to underground utilities, the Contractor shall hydro-excavate or hand excavate to expose underground utilities, in accordance with CW 1120 Clause 3.3. Once exposed, the Contract Administrator shall be asked to determine the elevations and determine if a conflict exists.

E10.7 Once the elevation of the top of pipe, cable or duct has been determined the resulting excavation shall be backfilled with bedding sand to the elevation of existing ground.

MEASUREMENT AND PAYMENT

E10.8 Soft excavation to expose underground utilities will be considered incidental to the Work. No measurement and payment will be made.

E11. WATER OBTAINED FROM THE CITY

E11.1 Further to 3.7 of CW 1120, the Contractor shall pay for all costs, including sewer charges, associated with obtaining water from the City in accordance with the Waterworks and Sewer By-laws.

E12. SURFACE RESTORATIONS

E12.1 Further to 3.3 of CW 1130, when Total Performance is not achieved in the year the Contract is commenced, the Contractor shall temporarily repair any Work commenced and not completed to the satisfaction of the Contract Administrator. The Contractor shall maintain the temporary repairs in a safe condition as determined by the Contract Administrator until permanent repairs are completed. The Contractor shall bear all costs associated with temporary repairs and their maintenance.

E13. INFRASTRUCTURE SIGNS

E13.1 If requested by the Contract Administrator, 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.

E14. REPLACE MANHOLE BENCHING

DESCRIPTION

E14.1 This Specification covers the installation of benching in existing manholes

CONSTRUCTION METHODS

E14.2 Replace Manhole Benching

E14.2.1 The Contractor shall remove and dispose of existing loose or crumbling benching mortar to the satisfaction of the Contract Administrator.

E14.2.2 The Contractor shall bench and channel the manhole floor with mortar or concrete in accordance with CW 2130, SD-010 and SD-011. Flow channels shall curve smoothly and transition smoothly between inlet and outlet pipes.

MEASUREMENT AND PAYMENT

E14.3 Replacement of manhole benching will be measured and paid for at the Contract Unit Price per manhole for "Replace Manhole Benching", which price shall be payment in full for supplying all materials and for completing all operations herein described and all other items incidental to the work included in this Specification, measured and accepted by the Contract Administrator.

E15. SUPPLY AND INSTALL WATERMAIN AND WATER SERVICE INSULATION

DESCRIPTION

E15.1 Notwithstanding 3.12 of CW 2110, this specification covers the supply and installation of insulation in roadway excavations over watermains and water services.

E15.2 Referenced Standard Construction Specifications

(a) CW 2030 – Excavation Bedding and Backfill

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

E15.3 Referenced Standard Details

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

MATERIALS

E15.4 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"

E15.5 Sand Bedding:

(a) In accordance with CW 2030

CONSTRUCTION METHODS

E15.6 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.

E15.7 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.

E15.8 Place insulation panels adjacent to each other over the specified area with no gaps between panels and less than 15mm of elevation difference along the adjoined edges. Where 2" thick panels are being used, offset the top layer to prevent the panel joints from aligning with the joints in the lower layer.

E15.9 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.

E15.10 Take appropriate measures to ensure panels are not displaced when installing geotextiles and during backfilling operations.

MEASUREMENT AND PAYMENT

E15.11 Watermain and Water Service Insulation shall be measured on an area basis and paid for at the Contract Unit Price per square metre of "Pipe Under Roadway Excavation". 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 E15.6 will not be measured for payment and will be included in the payment for "Watermain and Water Service Insulation".

E16. CONSTRUCTION OF CURBS FOR ASPHALT PAVEMENT

DESCRIPTION

E16.1 This Specification covers the construction of Barrier Curb, Modified Barrier Curb, and Curb Ramp for Asphalt Pavement.

GENERAL

E16.2 The City of Winnipeg Standard Construction Specifications shall be referenced. Standard Details (SDs) as described within the Specifications shall be replaced with the SDs and/or drawings included within Appendix 'B'.

CONSTRUCTION METHODS

E16.3 Further to CW 3310 and CW 3240, the contractor shall construct the Barrier Curb for Asphalt Pavement as per Standard Detail Drawing SD-200A.

E16.4 Construction of Barrier Curb for Asphalt Pavement – Standard Detail Drawing SD-200A

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

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

(c) 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.

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

(e) 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.

(f) Provide a minimum of 40mm cover between reinforcing steel and the finished concrete surface.

(g) 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.

E16.5 Construct Lip Curb for Asphalt Pavement (75mm ht) at private approaches in accordance with Standard Detail Drawing SD-202CA.

E16.6 Construct Modified Barrier Curb for Asphalt Pavement (150mm ht) in accordance with Standard Detail Drawing SD-203C 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.

E16.7 Construct Curb Ramp for Asphalt Pavement (8-12mm ht) at sidewalk ends in accordance with Standard Detail Drawing SD-229FA.

E16.8 Place concrete utilizing slip-form paving equipment in accordance with Specification CW 3310 unless otherwise directed by the Contract Administrator.

E16.9 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

E16.10 Construction of Barrier Curb for Asphalt Pavement shall 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 shall be the total number of meters supplied and installed in accordance with this Specification, accepted and measured by the Contract Administrator.

Items of Work:

(a) “Construction of Type 2 Concrete Barrier Curb for Asphalt Pavement (150 mm reveal ht), Slip Form Paving”

(b) “Construction of Type 2 Concrete Barrier Curb for Asphalt Pavement (100 mm reveal ht), Slip Form Paving”

E16.11 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 Type 2 Concrete Lip Curb for Asphalt Pavement (75 mm reveal ht)". 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.

E16.12 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 for the "Items of Work" listed here below. 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.

Items of Work:

(a) "Construction of Type 2 Concrete Modified Barrier Curb for Asphalt Pavement (150 mm reveal ht)"

(b) "Construction of Type 2 Concrete Modified Barrier Curb for Asphalt Pavement (100 mm reveal ht)"

E16.13 Construction of Curb Rampa for Asphalt Pavement shall be measured on a length basis and paid for at the Contract Unit Price per metre of "Construction of Type 2 Concrete Curb Ramp for Asphalt Pavement (8-12mm reveal ht)". 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

E16.14 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", and "Construction of Modified Barrier Curb for Asphalt Pavement"

E16.15 The supply and installation of 20M tie-bars is incidental to "Construction of Lip Curb for Asphalt Pavement", and "Construction of Curb Ramp for Asphalt Pavement."

E16.16 Supply and placement of 50mm sub-base material for backfill to be paid for as per payment item "50 mm Granular B Recycle Concrete".

E16.17 Supply and placement of suitable site material for backfill behind new curbs shall be considered incidental to the Construction of Curbs.

E17. ASPHALT PAVEMENT WORKS – SPECIAL PROVISION

E17.1 Appendix 'E' – Special Provision for Asphalt Pavement Works shall replace the City of Winnipeg Standard Construction Specification CW 3410 – Asphaltic Concrete Pavement Works for the Tender.

E18. HAULING AND PLACEMENT OF 50MM GRANULAR B RECYCLED CONCRETE AGGREGATE

DESCRIPTION

E18.1 General

E18.2 This Specification covers the hauling from a designated supplier and installation of 50 mm Granular B Recycled Concrete Aggregate.

E18.3 Referenced Standard Construction Specifications:

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

MATERIALS

E18.4 Materials will be provided to the Contractor in accordance with Tender 103-2025. Tender 103-2025 is expected to be awarded by May 1, 2025. Contact information and address will be provided once the award process is complete.

HAULING OF MATERIAL

E18.5 The Contractor shall obtain the 50 mm Granular B Recycled Concrete Aggregate from a stockpile location within the limits of the City of Winnipeg.

E18.6 The Customer will place orders before 4:00p.m. for each Business Day for the expected supply requirements for the following Business Day.

E18.7 The material will be available for pick up between the following hours:

(a) 0700 to 1800 from Monday to Friday

(b) 0700 to 1400 on Saturday

E18.8 Further to E18.7, material will not be available for pick up on general holidays in Manitoba.

E18.9 Requests for pick-up outside of these hours must be made a minimum of (4) four Business Days in advance to the Contract Administrator.

E18.10 The Contractor will be provided use of the scale at the pick-up site to facilitate tare and gross vehicles weights. A printed ticket will be provided for each load.

E18.11 The supplier shall load the material into the Contractors truck/truck trailer and shall facilitate unloading when a truck has been overloaded.

CONSTRUCTION METHODS

E18.12 Construction methods will be in accordance with CW 3110.

QUALITY ASSURANCE TESTING

E18.13 Quality Assurance Testing for physical properties as per CW 3110 will not be required. Field Density Testing will be required as per CW 3110.

MEASUREMENT AND PAYMENT

E18.14 The hauling, placing and compaction of sub-base material will be measured on a weight basis and paid for at the Contract Unit Price per tonne for the “Hauling and Placing Sub-base Material” listed here below. The weight to be paid for will be the total number of tonnes of sub-base material supplied, placed and compacted in accordance with this Specification, accepted and measured by the Contract Administrator.

E18.15 Items of Work:

(a) 50 mm Granular B Recycled Concrete

E18.16 The weight to be paid for will the total number of tonnes of sub-base material as measured on a certified weight scale.

E18.17 Only material placed within the limits of excavation will be included in the payment for the “Items of Work listed for sub-base material”.

E18.18 No measurement or payment will be made for materials rejected by the Contract Administrator.

E19. STAMPED AND COLOURED CONCRETE APPROACH AND SIDEWALK

DESCRIPTION

E19.1 This specification shall cover the renewal of the approach at 129 East Gate and the private sidewalk at 135 Middle Gate as specified on the Contract drawings. This specification supplements CW 3310 and CW 3325.

The contractor shall match the colour and the stamp pattern of the existing concrete as approved by the Contract Administrator.

QUALITY ASSURANCE

E19.2 Conduct all work in accordance with City of Winnipeg Standard Construction methods, Specifications and Standard Details.

METHODOLOGY

E19.3 The Contractor shall discuss individual requirements for private approach and sidewalk renewal/reconstruction with the Contract Administrator. In general, when utilizing existing private approach and sidewalk materials, the Contractor shall match the reconfigured private approach and sidewalk to the existing construction materials to provide a uniform appearance as much as possible.

E19.4 If the existing construction materials cannot be matched, the Contractor shall advise the Contract Administrator and jointly develop an alternate solution acceptable to all parties, including the homeowner and the City.

MEASUREMENT AND PAYMENT

E19.5 Renewal/reconstruction of Stamped and Coloured Concrete Approaches and Sidewalk shall be measured on a square meter basis and will be paid for at the Contract Unit Price for "Construction of 150 mm Type 4 Concrete Pavement (Reinforced) - Stamped and Coloured Concrete Approach" or "100 mm Type 5 Concrete Sidewalk - Stamped and Coloured Concrete Private Sidewalk". The price shall be payment in full for supplying all materials and for completing all operations herein described and all other items incidental to the work included in this Specification, accepted and measured by the Contract Administrator.

E20. PRUNING AND REMOVAL OF EXISTING TREES AND SHRUBS

DESCRIPTION

E20.1 Provide all labour, materials, methods, equipment and accessories for pruning of existing trees and shrubs within the limit of Work.

E20.2 Provide all labour, materials, methods, equipment and accessories for removal of existing trees (< 150 mm caliper) within the limit of Work.

QUALITY ASSURANCE

E20.3 Pruning or removal of trees shall be provided by a person with a Manitoba Arborists Certificate with demonstrable experience sourcing and Work.

E20.4 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

E20.5 The Contractor shall prune back all trees and shrubs as directed by the Contract Administrator such that the sidewalk is clear, signs are unobstructed, and sidewalk has a 2.5 metre height clearance.

E20.6 Prune horizontal and vertical within the limits of construction to ensure construction equipment can be operated without interfering with trees and shrubs to remain. The Contractor shall be

aware of all locations in the Work area where overhead utility lines may be a factor in the required tree pruning Work.

E20.7 Prune as required to remove dead, broken or damaged limbs.

E20.8 Prune back to healthy growth while maintaining balanced crown shape.

E20.9 Employ clean sharp tools.

E20.10 Make cuts smooth and flush with outer edge of branch collar near the main stem or branch.

E20.11 Cuts must be smooth and sloped to prevent accumulation of water on cut.

E20.12 Do not leave little stumps (“horns”) on trunks or main branches.

E20.13 Remove all pruned branches off-site

E20.14 Prune according to accepted horticultural practices as outlined in “The Pruning Manual”, Publication No. 1505-1977 by Agriculture Canada.

E20.15 American Elm Trees are not to be pruned between April 1 and August 1, and Siberian Elm Trees between April 1 and July 1 of any year under provisions of The Dutch Elm Disease Act.

REMOVAL METHODOLOGY

E20.16 The Contractor shall remove trees (< 150 mm caliper) as indicated on the drawings. There are two trees on Blanchard Avenue and two trees on the intersection Middle Gate and Blanchard Avenue and one tree on East Gate.

E20.17 Remove the trees and roots below the proposed sidewalk and haul off-site.

MEASUREMENT AND PAYMENT

E20.18 Pruning of existing trees will be measured on a unit basis, pruning of existing shrubs will be measured on a linear metre basis, parallel to the sidewalk, for the total length of shrubs pruned. Payment will be at the Contract Unit Price for the Items of Work below. Price shall be payment in full for supplying materials, tools and for performing the Work specified herein.

E20.19 Removal of existing trees shall not be measured or paid for and shall be considered incidental to Sidewalk Construction.

E20.20 Items of Work:

(a) Pruning of Existing Trees (each)

(b) Pruning of Existing Shrubs (l.m)

E21. SIDEWALK EXPANSION JOINTS

DESCRIPTION

E21.1 Further to CW 3325 - R5, CW 3235-R9 and CW 3310-R19, this specification covers the supply and installation of expansion joints to be constructed within concrete sidewalk.

E21.2 Referenced Standard Details

SD-228AA Sidewalk Expansion Joints (Appendix ‘B’)

MATERIALS

E21.3 Use only those materials listed as Approved Products for Surface Works. The Approved Products are available in Adobe Acrobat (.pdf) format at the City of Winnipeg, Corporate Finance, Material Management Internet site at:

https://legacy.winnipeg.ca/finance/findata/matmgt/std_const_spec/current/Docs/Approved_Product_Surface_Works.pdf

E21.4 Expansion Joint Filler

(a) Sidewalk expansion joints shall be closed-cell expansion joint filler.

E21.5 Reinforcing Steel

(a) 300mm long 10M dowels. Dowel bars shall be plain round bars of grade 300 or better in accordance with CSA G40.21. Epoxy coating shall meet the requirements of ASTM Standard A934/A934M, Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars.

(b) The dowels shall be placed half depth of the sidewalk and aligned parallel to the centreline and surface of the slab with a maximum allowable tolerance of ± 5 mm. The dowels shall be positioned sufficiently rigid so the dowels are held in alignment within the specified tolerance, both horizontally and vertically, until the concrete placing and setting cycle is complete.

(c) All areas of the dowel bar with damaged epoxy coating shall be cleaned and painted to the satisfaction of the Contract Administrator.

(d) All dowels shall be thoroughly coated with a thin uniform coating of bond breaker or lubricant such as oil, grease, or synthetic materials to prevent bonding with the concrete for the length of the dowel. The bond breaker coating shall be smooth and free of voids.

CONSTRUCTION METHODS

E21.6 Install sidewalk expansion joints as detailed in SD-228AA Sidewalk Expansion Joints and as indicated on the Drawings. At minimum, expansion joints shall be installed on each side of a driveway and at a 15 m spacing throughout all renewed sidewalks.

E21.7 Expansion joints shall be constructed and installed as indicated in the Contract Documents or directed by the Contract Administrator.

E21.8 The fiber joint filler shall extend the full width and depth of the sidewalk. Any excess material shall be trimmed to match the surface of the concrete.

E21.9 Dowels shall be placed at 0.45m O/C spacing. Three dowels shall be installed at each expansion joint no closer than 0.15m from edge of concrete. If dowels are displaced during concrete placing operations, concrete placement shall cease and shall not resume until the displaced dowels have been reset to the true design position.

E21.10 Once dowels are in position, they shall be inspected and approved by the Contract Administrator before any concrete is placed. Otherwise the concrete will be rejected by the Contract Administrator and shall be removed by the Contractor at his own expense.

E21.11 Expansion joints shall be installed every 15 meters when constructing new or renewing existing sidewalk. If sidewalk is constructed during cold weather concreting period, expansion joints shall be installed every 12 meters. Expansion joints shall not be installed when renewing less than 15m of sidewalk.

E21.12 Where the Drawings call for a new slab to be tied into an existing slab along a transverse joint, the Contractor shall construct an expansion joint and install dowels into the existing slab in accordance with Clause 6.3.2., CW 3310. Following installation of dowels, the ends of the dowels that extend into the new area shall be completely coated with a thin uniform coating of approved bond breaker or lubricant.

E21.13 When replacing heaved panels in an existing sidewalk, expansion joints shall be installed on both ends of the replaced panels.

E21.14 Expansion joints shall not be installed when constructing monolithic curb and sidewalk.

E21.15 Expansion joints shall be installed when installing separate concrete splash strip.

MEASUREMENT AND PAYMENT

E21.16 No measurement or payment shall be made for supplying all materials and for performing all operations herein described and all other items incidental to the Work included in this Specification.

E22. WATER SERVICE REPLACEMENT

DESCRIPTION

E22.1 Provide all labour, materials, methods, equipment and accessories for installation of new water service lines and connections to the existing watermain and existing service line.

CONSTRUCTION METHODS

E22.2 The Contractor shall:

(a) install new water service lines from the existing corporation stop to the designated curb stop location.

(b) connect the new water service lines to the existing corporation stops.

(c) replace the existing curb stops and curb stop boxes for all service replacements.

MEASUREMENT AND PAYMENT

E22.3 Water service replacement will be measured on a linear basis and paid for at the Contract Unit Price for “Water Service Replacement.” The length to be paid for shall be the total linear meters of new water service line installed and accepted by the Contract Administrator.

E22.4 Replacement of existing curb stops will measured on a unit basis and paid for at the Contract Unit Price for “Curb Stops - Replace Existing.” The number to be paid for shall be the total number of curb stops replaced in accordance with this Specification, accepted and measured by the Contract Administrator.

E22.5 Replacement of existing curb stop boxes will be measured on a unit basis and paid for at the Contract Unit Price for “Curb Stop Boxes - Replace Existing.” The number to be paid for shall be the total number of curb stop boxes replaced in accordance with this Specification, accepted and measured by the Contract Administrator.

E22.6 Connection to the existing watermain is considered incidental to the water service replacement and will not be paid separately.

E23. WORKING AROUND MANITOBA HYDRO POLES

DESCRIPTION

E23.1 When excavating for the road within three (3.0) m of a Manitoba Hydro wood pole, a Safety Watch will be required. The Contractor shall provide a digger truck capable of holding the pole in place while excavation and granular subbase backfill is completed back to original grade.

(a) The digger truck to be provided by the Contractor shall be to the satisfaction of the Contract Administrator and Manitoba Hydro Safety Watch personnel; and

(b) Manitoba Hydro has provided guidance for allowable excavations around existing poles.

CONSTRUCTION METHODS

E23.2 The pole rigging sling to be provided by the Contractor shall be to the satisfaction of the Contract Administrator and Manitoba Hydro Safety Watch personnel.

E23.3 The sling is to be wrapped around the pole and connected it to the winch line of the digger truck. The sling is to be situated just above the halfway mark of the pole between ground level and the top of the pole. The reason for this is to allow the operator to have control of the pole in the event that the pole breaks (due to rot or cracks).

E23.4 Manitoba Hydro Safety Watch personnel will assist the Contractor in attaching and detaching the pole sling.

MEASUREMENT AND PAYMENT

E23.5 The Work described in this Specification will be considered incidental to “Excavation” and no measurement or payment will be made.

E24. WORKING IN CLOSE PROXIMITY TO GAS INFRASTRUCTURE

DESCRIPTION

E24.1 While working in close proximity to gas infrastructure, all procedures and precautions outlined in the Appendix ‘D’ – Safe Excavation & Safety Watch Guideline manual must be adhered to. Ensure that all locates and clearances are current and have been received and understood prior to construction.

MEASUREMENT AND PAYMENT

E24.2 Hydro excavation to locate and verify gas infrastructure as typically required by Manitoba Hydro will be considered incidental to the Work.

E24.3 Any costs associated performing Safety Watches will be considered incidental to the Work.

E25. MANHOLE INSPECTIONS

DESCRIPTION

E25.1 This specification covers the inspection of both new and repaired manholes completed under this contract. Inspections are to be conducted in accordance with the existing specification CW 2145 for all manholes that are worked on.

CONSTRUCTION METHODS

E25.2 The Contractor shall ensure that a thorough inspection is conducted to capture the entire new structure of each manhole. The inspection shall also encompass the repaired areas.

MEASUREMENT AND PAYMENT

E25.3 Manhole inspection will be measured on a unit basis and paid for at the Contract Unit Price for “Manhole Inspections” The number of units to be paid for will be the total number of manholes inspected in accordance with this specification, accepted and measured by the Contract Administrator.

E25.4 Payment will not be made until the required report submissions are accepted by the Contract Administrator.

E25.5 Payment will not be made for inspections re-performed where the Contract Administrator has determined the requirements of the specification have not been satisfied.

E26. NEW STANDARD DETAILS AND DRAWING DETAILS

DESCRIPTION

E26.1 Further to CW 3110, CW3120, CW3130, CW3230, CW 3235, CW3240, CW 3310 and CW 3325, this specification covers the use of updated and new standard details and Drawing details.

E26.2 The following Referenced Standard Details are provided in Appendix 'B' and on Sheet 12 of the Drawings:

(a) SD-200A – Barrier Curb for Asphalt Pavements

(b) SD-202CA – 75 mm Lip Curb with Integral Approach for Asphalt Pavements

(c) SD-203C – Modified Barrier Curb for Asphalt Pavements

(d) SD-206CA – Safety Curb for Asphalt Pavements

(e) SD-220D - Curb and Gutter Inlet Isolation Detail for Asphalt Pavements

(f) SD-228A – Concrete Sidewalk

(g) SD-228AA – Sidewalk Expansion Joints

(h) SD-229FA – Curb Ramp for Asphalt Pavements

(i) SD-235 – Residential Approach – Concrete

(j) SD-240A – Interlocking Paving Stone Detail for Residential Approaches

(k) SD-245 – Subdrain Installation Detail

(l) Drawing Sheet 12 Detail – Monolithic Curb and Sidewalk

MATERIALS

E26.3 Use only those materials listed as Approved Products for Surface Works. The Approved Products are available in Adobe Acrobat (.pdf) format at the City of Winnipeg, Corporate Finance, Material Management Internet site at:
https://legacy.winnipeg.ca/finance/findata/matmgt/std const spec/current/Docs/Approved Product_Surface_Works.pdf

CONSTRUCTION METHODS

E26.4 Construct Barrier Curb for Asphalt Pavements, 75 mm Lip Curb with Integral Approach for Asphalt Pavements, Modified Barrier Curb for Asphalt Pavements, and Curb Ramp for Asphalt Pavements in accordance with E16.

E26.5 Construct Safety Curb for Asphalt Pavements in accordance with SD-206CA.

E26.6 Construct Curb and Gutter Inlet Isolations for Asphalt Pavements in accordance with SD-220D.

E26.7 Construct Concrete Sidewalk in accordance with SD-228A.

E26.8 Construct Sidewalk Expansion Joints in accordance with SD-228AA.

E26.9 Construct Concrete Residential Approaches in accordance with SD-235.

E26.10 Construct Interlocking Paving Stone Detail for Residential Approaches in accordance with SD-240A

E26.11 Construct Subdrains in accordance with SD-245.

E26.12 Construct Monolithic Curb and Sidewalk in accordance with the detail on Drawing Sheet 12

MEASUREMENT AND PAYMENT

E26.13 For SD-200A Barrier Curb for Asphalt Pavements, SD-202CA 75 mm Lip Curb with Integral Approach for Asphalt Pavements, SD-203C Modified Barrier Curb for Asphalt Pavements, and SD-229FA Curb Ramp for Asphalt Pavements, payment will be made in accordance with E16 Construction of Curbs for Asphalt Pavements.

E26.14 For SD-206CA Safety Curb for Asphalt Pavements payment will be made in accordance with E3 Safety Curb Construction.

E26.15 For SD-220D Curb and Gutter Inlet Isolations for Asphalt Pavement will not be paid directly but considered incidental to items “Catch Pits”, “Catchbasins”, or “Adjustment of Catchbasin Frames” as applicable.

E26.16 For SD-228A Concrete Sidewalk, payment will be made in accordance with “100 mm Type 5 Concrete Sidewalk”. Base course material will be considered incidental to the work.

E26.17 SD-228AA Sidewalk Expansion Joints, payment will be made in accordance with E21 Sidewalk Expansion Joints.

E26.18 SD-235 Residential Approach – Concrete, payment will be made in accordance with item “Construction of 150 mm Type 4 Concrete Pavement for Early Opening 72 Hour (Reinforced)”. Excavation shall be considered incidental to the work within private approach. Granular base will be paid in accordance with item “Base Course Material – Granular C Limestone”.

E26.19 For SD-240A Interlocking Paving Stone Detail for Residential Approaches, payment will be made in accordance with item “Interlocking Paving Stones”. Granular base will be paid in accordance with item “Base Course Material – Granular C Limestone”. Bedding sand will be considered incidental to the Work.

E26.20 For SD-245 Subdrain Installation Detail, payment will be made in accordance with item “Installation of Subdrains”.

E26.21 For Drawing Sheet 12 Detail Monolithic Curb and Sidewalk, payment will be made in accordance with item “Construction of Monolithic Type 5 Concrete Curb and Sidewalk”. Sub-base course material will be paid in accordance with item “50 mm Granular B Recycled Concrete”. Base course material will be considered incidental to the work.

Appendix A: Geotechnical Report

Stantec Consulting Ltd.
199 Henlow Bay
Winnipeg MB R3Y 1G4

February 6, 2025

Project/File: 123317458

Jeff Crang
Tetra Tech Canada Inc.
400-161 Portage Avenue East
Winnipeg, Manitoba R3B 0Y4

Good day Jeff,

Reference: 25-R-08 2025 Local Street Renewal Program - Geotechnical Investigation

Stantec Consulting Ltd. (Stantec) was retained to undertake a factual geotechnical investigation for the 25-R-08 2025 Local Street Renewal Program in Winnipeg, Manitoba. Use of this report is subject to the Statement of General Conditions provided in Appendix A.

The coring and drilling program was conducted from December 16, 2024, to January 3, 2025. A total of 12 locations were investigated with pavement coring and subsurface geotechnical drilling. Pavement coring was performed by Stantec's geotechnical field technologist, and drilling services were provided by Maple Leaf Drilling Ltd. under the supervision of Stantec's technologist. A Borehole Location Plan is provided in Appendix B.

1. Pavement Coring

A total of 12 pavement core samples were recovered to determine the in-place pavement thickness. The existing pavement thicknesses are summarized in Table 1 below, and the core photographs are provided in Appendix C.

2. Geotechnical Drilling

A total of 12 boreholes were investigated by geotechnical drilling. The boreholes were terminated at depths ranging from 2.1 m to 3.0 m. Soil samples were obtained directly from the auger flights at depths of 0.9 m, 1.3 m, 1.6 m, 1.9 m, 2.2 m, 2.6 m, and 3.0 m. The testholes were examined for evidence of sloughing and groundwater seepage upon completion of drilling.

The borehole records are provided in Appendix D. The soil classification used in the borehole records is as per ASTM D2487 – *Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).*

3. Existing Pavement Thicknesses

The existing pavement thicknesses are provided in the following table:

Borehole No.	Street	Asphalt Thickness (mm)	Concrete Thickness (mm)	Total Pavement Thickness (mm)
81	East Gate	55	0	55
82	East Gate	35	0	35
83	East Gate	55	0	55
84	West Gate	85	0	85
85	West Gate	50	0	50
86	West Gate	60	0	60
87	Middle Gate	110	0	110
88	Middle Gate	60	0	60
89	Middle Gate	80	0	80
90	Middle Gate	80	0	80
91	Blanchard Ave	40	0	40
92	Blanchard Ave	90	0	90

4. Laboratory Testing

Laboratory determination of moisture content (ASTM D2216) was conducted on all soil samples. The results are provided on the attached borehole records.

In addition, the following laboratory tests were conducted on select samples:

- ASTM D4318 - *Liquid Limit, Plastic Limit, and Plasticity Index of Soils*
- ASTM D7928 - *Particle-Size Distribution of Fine-Grained Soils Using The Sedimentation Analysis*
- ASTM D698 - *Laboratory Compaction Characteristics of Soil Using Standard Effort*
- ASTM D1883 - *California Bearing Ratio (CBR) of Laboratory-Compacted Soils*

The CBR tests were performed on test specimens compacted to 95% of the maximum dry density under soaked conditions.

The laboratory test reports are provided in Appendix E.

5. Closure

Please contact the undersigned if you have any questions regarding this report.

Reference: **25-R-08 2025 Local Street Renewal Program - Geotechnical Investigation**

Regards,

Stantec Consulting Ltd.

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Geotechnical Engineer, Materials Testing Services
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jason.thompson@stantec.com

Attachment: Appendix A – Statement of General Conditions
Appendix B – Borehole Location Plan
Appendix C – Core Photographs
Appendix D – Borehole Records
Appendix E – Laboratory Test Reports
- Atterberg Limits Test Reports
- Particle-Size Analysis Reports
- Standard Proctor Test Reports
- CBR Test Reports

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Appendix A

Statement of General Conditions

STATEMENT OF GENERAL CONDITIONS

USE OF THIS REPORT: This report has been prepared for the sole benefit of the Client or its agent and may not be used by any third party without the express written consent of Stantec and the Client. Any use which a third party makes of this report is the responsibility of such third party.

BASIS OF THE REPORT: The information, opinions, and/or recommendations made in this report are in accordance with Stantec's present understanding of the site-specific project as described by the Client. The applicability of these is restricted to the site conditions encountered at the time of the investigation or study. If the proposed site-specific project differs or is modified from what is described in this report or if the site conditions are altered, this report is no longer valid unless Stantec is requested by the Client to review and revise the report to reflect the differing or modified project specifics and/or the altered site conditions.

STANDARD OF CARE: Preparation of this report, and all associated work, was carried out in accordance with the normally accepted standard of care in the state or province of execution for the specific professional service provided to the Client. No other warranty is made.

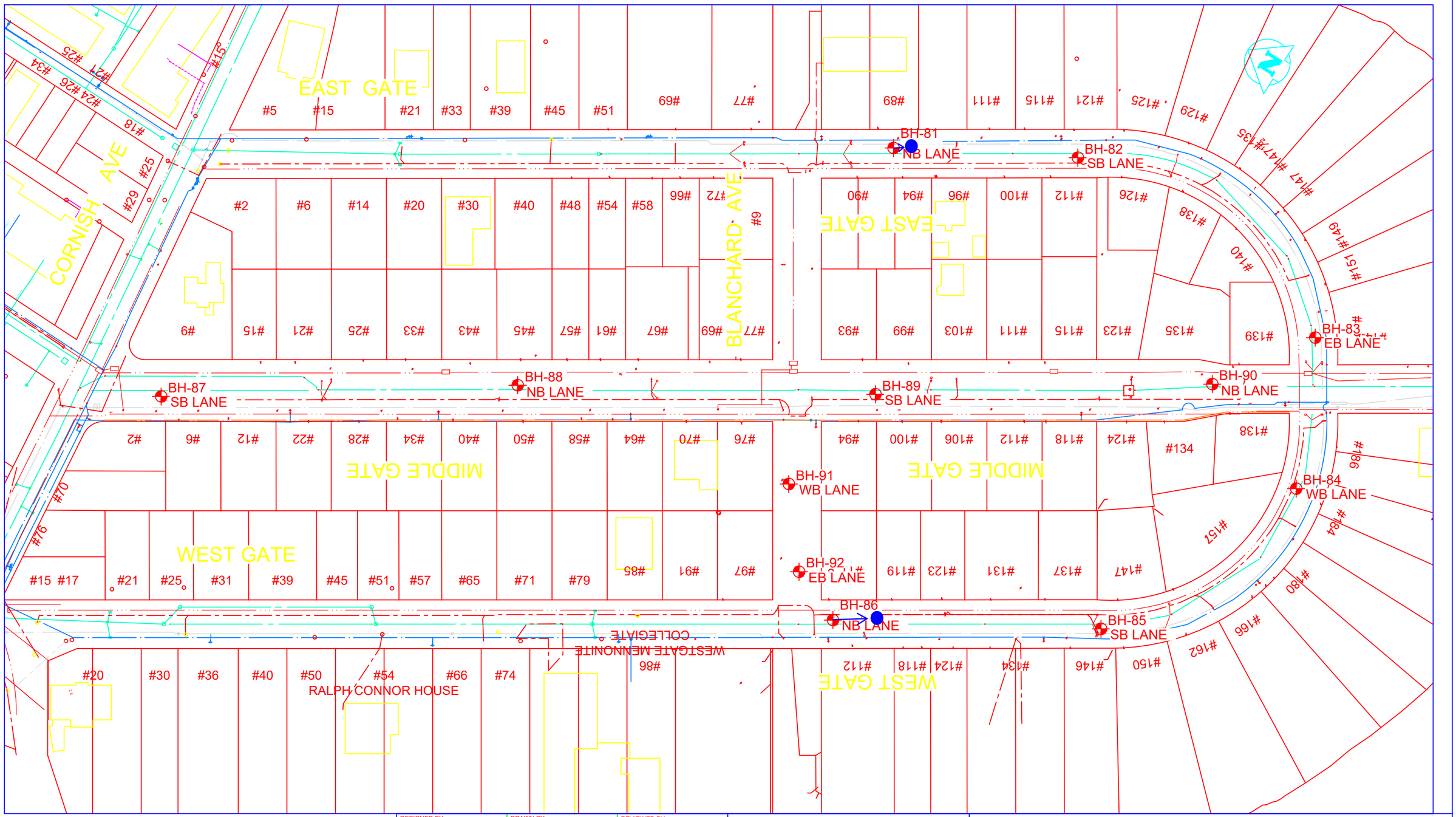
INTERPRETATION OF SITE CONDITIONS: Soil, rock, or other material descriptions, and statements regarding their condition, made in this report are based on site conditions encountered by Stantec at the time of the work and at the specific testing and/or sampling locations. Classifications and statements of condition have been made in accordance with normally accepted practices which are judgmental in nature; no specific description should be considered exact, but rather reflective of the anticipated material behavior. Extrapolation of in situ conditions can only be made to some limited extent beyond the sampling or test points. The extent depends on variability of the soil, rock, and groundwater conditions as influenced by geological processes, construction activity, and site use.

VARYING OR UNEXPECTED CONDITIONS: Should any site or subsurface conditions be encountered that are different from those described in this report or encountered at the test locations, Stantec must be notified immediately to assess if the varying or unexpected conditions are substantial and if reassessments of the report conclusions or recommendations are required. Stantec will not be responsible to any party for damages incurred as a result of failing to notify Stantec that differing site or sub-surface conditions are present upon becoming aware of such conditions.

PLANNING, DESIGN, OR CONSTRUCTION: Development or design plans and specifications should be reviewed by Stantec, sufficiently ahead of initiating the next project stage (property acquisition, tender, construction, etc.), to confirm that this report completely addresses the elaborated project specifics and that the contents of this report have been properly interpreted. Specialty quality assurance services (field observations and testing) during construction are a necessary part of the evaluation of sub-subsurface conditions and site preparation works. Site work relating to the recommendations included in this report should only be carried out in the presence of a qualified geotechnical engineer; Stantec cannot be responsible for site work carried out without being present.

Appendix B

Borehole Location Plan



DESIGNED BY: DAL	DRAWN BY: DID	REVIEWED BY: JNC
APPROVED BY: JNC	DATE: 2024/11/05	SCALE: 1:1,500

CLIENT: CITY OF WINNIPEG

TETRA TECH

PROJECT NAME: 2025 REGIONAL AND LOCAL STREET RENEWAL - 25-R-08

DRAWING DESCRIPTION:
BOREHOLE LOCATIONS
EAST GATE, MIDDLE GATE, WEST GATE AND BLANCHARD AVE.
PLAN

PROJECT NO:	CITY DRAWING NO:	SHEET NO:	REV:
704-INF.MBI03019-01		1	0

B (279 x 431)

3D MODEL REF No:

TT DOCUMENT I.D. No: 704-INF.MBI03019-01-DWG-C0001-00

Appendix C

Core Photographs

Figure 1 – Core Sample No. 81 - East Gate

Figure 2 – Core Sample No. 82 – East Gate

Figure 3 – Core Sample No. 83 – East Gate

Figure 4 – Core Sample No. 84 – West Gate

Figure 5 – Core Sample No. 85 – West Gate

Figure 6 – Core Sample No. 86 – West Gate

Figure 7 – Core Sample No. 87 – Middle Gate

Figure 8 – Core Sample No. 88 – Middle Gate

Figure 9 – Core Sample No. 89 – Middle Gate

Figure 10 – Core Sample No. 90 – Middle Gate

Figure 11 – Core Sample No. 91 – Blanchard Ave

Figure 12 – Core Sample No. 92 – Blanchard Ave

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Appendix D

Borehole Records

SYMBOLS AND TERMS USED ON BOREHOLE AND TEST PIT RECORDS

SOIL DESCRIPTION

Terminology describing common soil genesis

Rootmat	vegetation, roots and moss with organic matter and topsoil typically forming a mattress at the ground surface
Topsoil	mixture of soil and humus capable of supporting vegetative growth
Peat	mixture of visible and invisible fragments of decayed organic matter
Till	unstratified glacial deposit which may range from clay to boulders
Fill	material below the surface identified as placed by humans (excluding buried services)

Terminology describing soil structure

Desiccated	having visible signs of weathering by oxidization of clay minerals, shrinkage cracks, etc.
Fissured	having cracks, and hence a blocky structure
Varved	composed of regular alternating layers of silt and clay
Stratified	composed of alternating successions of different soil types, e.g. silt and sand
Layer	> 75 mm in thickness
Seam	2 mm to 75 mm in thickness
Parting	< 2 mm in thickness

Terminology describing soil types

The classification of soil types are made on the basis of grain size and plasticity in accordance with the Unified Soil Classification System (USCS) (ASTM D 2487 or D 2488) which excludes particles larger than 75 mm. For particles larger than 75 mm, and for defining percent clay fraction in hydrometer results, definitions proposed by Canadian Foundation Engineering Manual, 4th Edition are used. The USCS provides a group symbol (e.g. SM) and group name (e.g. silty sand) for identification.

Terminology describing cobbles, boulders, and non-matrix materials (organic matter or debris)

Terminology describing materials outside the USCS, (e.g. particles larger than 75 mm, visible organic matter, and construction debris) is based upon the proportion of these materials present:

Trace, or occasional	Less than 10%
Some	10-20%
Frequent	> 20%

Terminology describing compactness of cohesionless soils

The standard terminology to describe cohesionless soils includes compactness (formerly "relative density"), as determined by the Standard Penetration Test (SPT) N-Value - also known as N-Index. The SPT N-Value is described further on Page 2. A relationship between compactness condition and N-Value is shown in the following table.

Compactness Condition	SPT N-Value
Very Loose	<4
Loose	4-10
Compact	10-30
Dense	30-50
Very Dense	>50

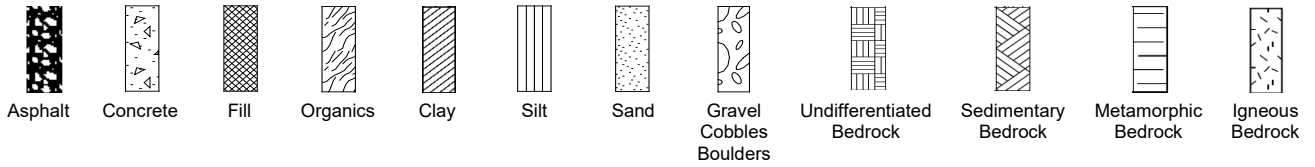
Terminology describing consistency of cohesive soils

The standard terminology to describe cohesive soils includes the consistency, which is based on undrained shear strength as measured by *in situ* vane tests, penetrometer tests, or unconfined compression tests. Consistency may be crudely estimated from SPT N-Value based on the correlation shown in the following table (Terzaghi and Peck, 1967). The correlation to SPT N-Value is used with caution as it is only very approximate.

Consistency	Undrained Shear Strength		Approximate SPT N-Value
	kips/sq.ft	kPa	
Very Soft	<0.25	<12.5	<2
Soft	0.25 - 0.5	12.5 - 25	2-4
Firm	0.5 - 1.0	25 - 50	4-8
Stiff	1.0 - 2.0	50 – 100	8-15
Very Stiff	2.0 - 4.0	100 - 200	15-30
Hard	>4.0	>200	>30

STRATA PLOT

Strata plots symbolize the soil or bedrock description. They are combinations of the following basic symbols. The dimensions within the strata symbols are not indicative of the particle size, layer thickness, etc. Not all bedrock strata plots are shown.



SAMPLE TYPE

AS, BS, GS		Auger sample; bulk sample; grab sample
DP		Direct-Push sample (small diameter tube sampler hydraulically advanced)
PS		Piston sample
SO		Sonic tube
SS		Split spoon sample (obtained by performing the Standard Penetration Test)
ST		Shelby Tube or thin wall tube
SV		Shear vane
RC *HQ, NQ, BQ, etc.*		Rock Core; samples obtained with the use of standard size diamond coring bits.

WATER LEVEL

Measured:
in standpipe, piezometer, or well

Inferred:
seepage noted or water level measured during or at completion of drilling

RECOVERY FOR SOIL SAMPLES

The recovery is recorded as the length of the soil sample recovered in the direct push, split spoon sampler, Shelby Tube, or sonic tube.

N-VALUE

Numbers in this column are the field results of the Standard Penetration Test (SPT): the number of blows of a 140-pound (63.5 kg) hammer falling 30 inches (760 mm), required to drive a 2 inch (50.8 mm) O.D. split spoon sampler one foot (300 mm) into the soil. In accordance with ASTM D1586, the N-Value equals the sum of the number of blows (N) required to drive the sampler over the interval of 6 to 18 in. (150 to 450 mm). However, when a 24 in. (610 mm) sampler is used, the number of blows (N) required to drive the sampler over the interval of 12 to 24 in. (300 to 610 mm) may be reported if this value is lower. For split spoon samples where insufficient penetration was achieved and N-Values cannot be presented, the number of blows are reported over sampler penetration in millimetres (e.g. 50 for 75 mm or 50/75 mm). Some design methods make use of N-values corrected for various factors such as overburden pressure, energy ratio, borehole diameter, etc. No corrections have been applied to the N-values presented on the log.

DYNAMIC CONE PENETRATION TEST (DCPT)

Dynamic cone penetration tests are performed using a standard 60-degree apex cone connected to 'A' size drill rods with the same standard fall height and weight as the Standard Penetration Test. The DCPT value is the number of blows of the hammer required to drive the cone one foot (300 mm) into the soil. The DCPT is used as a probe to assess soil variability.

OTHER TESTS

S	Sieve analysis
H	Hydrometer analysis
k	Laboratory permeability
γ	Unit weight
G_s	Specific gravity of soil particles
CD	Consolidated drained triaxial
CU	Consolidated undrained triaxial with pore pressure measurements
UU	Unconsolidated undrained triaxial
DS	Direct Shear
C	Consolidation
Q_u	Unconfined compression
I_p	Point Load Index (I_p on Borehole Record equals $I_p(50)$ in which the index is corrected to a reference diameter of 50 mm)

	Single packer permeability test; test interval from depth shown to bottom of borehole
	Double packer permeability test; test interval as indicated
	Falling head permeability test using casing
	Falling head permeability test using well point or piezometer

ROCK DESCRIPTION

Except where specified below, terminology for describing rock is as defined by the International Society for Rock Mechanics (ISRM) 2007 publication "The Complete ISRM Suggested Methods for Rock Characterization, Testing and Monitoring: 1974-2006"

Total Core Recovery (TCR) denotes the sum of all measurable rock core recovered in one drill run. The value is noted as a percentage of recovered rock core based on the total length of the drill run.

Solid Core Recovery (SCR) is defined as total length of solid core divided by the total drilled length, presented as a percentage. Solid core is defined as core with one full diameter.

Rock Quality Designation (RQD) is a modified core recovery that incorporates only pieces of solid core that are equal to or greater than 10 cm (4") along the core axis. It is calculated as the total cumulative length of solid core (> 10 cm) as measured along the centerline of the core divided by the total length of borehole drilled for each drill run or geotechnical interval, presented as a percentage. RQD is determined in accordance with ASTM D6032.

Fracture Index (FI) is defined as the number of naturally occurring fractures within a given length of core. The Fracture Index is reported as a simple count of natural occurring fractures.

Terminology describing rock quality

Rock Mass Quality	Rock Quality Designation Number (RQD)	Alternate (Colloquial) Rock Mass Quality	
Very Poor Quality	0-25	*Very Severely Fractured*	*Crushed*
Poor Quality	25-50	*Severely Fractured*	*Shattered or Very Blocky*
Fair Quality	50-75	*Fractured*	*Blocky*
Good Quality	75-90	*Moderately Jointed*	*Sound*
Excellent Quality	90-100	*Intact*	*Very Sound*

Terminology describing rock strength

Strength Classification	Grade	Field Estimates of Uniaxial Compressive Strength	Unconfined Compressive Strength (MPa)
Extremely Weak	R0	Indented by thumbnail	<1
Very Weak	R1	Crumbles under firm blows of geological hammer, can be peeled with a pocketknife	1 – 5
Weak	R2	Peeled by pocketknife with difficulty, shallow indentations made by firm blow with point of geological hammer	5 – 25
Medium Strong	R3	Cannot be scraped or peeled with a pocketknife, can be fractured with single firm blow of geological hammer	25 – 50
Strong	R4	More than one blow with geological hammer to fracture	50 – 100
Very Strong	R5	Many blows with geological hammer to fracture	100 – 250
Extremely Strong	R6	Can only be chipped with geological hammer	>250

Terminology describing rock weathering

Term	Symbol	Description
Fresh	W1	No visible signs of rock weathering. Slight discoloration along major discontinuities
Slightly	W2	Discoloration indicates weathering of rock on discontinuity surfaces. All the rock material may be discolored.
Moderately	W3	Less than half the rock is decomposed and/or disintegrated into soil.
Highly	W4	More than half the rock is decomposed and/or disintegrated into soil.
Completely	W5	All the rock material is decomposed and/or disintegrated into soil. The original mass structure is still largely intact.
Residual Soil	W6	All the rock converted to soil. Structure and fabric destroyed.

Terminology describing rock with respect to discontinuity and bedding spacing

Spacing (mm)	Discontinuities Spacing	Bedding
>6000	*Extremely Wide*	-
2000-6000	*Very Wide*	*Very Thick*
600-2000	*Wide*	*Thick*
200-600	*Moderate*	*Medium*
60-200	*Close*	*Thin*
20-60	*Very Close*	*Very Thin*
<20	*Extremely Close*	*Laminated*
<6	-	*Thinly Laminated*

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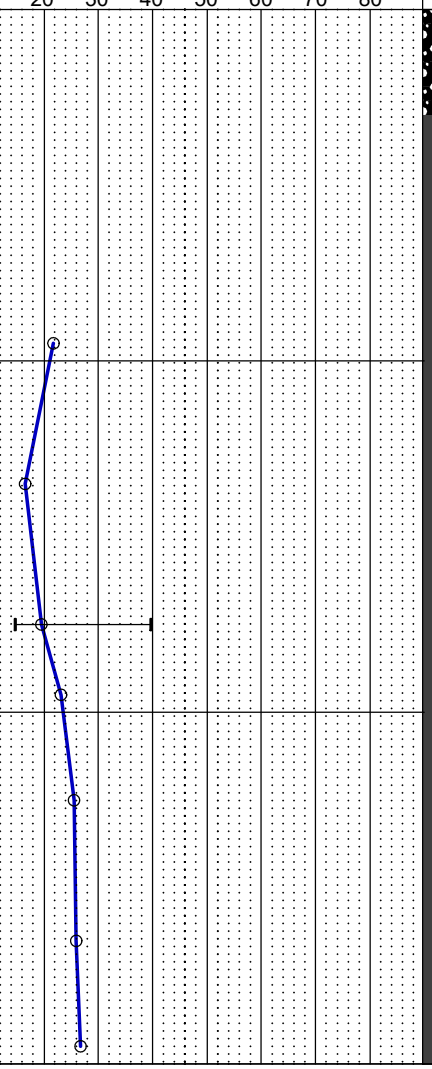
BOREHOLE RECORD

BH-81

CLIENT: **Tetra Tech Canada Inc.**
PROJECT NO.: **123317458**
PROJECT: **25-R-08 2025 Local Street Renewal**
BH ELEVATION: **N/A**
LOCATION: **East Gate**
DATUM: **N/A**
DATE BORED: **December 17 2024**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		FILL: crushed limestone, 12.5 mm						
		Firm black **SANDY LEAN CLAY (CL)**		AS				
1				AS				
		- soft below 1.7 m		BS				Sieve/Hydro at 1.6 m G 0% S 37% M 40% C 23%
2				AS				
				AS				
				AS				
3				AS				
		End of Borehole • Borehole terminated at a depth of 3.0 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.						
4								

UNDRAINED SHEAR STRENGTH, Cu (kPa)
▲ LABORATORY TEST ◆ FIELD VANE TEST
★ POCKET PENETROMETER □ POCKET SHEAR VANE
50 kPa 100 kPa 150 kPa 200 kPa
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
✖ SPT (N-value) BLOWS/0.3m
Water Content (%) and Blow Count
10 20 30 40 50 60 70 80



BACKFILL

ELEVATION (m)

BACKFILL SYMBOL: ASPHALT, GROUT, CONCRETE, BENTONITE, DRILL CUTTINGS, SAND, SLOUGH

Drilling Contractor: Maple Leaf Drilling Ltd.	Logged By: LP
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 3 m	Page 1 of 1

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BOREHOLE RECORD

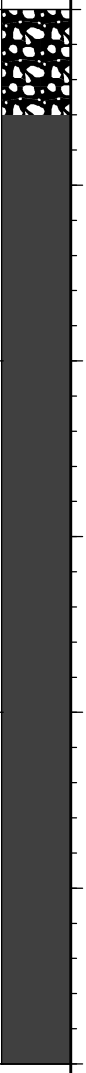
BH-82

CLIENT: **Tetra Tech Canada Inc.**
PROJECT NO.: **123317458**
PROJECT: **25-R-08 2025 Local Street Renewal**
BH ELEVATION: **N/A**
LOCATION: **East Gate**
DATUM: **N/A**
DATE BORED: **December 17 2024**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		FILL: crushed limestone, 12.5 mm						
		Firm brown **SANDY LEAN CLAY (CL)**		AS				
1				AS				
				AS				
2				AS				
				AS				
				AS				
3		**End of Borehole** • Borehole terminated at a depth of 3.0 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.						
4								

UNDRAINED SHEAR STRENGTH, Cu (kPa)
▲ LABORATORY TEST ◆ FIELD VANE TEST
★ POCKET PENETROMETER □ POCKET SHEAR VANE
50 kPa 100 kPa 150 kPa 200 kPa
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
✖ SPT (N-value) BLOWS/0.3m
Water Content (%) and Blow Count
10 20 30 40 50 60 70 80

BACKFILL



ELEVATION (m)

BACKFILL SYMBOL: ASPHALT, GROUT, CONCRETE, BENTONITE, DRILL CUTTINGS, SAND, SLOUGH

Drilling Contractor: Maple Leaf Drilling Ltd.	Logged By: LP
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 3 m	Page 1 of 1

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Stantec

BOREHOLE RECORD

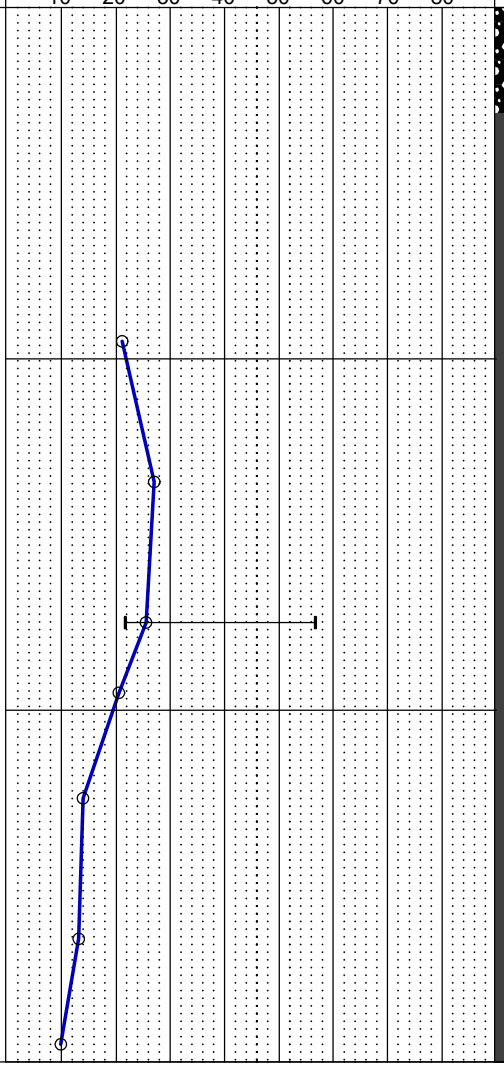
BH-83

CLIENT: **Tetra Tech Canada Inc.**
PROJECT NO.: **123317458**
PROJECT: **25-R-08 2025 Local Street Renewal**
BH ELEVATION: **N/A**
LOCATION: **East Gate**
DATUM: **N/A**
DATE BORED: **December 17 2024**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		FILL: crushed limestone, 20 mm						
		Firm brown **FAT CLAY (CH)**		AS				
1				AS				
				BS				Sieve/Hydro at 1.6 m G 0% S 2% M 66% C 32%
2		- sandy below 2.0 m		AS				
				AS				
				AS				
3		**End of Borehole** • Borehole terminated at a depth of 3.0 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.		AS				
4								

UNDRAINED SHEAR STRENGTH, Cu (kPa)
▲ LABORATORY TEST ◆ FIELD VANE TEST
★ POCKET PENETROMETER □ POCKET SHEAR VANE
50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_P W W_L
✖ SPT (N-value) BLOWS/0.3m
Water Content (%) and Blow Count
10 20 30 40 50 60 70 80



BACKFILL

BACKFILL SYMBOL: ASPHALT, GROUT, CONCRETE, BENTONITE, DRILL CUTTINGS, SAND, SLOUGH

Drilling Contractor: Maple Leaf Drilling Ltd.	Logged By: LP
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 3 m	Page 1 of 1

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BOREHOLE RECORD

BH-84

CLIENT: **Tetra Tech Canada Inc.**
PROJECT NO.: **123317458**
PROJECT: **25-R-08 2025 Local Street Renewal**
BH ELEVATION: **N/A**
LOCATION: **West Gate**
DATUM: **N/A**
DATE BORED: **December 17 2024**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		FILL: crushed limestone, 20 mm						
		Firm black **FAT CLAY (CH)**		AS				
1				AS				
				BS				Sieve/Hydro at 1.6 m G 0% S 6% M 56% C 37%
2				AS				
				AS				
				AS				
3		**End of Borehole** • Borehole terminated at a depth of 3.0 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.		AS				
4								

UNDRAINED SHEAR STRENGTH, Cu (kPa)
▲ LABORATORY TEST ◆ FIELD VANE TEST
★ POCKET PENETROMETER □ POCKET SHEAR VANE
50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_P W W_L
✖ SPT (N-value) BLOWS/0.3m
Water Content (%) and Blow Count
10 20 30 40 50 60 70 80

BACKFILL

ELEVATION (m)

BACKFILL SYMBOL: ASPHALT, GROUT, CONCRETE, BENTONITE, DRILL CUTTINGS, SAND, SLOUGH

Drilling Contractor: Maple Leaf Drilling Ltd.	Logged By: LP
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 3 m	Page 1 of 1

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Stantec

BOREHOLE RECORD

BH-85

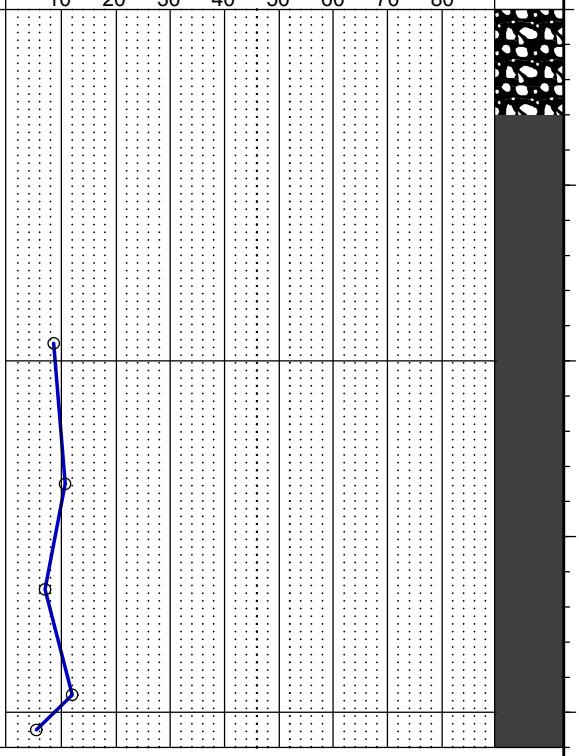
CLIENT: **Tetra Tech Canada Inc.**
PROJECT NO.: **123317458**
PROJECT: **25-R-08 2025 Local Street Renewal**
BH ELEVATION: **N/A**
LOCATION: **West Gate**
DATUM: **N/A**
DATE BORED: **December 17 2024**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		FILL: sand, some granular materials (20 mm)		AS				
1				AS				
		FILL: sand, some granular materials (25 mm)		AS				
2				AS				
				AS				
3		**End of Borehole** • Borehole terminated at a depth of 2.1 m due to potential presence of underground utility. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.						
4								

UNDRAINED SHEAR STRENGTH, Cu (kPa)
▲ LABORATORY TEST ◆ FIELD VANE TEST
★ POCKET PENETROMETER □ POCKET SHEAR VANE
50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_P W W_L
✖ SPT (N-value) BLOWS/0.3m
Water Content (%) and Blow Count
10 20 30 40 50 60 70 80

BACKFILL



BACKFILL SYMBOL: ASPHALT GROUT CONCRETE BENTONITE DRILL CUTTINGS SAND SLOUGH

Drilling Contractor: Maple Leaf Drilling Ltd.	Logged By: LP
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 2.1 m	Page 1 of 1

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Stantec

BOREHOLE RECORD

BH-86

CLIENT: **Tetra Tech Canada Inc.**
PROJECT NO.: **123317458**
PROJECT: **25-R-08 2025 Local Street Renewal**
BH ELEVATION: **N/A**
LOCATION: **West Gate**
DATUM: **N/A**
DATE BORED: **December 17 2024**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		FILL: granular materials, 10 mm						
		Firm brown **FAT CLAY (CH)**		AS				
1				AS				
				BS				Sieve/Hydro at 1.6 m G 0% S 1% M 46% C 53%
2				AS				
		- stiff and grey below 2.3 m		AS				
				AS				
3				AS				
		End of Borehole • Borehole terminated at a depth of 3.0 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.						
4								

UNDRAINED SHEAR STRENGTH, Cu (kPa)
▲ LABORATORY TEST ◆ FIELD VANE TEST
★ POCKET PENETROMETER □ POCKET SHEAR VANE
50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_P W W_L
✖ SPT (N-value) BLOWS/0.3m
Water Content (%) and Blow Count
10 20 30 40 50 60 70 80

BACKFILL

ELEVATION (m)

BACKFILL SYMBOL: ASPHALT, GROUT, CONCRETE, BENTONITE, DRILL CUTTINGS, SAND, SLOUGH

Drilling Contractor: Maple Leaf Drilling Ltd.	Logged By: LP
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 3 m	Page 1 of 1

Printed Jan 20 2025 14:22:06 SOIL 123317458.GPJ 1/20/25

Stantec

BOREHOLE RECORD

BH-87

CLIENT: **Tetra Tech Canada Inc.**
PROJECT NO.: **123317458**
PROJECT: **25-R-08 2025 Local Street Renewal**
BH ELEVATION: **N/A**
LOCATION: **Middle Gate**
DATUM: **N/A**
DATE BORED: **December 17 2024**
WATER LEVEL: **N/A**

UNDRAINED SHEAR STRENGTH, Cu (kPa)
▲ LABORATORY TEST ◆ FIELD VANE TEST
★ POCKET PENETROMETER □ POCKET SHEAR VANE
50 kPa 100 kPa 150 kPa 200 kPa
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
✖ SPT (N-value) BLOWS/0.3m
Water Content (%) and Blow Count
10 20 30 40 50 60 70 80

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS	BACKFILL	ELEVATION (m)
0		**ASPHALT**								
		FILL: crushed limestone, 20 mm								
		Firm black **FAT CLAY (CH)**		AS						
1				AS						
				BS				Sieve/Hydro at 1.6 m G S M C 0% 2% 24% 74%		
		Stiff brown **FAT CLAY (CH)** - sole silt, trace sand		AS						
2				AS						
				AS						
				AS						
3		**End of Borehole** • Borehole terminated at a depth of 3.0 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.								
4										

BACKFILL SYMBOL: ASPHALT GROUT CONCRETE BENTONITE DRILL CUTTINGS SAND SLOUGH

Drilling Contractor: Maple Leaf Drilling Ltd.	Logged By: LP
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 3 m	Page 1 of 1

Stantec

BOREHOLE RECORD

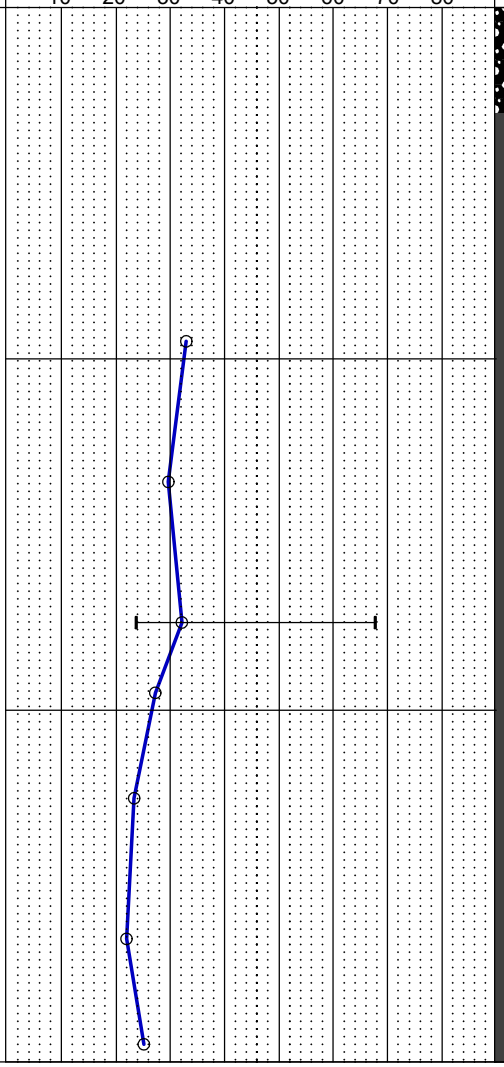
BH-88

CLIENT: **Tetra Tech Canada Inc.**
PROJECT NO.: **123317458**
PROJECT: **25-R-08 2025 Local Street Renewal**
BH ELEVATION: **N/A**
LOCATION: **Middle Gate**
DATUM: **N/A**
DATE BORED: **December 17 2024**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		FILL: crushed limestone, 20 mm						
		Firm black **FAT CLAY (CH)**		AS				
1				AS				
				BS				Sieve/Hydro at 1.6 m G 0% S 8% M 16% C 76%
		Soft brown **SILTY CLAY (CL-ML)** - trace sand		AS				
2				AS				
				AS				
				AS				
3		**End of Borehole** • Borehole terminated at a depth of 3.0 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.						
4								

UNDRAINED SHEAR STRENGTH, Cu (kPa)
▲ LABORATORY TEST ◆ FIELD VANE TEST
★ POCKET PENETROMETER □ POCKET SHEAR VANE
50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_P W W_L
✖ SPT (N-value) BLOWS/0.3m
Water Content (%) and Blow Count
10 20 30 40 50 60 70 80



BACKFILL

ELEVATION (m)

BACKFILL SYMBOL: ASPHALT, GROUT, CONCRETE, BENTONITE, DRILL CUTTINGS, SAND, SLOUGH

Drilling Contractor: Maple Leaf Drilling Ltd.		Logged By: LP
Drilling Method: 125 mm SSA		Reviewed By: GB
Completion Depth: 3 m		Page 1 of 1

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Stantec

BOREHOLE RECORD

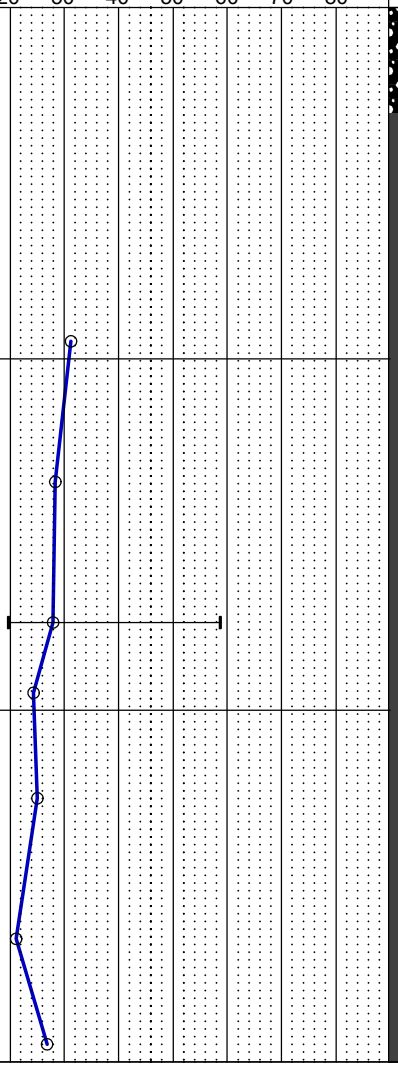
BH-89

CLIENT: **Tetra Tech Canada Inc.**
PROJECT NO.: **123317458**
PROJECT: **25-R-08 2025 Local Street Renewal**
BH ELEVATION: **N/A**
LOCATION: **Middle Gate**
DATUM: **N/A**
DATE BORED: **December 17 2024**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		FILL: crushed limestone, 20 mm						
		Stiff black **FAT CLAY (CH)**		AS				
1				AS				
				BS				Sieve/Hydro at 1.6 m G 0% S 2% M 57% C 41%
		Firm brown **SILTY CLAY (CL-ML)** - trace sand		AS				
2				AS				
				AS				
				AS				
3		**End of Borehole** • Borehole terminated at a depth of 3.0 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.						
4								

UNDRAINED SHEAR STRENGTH, Cu (kPa)
▲ LABORATORY TEST ◆ FIELD VANE TEST
★ POCKET PENETROMETER □ POCKET SHEAR VANE
50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_P W W_L
✖ SPT (N-value) BLOWS/0.3m
Water Content (%) and Blow Count
10 20 30 40 50 60 70 80



BACKFILL

ELEVATION (m)

BACKFILL SYMBOL: ASPHALT, GROUT, CONCRETE, BENTONITE, DRILL CUTTINGS, SAND, SLOUGH

Drilling Contractor: Maple Leaf Drilling Ltd.	Logged By: LP
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 3 m	Page 1 of 1

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Stantec

BOREHOLE RECORD

BH-90

CLIENT: **Tetra Tech Canada Inc.**
PROJECT NO.: **123317458**
PROJECT: **25-R-08 2025 Local Street Renewal**
BH ELEVATION: **N/A**
LOCATION: **Middle Gate**
DATUM: **N/A**
DATE BORED: **December 17 2024**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		FILL: crushed limestone, 20 mm						
		Firm brown **FAT CLAY (CH)**		AS				
1				AS				
				AS				
2				AS				
				AS				
				AS				
3				AS				
		End of Borehole • Borehole terminated at a depth of 3.0 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.						
4								

UNDRAINED SHEAR STRENGTH, Cu (kPa)
▲ LABORATORY TEST ◆ FIELD VANE TEST
★ POCKET PENETROMETER □ POCKET SHEAR VANE
50 kPa 100 kPa 150 kPa 200 kPa
WATER CONTENT & ATTERBERG LIMITS W_P W W_L
✖ SPT (N-value) BLOWS/0.3m
Water Content (%) and Blow Count
10 20 30 40 50 60 70 80

BACKFILL

ELEVATION (m)

BACKFILL SYMBOL: ASPHALT, GROUT, CONCRETE, BENTONITE, DRILL CUTTINGS, SAND, SLOUGH

Drilling Contractor: Maple Leaf Drilling Ltd.	Logged By: LP
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 3 m	Page 1 of 1

Printed Jan 20 2025 14:22:10 SOIL 123317458.GPJ 1/20/25

Stantec

BOREHOLE RECORD

BH-91

CLIENT: **Tetra Tech Canada Inc.**
PROJECT NO.: **123317458**
PROJECT: **25-R-08 2025 Local Street Renewal**
BH ELEVATION: **N/A**
LOCATION: **Blanchard Ave**
DATUM: **N/A**
DATE BORED: **December 17 2024**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS	BACKFILL	ELEVATION (m)
0		**ASPHALT**								
		FILL: crushed limestone, 20 mm								
		Firm brown **FAT CLAY (CH)**		AS						
1				AS						
				BS				Sieve/Hydro at 1.6 m G 0%, S 1%, M 52%, C 47%		
2				AS						
				AS						
				AS						
3				AS						
		End of Borehole • Borehole terminated at a depth of 3.0 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.								
4										

UNDRAINED SHEAR STRENGTH, Cu (kPa)
▲ LABORATORY TEST ◆ FIELD VANE TEST
★ POCKET PENETROMETER □ POCKET SHEAR VANE
50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_P W W_L
✖ SPT (N-value) BLOWS/0.3m
Water Content (%) and Blow Count
10 20 30 40 50 60 70 80

BACKFILL SYMBOL: ASPHALT, GROUT, CONCRETE, BENTONITE, DRILL CUTTINGS, SAND, SLOUGH

Drilling Contractor: Maple Leaf Drilling Ltd. | Logged By: LP
Drilling Method: 125 mm SSA | Reviewed By: GB
Completion Depth: 3 m | Page 1 of 1

Printed Jan 20 2025 14:22:11 SOIL 123317458.GPJ 1/20/25

Stantec

BOREHOLE RECORD

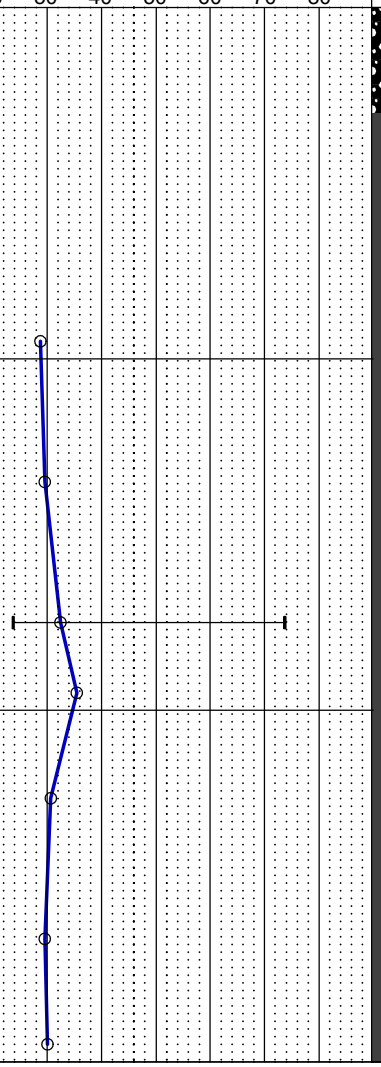
BH-92

CLIENT: **Tetra Tech Canada Inc.**
PROJECT NO.: **123317458**
PROJECT: **25-R-08 2025 Local Street Renewal**
BH ELEVATION: **N/A**
LOCATION: **Blanchard Ave**
DATUM: **N/A**
DATE BORED: **December 17 2024**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		FILL: crushed limestone, 20 mm						
		Firm brown **FAT CLAY (CH)** - trace organics		AS				
1				AS				
				BS				Sieve/Hydro at 1.6 m G S M C 0% 1% 41% 58%
2				AS				
				AS				
				AS				
3				AS				
		End of Borehole • Borehole terminated at a depth of 3.0 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.						
4								

UNDRAINED SHEAR STRENGTH, Cu (kPa)
▲ LABORATORY TEST ◆ FIELD VANE TEST
★ POCKET PENETROMETER □ POCKET SHEAR VANE
50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_P W W_L
✖ SPT (N-value) BLOWS/0.3m
Water Content (%) and Blow Count
10 20 30 40 50 60 70 80



BACKFILL

ELEVATION (m)

BACKFILL SYMBOL: ASPHALT, GROUT, CONCRETE, BENTONITE, DRILL CUTTINGS, SAND, SLOUGH

Drilling Contractor: Maple Leaf Drilling Ltd.	Logged By: LP
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 3 m	Page 1 of 1

Printed Jan 20 2025 14:22:12 SOIL 123317458.GPJ 1/20/25

Stantec

Appendix E

Laboratory Testing Reports

- Atterberg Limits
- Particle-Size Analysis
- Standard Proctor
- California Bearing Ratio
- Concrete Compressive Strength

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D4318 - LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS (LL METHOD B - ONE-POINT)

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 1

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.07
TESTED BY: Kailash Vaghjiyani

MATERIAL IDENTIFICATION

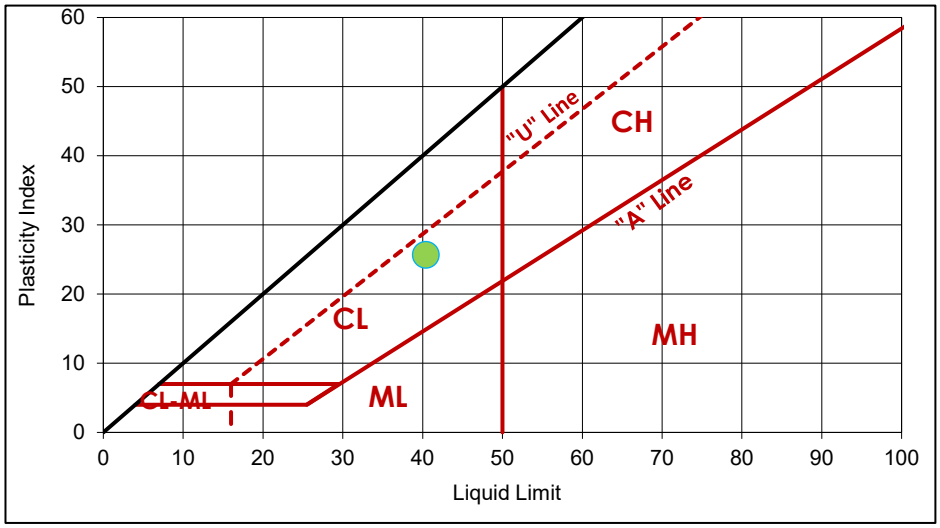
CLIENT FIELD ID BH-81, 1.6 m (East Gate)

STANTEC SAMPLE NO. 5514

LIQUID LIMIT		
TRIAL	1	2
BLOWS	27	27
MC (%)	40	40

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	15	15

LIQUID LIMIT, LL	40
PLASTIC LIMIT, PL	15
PLASTICITY INDEX, PI	25
AS REC'D MC (%)	20.1



COMMENTS
No comments.

REPORT DATE 2025.Jan.09

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D4318 - LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS (LL METHOD B - ONE-POINT)

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 2

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.07
TESTED BY: Kailash Vaghjiyani

MATERIAL IDENTIFICATION

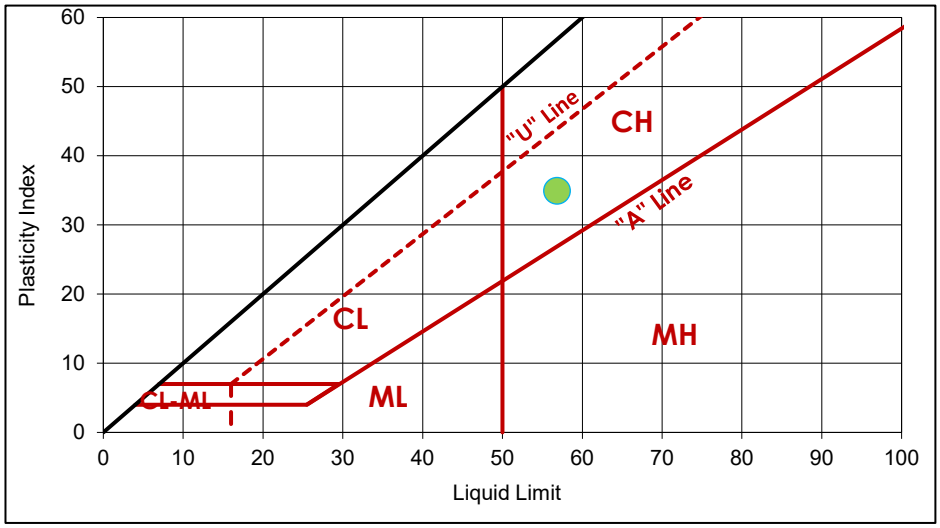
CLIENT FIELD ID BH-83, 1.6 m (East Gate)

STANTEC SAMPLE NO. 5515

LIQUID LIMIT		
TRIAL	1	2
BLOWS	26	26
MC (%)	57	57

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	22	22

LIQUID LIMIT, LL	57
PLASTIC LIMIT, PL	22
PLASTICITY INDEX, PI	35
AS REC'D MC (%)	26.1



COMMENTS
No comments.

REPORT DATE 2025.Jan.09

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D4318 - LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS (LL METHOD B - ONE-POINT)

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 3

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.08
TESTED BY: Kailash Vaghjiyani

MATERIAL IDENTIFICATION

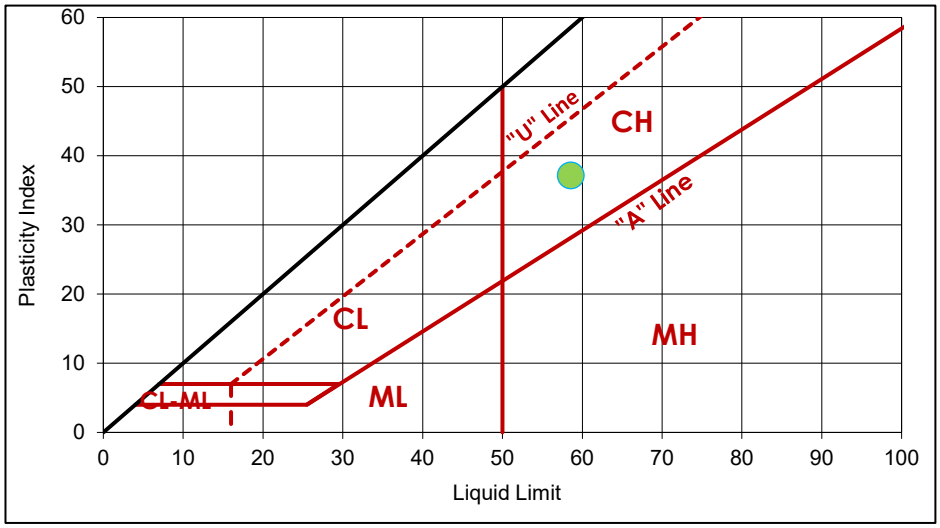
CLIENT FIELD ID BH-84, 1.6 m (West Gate)

STANTEC SAMPLE NO. 5516

LIQUID LIMIT		
TRIAL	1	2
BLOWS	27	26
MC (%)	58	58

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	21	21

LIQUID LIMIT, LL	59
PLASTIC LIMIT, PL	21
PLASTICITY INDEX, PI	38
AS REC'D MC (%)	25.46



COMMENTS
No comments.

REPORT DATE 2025.Jan.09

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D4318 - LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS (LL METHOD B - ONE-POINT)

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 4

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.08
TESTED BY: Kailash Vaghjiyani

MATERIAL IDENTIFICATION

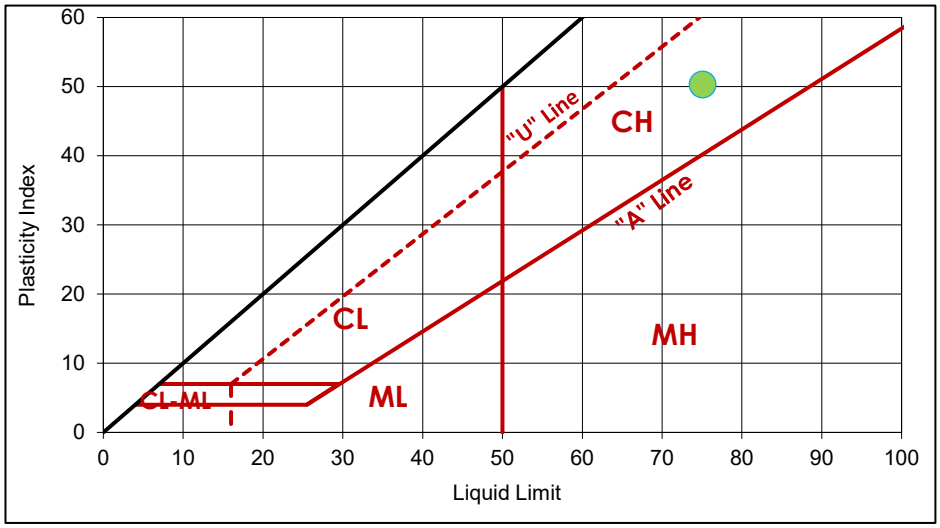
CLIENT FIELD ID BH-86, 1.6 m (West Gate)

STANTEC SAMPLE NO. 5517

LIQUID LIMIT		
TRIAL	1	2
BLOWS	28	27
MC (%)	74	74

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	25	25

LIQUID LIMIT, LL	75
PLASTIC LIMIT, PL	25
PLASTICITY INDEX, PI	50
AS REC'D MC (%)	30.2



COMMENTS
No comments.

REPORT DATE 2025.Jan.09

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D4318 - LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS (LL METHOD B - ONE-POINT)

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 5

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.08
TESTED BY: Kailash Vaghjiyani

MATERIAL IDENTIFICATION

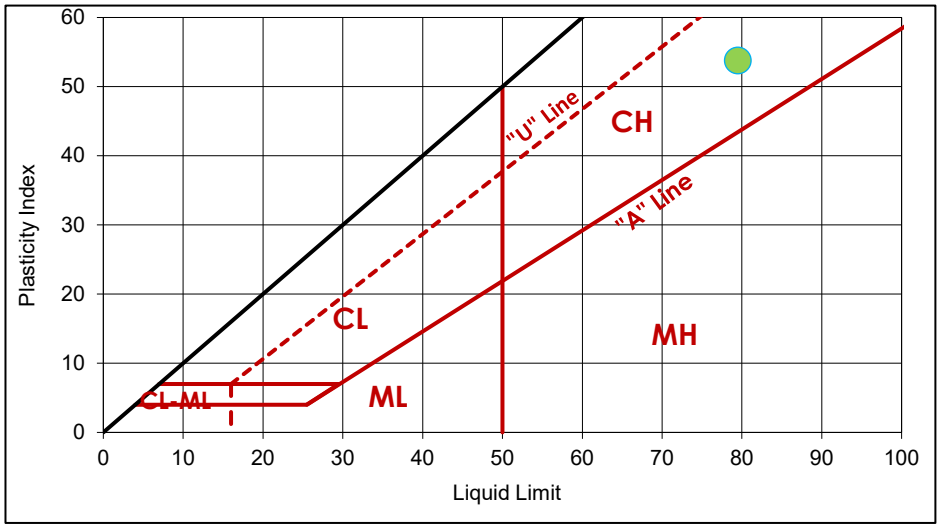
CLIENT FIELD ID BH-87, 1.6 m (Middle Gate)

STANTEC SAMPLE NO. 5518

LIQUID LIMIT		
TRIAL	1	2
BLOWS	24	24
MC (%)	80	80

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	26	26

LIQUID LIMIT, LL	79
PLASTIC LIMIT, PL	26
PLASTICITY INDEX, PI	54
AS REC'D MC (%)	31.6



COMMENTS
No comments.

REPORT DATE 2025.Jan.09

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D4318 - LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS (LL METHOD B - ONE-POINT)

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 6

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.08
TESTED BY: Kailash Vaghjiyani

MATERIAL IDENTIFICATION

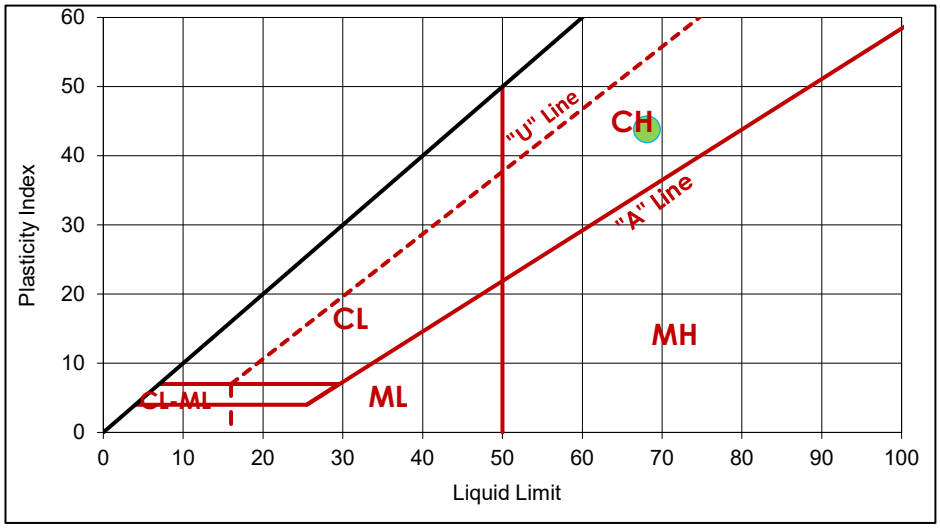
CLIENT FIELD ID BH-88, 1.6 m (Middle Gate)

STANTEC SAMPLE NO. 5519

LIQUID LIMIT		
TRIAL	1	2
BLOWS	23	23
MC (%)	69	69

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	25	24

LIQUID LIMIT, LL	68
PLASTIC LIMIT, PL	24
PLASTICITY INDEX, PI	44
AS REC'D MC (%)	32.7



COMMENTS
No comments.

REPORT DATE 2025.Jan.09

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D4318 - LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS (LL METHOD B - ONE-POINT)

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 7

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.08
TESTED BY: Blair Dawson

MATERIAL IDENTIFICATION

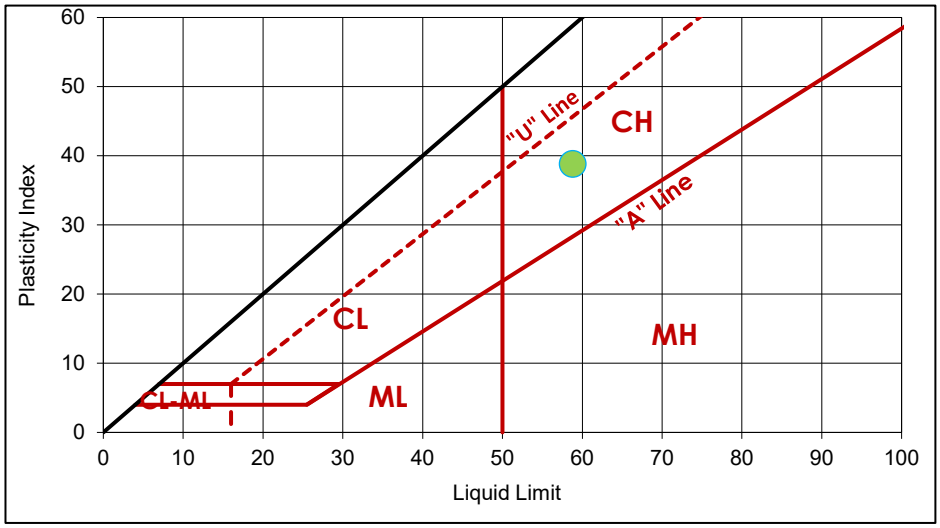
CLIENT FIELD ID BH-89, 1.6 m (Middle Gate)

STANTEC SAMPLE NO. 5520

LIQUID LIMIT		
TRIAL	1	2
BLOWS	23	23
MC (%)	59	60

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	20	20

LIQUID LIMIT, LL	59
PLASTIC LIMIT, PL	20
PLASTICITY INDEX, PI	39
AS REC'D MC (%)	28.5



COMMENTS
No comments.

REPORT DATE 2025.Jan.09

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D4318 - LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS (LL METHOD B - ONE-POINT)

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 8

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.08
TESTED BY: Blair Dawson

MATERIAL IDENTIFICATION

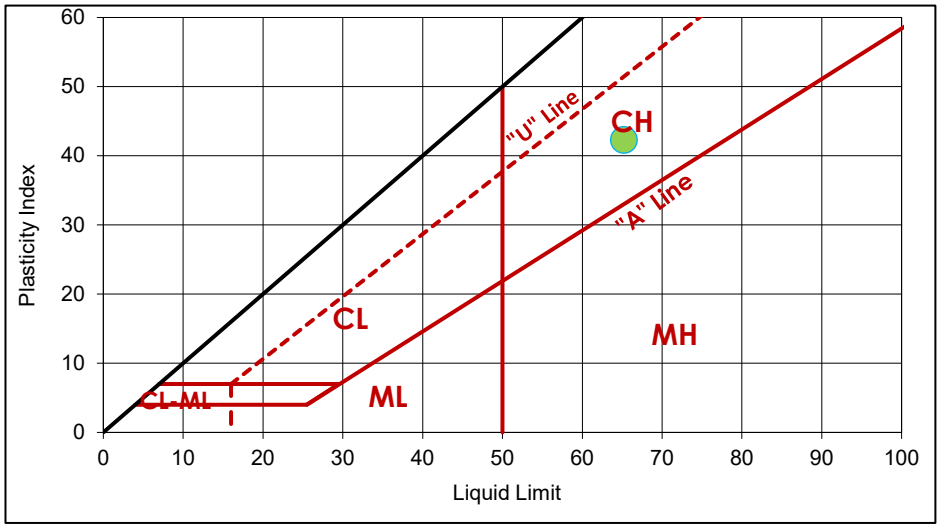
CLIENT FIELD ID BH-91, 1.6 m (Blanchard Ave)

STANTEC SAMPLE NO. 5521

LIQUID LIMIT		
TRIAL	1	2
BLOWS	25	25
MC (%)	65	65

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	23	23

LIQUID LIMIT, LL	65
PLASTIC LIMIT, PL	23
PLASTICITY INDEX, PI	42
AS REC'D MC (%)	30.4



COMMENTS
No comments.

REPORT DATE 2025.Jan.09

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D4318 - LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX OF SOILS (LL METHOD B - ONE-POINT)

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 9

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.08
TESTED BY: Blair Dawson

MATERIAL IDENTIFICATION

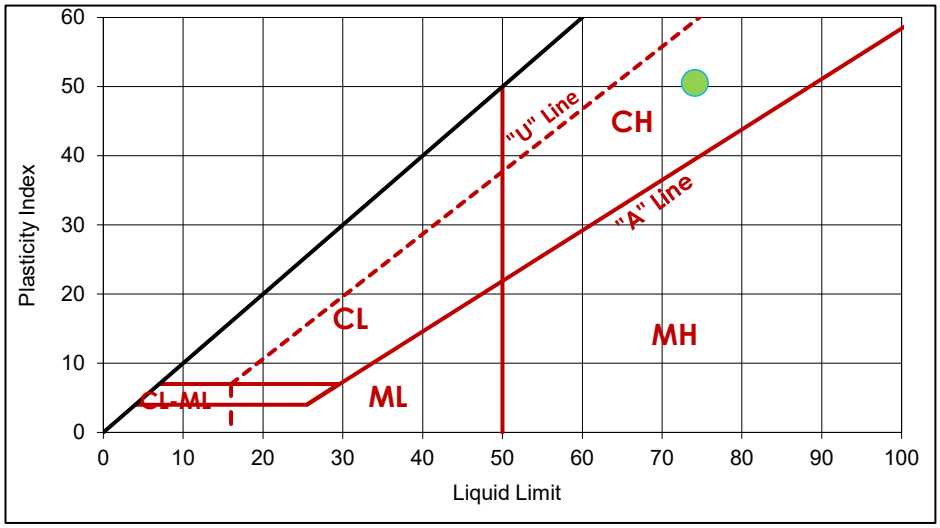
CLIENT FIELD ID BH-92, 1.6 m (Blanchard Ave)

STANTEC SAMPLE NO. 5522

LIQUID LIMIT		
TRIAL	1	2
BLOWS	26	27
MC (%)	74	73

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	23	24

LIQUID LIMIT, LL	74
PLASTIC LIMIT, PL	24
PLASTICITY INDEX, PI	50
AS REC'D MC (%)	33.0



COMMENTS
No comments.

REPORT DATE 2025.Jan.09

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

TO Tetra Tech Canada Inc.
400-161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Street Renewal Program

PROJECT NO. 123317458

REPORT NO. 1

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

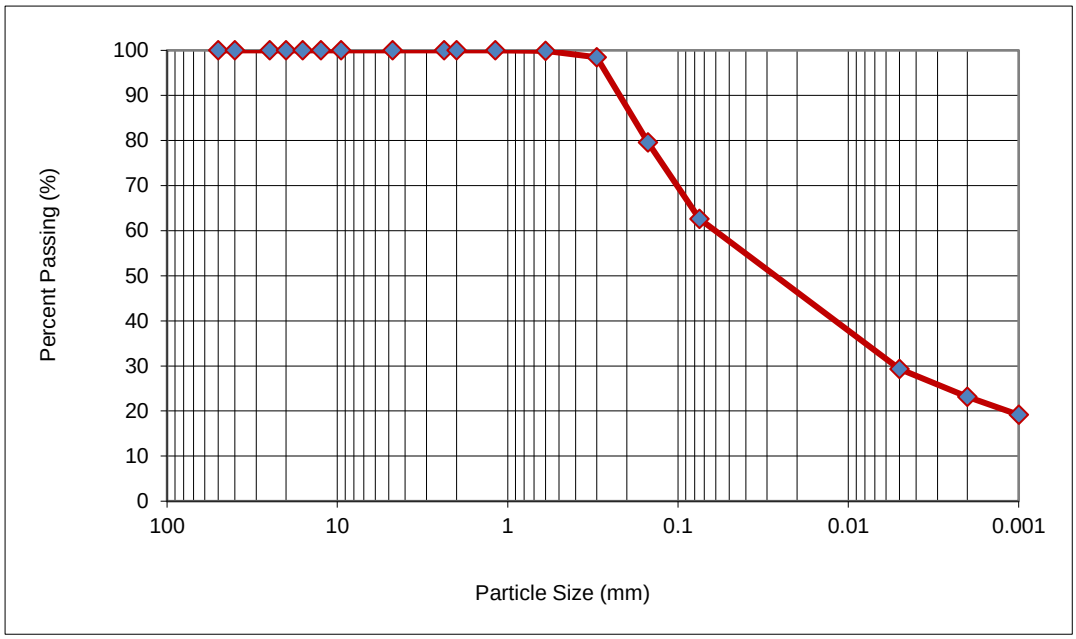
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.08
TESTED BY: Kevin Hiraoka

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-81, 1.6 m

STANTEC SAMPLE NO. 5514



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	100.0
0.600	99.9
0.300	98.5
0.150	79.6
0.075	62.6
0.005	29.3
0.002	23.1
0.001	19.2

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.9	36.5	39.5	23.1	19.2

COMMENTS
No comments.

REPORT DATE 2025.Jan.10

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

TO Tetra Tech Canada Inc.
400-161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Street Renewal Program

PROJECT NO. 123317458

REPORT NO. 2

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

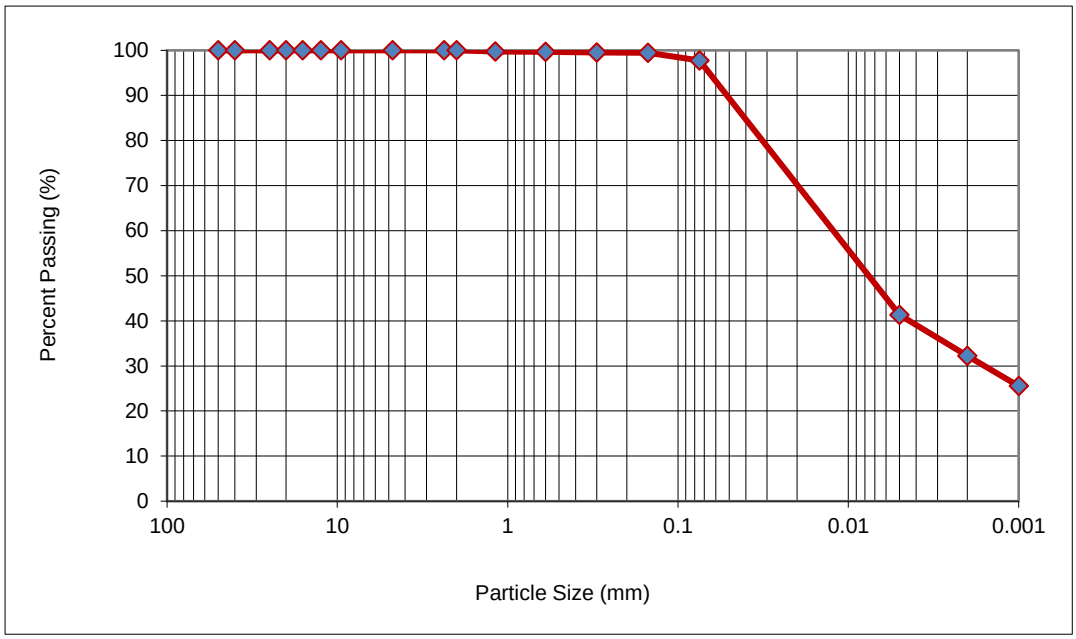
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.08
TESTED BY: Kevin Hiraoka

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-83, 1.6 m

STANTEC SAMPLE NO. 5515



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	99.7
0.600	99.6
0.300	99.6
0.150	99.5
0.075	97.8
0.005	41.4
0.002	32.2
0.001	25.5

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.4	1.8	65.6	32.2	25.5

COMMENTS
No comments.

REPORT DATE 2025.Jan.10

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

TO Tetra Tech Canada Inc.
400-161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Street Renewal Program

PROJECT NO. 123317458

REPORT NO. 3

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

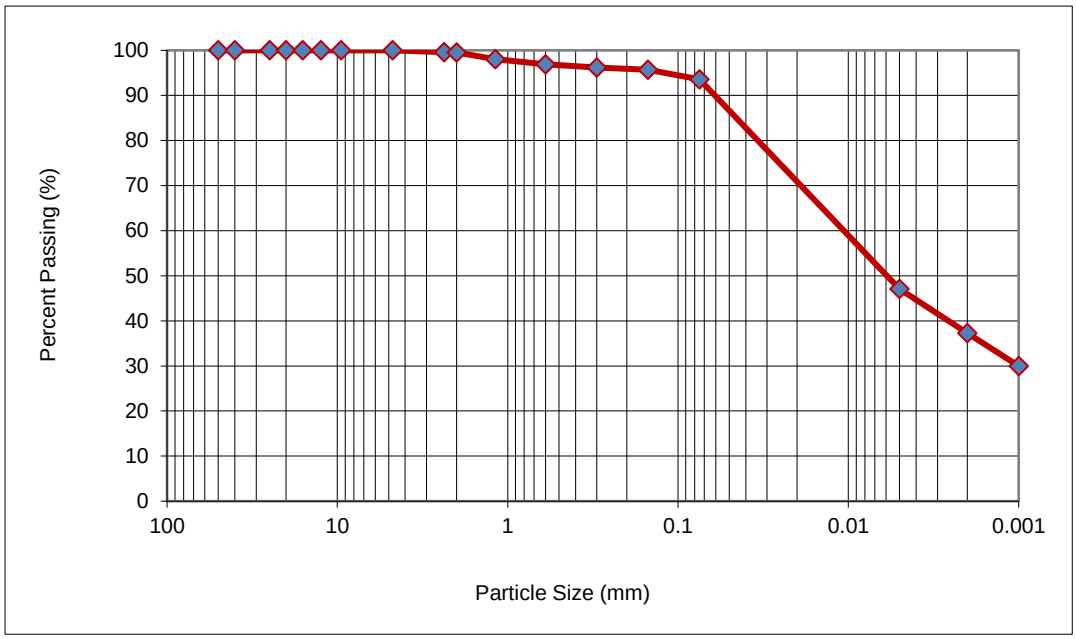
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.08
TESTED BY: Kevin Hiraoka

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-84, 1.6 m

STANTEC SAMPLE NO. 5516



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	99.6
2.00	99.6
1.18	98.0
0.600	96.9
0.300	96.2
0.150	95.7
0.075	93.6
0.005	47.1
0.002	37.3
0.001	30.0

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.4	3.1	2.9	56.3	37.3	30.0

COMMENTS
No comments.

REPORT DATE 2025.Jan.13

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

TO Tetra Tech Canada Inc.
400-161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Street Renewal Program

PROJECT NO. 123317458

REPORT NO. 4

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

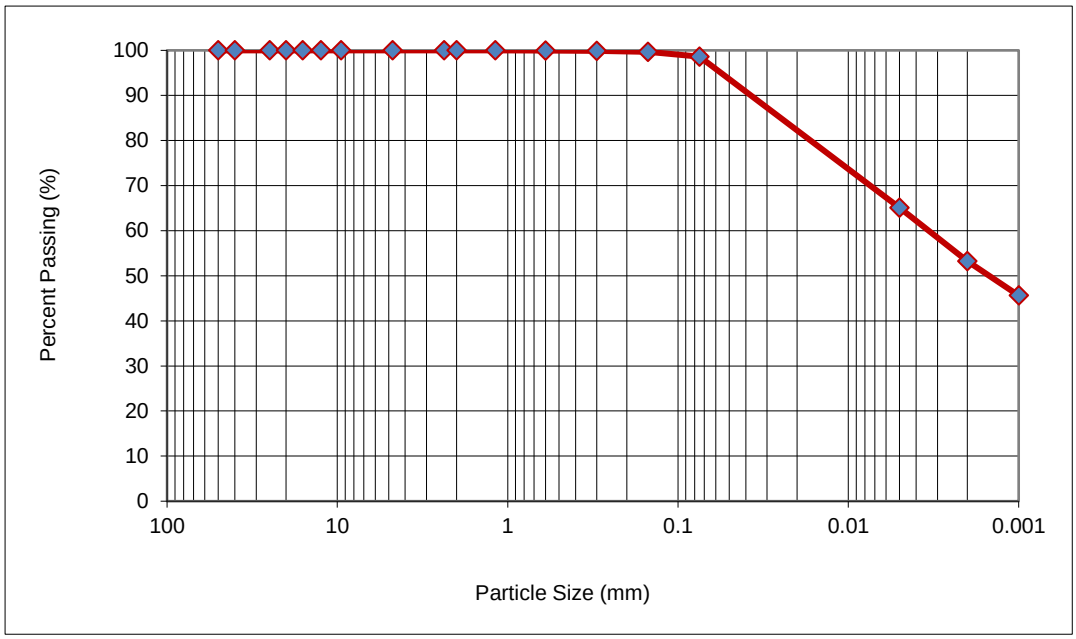
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.08
TESTED BY: Kevin Hiraoka

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-86, 1.6 m

STANTEC SAMPLE NO. 5517



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	100.0
0.600	100.0
0.300	99.9
0.150	99.7
0.075	98.6
0.005	65.1
0.002	53.3
0.001	45.6

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.1	1.3	45.3	53.3	45.6

COMMENTS
No comments.

REPORT DATE 2025.Jan.13

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

TO Tetra Tech Canada Inc.
400-161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Street Renewal Program

PROJECT NO. 123317458

REPORT NO. 5

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

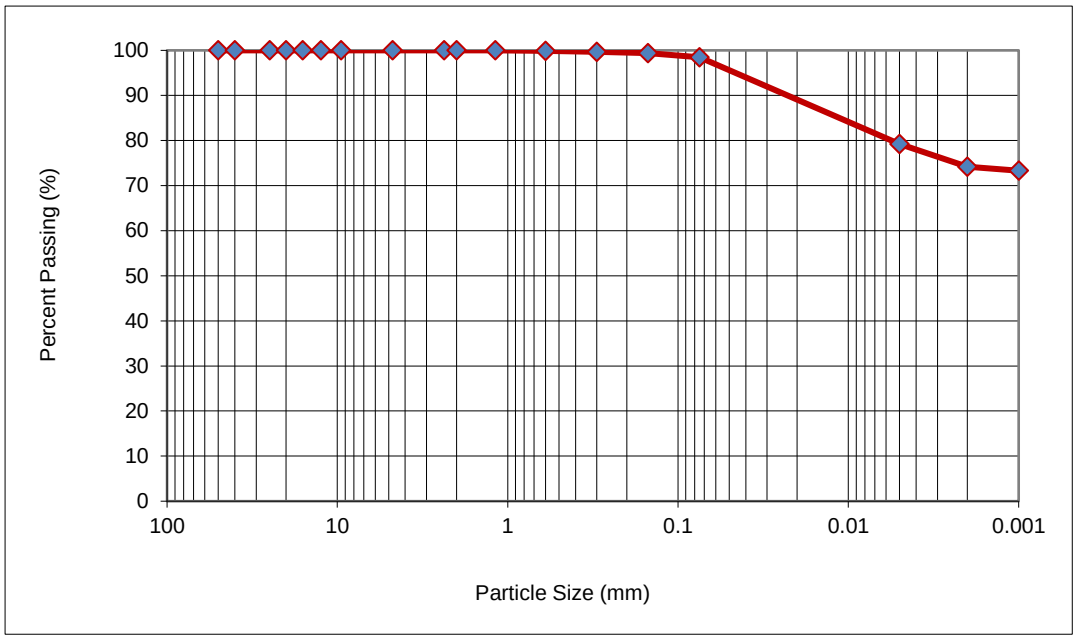
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.08
TESTED BY: Kevin Hiraoka

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-87, 1.6 m

STANTEC SAMPLE NO. 5518



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	100.0
0.600	99.9
0.300	99.7
0.150	99.4
0.075	98.4
0.005	79.2
0.002	74.2
0.001	73.3

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.2	1.4	24.2	74.2	73.3

COMMENTS
No comments.

REPORT DATE 2025.Jan.13

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

TO Tetra Tech Canada Inc.
400-161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Street Renewal Program

PROJECT NO. 123317458

REPORT NO. 6

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

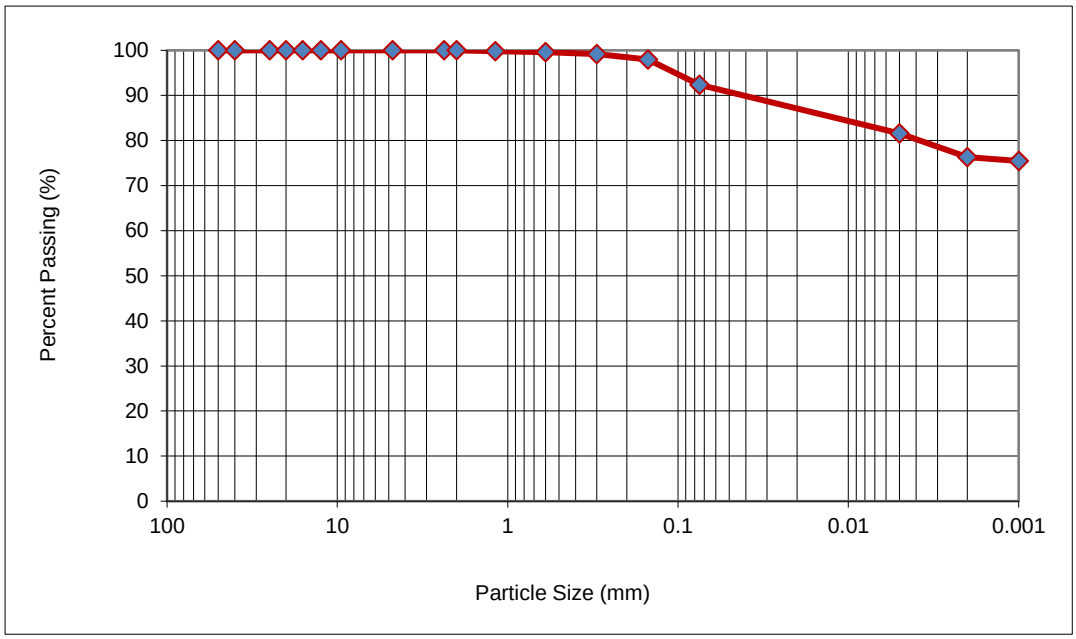
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.08
TESTED BY: Kevin Hiraoka

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-88, 1.6 m

STANTEC SAMPLE NO. 5519



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	99.8
0.600	99.6
0.300	99.2
0.150	98.0
0.075	92.4
0.005	81.5
0.002	76.3
0.001	75.5

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.6	7.0	16.1	76.3	75.5

COMMENTS
No comments.

REPORT DATE 2025.Jan.13

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

TO Tetra Tech Canada Inc.
400-161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Street Renewal Program

PROJECT NO. 123317458

REPORT NO. 7

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

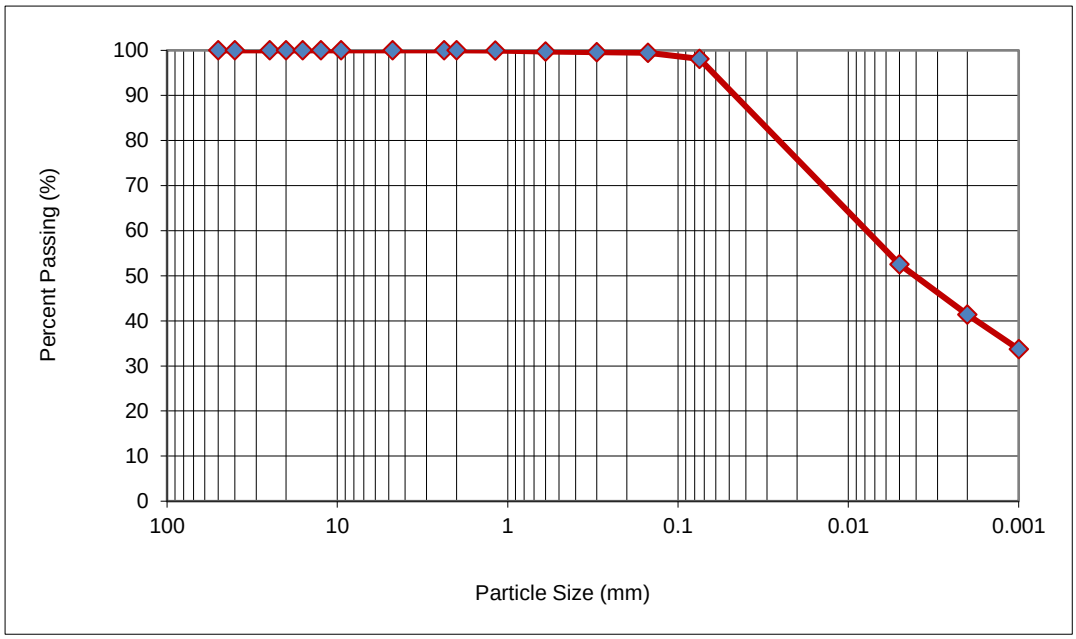
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.08
TESTED BY: Kevin Hiraoka

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-89, 1.6 m

STANTEC SAMPLE NO. 5520



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	99.9
0.600	99.7
0.300	99.6
0.150	99.5
0.075	98.1
0.005	52.5
0.002	41.4
0.001	33.7

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.3	1.6	56.7	41.4	33.7

COMMENTS
No comments.

REPORT DATE 2025.Jan.13

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

TO Tetra Tech Canada Inc.
400-161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Street Renewal Program

PROJECT NO. 123317458

REPORT NO. 8

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

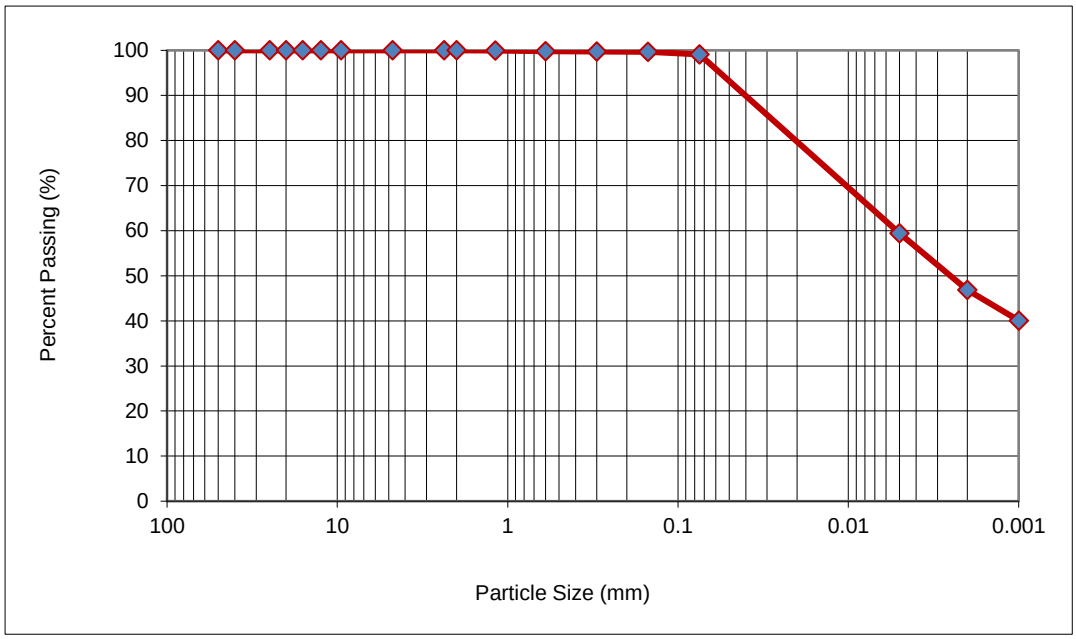
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.08
TESTED BY: Kevin Hiraoka

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-91, 1.6 m

STANTEC SAMPLE NO. 5521



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	100.0
0.600	99.8
0.300	99.8
0.150	99.7
0.075	99.1
0.005	59.4
0.002	46.9
0.001	40.1

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.2	0.7	52.2	46.9	40.1

COMMENTS
No comments.

REPORT DATE 2025.Jan.13

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

TO Tetra Tech Canada Inc.
400-161 Portage Avenue E.
Winnipeg, Manitoba
R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Street Renewal Program

PROJECT NO. 123317458

REPORT NO. 9

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

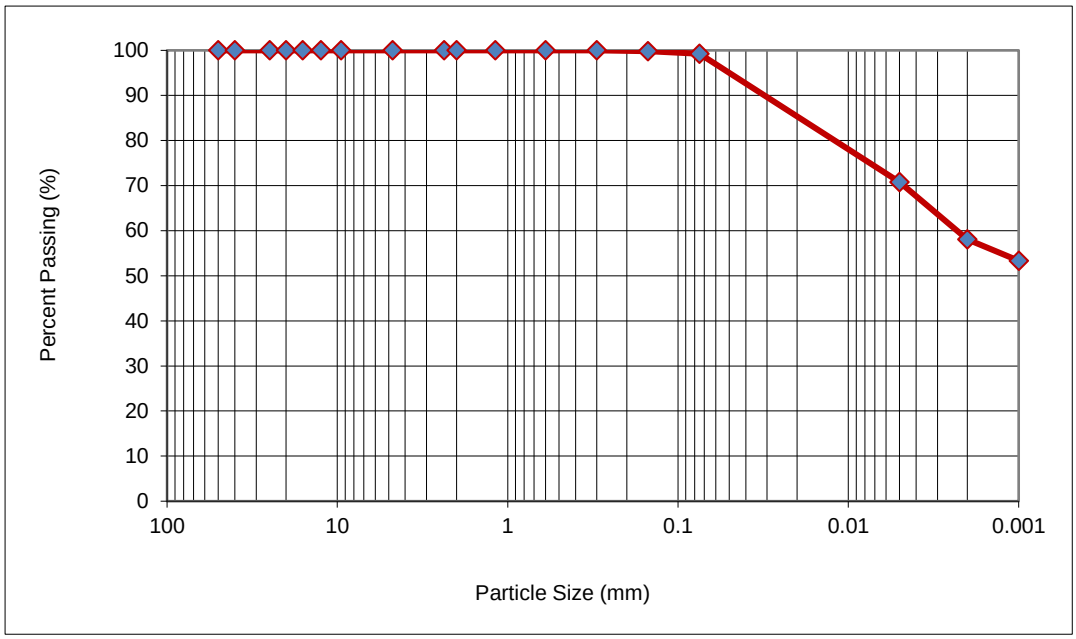
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.08
TESTED BY: Kevin Hiraoka

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-92, 1.6 m

STANTEC SAMPLE NO. 5522



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	100.0
0.600	100.0
0.300	100.0
0.150	99.8
0.075	99.2
0.005	70.8
0.002	58.1
0.001	53.3

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.0	0.8	41.1	58.1	53.3

COMMENTS
No comments.

REPORT DATE 2025.Jan.13

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec
199 Henlow Bay
Winnipeg, MB
R3Y 1G4
Email: jason.thompson@stantec.com

CERTIFIED BY CCIL Canadian Council of Independent Laboratories For specific tests as listed on www.ccil.com

PROCTOR TEST REPORT

TO Tetra Tech
400-161 Portage Ave. E
Winnipeg, MB
R3B 0Y4

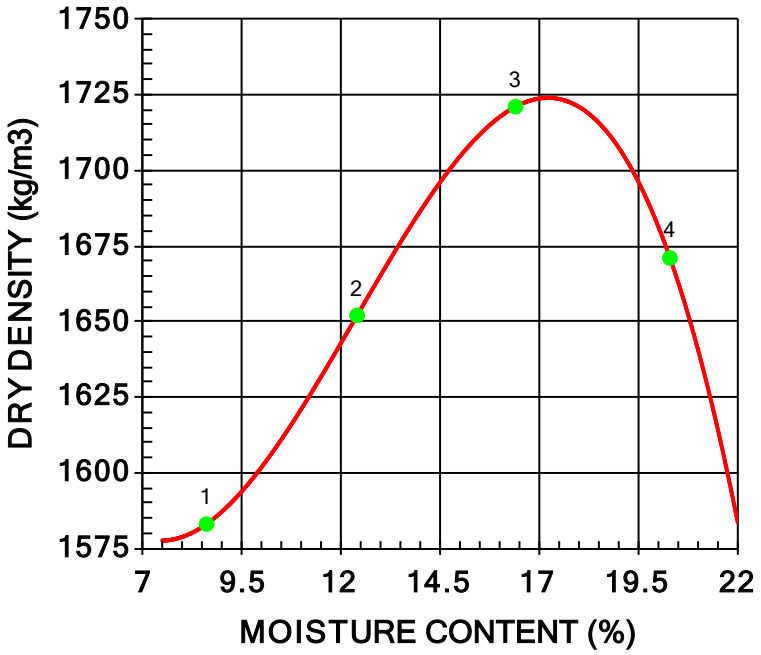
CLIENT Tetra Tech
C.C.

ATTN: Jeff Crang

PROJECT 25-R-08, 2025 Local Street Renewal Program

PROJECT NO. 123317458
PROCTOR NO. 1 DATE SAMPLED 2024.Dec.17 DATE RECEIVED 2024.Dec.17 DATE TESTED 2025.Jan.09

INSITU MOISTURE	20.1 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Sandy Lean Clay (CL)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-81- 1.6 m (East Gate)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1719	1583	8.6
2	1857	1652	12.4
3	2003	1721	16.4
4	2010	1671	20.3

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1720	17.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5514.

 2025.Jan.13 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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199 Henlow Bay
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CERTIFIED BY CCIL Canadian Council of Independent Laboratories For specific tests as listed on www.ccil.com

PROCTOR TEST REPORT

TO Tetra Tech
400-161 Portage Ave. E
Winnipeg, MB
R3B 0Y4

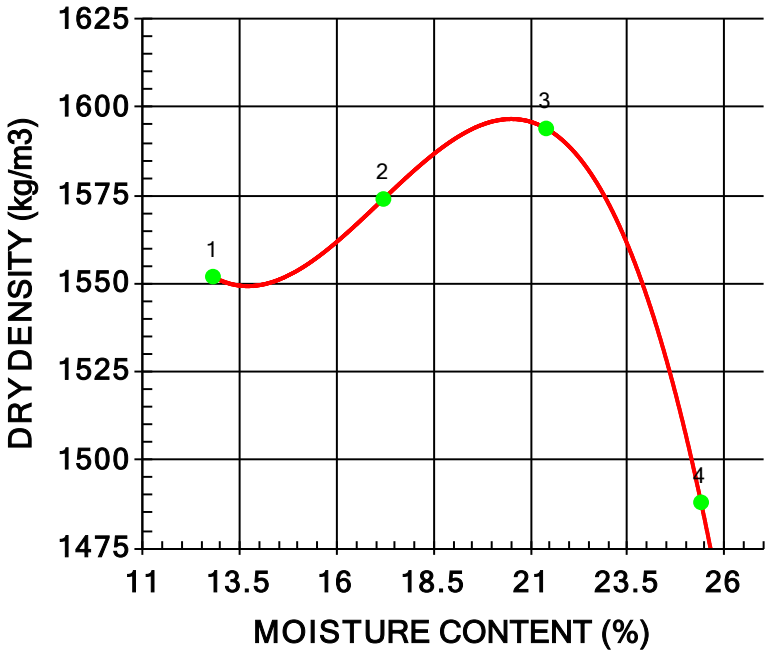
CLIENT Tetra Tech
C.C.

ATTN: Jeff Crang

PROJECT 25-R-08, 2025 Local Street Renewal Program

PROJECT NO. 123317458
PROCTOR NO. 2 DATE SAMPLED 2024.Dec.17 DATE RECEIVED 2024.Dec.17 DATE TESTED 2025.Jan.10

INSITU MOISTURE	26.1 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Fat Clay (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-83, 1.6 m (East Gate)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1751	1552	12.8
2	1845	1574	17.2
3	1935	1594	21.4
4	1866	1488	25.4

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1600	20.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5515.

 2025.Jan.13 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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199 Henlow Bay
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PROCTOR TEST REPORT

TO Tetra Tech
400-161 Portage Ave. E
Winnipeg, MB
R3B 0Y4

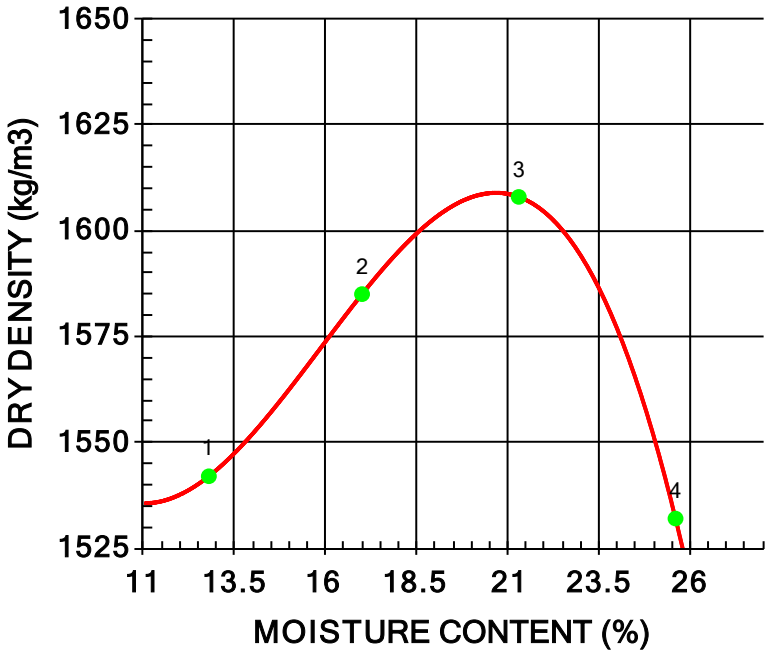
CLIENT Tetra Tech
C.C.

ATTN: Jeff Crang

PROJECT 25-R-08, 2025 Local Street Renewal Program

PROJECT NO. 123317458
PROCTOR NO. 3 DATE SAMPLED 2024.Dec.17 DATE RECEIVED 2024.Dec.17 DATE TESTED 2025.Jan.10

INSITU MOISTURE	25.5 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Fat Clay (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-84, 1.6 m (West Gate)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1739	1542	12.8
2	1855	1585	17.0
3	1950	1608	21.3
4	1924	1532	25.6

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1610	20.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5516.

 2025.Jan.13 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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PROCTOR TEST REPORT

TO Tetra Tech
400-161 Portage Ave. E
Winnipeg, MB
R3B 0Y4

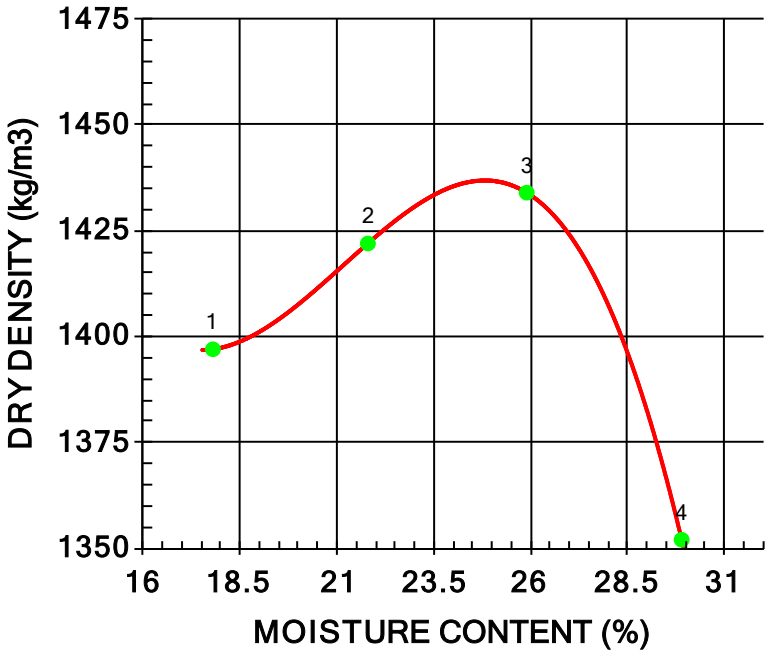
CLIENT Tetra Tech
C.C.

ATTN: Jeff Crang

PROJECT 25-R-08, 2025 Local Street Renewal Program

PROJECT NO. 123317458
PROCTOR NO. 4 DATE SAMPLED 2024.Dec.17 DATE RECEIVED 2024.Dec.17 DATE TESTED 2025.Jan.10

INSITU MOISTURE	30.2 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Fat Clay (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-86, 1.6 m (West Gate)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1646	1397	17.8
2	1732	1422	21.8
3	1805	1434	25.9
4	1756	1352	29.9

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1440	25.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5517.

Page 1 of 1 2025.Jan.13 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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PROCTOR TEST REPORT

TO Tetra Tech
400-161 Portage Ave. E
Winnipeg, MB
R3B 0Y4

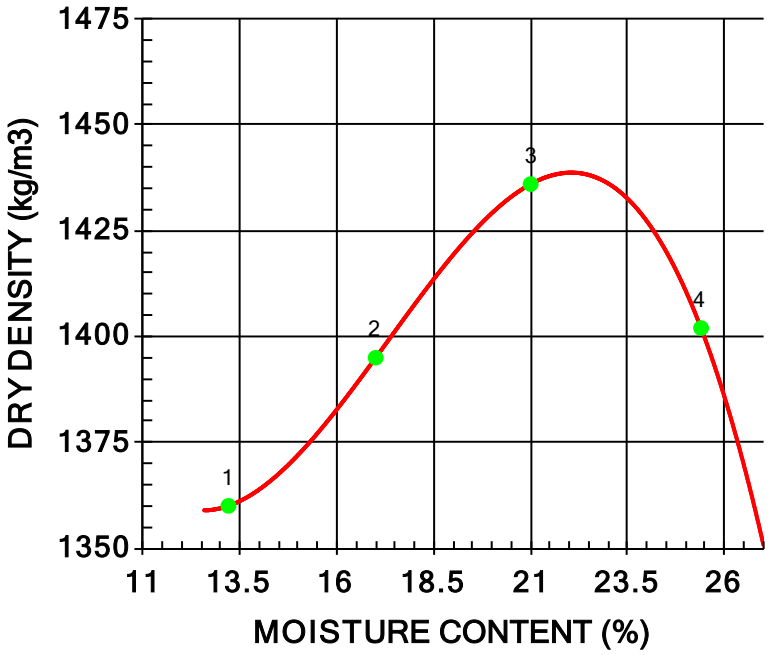
CLIENT Tetra Tech
C.C.

ATTN: Jeff Crang

PROJECT 25-R-08, 2025 Local Street Renewal Program

PROJECT NO. 123317458
PROCTOR NO. 5 DATE SAMPLED 2024.Dec.17 DATE RECEIVED 2024.Dec.17 DATE TESTED 2025.Jan.14

INSITU MOISTURE	31.6 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Madison Murphy		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Fat Clay (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-87, 1.6 m (Middle Gate)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1539	1360	13.2
2	1632	1395	17.0
3	1737	1436	21.0
4	1758	1402	25.4

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1440	22.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5518.

Page 1 of 1 2025.Jan.15 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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PROCTOR TEST REPORT

TO Tetra Tech
400-161 Portage Ave. E
Winnipeg, MB
R3B 0Y4

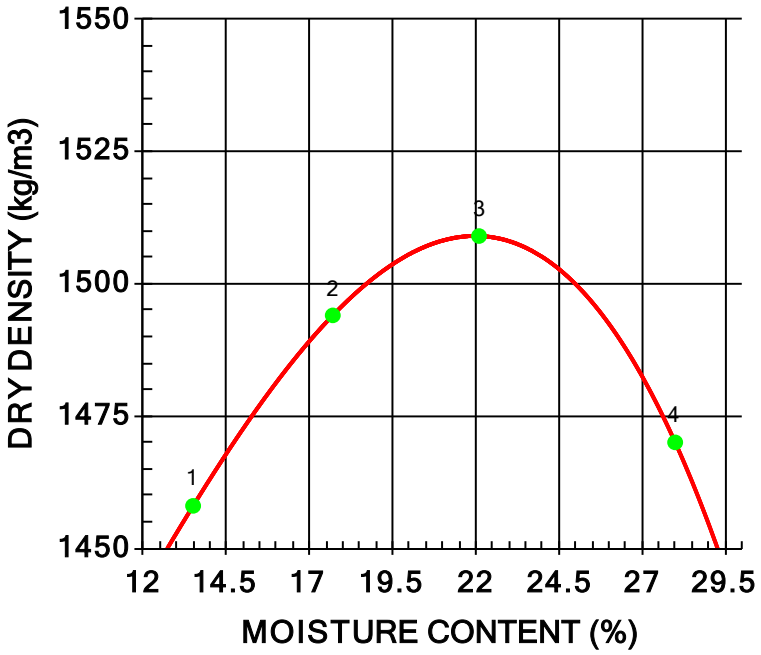
CLIENT Tetra Tech
C.C.

ATTN: Jeff Crang

PROJECT 25-R-08, 2025 Local Street Renewal Program

PROJECT NO. 123317458
PROCTOR NO. 6 DATE SAMPLED 2024.Dec.17 DATE RECEIVED 2024.Dec.17 DATE TESTED 2025.Jan.14

INSITU MOISTURE	32.7 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Fat Clay (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-88, 1.6 m (Middle Gate)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1655	1458	13.5
2	1758	1494	17.7
3	1843	1509	22.1
4	1881	1470	28.0

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1510	22.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5519.

 2025.Jan.15 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

Stantec
199 Henlow Bay
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PROCTOR TEST REPORT

TO Tetra Tech
400-161 Portage Ave. E
Winnipeg, MB
R3B 0Y4

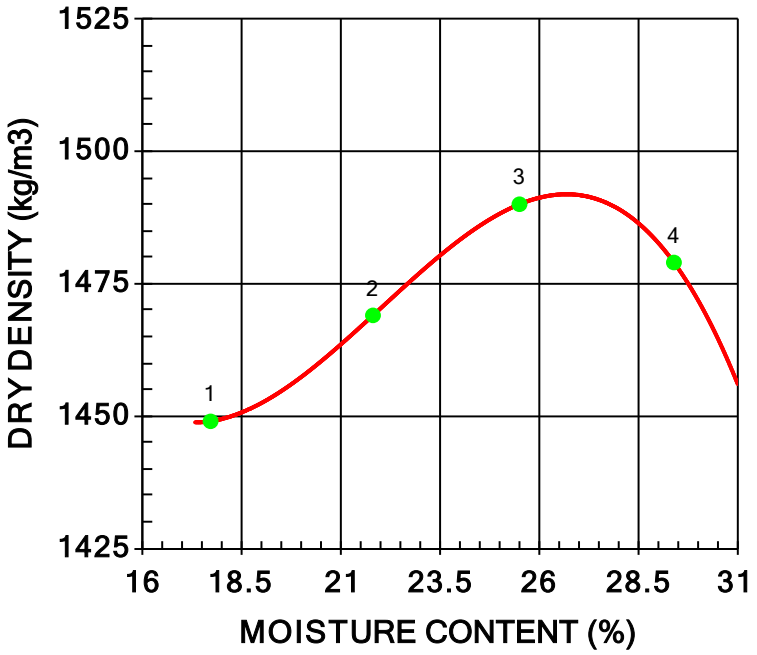
CLIENT Tetra Tech
C.C.

ATTN: Jeff Crang

PROJECT 25-R-08, 2025 Local Street Renewal Program

PROJECT NO. 123317458
PROCTOR NO. 7 DATE SAMPLED 2024.Dec.17 DATE RECEIVED 2024.Dec.17 DATE TESTED 2025.Jan.14

INSITU MOISTURE	28.5 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Fat Clay (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-89, 1.6m (Middle Gate)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1706	1449	17.7
2	1789	1469	21.8
3	1870	1490	25.5
4	1914	1479	29.4

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1490	26.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5520.

 2025.Jan.15 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

Stantec
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PROCTOR TEST REPORT

TO Tetra Tech
400-161 Portage Ave. E
Winnipeg, MB
R3B 0Y4

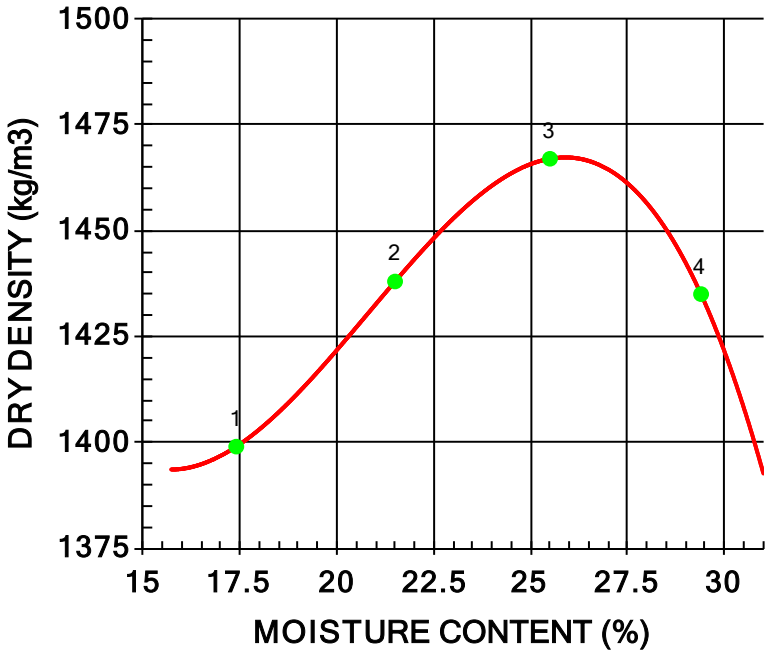
CLIENT Tetra Tech
C.C.

ATTN: Jeff Crang

PROJECT 25-R-08, 2025 Local Street Renewal Program

PROJECT NO. 123317458
PROCTOR NO. 8 DATE SAMPLED 2024.Dec.17 DATE RECEIVED 2024.Dec.17 DATE TESTED 2025.Jan.14

INSITU MOISTURE	30.4 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Fat Clay (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-91, 1.6 m (Blanchard Ave)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1643	1399	17.4
2	1747	1438	21.5
3	1841	1467	25.5
4	1857	1435	29.4

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1470	26.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5521.

 2025.Jan.15 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

Stantec
199 Henlow Bay
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PROCTOR TEST REPORT

TO Tetra Tech
400-161 Portage Ave. E
Winnipeg, MB
R3B 0Y4

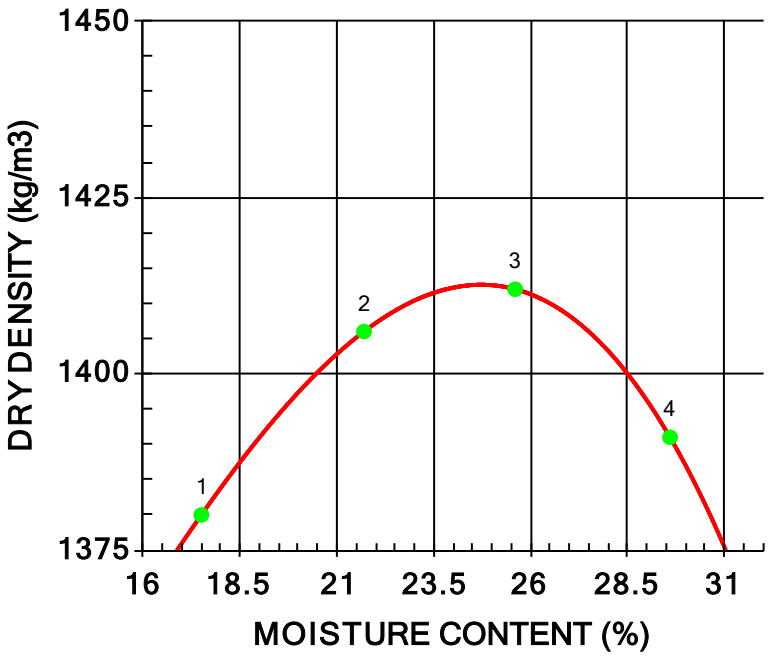
CLIENT Tetra Tech
C.C.

ATTN: Jeff Crang

PROJECT 25-R-08, 2025 Local Street Renewal Program

PROJECT NO. 123317458
PROCTOR NO. 9 DATE SAMPLED 2024.Dec.17 DATE RECEIVED 2024.Dec.17 DATE TESTED 2025.Jan.15

INSITU MOISTURE	33.1 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Fat Clay (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-92, 1.6 m (Blanchard Ave)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1621	1380	17.5
2	1711	1406	21.7
3	1773	1412	25.6
4	1803	1391	29.6

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1410	24.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5522.

Page 1 of 1 2025.Jan.17 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D1883 - CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOILS

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 1

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

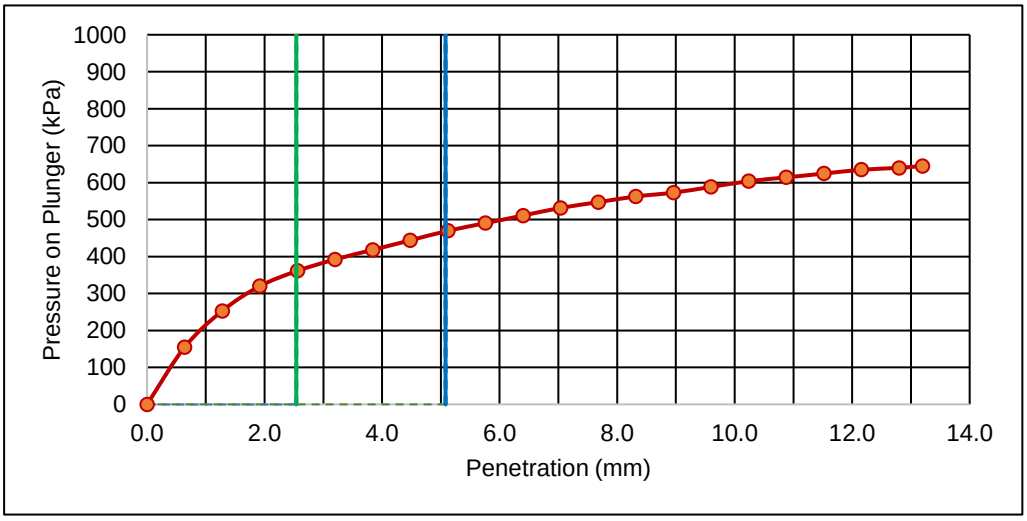
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.16
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Sandy Lean Clay (CL)	SAMPLE LOCATION	BH-81, 1.6 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5514

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1720 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	17.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1635 kg/m^3
SWELL OF SAMPLE	1.20 %	AS-COMPACTED MOISTURE	16.9 %
POST-TEST MOISTURE	25.5 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
5.2

CBR VALUE AT 5.08 mm PENETRATION
4.7

COMMENTS
Sample prepared to 95% of the maximum dry density at the optimum moisture content as determined from ASTM D698.

REPORT DATE 2025.Jan.21

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D1883 - CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOILS

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 2

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

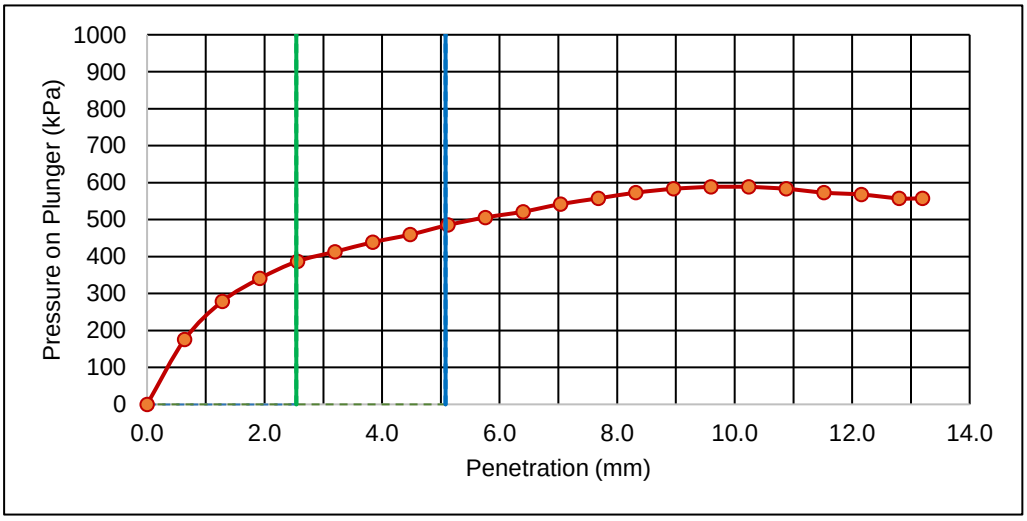
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.16
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Fat Clay (CH)	SAMPLE LOCATION	BH-83, 1.6 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5515

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1600 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	20.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1521 kg/m^3
SWELL OF SAMPLE	1.75 %	AS-COMPACTED MOISTURE	20.4 %
POST-TEST MOISTURE	28.6 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
5.6

CBR VALUE AT 5.08 mm PENETRATION
4.8

COMMENTS
Sample prepared to 95% of the maximum dry density at the optimum moisture content as determined from ASTM D698.

REPORT DATE 2025.Jan.21

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
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ASTM D1883 - CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOILS

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 3

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

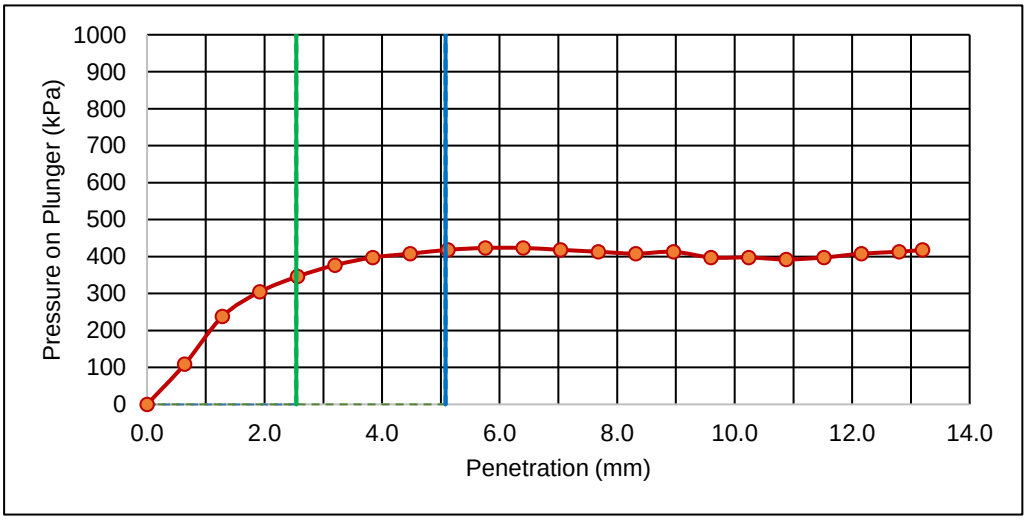
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.16
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Fat Clay (CH)	SAMPLE LOCATION	BH-84, 1.6 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5516

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1610 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	20.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1531 kg/m^3
SWELL OF SAMPLE	1.50 %	AS-COMPACTED MOISTURE	20.4 %
POST-TEST MOISTURE	24.6 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
5.0

CBR VALUE AT 5.08 mm PENETRATION
4.2

COMMENTS
Sample prepared to 95% of the maximum dry density at the optimum moisture content as determined from ASTM D698.

REPORT DATE 2025.Jan.21

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D1883 - CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOILS

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 4

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

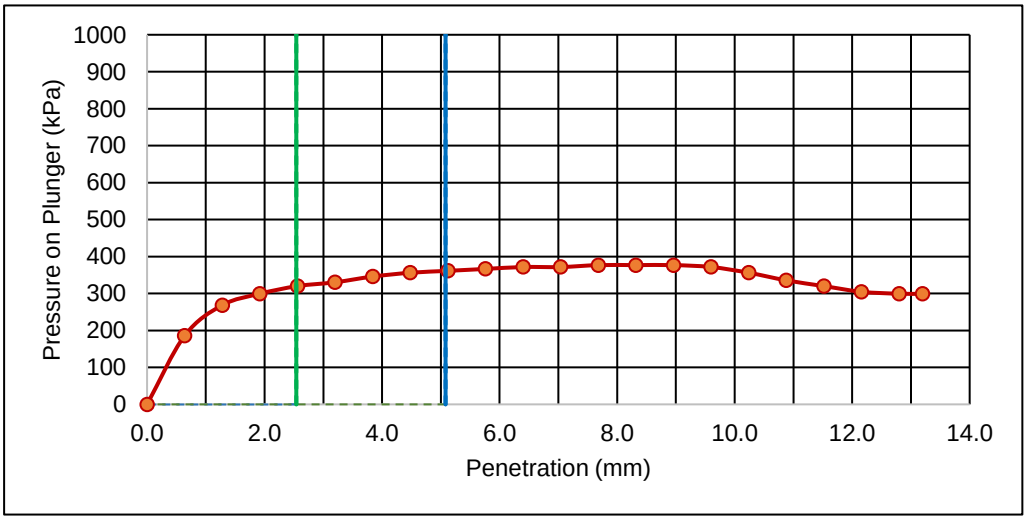
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.16
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Fat Clay (CH)	SAMPLE LOCATION	BH-86, 1.6 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5517

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1440 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	25.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1368 kg/m^3
SWELL OF SAMPLE	1.86 %	AS-COMPACTED MOISTURE	25.0 %
POST-TEST MOISTURE	33.0 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
4.6

CBR VALUE AT 5.08 mm PENETRATION
3.6

COMMENTS
Sample prepared to 95% of the maximum dry density at the optimum moisture content as determined from ASTM D698.

REPORT DATE 2025.Jan.21

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D1883 - CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOILS

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 5

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

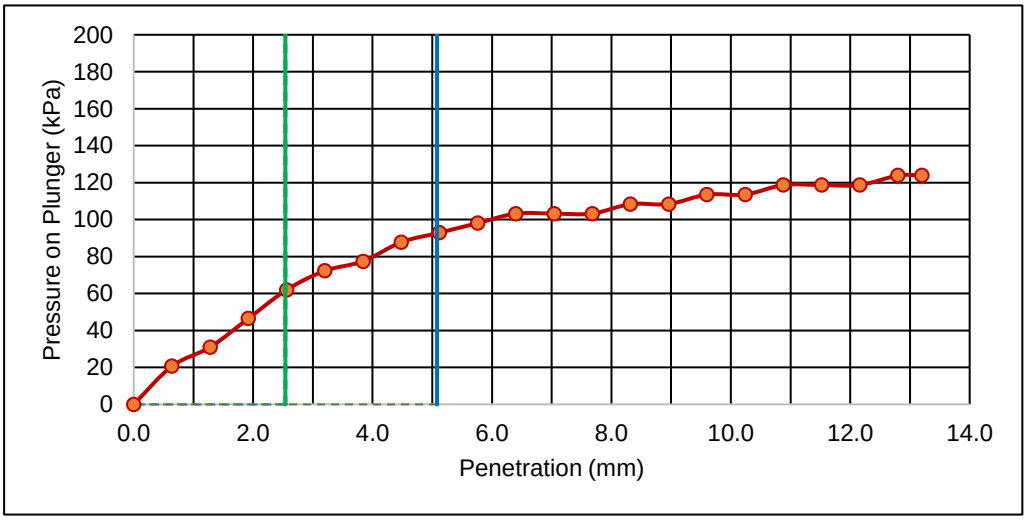
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.16
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Fat Clay (CH)	SAMPLE LOCATION	BH-87, 1.6 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5518

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1440 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	22.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1370 kg/m^3
SWELL OF SAMPLE	8.47 %	AS-COMPACTED MOISTURE	21.8 %
POST-TEST MOISTURE	47.7 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
0.9

CBR VALUE AT 5.08 mm PENETRATION
0.9

COMMENTS
Sample prepared to 95% of the maximum dry density at the optimum moisture content as determined from ASTM D698.

REPORT DATE 2025.Jan.21

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D1883 - CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOILS

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 6

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

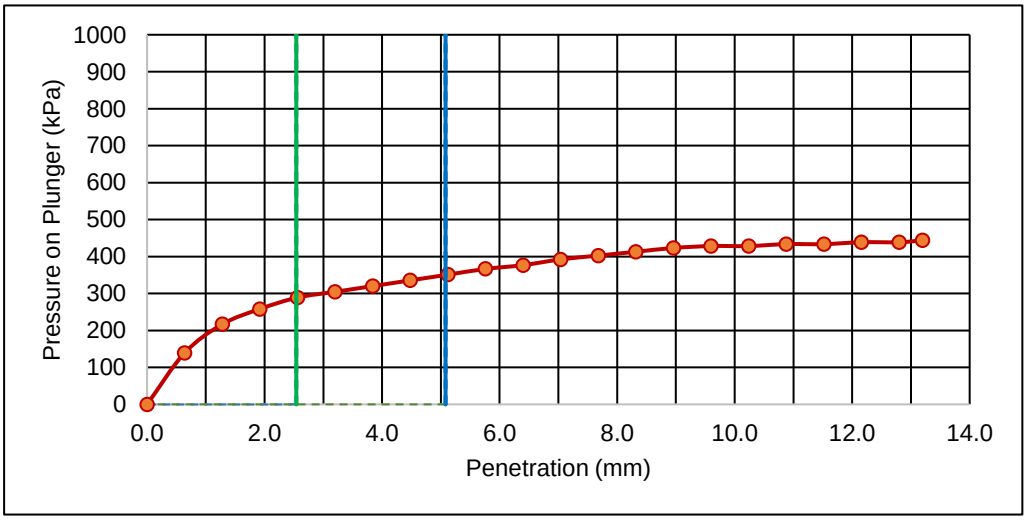
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.16
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Fat Clay (CH)	SAMPLE LOCATION	BH-88, 1.6 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5519

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1510 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	22.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1434 kg/m^3
SWELL OF SAMPLE	2.27 %	AS-COMPACTED MOISTURE	22.0 %
POST-TEST MOISTURE	29.4 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
4.2

CBR VALUE AT 5.08 mm PENETRATION
3.5

COMMENTS
Sample prepared to 95% of the maximum dry density at the optimum moisture content as determined from ASTM D698.

REPORT DATE 2025.Jan.21

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D1883 - CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOILS

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 7

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

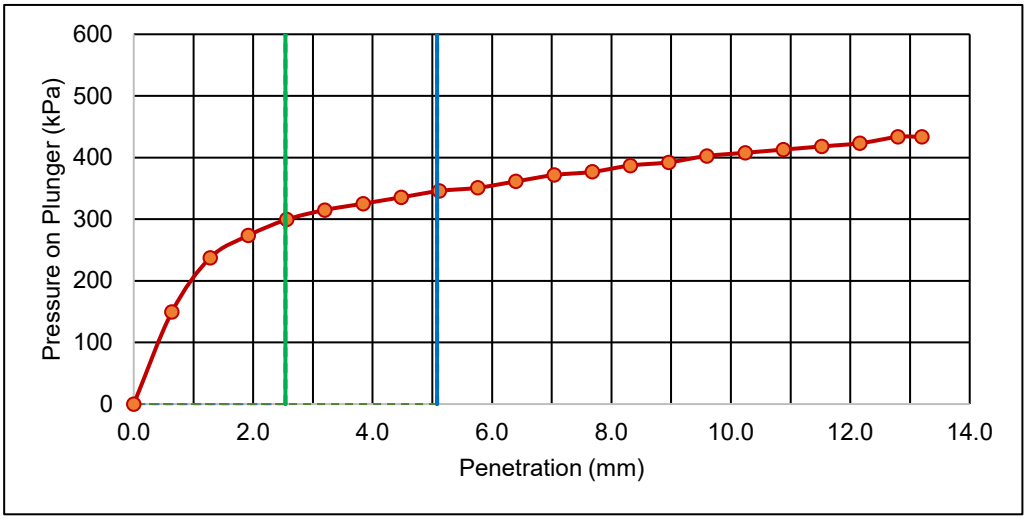
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.17
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Fat Clay (CH)	SAMPLE LOCATION	BH-89, 1.6 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5520

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1490 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	26.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1415 kg/m^3
SWELL OF SAMPLE	2.53 %	AS-COMPACTED MOISTURE	26.5 %
POST-TEST MOISTURE	29.6 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
4.3

CBR VALUE AT 5.08 mm PENETRATION
3.5

COMMENTS
Sample prepared to 95% of the maximum dry density at the optimum moisture content as determined from ASTM D698.

REPORT DATE 2025.Jan.22

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D1883 - CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOILS

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 8

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

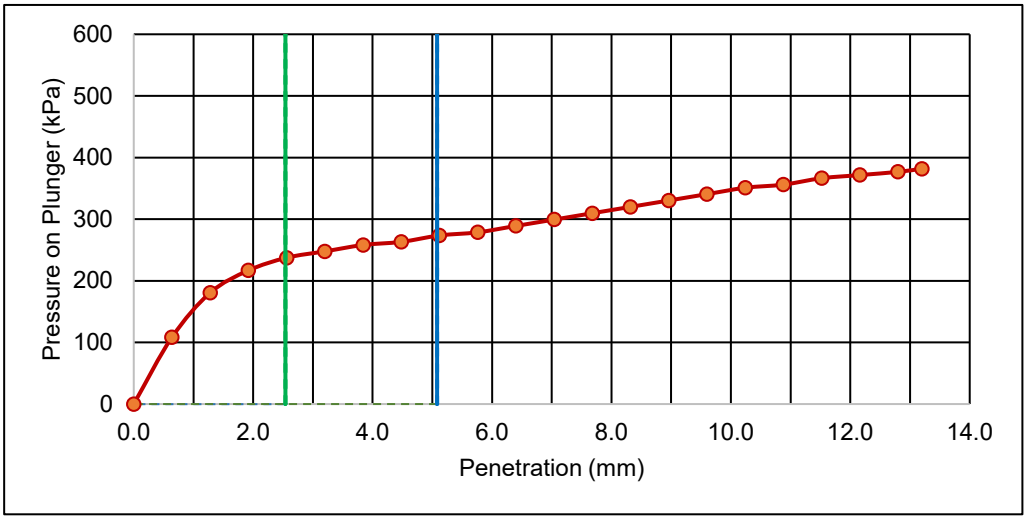
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.17
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Fat Clay (CH)	SAMPLE LOCATION	BH-91, 1.6 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5521

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1470 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	26.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1396 kg/m^3
SWELL OF SAMPLE	2.66 %	AS-COMPACTED MOISTURE	26.1 %
POST-TEST MOISTURE	31.6 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
3.4

CBR VALUE AT 5.08 mm PENETRATION
2.7

COMMENTS
Sample prepared to 95% of the maximum dry density at the optimum moisture content as determined from ASTM D698.

REPORT DATE 2025.Jan.22

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Stantec Consulting Ltd.
199 Henlow Bay, Winnipeg, MB R3Y 1G4
Tel: (204) 488-6999

ASTM D1883 - CALIFORNIA BEARING RATIO (CBR) OF LABORATORY-COMPACTED SOILS

TO Tetra Tech Canada Inc.
400 - 161 Portage Avenue E.
Winnipeg, Manitoba R3B 0Y4

ATTN Jeff Crang

PROJECT 25-R-08 2025 Local Streets Renewal Program

PROJECT NO. 123317458

REPORT NO. 9

DATE SAMPLED: 2024.Dec.17
SAMPLED BY: Larry Presado

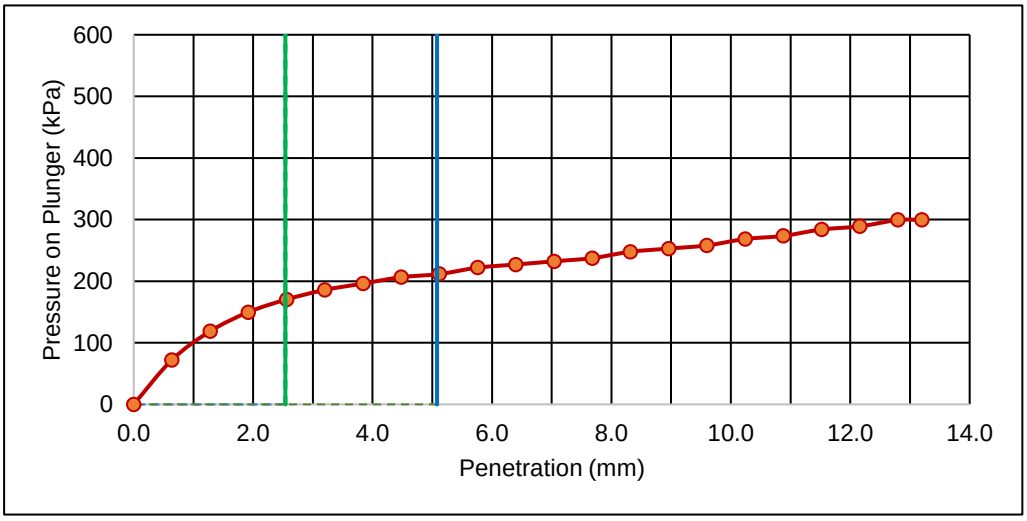
DATE RECEIVED: 2024.Dec.17
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Jan.20
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Fat Clay (CH)	SAMPLE LOCATION	BH-92, 1.6 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5522

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1410 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	24.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1340 kg/m^3
SWELL OF SAMPLE	3.96 %	AS-COMPACTED MOISTURE	24.4 %
POST-TEST MOISTURE	35.5 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.5

CBR VALUE AT 5.08 mm PENETRATION
2.1

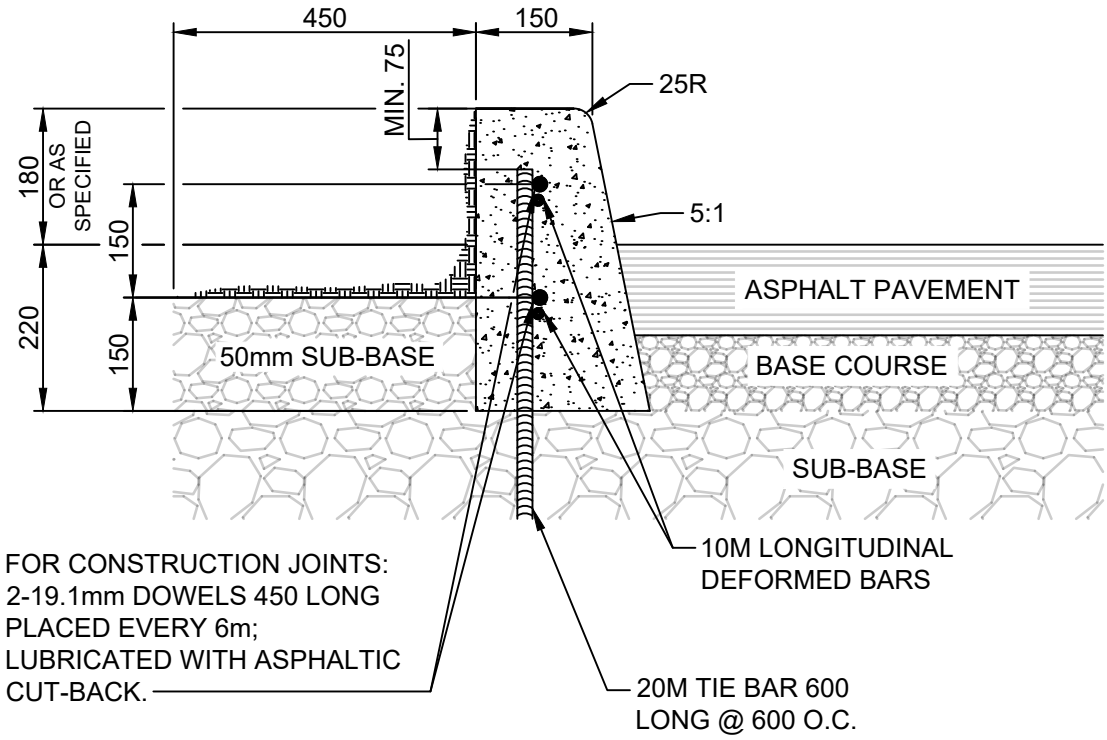
COMMENTS
Sample prepared to 95% of the maximum dry density at the optimum moisture content as determined from ASTM D698.

REPORT DATE 2025.Jan.27

REVIEWED BY Guillaume Beauce, P.Eng.
Geotechnical Engineer - Materials Testing Services

Appendix B: Standard Detail Drawings

SD-200A – Barrier Curb for Asphalt Pavements
SD-202CA – 75 mm Lip Curb with Integral Approach for Asphalt Pavements
SD-203C – Modified Barrier Curb for Asphalt Pavements
SD-206CA – Safety Curb for Asphalt Pavements
SD-220D – Curb and Gutter Inlet Isolation Detail for Asphalt Pavements
SD-228A – Concrete Sidewalk
SD-228AA – Sidewalk Expansion Joints
SD-229FA – Curb Ramp for Asphalt Pavements
SD-235 – Residential Approach – Concrete
SD-240A – Interlocking Paving Stone Detail for Residential Approaches
SD-245 – Subdrain Installation Detail



NOTES:

1. TRANSVERSE SAW CUT EVERY 3m OR AT PAVEMENT JOINTS
2. TRANSVERSE SAW CUTS ARE TO BE A MAXIMUM DEPTH OF 25mm

DIMENSIONS IN MILLIMETRES

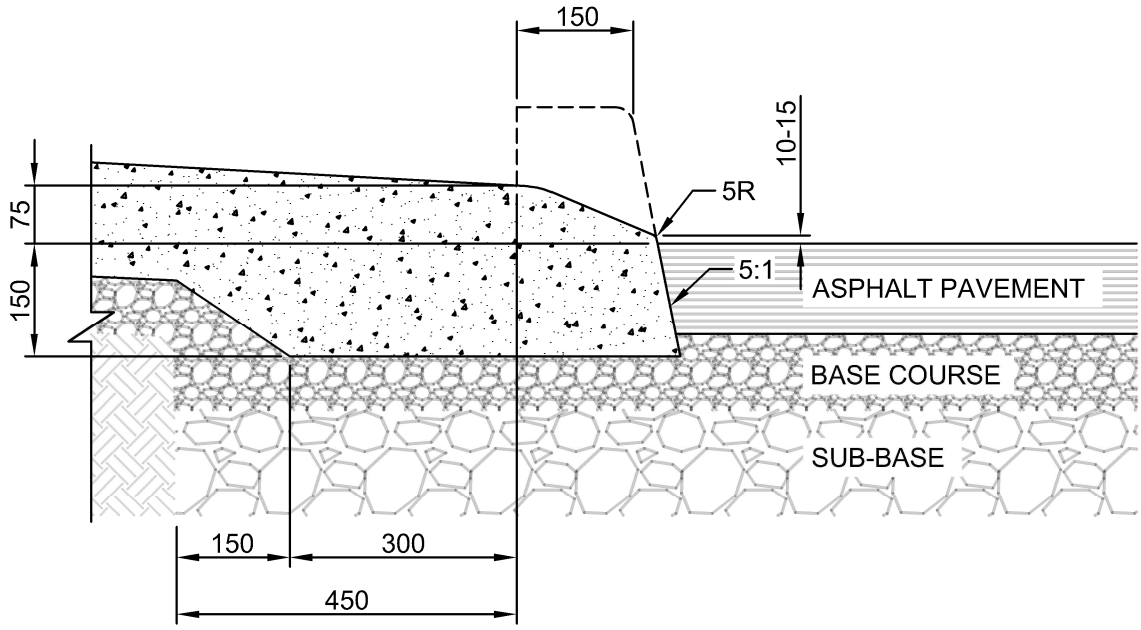
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

Reference Spec. No.
CW 3325

Revisions			
No.	Date	Description	By

BARRIER CURB FOR ASPHALT PAVEMENT

Designed By: A.G.	Drawn By: R.B.	Scale : N.T.S
Checked By: B.K.	Date: 2024-10-01	Drawing No. SD-200A
Approved: PAVEMENT MANAGEMENT BRANCH		



NOTES:

1. TRANSVERSE SAW CUT EVERY 3m OR AT PAVEMENT JOINTS
2. TRANSVERSE SAW CUTS ARE TO BE A MAXIMUM DEPTH OF 25mm
3. FOR CONSTRUCTION JOINTS INSTALL TWO 19.1mm DOWELS 450 LONG; LUBRICATED WITH ASPHALTIC CUT-BACK. REF SD-200AA.

DIMENSIONS IN MILLIMETRES

Winnipeg

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

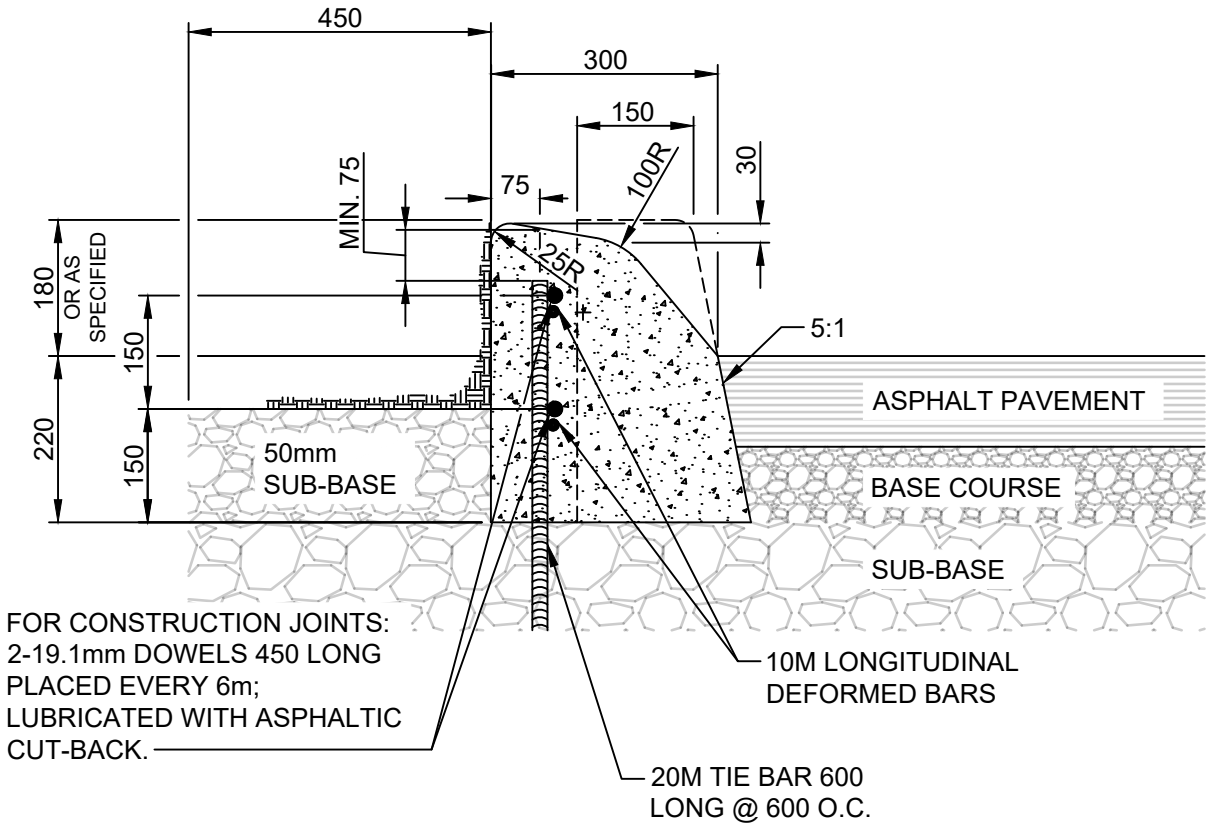
Reference Spec. No.
CW 3325

Revisions

No.	Date	Description	By

75 mm LIP CURB WITH INTEGRAL APPROACH FOR ASPHALT PAVEMENT

Designed By: A.G.	Drawn By: T.K.	Scale : N.T.S
Checked By: B.K.	Date: 2025–01–31	Drawing No. SD-202CA
Approved: PAVEMENT MANAGEMENT BRANCH		



NOTES:

1. TRANSVERSE SAW CUT EVERY 3m OR AT PAVEMENT JOINTS
2. TRANSVERSE SAW CUTS ARE TO BE A MAXIMUM DEPTH OF 25mm

DIMENSIONS IN MILLIMETRES

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

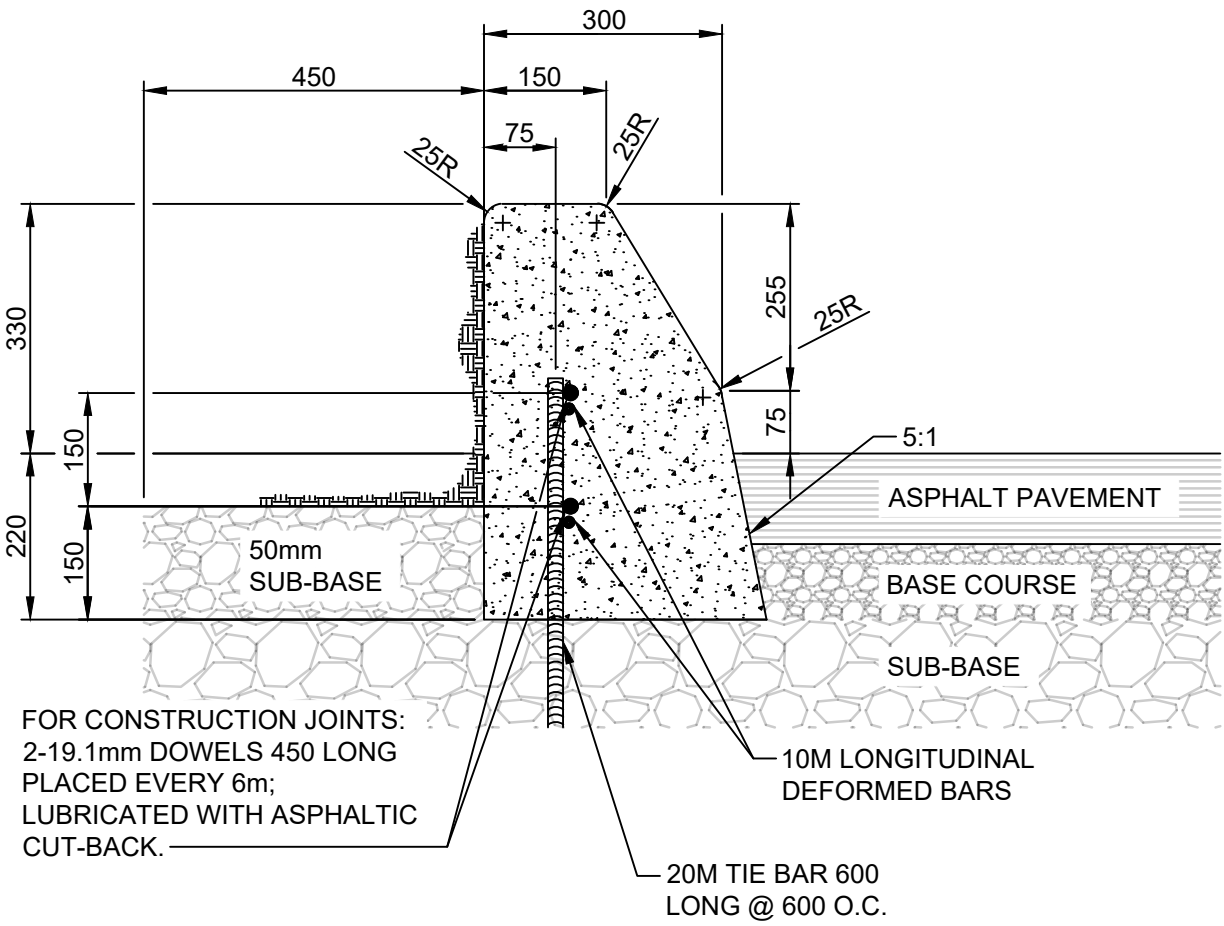
Reference Spec. No.
CW 3325

Revisions

No.	Date	Description	By

MODIFIED BARRIER CURB FOR ASPHALT PAVEMENT

Designed By: A.G.	Drawn By: R.B.	Scale : N.T.S
Checked By: B.K.	Date: 2024-10-01	Drawing No. SD-203C
Approved: PAVEMENT MANAGEMENT BRANCH		



NOTES:

1. TRANSVERSE SAW CUT EVERY 3m OR AT PAVEMENT JOINTS
2. TRANSVERSE SAW CUTS ARE TO BE A MAXIMUM DEPTH OF 25mm

DIMENSIONS IN MILLIMETRES

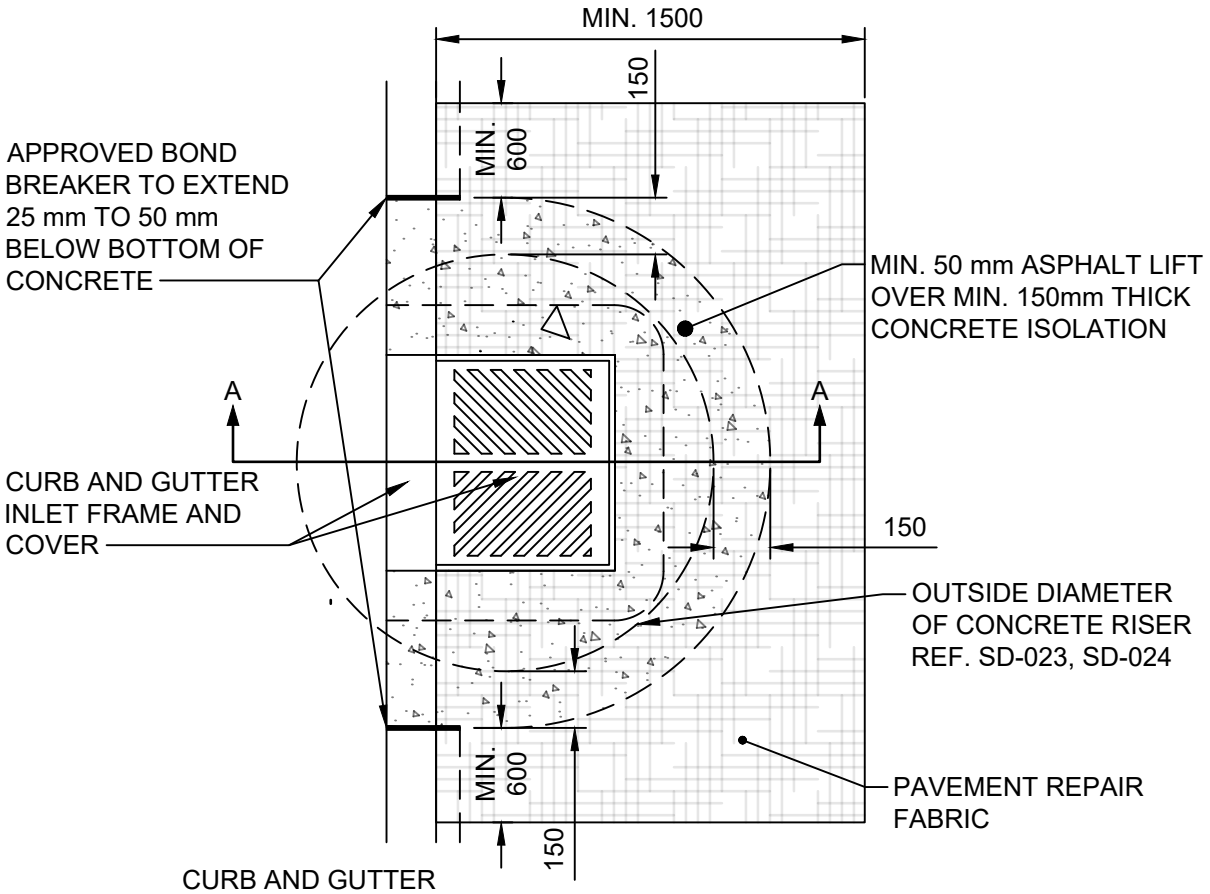
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

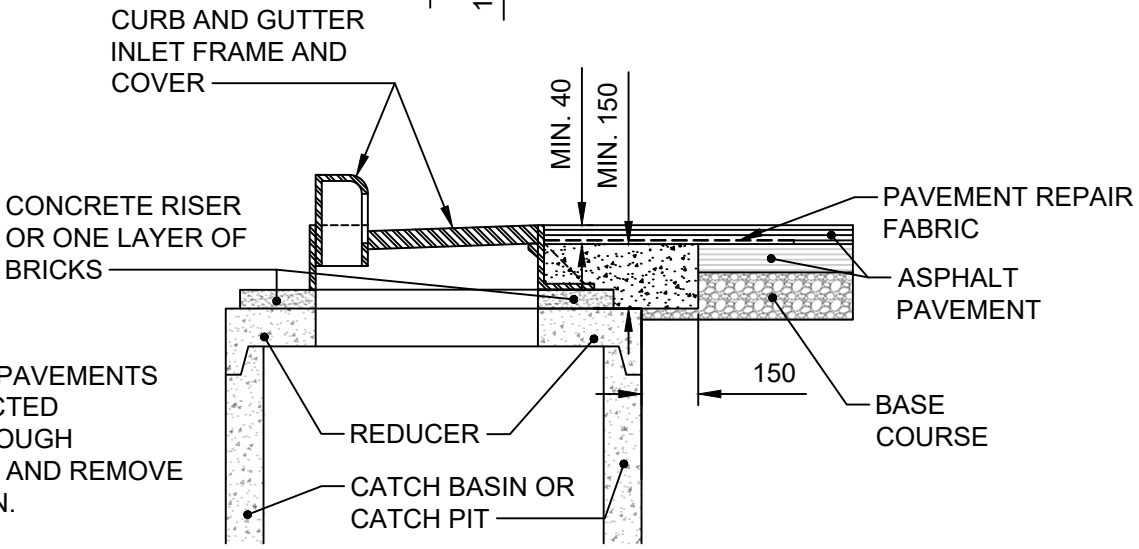
Reference Spec. No.
CW 3325

Revisions			
No.	Date	Description	By

SAFETY CURB FOR ASPHALT PAVEMENT

Designed By: A.G.	Drawn By: T.K.	Scale : N.T.S
Checked By: B.K.	Date: 2024-10-01	Drawing No. SD-206CA
Approved: PAVEMENT MANAGEMENT BRANCH		





NOTE:

CURB FOR ASPHALT PAVEMENTS SHALL BE CONSTRUCTED CONTINUOUSLY THROUGH ISOLATION. SAW CUT AND REMOVE CURB FOR ISOLATION.

SECTION A-A

DIMENSIONS IN MILLIMETRES

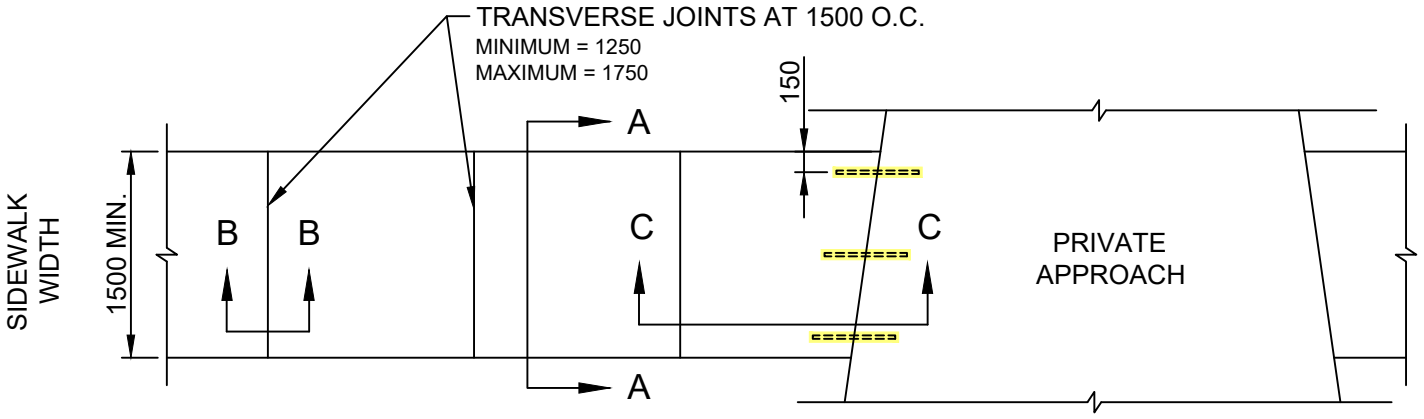
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

Reference Spec. No.
CW 3325

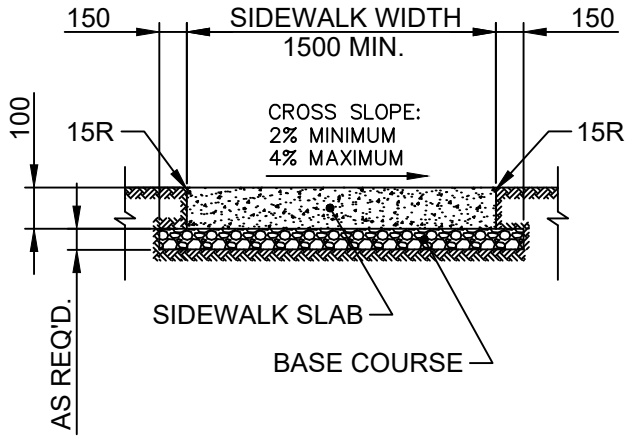
Revisions			
No.	Date	Description	By

CURB AND GUTTER INLET ISOLATION DETAIL FOR ASPHALT PAVEMENTS

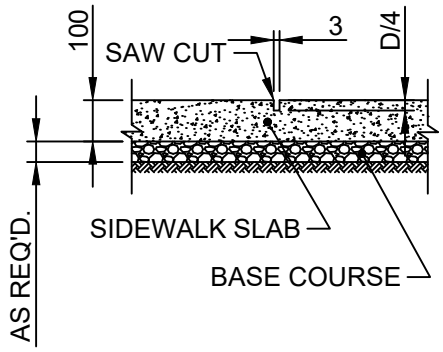
Designed By: A.G.	Drawn By: R.B.	Scale : N.T.S.
Checked By: B.K.	Date: 2024-10-01	Drawing No. SD-220D DRAFT
Approved: PAVEMENT MANAGEMENT BRANCH		



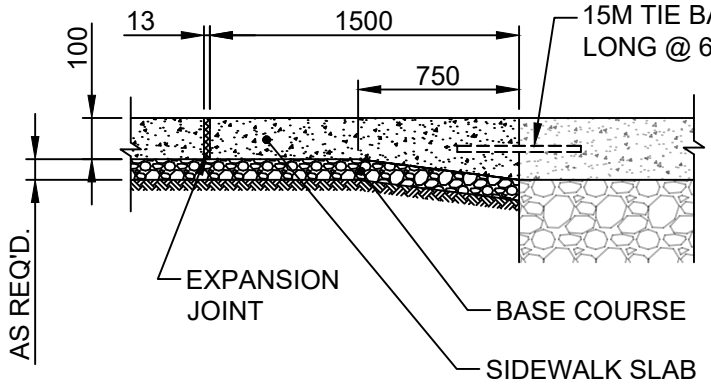
PLAN



SECTION A - A



SECTION B - B



SECTION C - C

NOTE:

1. SIDEWALK SLAB SURFACE WILL BE GIVEN A TEXTURED BROOM FINISH. NO EDGER MARKS WILL BE LEFT

2. LONGITUDINAL JOINTS AT 1500 O.C. MAXIMUM

3. FOR PRIVATE APPROACHES WITH CURBS, CURB RAMPS SHALL BE INSTALLED

DIMENSIONS IN MILLIMETRES

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

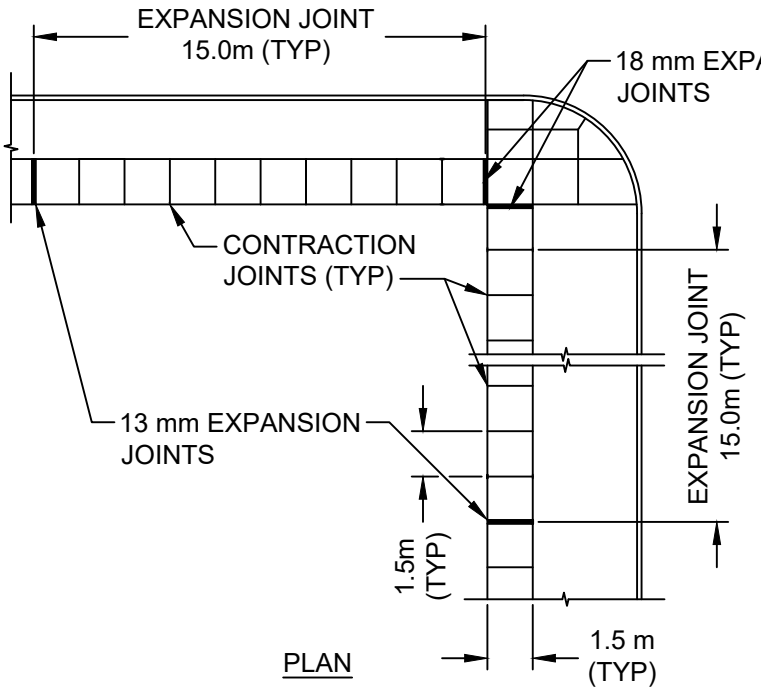
Reference Spec. No.
CW 3235, CW 3310, CW 3325

Revisions

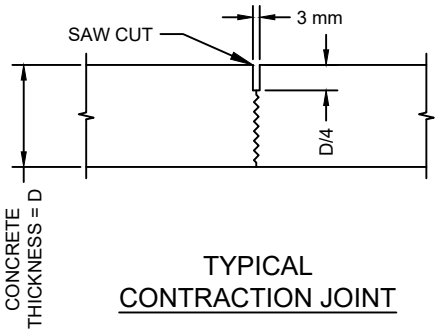
No.	Date	Description	By
1.	OCT 24	ADDED TIE BARS	R.B.

CONCRETE SIDEWALK

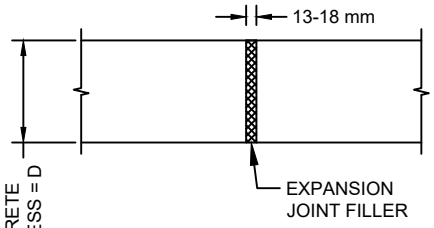
Designed By: A.G.	Drawn By: R.B.	Scale : N.T.S.
Checked By: B.K.	Date: 2024-10-01	Drawing No. SD-228A
Approved: PAVEMENT MANAGEMENT BRANCH		



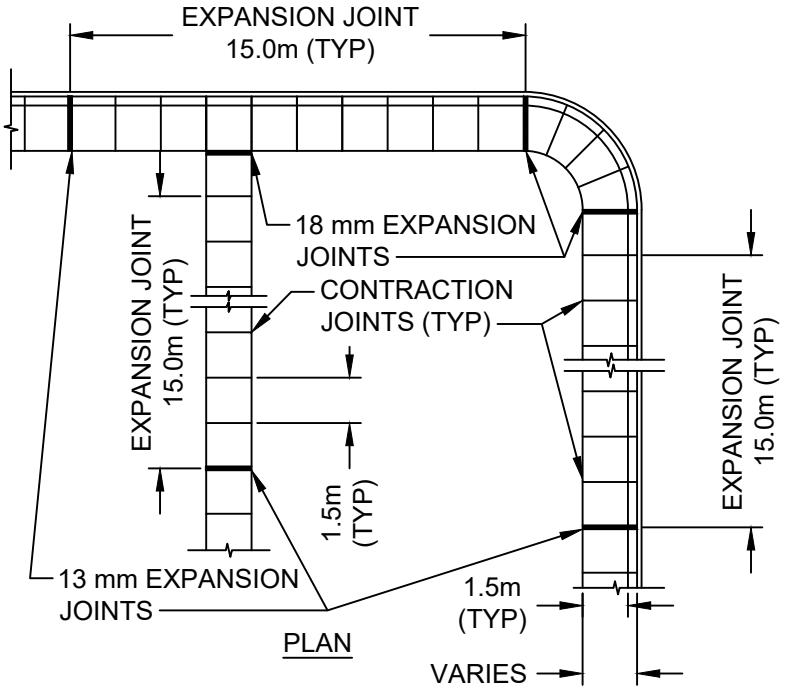
PLAN



TYPICAL
CONTRACTION JOINT



TYPICAL
EXPANSION JOINT



PLAN

NOTES:

1. IF SIDEWALK IS CONSTRUCTED DURING COLD WEATHER CONCRETING PERIOD, EXPANSION JOINTS SHALL BE INSTALLED EVERY 12 .0m
2. EXPANSION JOINTS SHALL NOT BE INSTALLED WHEN CONSTRUCTING MONOLITHIC CURB AND SIDEWALK
3. WHEN REPLACING HEAVED PANELS IN AN EXISTING SIDEWALK, EXPANSION JOINTS SHALL BE INSTALLED ON BOTH ENDS OF THE REPLACED PANELS

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

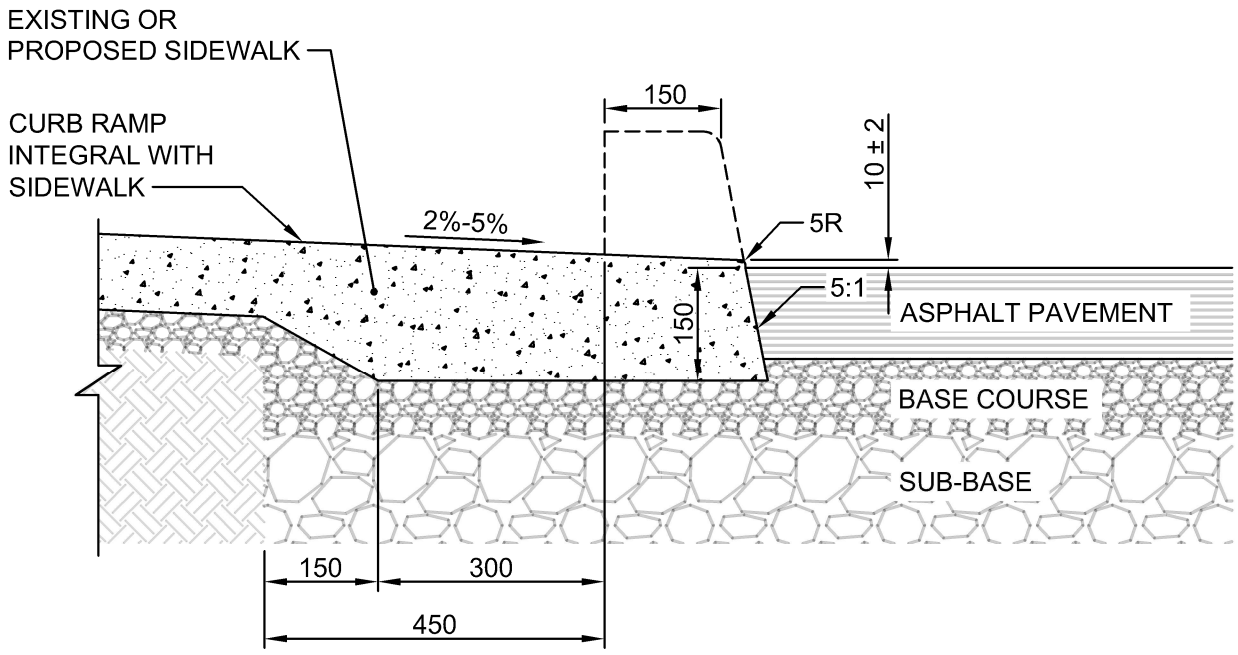
Reference Spec. No.
CW 3325

Revisions

No.	Date	Description	By

SIDEWALK EXPANSION JOINTS

Designed By: A.G.	Drawn By: R.B.	Scale : N.T.S.
Checked By: B.K.	Date: 2024-10-01	Drawing No. SD-228AA
Approved: PAVEMENT MANAGEMENT BRANCH		



NOTES:

1. TRANSVERSE SAW CUT EVERY 3m OR AT PAVEMENT JOINTS
2. TRANSVERSE SAW CUTS ARE TO BE A MAXIMUM DEPTH OF 25mm

DIMENSIONS IN MILLIMETRES

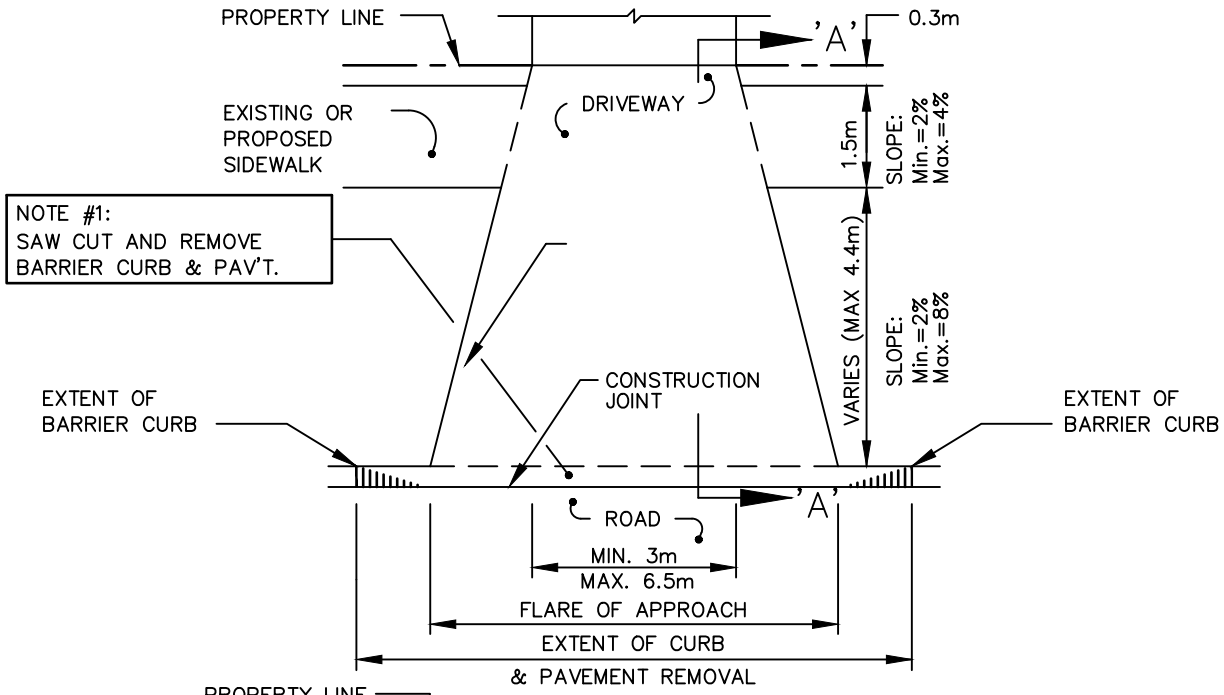
THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

Reference Spec. No.
CW 3325

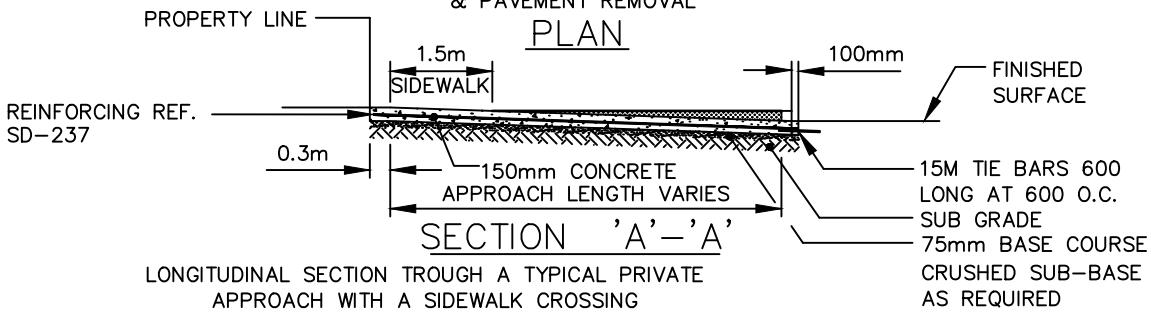
Revisions			
No.	Date	Description	By

CURB RAMP FOR ASPHALT PAVEMENT

Designed By: A.G.	Drawn By: T.K.	Scale : N.T.S
Checked By: B.K.	Date: 2025–01–31	Drawing No. SD-229FA
Approved: PAVEMENT MANAGEMENT BRANCH		

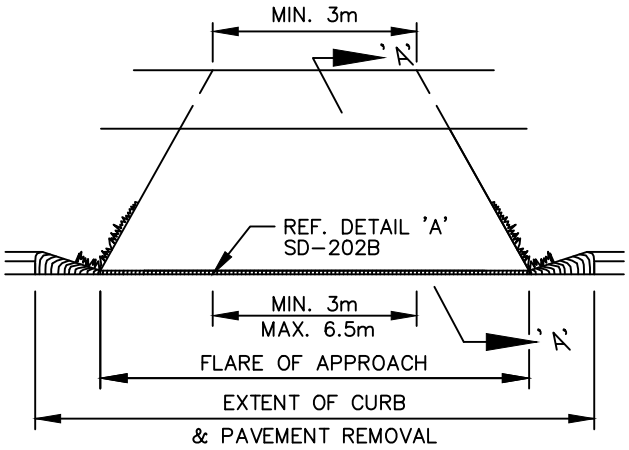


PLAN



SECTION 'A'–'A'

LONGITUDINAL SECTION TROUGH A TYPICAL PRIVATE APPROACH WITH A SIDEWALK CROSSING



FRONTAL PERSPECTIVE OF FINISHED PRIVATE APPROACH

NOTES:

1. EXISTING SIDEWALK SHALL BE REMOVED, THE APPROACH EXTENDED BACK TO THE PROPERTY LINE AND THE SIDEWALK RESTORED TO THE EDGE OF THE APPROACH AS SHOWN.
2. M.H. ISOLATIONS TO BE APPROVED BY CONTRACT ADMINISTRATOR.
3. CONTRACTION JOINT AS REQUIRED TO MATCH STREET TRANSVERSE JOINTS.

DIMENSIONS IN MILLIMETRES

Winnipeg

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

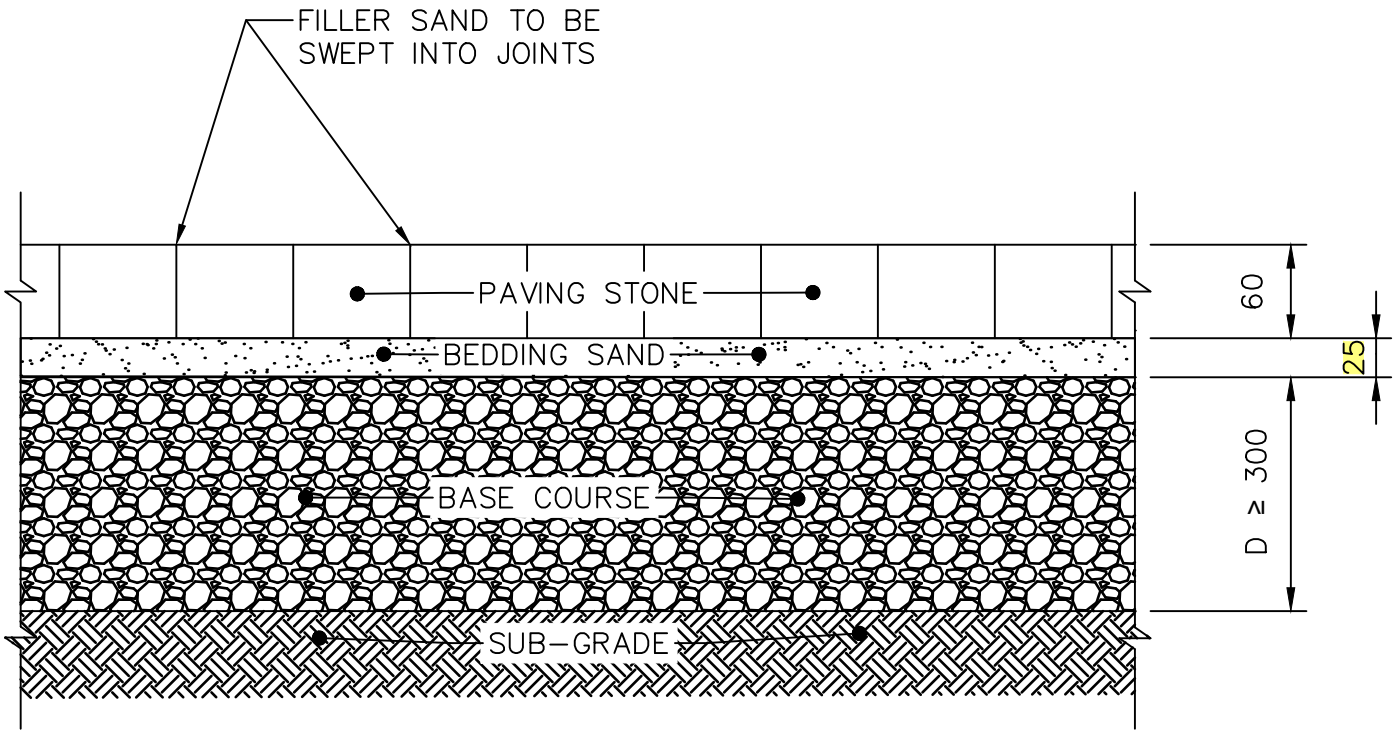
Reference Spec. No.
CW 3230, CW3240, CW 3310

Revisions			
1.	OCT 25	ADDED FLAIR LAYOUT 2	R.B.
No.	Date	Description	By

RESIDENTIAL APPROACH–CONCRETE

(WITH EXISTING BARRIER CURB)

Designed By: A.G.	Drawn By: R.B.	Scale : N.T.S.
Checked By: B.K.	Date: 2024–10–01	Drawing No. SD–235
Approved: PAVEMENT MANAGEMENT BRANCH		



DIMENSIONS IN MILLIMETRES

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

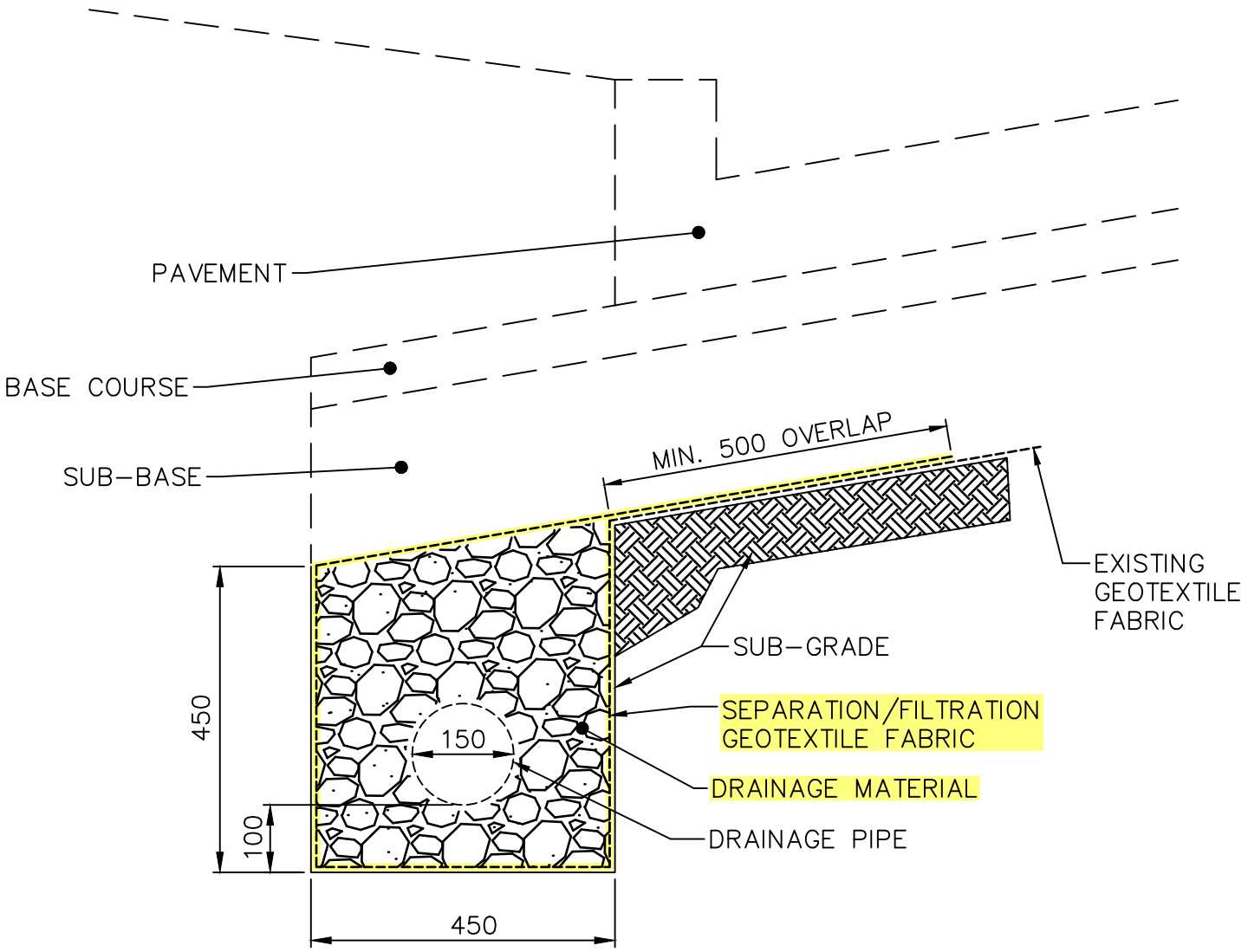
Reference Spec. No.
CW 3110, CW 3330

Revisions

No.	Date	Description	By
1.	OCT 24	GENERAL REVISION	R.B.

INTERLOCKING PAVING STONE DETAIL FOR RESIDENTIAL APPROACHES

Designed By: A.G.	Drawn By: R.B.	Scale : N.T.S.
Checked By: B.K.	Date: 2024-10-01	Drawing No. SD-240A
Approved: PAVEMENT MANAGEMENT BRANCH		



DIMENSIONS IN MILLIMETRES

THE CITY OF WINNIPEG
PUBLIC WORKS DEPARTMENT

Reference Spec. No.
CW 3110, CW 3120, CW 3130

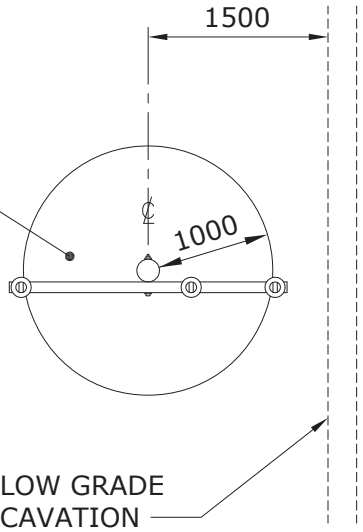
Revisions			
1.	OCT 24	GENERAL REVISION	R.B.
No.	Date	Description	By

SUBDRAIN INSTALLATION DETAIL

Designed By: A.G.	Drawn By: R.B.	Scale : N.T.S.
Checked By: B.K.	Date: 2024-10-01	Drawing No. SD-245
Approved: PAVEMENT MANAGEMENT BRANCH		

Appendix C – Manitoba Hydro Allowable Excavation Around Existing Poles: Drawing CD 30-5

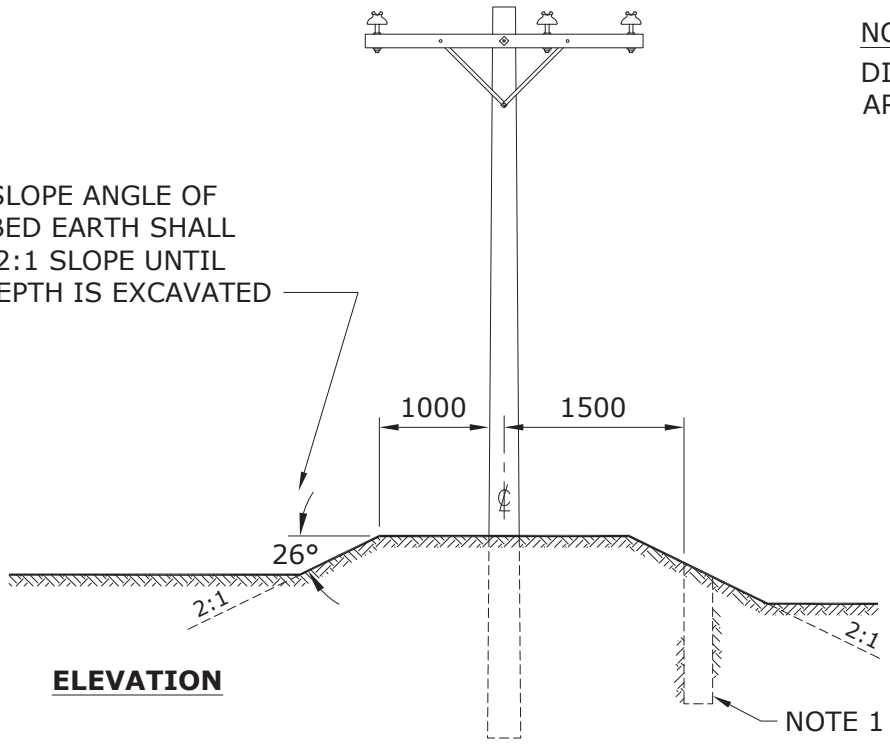
FOR CHANGES IN GRADE, THE MINIMUM AMOUNT OF UNDISTURBED EARTH TO BE LEFT ALL AROUND POLES SHALL BE 1000mm



PLAN

NOTE:
DIMENSIONS SHOWN ARE MILLIMETRES.

MAXIMUM SLOPE ANGLE OF UNDISTURBED EARTH SHALL BE 26° OR 2:1 SLOPE UNTIL DESIRED DEPTH IS EXCAVATED



ELEVATION

NOTE:

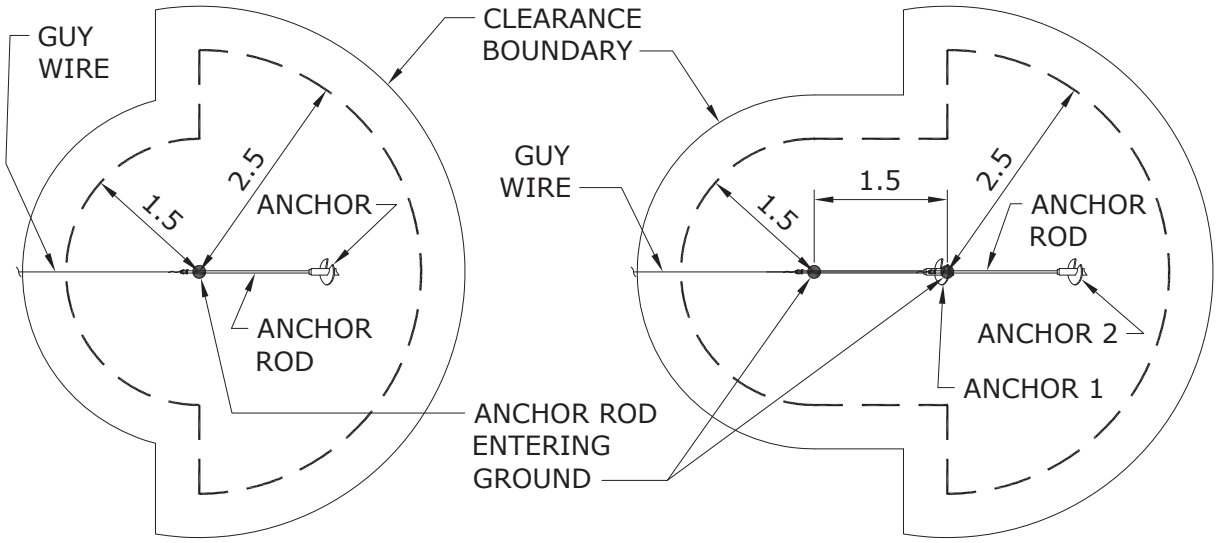
1. THE MINIMUM SEPARATION (TO ANY SIDE OF A POLE) FOR EXCAVATIONS DEEPER THAN 500mm WITHOUT DISTRIBUTION ENGINEERING INVOLVEMENT SHALL BE 1500mm, EXCAVATIONS TO BE BACKFILLED & TAMPED TO MAINTAIN SLOPE. A CIVIL ENGINEER SHOULD BE CONSULTED FOR ANY LARGER (TEMPORARY OR PERMANENT) EXCAVATIONS.

SUPERCEDES ORIGINAL SEALED BY E. WIEBE ON 94-07-11

APPROVED	REVISIONS			MANITOBA HYDRO DISTRIBUTION STANDARDS
ORIGINAL DRAWING SEALED BY D.R. ORR 19-05-17	23-01	4	ADDED SHEET 2 - EXCAVATION LIMITS AROUND ANCHORS	**ALLOWABLE EXCAVATIONS AROUND EXISTING POLES AND ANCHORS**
	19-04	3	REVISED NOTE 1, RESEALED	
	06-02	2	REVISED SLOPE & ADDED MORE EXPLANATION TO NOTES	

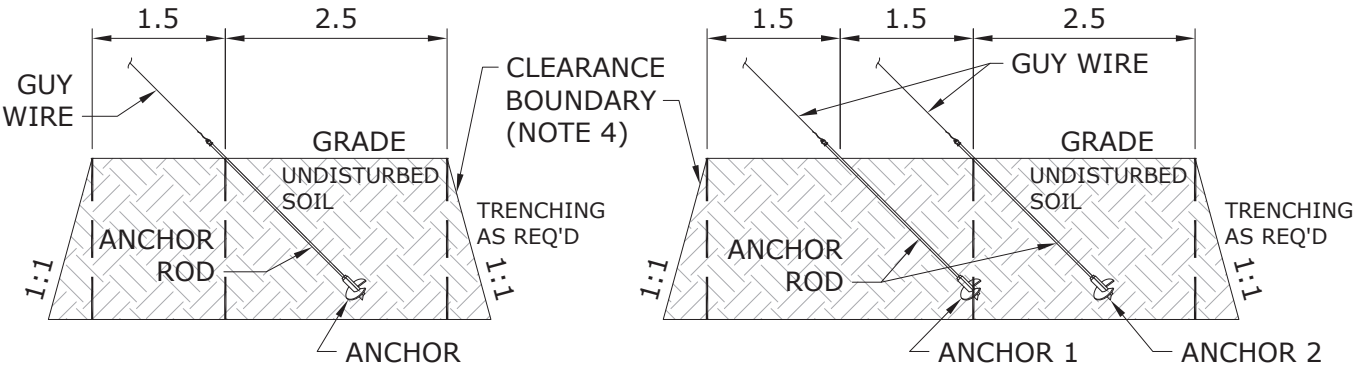
DRAWN	CHECKED	DATE		SHT	REV
C.A.	G.D./C.W.	19-04	**CD 30-55**	0001 OF 2	04

1-04430-DA-24200-0013



SINGLE ANCHOR - TOP VIEW

MULTIPLE ANCHOR - TOP VIEW



SINGLE ANCHOR - PLAN VIEW

MULTIPLE ANCHOR - PLAN VIEW

NOTES:

1. EXCAVATION ZONE LIMITS ARE ONLY APPLICABLE FOR NORMAL OR BETTER SOIL CONDITIONS. FOR POOR OR SWAMP SOIL CONDITIONS, CONTACT DISTRIBUTION ENGINEERING BEFORE BEGINNING ANY WORK.
2. IF THERE ARE MULTIPLE ANCHORS IN-LINE, ADD ANOTHER 1.5m FOR EACH ADDITIONAL ANCHOR TO THE 1.5m MINIMUM DIMENSION.
3. THIS DRAWING SHOWS A PISA ANCHOR, IT IS APPLICABLE FOR ALL ANCHOR TYPES.
4. EXCAVATION TO BE DONE AT MAXIMUM ANGLE OF 45° SLOPE AWAY FROM THE CLEARANCE BOUNDARY. THE HORIZONTAL AND VERTICAL CUTS SHALL NOT BE STEEPER THAN 1:1 RATIO TO PREVENT CAVE-IN.
5. IF AT ANY TIME IN THE COURSE OF EXCAVATION THE POLE OR ITS SUPPORTING EQUIPMENT APPEARS TO BECOME UNSTABLE TO ANY DEGREE, WORK SHALL BE HALTED IMMEDIATELY AND DISTRIBUTION ENGINEERING SHALL BE CONTACTED BEFORE PROCEEDING WITH ANY ADDITIONAL EXCAVATION.
6. IF THE SPECIFIED CLEARANCES CANNOT BE MET, CONTACT DISTRIBUTION ENGINEERING BEFORE BEGINNING ANY WORK.
7. DIMENSIONS SHOWN ARE IN METERS.

APPROVED	REVISIONS	MANITOBA HYDRO DISTRIBUTION STANDARDS
ORIGINAL DRAWING SEALED BY C. WEERAKOON 23-01-30		**ALLOWABLE EXCAVATIONS AROUND EXISTING POLES AND ANCHORS**

DRAWN	CHECKED	DATE		SHT	REV
C.A.	G.D.	23-01	**CD 30-55**	0002 OF 2	00

1-04430-DA-24200-0013

Appendix D – Manitoba Hydro Safe Excavation & Safety Watch Guidelines

Safe Excavation & Safety Watch Guidelines

For your **SAFETY**

ClickBeforeYouDigMB.com

Or call 1-800-940-3447

Manitoba Hydro

RELEASE OF NATURAL GAS

In the event of any damage to a natural gas pipeline (regardless of whether it is steel, plastic or aluminum) or to its protective pipe coating or tracer wire, however minor, call Manitoba Hydro immediately 204-480-5900 or 1-888-624-9376. In most cases there is no charge for minor repairs.

In case of damage causing a release of natural gas:

- Call 911 and Manitoba Hydro immediately.
- Clear people from the vicinity and prevent people from approaching the area of the leak.
- Shut off all vehicles and equipment. Remove or extinguish all sources of ignition. DO NOT smoke or allow open flame in the presence of natural gas.
- If a gas line has been punctured, do not remove the tool or equipment that punctured the line. This could result in a larger gas leak and pose a greater hazard.
- DO NOT attempt to backfill over a leaking natural gas line or attempt to stop the leak; it is safest to allow the gas to vent into the atmosphere.

Before you start to dig, contact ClickBeforeYouDigMB.com to request to have underground lines located. Manitoba Hydro will be notified and will contact you within three business days to advise of the date we will locate our electric and natural gas lines.

- Once the lines are marked we will provide you with a Facilities Locate form with specific instructions. You must obtain this form prior to excavation.
- If work has not started within 14 calendar days after the locate was provided by Manitoba Hydro, you must contact us to have the lines re-marked and receive an updated Facilities Locate form.
- Contractors must ensure that everyone on the worksite is aware of the presence of all gas and electric facilities and ensure that the Facilities Locate form is kept at the excavation site until the excavation and backfill are complete.
- The location markings must be maintained and kept visible by the person or contractor doing the excavation. Be careful that site operators do not remove the line location markings.

In addition to contacting ClickBeforeYouDigMB.com be sure to contact any other underground services that may be in the area.

This guideline applies to the crossing of Manitoba Hydro electrical conductors and natural gas pipelines only. When Manitoba Hydro fibre optic cables are present contractors will be referred by the Manitoba Hydro Facilities Locator to the Manitoba Hydro communications department for more information.

Manitoba Hydro only locates facilities that it owns and has no knowledge of or responsibility for privately owned facilities. Electric conductors or gas pipes installed past the meter are owned privately by the property owner, and at times are installed below ground before entering the building. Outbuildings that are heated or have electric power, wells, septic systems, pumps, pools and hot tubs are examples where privately owned buried facilities may exist.

This booklet has been prepared by Manitoba Hydro for Manitoba Hydro staff, contractors and homeowners involved with excavation and is available at hydro.mb.ca. Information on excavation and safety watch is included to inform excavators about basic requirements for excavation in the vicinity of buried electric power lines and gas pipelines. Unless otherwise indicated, gas pipelines and underground power cables will be called "lines".

Table of Contents

WHY YOU SHOULD PLAN AHEAD

When you contact ClickBeforeYouDigMB.com before you dig, we can identify buried lines so you can dig safely. This prevents injury or death, costly repairs, equipment damage, service outages, and environmental pollution.

It is YOUR responsibility to contact all owners of buried underground services.

PLANNING LARGE PROJECTS

Determining the location of existing Manitoba Hydro Underground Structures within the work area should be one of the first priorities of any work. Knowing the location of all utilities infrastructure allows the third party to plan work proactively, mitigating the need for costly design changes or delays during construction.

Gas
Manitoba Hydro requests that drawings be submitted for review for all projects involving ground disturbance. Drawings shall be submitted to: gasdesign@hydro.mb.ca.

Drawings will be reviewed by Manitoba Hydro at no cost and a letter providing details of any work restrictions, specific requirements or costs will be provided to the contractor.

Drawings should be submitted a minimum of 4 weeks before the start of any excavation work. Drawings shall include the details of the proposed work and include any gas or electrical line in the work area.

Electric
Contact Manitoba Hydro in Winnipeg at 204-480-5900 or outside Winnipeg at 1-888-MBHYDRO (1-888-624-9376)

You will be referred to the local district office for further instruction.

REGULATIONS

There are several federal and provincial agencies overseeing the operation of and around natural gas pipelines and electric cables. The following regulations and safe practice guides specify requirements for both the contractor and the utility:

- Manitoba Gas Pipeline Act, Regulation 140/92 –
  Provides the legal definition of an excavation and outlines Excavator and Utility responsibilities.

- National Energy Board Pipeline Damage Prevention Regulations:
  Authorizations, SOR/2016-124;
  Obligations of pipeline companies, SOR/2016-133

- Manitoba Workplace Safety and Health Act and Regulation M.R. 217/2006 including Part 26, Excavations and Tunnels -
  Describes legal responsibilities in regards to excavating safely.

- Guideline for Excavation Work, Manitoba Workplace Safety & Health Division.

- CSA Z247 Damage Prevention Standard.

DEFINITIONS

Daylighting – A term used to describe the uncovering and exposing of underground utilities to daylight without the use of mechanical excavation.

Excavation – includes digging, boring, pushing, ploughing, trenching, grading, post installation and breaking and displacement of soil or other material below the existing level of the ground that will disturb more than the top 150 mm (6 inches) of the ground.

High Pressure gas line – A natural gas line that operates in excess of 700 KPa (100psi).

Hydrovac – A truck or trailer that injects pressurized water from an onboard reservoir tank into the ground through a handheld wand. As the soil cover is liquefied, the resulting slurry is simultaneously extracted by a powerful vacuum and stored in an onboard debris tank for later disposal.

Large diameter pipeline – A natural gas pipeline that is 168.3 mm (6 inches) in diameter or larger, regardless of operating pressure.

Safety Watcher – A person designated by Manitoba Hydro to ensure that workers are not put at risk as a result of special hazards on the work site.

Sonde - A transmitter behind the bore head which registers angle, rotation, direction and temperature data.

Tolerance Zone – The space in which a line or facility is located, and in which special care is to be taken.

White lining – Designating the route and/or work area of the excavation using white paint, stakes and/or flags to outline the work area prior to the locator arriving on the site.

EXCAVATOR PRE-MARKING

Pre-marking your proposed work site allows excavators to accurately communicate to Manitoba Hydro's facility locators where the excavation is to occur. This may be accomplished either electronically or by white lining.

For excavator pre-marking, contact ClickBeforeYouDigMB.com or call 1-800-940-3447 to communicate where the excavation is to occur and:

- Attach a sketch or map that clearly identifies the excavation area via email or
- Pre-mark the excavation area by white lining

In either scenario you will be issued a reference number and notified of the day the locator will be on site.

When a project is too large for or not conducive to pre-marking, face-to-face meetings between Manitoba Hydro's facility locator and the excavators will be arranged at the proposed work site.

White Line
The excavator designates the route and/or area of the excavation using white paint, stakes and/or flags to outline the work area prior to the locator arriving on the site.

White paint, white stakes or white flags with the excavator's company identifier on them are permissible methods of marking.

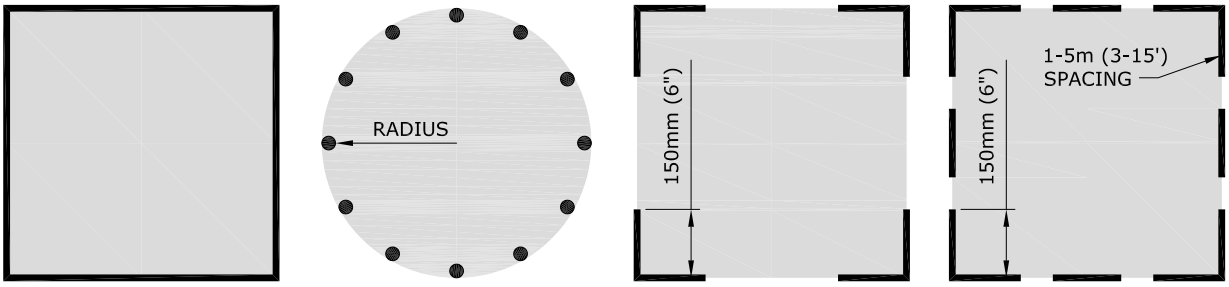
When using stakes or flags to mark the excavation work area, do not drive them into the ground deeper than 150 mm (6 inches). Any activity which disturbs more than 150 mm (6 inches) must have the facilities located.

Guidelines for excavation marking

The following marking illustrations are examples of how excavators may choose to mark their area of proposed excavation. The use of white marking products (e.g. paint, flags, stakes, or a combination of these) may be used to identify the excavation site.

Mark in white paint the proposed area of excavation through the use of a continuous line, dots marking the radius or arcs, dashes marking the four corners of the project, or dashes outlining the excavation project. The recommended size of each dash is approximately 150 – 300 mm (6-12 inches) in length and 20 mm (3/4 inch) in width with interval spacing approximately 1 – 5 metres (3-16 feet) apart. The maximum separation of excavation marks is to be reduced to a length that can be reasonably seen by the operator's locators when the terrain or excavation site conditions warrant it. Dots of approximately 20 mm (3/4 inch) diameter are typically used to define arcs or radii and may be placed at closer intervals in lieu of dashes.

SINGLE POINT EXCAVATION MARKINGS



STAKE IN CENTRE WITH COMPANY NAME & RADIUS OF CIRCLE

FULL LINE | **RADIUS OR ARC** | **FOUR CORNERS** | **DASH LINE**

If an excavation is contained within a 5 metre (16 feet) maximum radius then it can be marked with a single white stake at the centre of the excavation. The stake must clearly state the company identifier and the radius of the excavation in black lettering. This information must be conveyed to Manitoba Hydro.

After the area is Pre-Marked

On the appointed date, the locator will identify the Manitoba Hydro facilities that are located in the designated work area. They will document it using a sketch or map attached to the Electric and/or Natural Gas Facilities Locate Form.

When the locator has completed locating the facilities, they will advise the excavator and indicate whether there is a conflict. The Facilities Locate form will be available and must be on site prior to excavating.

The Manitoba Gas Pipeline Act, Regulation 140/92 and the Workplace Safety and Health Act, regulations M.R.217/2006, part 26.6 require that a valid Facilities Locate form be on the work site at all times until the project is complete.

If an excavation takes place without a current locate form on site, the locate is not valid. The excavator could face consequences which may include fines and/or sanctions by Manitoba Workplace Safety and Health and Manitoba Hydro.

APWA UNIFORM COLOUR CODE

Underground utility marking

WHITE – Proposed Excavation

PINK – Temporary Survey Markings

RED – Electric Power Lines, Cables, Conduit and Lighting Cables

YELLOW – Gas, Oil, Petroleum, or Gaseous Materials

ORANGE – Communication, Alarm or Signal Lines, Cables or Conduit

BLUE – Potable Water

PURPLE – Reclaimed Water, Irrigation and Slurry Lines

GREEN – Sewer and Drain Lines

GUIDELINES FOR EXCAVATION NEAR ELECTRICAL AND NATURAL GAS LINES

Hand Digging to Expose Lines

Mechanical excavation cannot be used within 1 metre (39 inches) of an electrical or gas line until the line is physically exposed by hand. Hand exposing means exposing a buried facility, whose location has been marked by Manitoba Hydro, using non-powered tools such as a Spade or shovel (hand augers are not acceptable). A water pressure/ vacuum system (hydrovac) is an acceptable alternative.

There are several things to remember when hand exposing:

- No one should ever jump on or use their entire body weight on a shovel when digging.
- Use a prying (rather than striking) motion to loosen hard dirt.
- Never probe for the facility using a sharp pointed tool such as a pick axe or pointed bar.
- Dig on an angle if possible, such that any contact with the facility is a glancing blow rather than a direct hit.

Once the line is visible, mechanical excavation equipment can be used in accordance with the guidelines for mechanical excavation.

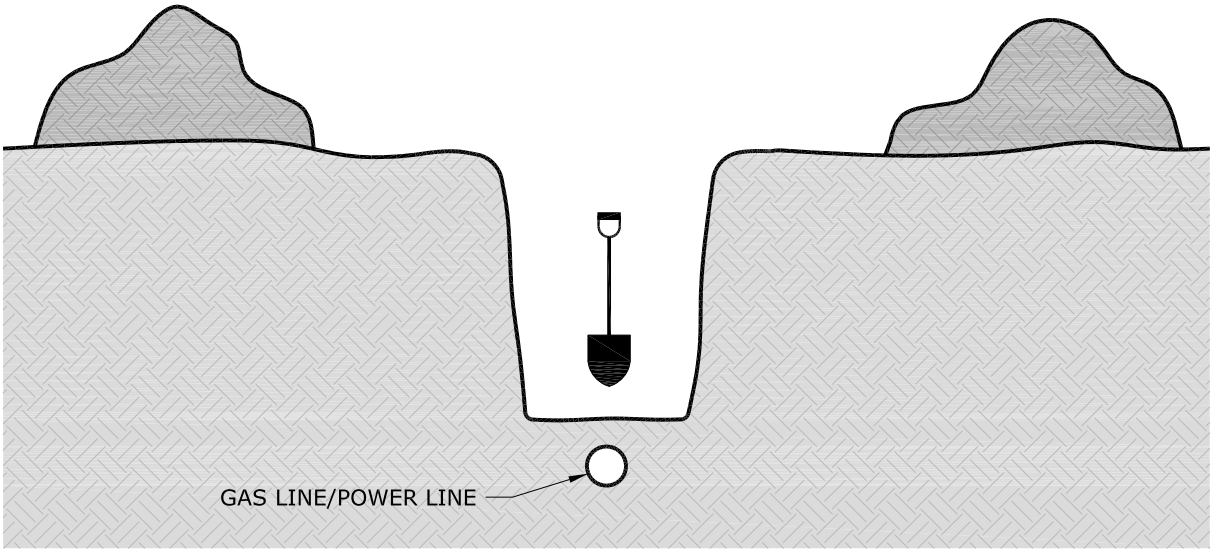
Water Pressure/Vacuum System (Hydrovac)

An alternative to exposing cables by hand digging is to use a water pressure/vacuum system capable of exposing Manitoba Hydro facilities without damage.

Only oscillating head type nozzles are to be used for the water wand. When excavating within 1 metre of a marked line the maximum setting of 38°C (100°F) water temperature and 10,342 Kpa (1,500 psi) must not be exceeded. The end of the vacuum tube shall be neoprene or equivalent. Expose the buried line by using a sweeping motion only, perpendicular to the locate markings, until the line is sighted. IMPORTANT: *After sighting, the line shall not be contacted by spray or vacuum to avoid damage to wraps and coatings.*

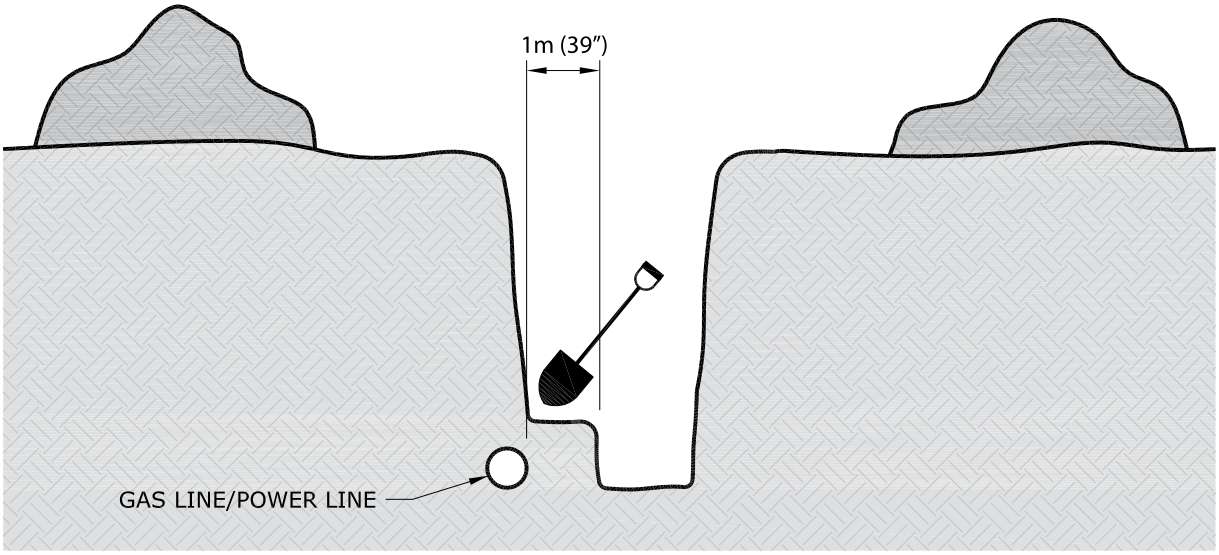
Some acceptable excavation methods:

a) Dig Vertically



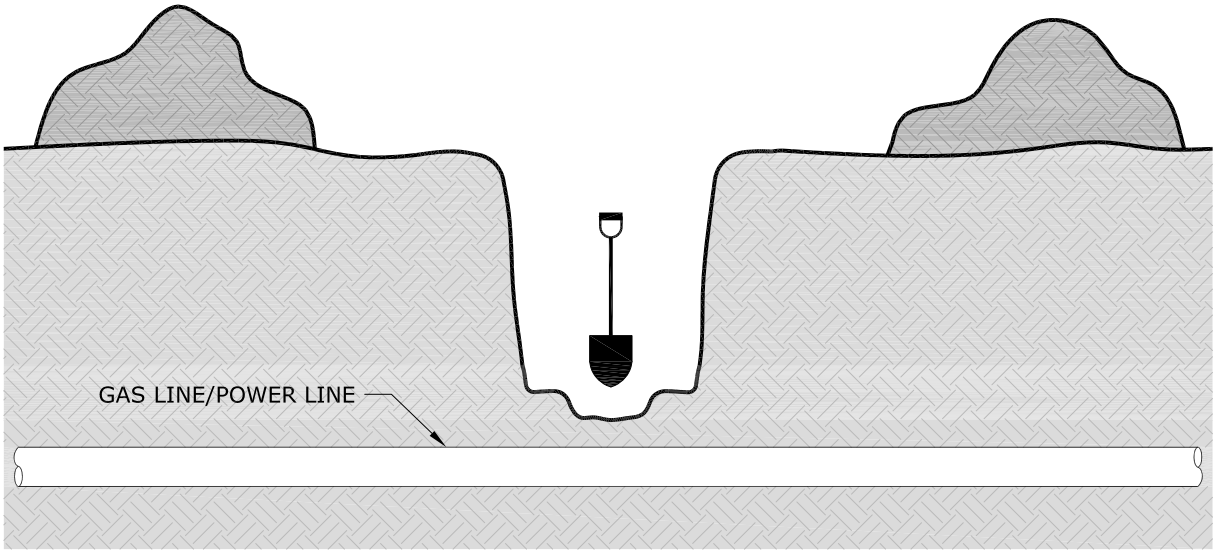
Dig a hole with a shovel directly above the line location until the line is exposed. Take care not to damage the line or coating. Mechanical excavation equipment MUST NOT be used to widen or deepen the hole before exposing the line.

b) Dig Laterally



Dig a trench or bell hole 1 metre (39 inches) from the line location, parallel to the line, then hand dig laterally to expose the line.

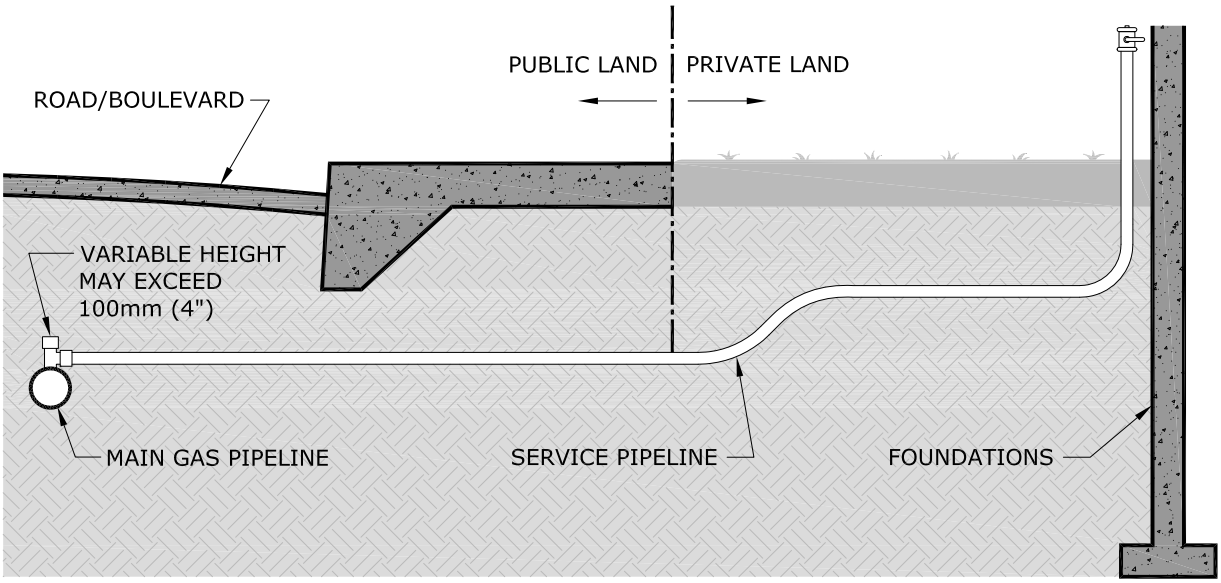
c) Dig Trench and excavate



Dig a trench by hand across the full width of the excavation (perpendicular to or "across from" the line). If the line is not uncovered, mechanically excavate to one half the depth of the trench. Repeat this process until the line is exposed.

Typical Gas Service Installation

(example only does not represent all installations)

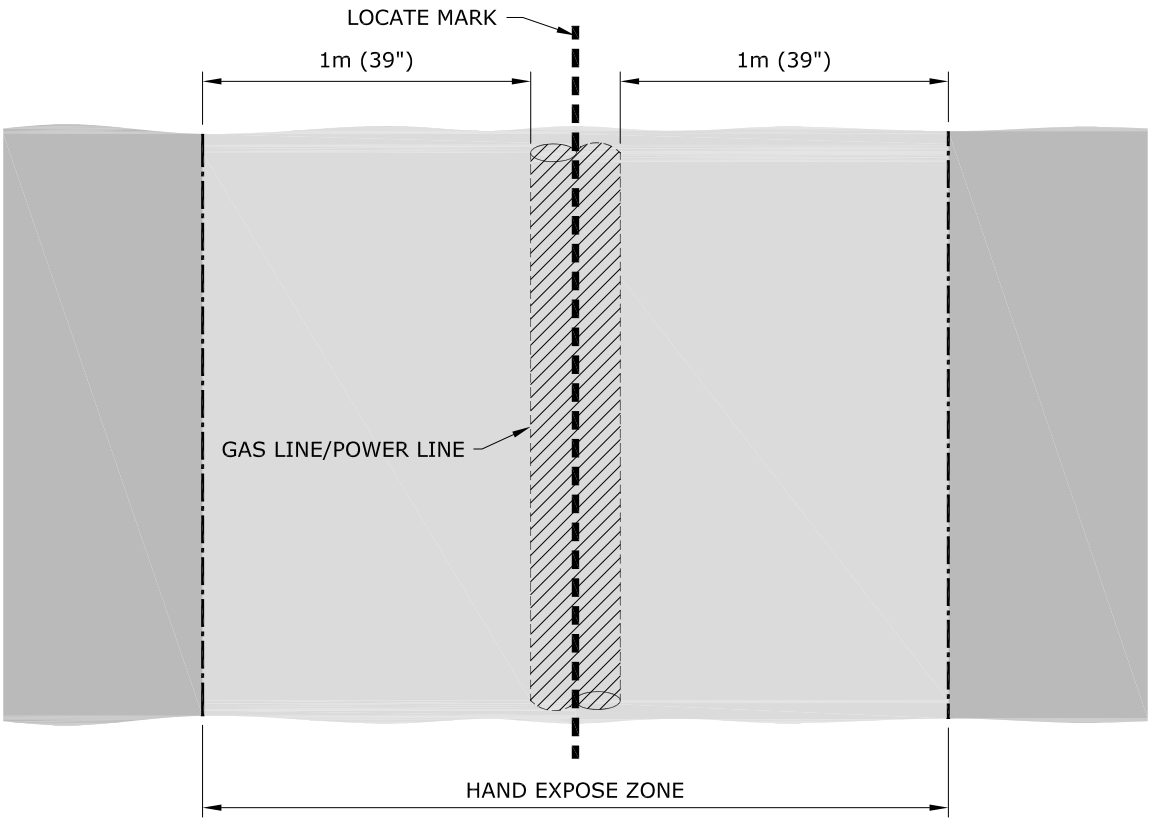


Fittings such as active or abandoned service tees may be present on gas pipelines, exercise care when excavating.

General Approach

- When the line is not visible, mechanical excavation shall not be used within 1 metre (39 inches) of an electrical or gas line.
- When the line is visible, mechanical excavation can be used no closer than 450 mm (18 inches) to natural gas lines and 600 mm (24 inches) to electrical lines.
- When soil conditions permit, a smooth edge bucket is preferred when excavating near gas and electrical lines.
- An observer (excavator staff) located near the line must maintain communication and control of the operator at all times by the use of hand signals and verbal communication. The observer is responsible for maintaining the minimum distance from the pipe. If at any point the observer or operator is unclear of the location or orientation of the line, no digging shall occur until this is confirmed and agreed upon by all on the worksite.

Before line is exposed



Crossing Lines

- When crossing a line, the line is to be exposed for the width of the excavation.
- After the line is daylighted, and provided there is space for excavator access, it is recommended that excavation near the line be performed parallel to the line.

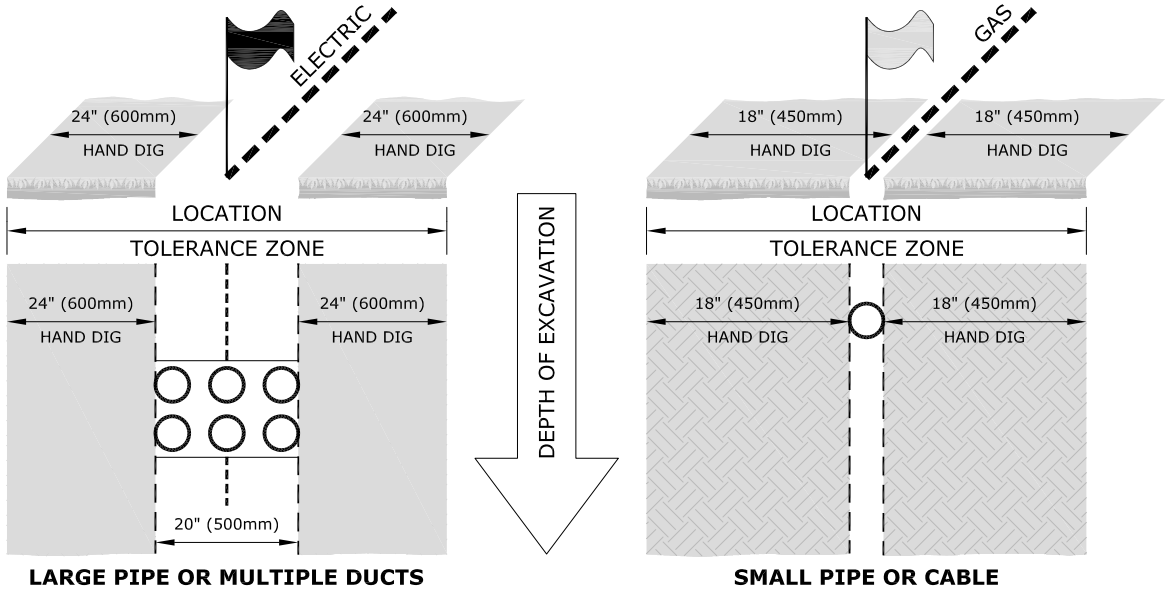
Working Parallel to Lines

- When working parallel to a line it is not necessary to expose the full length of the line to reduce the acceptable mechanical excavation separation. A series of daylight holes along the line is acceptable. The distance between daylight holes will be a maximum of 10 metres (33 feet) or as required to define the location of the line. Daylight holes must be large enough to expose the full width of the line or lines.
- After daylighting and previewing of the line, marks shall be placed a minimum of 450 mm (18 inches) from the outside of the line at each daylight hole for gas and 600 mm (24 inches)

for electrical lines. This tolerance zone should be marked along the entire length of the work area to ensure that the operator maintains proper alignment with the line. With the line daylighted and the tolerance zone marked, it is acceptable to use mechanical excavation on the outside of the marked line of the tolerance zone.

- If at any point the line becomes obscured, it shall be remarked immediately. The observer is responsible for maintaining the minimum distance from the pipe by confirming the machine's distance and alignment with the line. The operator will orient his machine parallel to the line so their bucket remains more than 450 mm (18 inches) away for gas and 600 mm (24 inches) away for electric lines. They must preview the work prior to entering their machine and prior to any trenching.

Once line is exposed



LARGE PIPE OR MULTIPLE DUCTS **SMALL PIPE OR CABLE**

Hard Surface Removal

- Mechanical equipment can be used to remove the asphalt or concrete road/sidewalk surface and should only be used to the depth of that surface.

- Avoid starting the pavement break directly over the marked facility.

- Start a few feet away from the marks and attempt to "peel off" the pavement or break it into small chunks for removal.

Line Exposed

When a length of line is exposed consult the utility for proper handling procedures. The line may need to be supported to prevent settling or sagging.

No Relocation

The line shall not be moved or relocated. No operation or work shall be done that would put stress on the line.

Inspect for Damage

Electric Power Lines – If you suspect a power cable has been damaged, contact Manitoba Hydro to inspect the cable. Do not contact the cable as it may be energized.

Gas Pipelines – Thoroughly clean (with water only) and inspect the exposed gas line for damage to the pipe, yellow plastic pipe covering or tracer wire (used on plastic pipe). If damage is found, notify Manitoba Hydro. They will repair minor damage to the pipe coating or tracer wire at no charge.

Report Contact or Damage – Any contact with or damage to any line or underground cable must be reported immediately to Manitoba Hydro.

Backfilling

To prevent settling or stress, the contractor is required to place clean fill under the power or gas line and compact the fill. The backfill material must be free of rocks, sharp objects or other material that could damage the line.

If the backfill material is frozen, it should be free of large frozen lumps of soil. The backfill material must be gradually placed, not dumped, on the line. Alternatively, the line may be hand padded with 300 mm (12 inches) of screened sand or soft fill before backfilling.

If mechanical protection is required, or if the backfill contains rocks, the cable or pipeline must be enclosed in a 150 mm (6 inches) envelope of screened sand.

Access

Manitoba Hydro utility personnel shall have access to the excavation to inspect the underground line at any time during construction.

Project Closeout

When the excavation project has been completed all flags and stakes used to mark gas and electric lines shall be removed from the site.

SAFETY WATCH

Safety Watch is a program where an employee qualified by Manitoba Hydro observes the excavation work in progress and determines actions to be taken by the contractor to prevent injury, property damage or damage to Manitoba Hydro facilities.

Safety Watch personnel work with the excavator to check that:

- the excavation is done safely;
- rules and procedures related to the excavation are followed;
- the plant is located accurately;
- all documentation is accurate and complete;
- Hydrovac guidelines are followed.

Safety Watch personnel shall be recognized as an authority on site with the ability to shut the job down.

When is a Safety Watch required?

Any excavation within 3 metres (10 feet) of a cable or pipeline may require a Safety Watch. The need for a safety watch will be assessed and identified on the Facilities Locate form. The decision to provide a Safety Watch will be based on the excavation proposed, the type of cable or pipeline, and the proximity of the excavation to the cable or pipeline.

Why is a Safety Watch done?

Safety Watch service is provided to ensure the safety of customers and their contractors when working in close proximity to either energized electrical or pressurized gas lines. In addition, this protects the integrity of the utility lines minimizing the chance of an outage.

NOTE: *Typically, Safety Watch personnel are not provided for low voltage conductors (under 750 volts) or distribution pressure gas mains and services under 168.3 mm (6 inches) diameter. However, Manitoba Hydro staff may assess the situation and choose to provide Safety Watch personnel where conditions warrant*.

Who pays for a Safety Watch?

Generally, Safety Watch service is provided at no cost to the homeowner for minor projects. For larger projects, the contractor may be charged at a cost shared rate. Contact the local district office for further information.

How to arrange for a Safety Watch.

When an underground line is located in response to a Click Before You Dig request, the Manitoba Hydro employee will indicate whether a Safety Watch is required. Call Manitoba Hydro to arrange for a Safety Watch appointment a minimum of three business days before any excavation is to occur.

DIRECTIONAL BORING – CONTRACTOR GUIDELINES

As with all ground disturbance activity, the excavator must first obtain a facilities locate from Manitoba Hydro.

The distance measured to Manitoba Hydro electrical conductor or gas pipeline must always be measured from the **outside** diameter or wall of the Manitoba Hydro facility to the outside diameter of the back reamer. The same measuring methodology must be used when paralleling Manitoba Hydro facilities.

When boring within the tolerance zone of a high pressure or large diameter gas pipeline or any critical distribution gas pipeline or electrical conductor, as identified by Manitoba Hydro's Facilities Locate personnel, qualified natural gas or electric Safety Watch personnel are required.

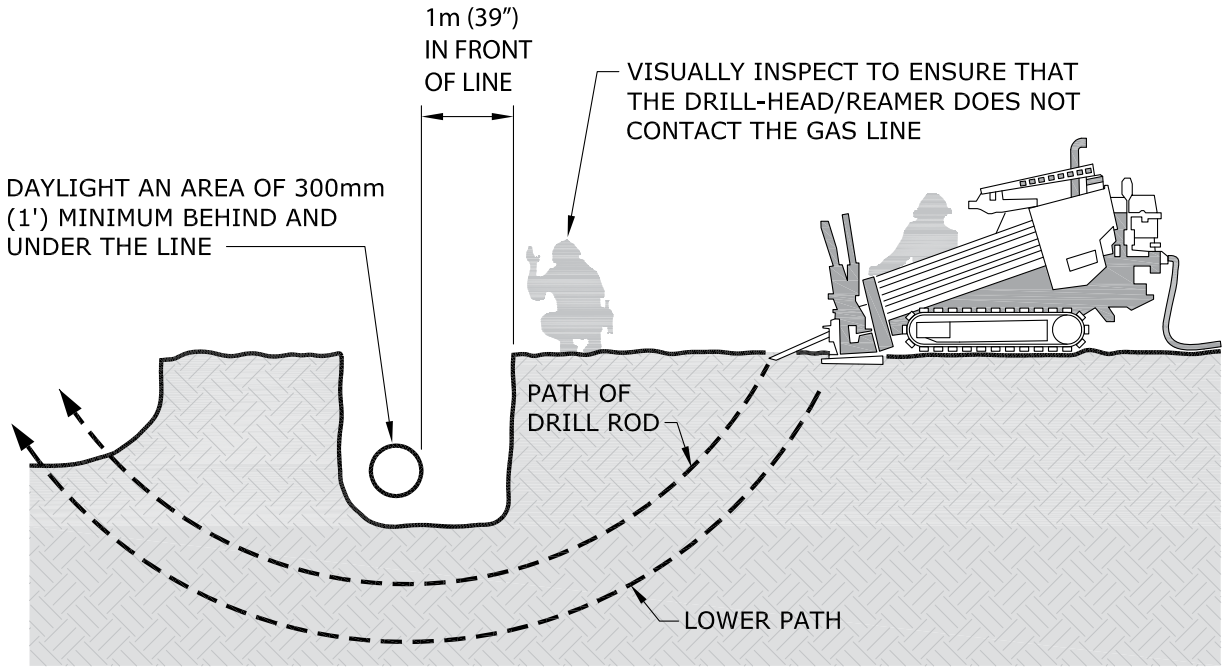
Electrical Conductors and Gas Pipelines

Prior to directional boring across Manitoba Hydro gas and electrical lines, the buried depth must be confirmed. Acceptable practice to verify line depth is to:

- Expose the line by hand digging, or
- Expose the line by water pressure/vacuum excavation; or
- Locate on the side wall of a trench that has been excavated 1 metre (39 inches) on either side of the surface locates; or
- Use reference measurements that are known to be accurate, for example: electrical duct lines.

The drill head and/or back reamer should at all times maintain a minimum of 1 metre (39 inches) clearance from all Manitoba Hydro lines.

Where underground facility congestion does not effectively allow a 1 metre (39 inches) clearance/separation from Manitoba Hydro lines, the contractor may consult with Manitoba Hydro Engineering for site specific direction. Any deviations in clearances/separations must be provided in writing and must be present on-site when the work is being performed.



Observation Hole Required When Crossing Any Manitoba Hydro Facility

The accuracy of the drill head location and depth must be visually verified 1 metre (39 inches) prior to crossing Manitoba Hydro facilities. An observation or discovery hole is required.

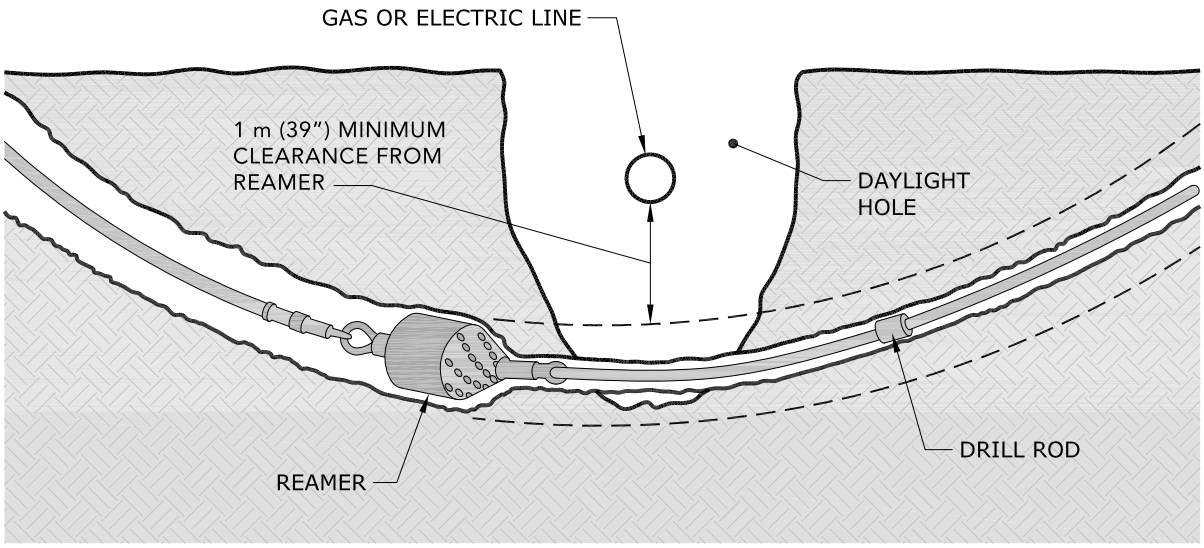
Acceptable practice for opening up the observation hole is using water pressure/vacuum or hand digging.

When boring head and/or back reamers path is crossing above a natural gas pipeline or electrical conductor the boring head and/or back reamer must be visually observed crossing the facility.

When the boring head and/or backreamer's path is crossing below a gas pipeline or electrical conductor an observer must verify that the bore head and/or reamer does not enter the observation hole within 1 metre of the line.

The minimum dimensions of the observation/discovery hole MUST BE:

- 1 metre (39 inches) in front of the gas pipeline or electrical conductor on the near side of the bore path;
- 300 mm (12 inches) on the far side of the bore path;
- 300 mm (12 inches) on each side of the bore path;
- 300 mm (12 inches) below natural gas pipeline or electrical conductor.



Drilling Parallel to Manitoba Hydro Facilities

Paralleling Electrical Conductors & Natural Gas Pipelines

There must be 1 metre (39 inches) of separation between the outside diameter of the back reamer assembly and the outside diameter of any Manitoba Hydro electrical conductors or natural gas pipelines.

NOTE: *When drilling within 1 metre (39 inches) horizontally, the drill must be kept at a depth either deeper or shallower than the existing electrical conductor or natural gas pipeline to maintain 1 metre (39 inches) separation when measured diagonally.*

If 1 metre (39 inches) horizontal separation cannot be maintained, the electrical conductor or natural gas pipeline adjacent to the bore path must be exposed. When it is not possible to de-energize electrical conductors, a Safety Hold-Off must be in place and qualified Safety Watch personnel must be on site.

When suspected of drilling within 1 metre (39 inches) of any gas or electrical lines determined by the boring head (sonde) position readings and the proximity to the locate marks, the location of the conductor or pipeline shall be verified; the electrical conductor or natural gas pipeline adjacent to the bore path must be hand exposed or exposed by water pressure/vacuum excavation as determined by Manitoba Hydro. The frequency of exposures depends on the consistency of the alignment of the existing facility.

Manitoba Hydro facilities must be exposed a minimum of once every 10 metres (33 feet), to confirm alignment. Where there is an alignment change indicated by the locator marks, the Manitoba Hydro facility shall be visually confirmed at each alignment deviation.

UNPLANNED CONTACT WITH ELECTRIC OR NATURAL GAS LINES

This guideline applies to people who come in contact with or simply expose a buried utility line while excavating.

Anyone who comes in contact with buried utility lines should contact the utility owner immediately. Although there may be no apparent external damage, the impact of striking a line can cause internal structural damage that can only be determined and repaired by qualified utility personnel. Generally, we do not charge for this inspection and coating repair.

Abrasions

Even if contact does not cause the utility line to stop working, a nick or cut to the outer, protective sheath of the utility line can allow ground water, laden with salts and other caustic substances, to corrode the line. Abrasions may compromise the sidewall strength of a plastic, steel or aluminum gas line.

Aerial

Cables suspended along utility poles can easily be damaged if struck by a vehicle or a mechanical implement like a hydraulic lift. Cable clamps and other attachments can be pulled apart and component housings may hide damage to the electronic equipment inside.

Stop Work

If any equipment is snared in the utility lines, it should be left in place. Trying to extract, flex or manipulate the line can compound the damage. Operations at the site shall stop immediately. Operators should stay in the equipment unless it is not safe (as in the case of a fire) and all others should be kept clear of the equipment as it may have become energized. If you must leave the equipment, jump clear with both feet together so you are not in contact with the equipment and the ground at the same time. Continue to hop or shuffle with your feet close together until you are a safe distance away.

Call It In

The person involved in the incident should call Manitoba Hydro immediately and report the location of the hit. (In Winnipeg at 204-480-5900 or outside of Winnipeg at 1-888-624-9376.) The exact address, or street intersection, along with what type of contact occurred, will help the utility respond in an appropriate manner.

Notes

ClickBeforeYouDigMB.com®

Or call 1-800-940-3447

In addition to contacting
ClickBeforeYouDigMB.com
be sure to contact other
underground services in the area.

For more information visit
hydro.mb.ca

Manitoba Hydro

Rev. 2016 07

Appendix E – Special Provision for Asphalt Pavement Works

PUBLIC WORKS DEPARTMENT • SERVICE DES TRAVAUX PUBLICS Engineering Division • Division de l'ingénierie	**Special Provision** **DIVISION 4**
Special Provision	**ASPHALT PAVEMENT WORKS**

TABLE OF CONTENTS

1. DESCRIPTION

1.1 General

1.1.1 This specification covers the requirements for the materials, equipment, and processes for proportioning and mixing hot mix asphalt (HMA) including warm mix asphalt (WMA), recycled mixes, and mixes for miscellaneous work in accordance with the Marshall and Superpave methods.

1.1.2 This Specification covers the preparation of hot/warm-mixed, hot/warm-laid, asphalt paving mixes for, and all placing operations relating to, the construction of asphalt pavements, overlays and other related pavement works.

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

1.2 Definitions

1.2.1 Hot Mix Asphalt (HMA) means hot mixed, hot laid asphalt. The terms are used interchangeably. HMA may include recycled or specialty mixes.

1.2.2 Warm Mix Asphalt (WMA) means warm mixed, warm laid asphalt produced using technologies that allow for the mixing, handling, and compaction of the asphalt concrete mixture at a temperature typically lower than conventional hot mix asphalt.

1.2.3 Lift means the compacted thickness of asphalt material laid in a single application.

1.2.4 Base Course means the layer of material between the sub-base and the pavement wearing surface.

1.2.5 SP1 means dense-graded asphalt mix using Superpave mix design for surface course. SP1 is intended for the reconstruction and asphalt overlay of expressways, major arterials, and minor arterials, reconstruction of industrial/commercial collectors and associated approaches as well as the paving of bridge decks.

1.2.6 SP2 means dense-graded asphalt mix using Superpave mix design for intermediate and bottom lifts. SP2 is intended for the reconstruction of high traffic volume streets, including expressways, major arterials, minor arterials, industrial/commercial collectors and associated approaches as well as the paving of bridge decks.

1.2.7 MS1 means dense-graded asphalt mix using Marshall mix design for surface course. MS1 is intended for the reconstruction and asphalt overlay of intermediate and low volume streets including residential major or minor collectors, residential local, public lanes, asphalt pathways and associated approaches.

1.2.8 MS2 means dense-graded asphalt mix using Marshall mix design for intermediate and bottom lifts. MS2 is intended for intermediate and low volume streets including residential major or minor collectors, residential local, public lanes, asphalt pathways and associated approaches.

1.2.9 Reclaimed asphalt pavement (RAP) means the processed HMA or WMA material that is recovered by partial or full depth removal.

1.2.10 Deleterious Material means soft or friable material that would decay or disintegrate from weathering including ironstone, porcelain, vegetation, organic material, wood, glass, alkali, plastic, metal, reinforcing steel, building rubble, brick, shale, mica, coal, clay lumps, and loam or other deleterious substances.

1.2.11 Job-Mix Formula (JMF) means the percentage passing on each designated sieve of the total mass of aggregate and the amount of asphalt cement as a percentage by mass of the mixture that are based on specified mix design procedures, and when mixed results in a paving mixture in accordance with this specification.

1.2.12 Mix Design means the design of the proportions of aggregates, asphalt cement, and additives that when uniformly mixed results in an acceptable asphalt mix in accordance with the specified method.

1.2.13 Performance Graded Asphalt Cement (PGAC) means an asphalt binder that is asphalt-based cement produced from petroleum residue, either with or without the addition of non-particulate modifiers, in accordance with AASHTO M320.

1.2.14 Superpave means the method for specifying material components and asphalt mix design using the Superpave Gyratory Compactor (SGC).

1.2.15 Joint means a vertical contact between a new asphalt pavement course and any existing asphalt pavement or any rigid object that exists at the time the HMA is laid.

1.2.16 Prime Coat means application of emulsified asphalt cement on a Base Course granular surface.

1.2.17 Tack Coat means application of emulsified asphalt cement on existing asphalt or portland cement concrete pavement prior to overlay, or between layers of new bituminous pavement.

1.2.18 Prime/Tack Coat Cure means the moment when water separates enough from the emulsified asphalt to show a color change from brown to black.

1.2.19 Segregation means a condition of the pavement characterized by areas with comparatively coarser texture than that of the surrounding pavement.

1.2.20 Lot means a specific quantity of material, approximately 150 tonnes or less, from a single source and produced by the same process within a single operational day. Actual size of Lot may vary based on scaled quantities delivered to the road.

2. MATERIALS

2.1 Handling and Storage of Materials

2.1.1 All asphalt constituent materials shall be stored in a manner that will prevent contamination or deterioration. Access to the storage facilities shall be provided for inspection by the Contract Administrator.

2.1.2 All fabricated and incidental materials, such as anti-stripping, prime coat, tack coat, etc., shall be stored in accordance with the manufacturer's instructions.

2.1.3 The Contract Administrator shall approve all materials before any construction is undertaken. If, in the opinion of the Contract Administrator, such materials, in whole or in part, do not conform to this Specification or are found to be defective in manufacture or have become damaged in transit, storage or handling operations, then such material shall be rejected by the Contract Administrator and replaced by the Contractor at his own expense. There shall be no charge to the City for any materials taken for testing purposes.

2.2 Aggregate

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

2.2.1.1 Each of the fine- and coarse-fractions of the combined aggregate shall meet all the requirements of this Specification 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 demonstrating that the material will produce asphalt mixes of acceptable quality that meet all the requirements of this Specification.

2.2.1.2 Aggregates shall be hard and durable fragments with a maximum of 2% deleterious materials in both coarse and fine aggregates in accordance with ASTM Standard C142, Standard Test Method for Clay Lumps and Friable Particles in Aggregate and ASTM

C123/C123M - Standard Test Method for Lightweight Particles in Aggregate by Washing as well as visual inspection of aggregates to identify deleterious materials.

2.2.1.3 The combined aggregate gradation and physical properties shall comply with the requirements in Table CW 3410.1.

TABLE CW 3410.1 - Combined Aggregate Gradation and Physical Properties Limits

	Test Method	SP1	SP2	MS 1	MS 2
Sieve Size, mm		Percent of Total Dry Weight Passing Each Sieve			
19.0 16.0 12.5 9.5 4.75 2.36 1.18 0.60 0.15 0.075	ASTMC 136 or ASTM D5444 (Note 1)	-- 100% 90% - 100% 75% - 90% 48% - 70% 28% - 58% 19% - 40% 13% - 30% 4% - 15% 2% - 8%	100% 90% - 100% 70% - 90% 60% - 80% 40% - 62% 23% - 50% 15% - 35% 10% - 22% 4% - 14% 2% - 8%	-- 100% 90% - 100% 75% - 90% 48% - 70% 28% - 58% 19% - 40% 13% - 30% 4% - 15% 2% - 8%	100% 90% - 100% 75% - 95% 70% - 90% 55% - 70% 35% - 55% 28% - 46% 17% - 32% 4% - 12% 3% - 10%
Fine Aggregate Angularity, %min (Note 2)	ASTM C1252 – Method A	45%	45%	40%	40%
Clay Content (Sand Equivalency), %min (Note 3)	ASTM D2419	45%	45%	45%	40%
Crush Count, %min (2 Fractured Faces) (Note 4)	ASTM D5821	95%	80%	80%	80%
Flat and Elongated Particles, % Max	ASTM D4791	6%	10%	--	--
Absorption, %max	ASTM C127	2%	2%	2%	2%
Abrasion, %max (Note 4)	ASTM C131	35%	35%	35%	40%
Micro-Deval, %max (Note 4)	ASTM D6928	15%	15%	15%	17%
Soundness (Note 5)	ASTM C88	Note 3	Note 3	Note 3	--
Lightweight Particles Content, %max (Note 6)	ASTM C123	3%	5%	3%	5%

- Note 1: ASTM C136 shall be used for determining the particle size distribution of fine and coarse virgin

aggregates while ASTM D5444 shall be used for determining the particle size distribution of extracted aggregates from bituminous mixtures.

- Note 2: Test criteria shall apply for fine aggregates passing 4.75mm sieve. Test results shall be based on combined aggregates prior to the addition of RAP. Fine Aggregate Angularity (FAA) of 43% is acceptable, provided the mix complies with all other specified requirements.
- Note 3: Test results shall be conducted on the combined aggregate mix before the addition of Reclaimed Asphalt Pavement (RAP).
- Note 4: Test criteria shall apply for coarse aggregates retained on 4.75 mm sieve.
- Note 5: Soundness - Coarse aggregate when subjected to five cycles of the soundness test shall have a weighted loss of not more than twelve (12) percent when sodium sulphate is used or not more than eighteen (18) percent when magnesium sulphate is used in accordance with ASTM Standard C88, Test for Soundness of Aggregates by Use of Sodium Sulphate or Magnesium Sulphate.
- Note 6: The lightweight particle content is the percentage of lightweight particles by weight of all particles retained on 4.75mm sieve.

2.2.1.4 Quarried limestone and dolomite shall not be acceptable as asphalt aggregate materials for SP1 and MS1 surface lifts.

2.3 Asphalt Cement

2.3.1 Asphalt cement shall be performance graded asphalt cement in accordance with AASHTO M 320 unless otherwise specified in the Contract Documents.

2.3.1.1 Use only those materials listed as Approved Products for Surface Works. The Approved Products are available in Adobe Acrobat (.pdf) format at the City of Winnipeg, Corporate Finance, Material Management Internet site at: https://legacy.winnipeg.ca/matmgt/spec/default.stm

2.3.2 The PGAC shall be homogeneous, free of water and any contamination, and shall not foam when heated to the temperatures specified by the manufacturer for the safe handling and use of the product. It shall be shipped, used, and always handled in accordance with the manufacturer's specifications.

2.3.3 All PGAC shall be in accordance with AASHTO M 320 when tested using the methods designated in AASHTO R29, Test Procedure for Grading an Unknown Asphalt Binder and continuous grading temperatures and reported continuous grading temperatures rounded to the nearest 0.1 °C.

2.3.4 Grades shall be tested at a temperature of 58 °C to determine the average percent recovery at 3.2 kPa ($R_{3.2}$) in accordance with the requirements of AASHTO T350 Multiple Stress Creep Recovery (MSCR) Test using a Dynamic Shear Rheometer. The minimum MSCR Elastic Recovery shall be 25%.

2.3.5 The PGAC performance grading test result requirements shall be

- Equal to or above XX* and equal to or below -YY*; or
- ≤ 0.5 °C below XX and ≤ 0.5 °C above -YY

Where *XX is the specified high temperature performance grade and design maximum pavement temperature and -YY is the specified low temperature performance grade and design minimum pavement temperature.

2.3.6 The PGAC shall comply with the performance grading requirements in Table CW 3410.2.

Table CW 3410.2: Categories for PGAC

Asphalt Type		Specified Standard Grade*
Top lift	SP1	PG 64-34P
	MS1	PG 58-34P
Other lifts	SP2	PG 58-34P
	MS2	PG 58-34P

2.4 Mineral Filler

2.4.1 Mineral filler, when required, shall consist of finely divided mineral matter such as rock dust, slag dust, hydrated lime, hydraulic cement, fly ash, loess or other suitable mineral matter, and shall conform to the requirements of ASTM Standard D242, Standard Specification for Mineral Filler for Bituminous Paving Mixtures. Mineral filler shall be free from organic matter and shall be non-plastic when tested in accordance with ASTM D2974 Standard Test Methods for Determining the Water (Moisture) Content, Ash Content, and Organic Material of Peat and Other Organic Soils

2.5 Incidental Materials

2.5.1 Prime Coat

2.5.1.1 Prime coat shall consist of an emulsified asphalt. Method of application shall conform to the manufacturer's recommendations.

2.5.1.2 Use only those materials listed as Approved Products for Surface Works. The Approved Products are available in Adobe Acrobat (.pdf) format at the City of Winnipeg, Corporate Finance, Material Management Internet site at:
https://legacy.winnipeg.ca/matmgt/spec/default.stm

2.5.2 **Tack Coat**

2.5.2.1 Tack coat shall consist of emulsified asphalt. Method of application shall conform to the manufacturer's recommendations.

2.5.2.2 Use only those materials listed as Approved Products for Surface Works. The Approved Products are available in Adobe Acrobat (.pdf) format at the City of Winnipeg, Corporate Finance, Material Management Internet site at: https://legacy.winnipeg.ca/matmgt/spec/default.stm

2.5.3 **Reclaimed Asphalt Pavement (RAP)**

2.5.3.1 Reclaimed asphalt pavement shall consist of sound durable particles produced by crushing and screening.

2.5.3.2 RAP is not permitted in SP1 where used as a surface course. Up to 10% by mass of RAP is permitted where SP1 is used in lifts other than surface course.

2.5.3.3 Up to 10% by mass of RAP is permitted in MS1 where used as a surface course.

2.5.3.4 Up to 15% by mass of RAP is permitted in MS1, MS2, and SP2 where used in lifts other than surface course.

2.5.3.5 RAP shall be blended during production of the asphalt and the mix produced shall consist of a uniform blend of all materials.

2.5.3.6 All physical requirements and combined aggregate gradation limits shall meet the requirements of Table CW 3410.1.

2.5.4 Recycled Asphalt Shingles (RAS)

2.5.4.1 RAS shall be blended during production of the asphalt and the mix produced shall consist of a uniform blend of all materials.

2.5.4.2 RAS shall consist of sound durable particles produced from recovered organic asphalt, shingles, asphalt caps and asphalt rolled roofing. Fiberglass shingles are not permitted.

2.5.4.3 RAS material can be incorporated to a maximum 3% by weight of the total mix into MS1, MS2, and SP2 where used in lifts other than surface course.

2.5.4.4 RAS particles shall be a maximum size of 10mm and shall otherwise meet the gradation requirements in Table CW 3410.1.

2.5.4.5 RAS shall be free of chemical contaminants. Deleterious substances shall be a maximum of 3% of RAS by weight. Deleterious substances include fiberglass shingles, metal, glass, rubber, nails, soil, brick, tars and asbestos.

3. DESIGN REQUIREMENTS FOR ASPHALT PAVING MIX

3.1 Testing Laboratories

3.1.1 The City of Winnipeg, Research and Standards Engineer will maintain a list of approved Testing Laboratories. To obtain approval, Testing Laboratories must submit the following information to the Research and Standards Engineer annually prior to April 1st:

3.1.1.1 Valid Category "B" Asphalt laboratory certification or higher by Canadian Council of Independent Laboratories (CCIL);

3.1.1.2 A complete list of the certified testing; and,

3.1.1.3 List of the field personnel and their qualifications.

3.2 Asphalt Suppliers

3.2.1 Asphalt suppliers must submit the following information to the Research and Standards Engineer three weeks prior to paving:

3.2.1.1 Asphalt suppliers Approval Guidelines and Application is available at the City of Winnipeg, Corporate Finance, Material Management Division website at;

https://legacy.winnipeg.ca/matmgt/spec/default.stm

3.2.1.2 Names of suppliers and sources for all materials and admixtures;

3.2.1.3 Asphalt mix designs. The mix design shall be completed by an approved laboratory with CCIL Type "A" certification based on the asphalt type;

3.2.1.4 Copies of valid scale calibration reports for the asphalt batch plant;

3.2.1.5 Test data for aggregates (in accordance with Clause 2.2);

3.2.1.6 Sieve analysis test reports for the individual aggregates and the combined aggregate gradations to be used in the asphalt. The sieve analysis test reports shall be representative of the material to be used during asphalt production;

3.2.1.7 Test data for asphalt cement (in accordance with Clause 2.3) and the following items shall be submitted:

3.2.1.7.1 The PGAC supplier and location that the product shall be supplied from;

3.2.1.7.2 All documentation from the PGAC supplier confirming the grade of PGAC;

3.2.1.7.3 Applicable mixing and compaction temperatures for the product;

3.2.1.7.4 The minimum temperature of the mix immediately after spreading as recommended by the PGAC supplier; and,

3.2.1.7.5 Documentation of construction, storage, and handling requirements, including the material safety data sheet, recompaction temperature, and mix discharge temperature.

3.2.1.8 Performance data from trial batches prior to construction to demonstrate the asphalt mix will achieve the performance criteria in Table CW 3410.4 and Table CW 3410.5. Three (3) separate sets of test results from a trial batch will be required for approval of the corrected mix design statement;

3.2.1.9 Quality control program for all materials, including a proposed sampling and testing plan in accordance with Clause 3.4;

3.2.1.10 The supplier shall hold a valid development license issued in accordance with the Manitoba Environment Act for the operation of the Bituminous Mix plant. The plant shall be located and operated in accordance with the terms and conditions of the license; and,

3.2.1.11 The supplier shall control dust at the plant site in accordance with health, safety and environmental requirements.

3.2.2 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.

3.2.3 Testing for qualification or acceptance purposes shall be done in accordance with this Specification and applicable test procedures and standard practices. There shall be no charge for any materials taken for testing purposes.

3.2.4 Changes in the source of any asphalt 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.

3.2.5 Once approved, all asphalt shall be supplied in accordance with the approved Mix Design Statement. No changes in the asphalt mix designs will be permitted without written permission from the City of Winnipeg, Research and Standards Engineer.

3.2.6 Any change in the constituent materials of the asphalt shall require a new asphalt mix design.

3.2.7 No asphalt supply or placement shall proceed until the asphalt cement submittal, mix design and Job Mix Formula are approved.

3.3 Asphalt Mix Design and Job Mix Formula

3.3.1 The Mix Design Statements for all asphalt types shall be submitted to the City of Winnipeg, Research and Standards Engineer for approval. The mix shall be proportioned to produce asphalt in accordance with the requirements of Table CW 3410.3 or Table CW 3410.4.

Table CW 3410.3: Marshall Mix Requirements

Mix Properties	MS1	MS2
Asphalt Cement, % total sample weight	5.5% to 6.5%	5.0% to 6.0%
Voids in Mineral Aggregate, %min	14%	13%
Voids Filled with Asphalt (%)	67% to 78%	67% to 75%
Air Voids	3.0% to 5.0%	3.0% to 5.0%
Marshall Stability, kN at 60°C	8 min.	8 min.
Flow Index, units of 250 µm	8.0 to 14.0	8.0 to 16.0

Note: The mix shall be designed using 75 blows per side of the test specimen with manual compaction hammer or a mechanical equivalent device.

Table CW 3410.4: Superpave Mix Requirements

Mix Properties			SP1	SP2
% of Theoretical Maximum Specific Gravity		Mix Gyratory Compaction Requirements		
	$N_{initial}$	8	≤ 89.0	≤ 90.5
	N_{design}	100	96.0	96.0
	N_{max}	160	≤ 98.0	≤ 98.0
Voids in Mineral Aggregate, %min			14	13

Voids Filled with Asphalt, %	67 – 75	65 – 75
Dust to Binder Ratio	0.6 – 1.2	0.6 – 1.2
Minimum Tensile Strength Ratio (TSR), % (AASHTO T283)*	80%	70%

* If the specified TSR is not met, an approved anti-stripping additive shall be incorporated into the mix at a rate recommended by the anti-strip manufacturer and approved by the City of Winnipeg, Research and Standards Engineer.

3.3.2 If, during the progress of the work, the mix design is found to be unsatisfactory for any reason or the quality assurance tests show deviation between the results and Mix Design Statement exceeding those identified in Table CW 3410.5, the asphalt supplier shall revise the mix design(s) and submit the proposed changes to the City of Winnipeg, Research and Standards Engineer for approval. The changes shall not exceed any of the limits specified in Table CW 3410.5 and shall meet the requirements specified in Tables CW 3410.1, CW 3410.2, CW 3410.3 and CW 3410.4 of this Specification; otherwise a new mix design shall be submitted.

Table CW 3410.5: Maximum Deviation and Adjustments for JMF

Mix Properties	Maximum Deviation Between the QA results and Mix Design Statement, %	Maximum JMF Adjustment, %
Asphalt Cement, % total sample weight	± 0.2	± 0.3
RAP	3%	5%
Passing 16.0 mm, 12.5 mm, 9.5 mm sieves	4.0%	5.0%
Passing 4.75 mm, 2.36 mm, 1.18 mm, 0.425 mm, 0.18 sieves	2.0%	3.0%
Passing 0.075 mm sieve	1.0%	1.0%

3.3.3 The mix design shall be valid for a maximum of twelve (12) months from when the mix design was developed. To extend use of the mix design beyond the initial twelve (12) months, a minimum of one test of each property listed in Section 3 shall be submitted to the City of Winnipeg, Research and Standards Engineer for approval. A full mix design shall be submitted every three years.

3.4 Plant Quality Control

3.4.1 The asphalt supplier shall be responsible for quality control of the plant to ensure all materials meet the approved mix designs. This information shall be submitted monthly 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 asphalt supplier.

3.4.2 Quality Control testing shall be conducted by a laboratory certified in accordance with the requirements of Clause 3.1 and approved by the City of Winnipeg, Research and Standards Engineer.

3.4.3 The quality control program shall include all testing in accordance with Sections 2 and 3 of this Specification. A minimum of one test for aggregate gradation and asphalt materials shall be provided monthly during production.

3.4.4 Testing of any asphalt constituent materials may be undertaken by a testing laboratory designated by the City of Winnipeg, Research and Standards Engineer. The asphalt supplier shall be equipped with suitable means or a device for obtaining a representative sample of the asphalt cement. Any material which fails to comply with the requirements of this specification will be rejected. Material that has been rejected must be removed immediately by the asphalt supplier.

4. SUPPLY OF MATERIALS

4.1 General

4.1.1 All asphalt suppliers shall be approved by the City of Winnipeg, Research and Standards Engineer. A list of approved asphalt suppliers is available at the City of Winnipeg, Corporate Finance, Material Management Division website at: https://legacy.winnipeg.ca/matmgt/spec/default.stm

4.1.2 Unless otherwise specified, only use of stationary asphalt mixing plants will be permitted.

4.2 Aggregate

4.2.1 The different sizes of aggregate used shall be kept separate and adequate provision shall be made to keep them from becoming mixed or otherwise contaminated.

4.2.2 Where blending of materials from one or more sources and/or sizes, each material shall be placed in separate stockpiles.

4.2.3 Separate aggregate feeds capable of delivering a uniform flow of material to the dryer shall be provided for each separate stockpile of aggregate, RAP, supplementary material and VMA additive used to produce the asphalt mix.

4.2.4 The aggregates shall be dried at a minimum temperature of 135°C before mixing with the asphalt.

4.3 Asphalt Cement

4.3.1 The asphalt cement shall be heated in a storage tank to a temperature that falls within the mixing temperature range recommended by the asphalt cement manufacturer. The mixing temperature shall be based on the temperature-viscosity curve for the asphalt cement and shall be sufficient to produce a uniform and homogeneous mixture in which all particles of the aggregate are thoroughly and uniformly coated. All information related to the asphalt cement shall be made available to the Contract Administrator upon request.

4.3.2 The asphalt cement shall be heated at the plant to a maximum temperature of 160°C before mixing with the aggregates. In no case shall the temperature of the asphalt and aggregates differ by more than 15°C when placed in the mixing drum.

4.4 Transportation of Asphalt Paving Mix

4.4.1 The mixture shall be transported from the plant to the site in trucks with metal bottoms previously cleaned of all foreign materials. If required, truck boxes shall be lightly coated with a uniform application of a non-petroleum-based asphalt release agent. The release agent shall conform to the Manufacturer's specifications and approved by the Contract Administrator. Excess lubricants shall be removed before trucks are loaded with asphalt. Release agents that adversely affect the quality or performance of the asphalt mix shall not be used.

4.4.2 The trucks shall be suitably insulated, as required. Each vehicle shall be equipped with a tarpaulin or other suitable covering material of sufficient size to overhang the truck box on three sides when the vehicle is fully loaded. Such tarpaulins shall be on the truck at all times and shall be used to cover the mixture completely as directed by the Contract Administrator.

5. EQUIPMENT

5.1 General

5.1.1 All equipment shall be of a type approved by the Contract Administrator. The equipment shall be in good working condition for the duration of the Contract.

5.2 Prime/Tack Coat Distributors

5.2.1 For main lane paving, prime/tack coat shall be applied using self-propelled or tow-along pressure distributors capable of applying the product at the specified rate and in a

continuous and uniform manner both longitudinally and transversely for the full lane width.

5.2.2 The distributors shall be equipped with a volume metering system of sufficient sensitivity to measure the quantity of tack/prime coat. The metering system shall be calibrated annually and all the certifications shall be made available to the Contract Administrator upon request. The distributors shall contain a thermometer for measuring the temperature of the tank contents.

5.2.3 All nozzles shall be set in the spray bar such that the nozzle slots make an angle between 15° to 30° with the longitudinal axis of the spray bar. Clogged nozzles shall be removed and cleaned with solvent before being used.

5.2.4 The use of a hand-held pressure applicator is acceptable only for prime/tack coating of small or irregularly shaped areas such as cuts, approaches, etc.

5.3 Mechanical Pavers

5.3.1 Asphalt pavers shall be self-propelled and capable of laying a consistent lift which is true to the specified geometrics, cross-section and alignment. Pavers shall be equipped with hoppers and distributing screws capable of placing the hot mix evenly in front of the screeds.

5.3.2 Asphalt pavers shall be equipped with automatic longitudinal and transverse grade and slope controls which are capable of being operated from either side of the paver. The longitudinal grade control shall be readily adjustable for lift thickness in small increments without the necessity of stopping the paver.

5.3.3 The use of any paver that is experiencing difficulty in achieving a consistent and smooth lift in conformance with this Specification shall be discontinued until the Contractor demonstrates suitable corrective measures.

5.4 Rollers

5.4.1 A rolling pattern shall be established and submitted by the Contractor to the Contract Administrator for approval before paving. The Contract Administrator shall approve any deviation from the rolling pattern during construction.

5.4.2 The Contract Administrator shall be provided with the mass of the rollers and may require they be weighed.

5.4.3 Rollers shall be classified into categories in accordance with Table CW 3410.6.

Table CW 3410.6: Roller Classifications

Type	Description	Classification	Minimum Mass, tonnes
Class S	Self-propelled steel-drum roller	S1	7
		S2	9
Class R	Self-propelled pneumatic-tired rollers Or Self-propelled combination roller	R1	8
		R2	15
Class V	Self-propelled vibratory roller	V1	4
		V2	5.2
		V3	5.8

5.4.4 Rollers shall be equipped with an automatic device that prevents the drum from vibrating unless the roller is moving and shall automatically halt vibration before coming to a stop. Frequency of vibration shall not be less than 2200 per minute. Vibration should not be used where there is potential to damage services and structures, or cause nuisance complaints as directed by the Contract Administrator.

6. CONSTRUCTION METHODS

6.1 General

6.1.1 All construction methods shall conform to this Specification, except as otherwise approved by the Contract Administrator.

6.2 Preparation of Base Course for Asphalt Pavement

6.2.1 General

6.2.1.1 Placing of the asphalt mixture shall not commence until the construction of the sub-grade, sub-base and Base Course has been completed in accordance with the requirements of Specification CW 3110, and the installation of pavement and boule-vard structures and appurtenances has been completed to the satisfaction of the Contract Administrator.

6.2.1.2 Where Base Course has raveled, the loose material shall be removed or recompacted to a uniform surface.

6.2.2 Prime Coat

6.2.2.1 Application of prime coat shall consist of flushing the final accepted Base Course layer with diluted emulsified asphalt. Use an equal volume of water to dilute the emulsified asphalt unless otherwise specified by the Contract Administrator. Surfaces to be prime coated shall be free of standing water and contamination, such as mud, loose aggregate, or debris.

6.2.2.2 The application rate of undiluted prime shall be between 0.5 to 1.0 L/m^2 and shall be approved by the Contract Administrator.

6.2.2.3 Prime coat shall be placed with sufficient time to cure prior to paving. Asphalt mix shall not be placed on prime coated areas until the prime coat is cured for a minimum of eight (8) hours or until prime coat cannot be tracked by foot traffic and tires. Paving and construction equipment shall not be permitted onto the prime coat until it has broken and set. Traffic shall not be permitted on the prime coat.

6.2.2.4 Prime coat shall be visually uniform. Prime coat shall be reapplied to areas of insufficient or non-uniform coverage. A hand spray can be used to apply prime coat to areas missed or inaccessible by the distributor. When prime coating is performed using hand spray, the visual appearance of such areas shall be consistent with the adjacent areas.

6.2.2.5 Prime coat shall not be applied when the weather is foggy or rainy or when the ambient temperature is less than 0°C. If the ambient temperature is less than 0°C as forecast by the nearest official meteorological office, the product used for prime coat shall be approved by the Contract Administrator.

6.2.2.6 Before applying the prime coat, the surface shall be flushed with water to create optimal conditions for adhesion, absorption control, and overall effectiveness of the prime coat and shall be approved by the Contract Administrator.

6.2.2.7 After curing, if any excess primer remains on the surface, the Contractor shall apply an approved sand where necessary to blot up the excess prime. The sand cover, where used, shall consist of clean, granular, mineral material approved by the Contract Administrator, all of which shall pass a 4.75 mm sieve. Only sufficient sand shall be spread to blot up excess prime and such areas shall be broomed to remove the excess sand prior to paving.

6.2.2.8 Prime coat shall be inspected and approved by the Contract Administrator before any asphalt is placed. Otherwise the asphalt shall be rejected by the Contract Administrator and shall be removed by the Contractor at his own expense.

6.2.2.9 When traffic flow must be maintained, prime coat shall be applied to one direction of the roadway at a time. No prime coat shall be applied to the other direction of the roadway until the first direction has cured to accommodate vehicular traffic.

6.3 Preparation of Asphalt or Portland Cement Concrete Pavement for Asphalt Overlay

6.3.1 Asphalt Surface Pavement

6.3.1.1 A layer of the existing asphalt surface course shall be removed to such depth as is specified on the Drawings or as directed by the Contract Administrator. This work will be done and paid for in accordance with Specification CW 3450.

6.3.1.2 If the entire existing asphalt overlay is removed to the existing portland cement concrete pavement, the preparation of the existing Portland cement concrete pavement for asphalt overlay shall be in accordance with Section 6.4 of this Specification.

6.3.1.3 If the surface remaining after the removal of the specified layer of asphalt surface course is asphalt, the Contractor shall proceed to fill any remaining holes and depressions with asphalt paving mixture and compact these areas with a steel wheel roller before paving. The asphalt surface upon which the asphalt overlay is to be placed shall be approved by the Contract Administrator prior to placing asphalt.

6.3.1.4 At the locations designated on the Drawings and at any other locations designated by the Contract Administrator, the Contractor shall adjust existing structures and appurtenances, reconstruct sections of curb, seal all cracks and do other repair works as required. The adjustment of existing structures and appurtenances shall be done and paid for in accordance with Specification CW 3210, and the curb renewal, crack sealing and other repair works shall be done and paid for in accordance with Specifications CW 3230, CW 3240, and CW 3250.

6.3.2 Portland Cement Concrete Pavement Surface

6.3.2.1 At the locations designated on the Drawings and at any other locations designated by the Contract Administrator, the Contractor shall adjust existing structures and appurtenances, reconstruct sections of concrete pavement, reconstruct sections of curb, seal all joints and cracks and do other repair works as required. The adjustment of existing structures and appurtenances shall be done and paid for in accordance with Specification CW 3210, and the pavement reconstruction, curb renewal, joint and crack sealing and other repair works shall be done and paid for in accordance with Specifications CW 3230, CW 3240, and CW 3250.

6.3.3 Tack Coat

6.3.3.1 Application of tack coat shall consist of flushing the final accepted surface with undiluted emulsified asphalt. Surfaces to be tack coated shall be free of standing water and contamination, such as mud, loose aggregate, or debris.

6.3.3.2 Tack coat shall be required between layers of asphalt material and the application rate shall be in accordance with Table CW 3410.7, unless otherwise specified by the Contract Administrator.

Table CW 3410.7: Application Rate for Tack Coat

Surface Type	Application Rate, L/m^2	Max Allowable Tolerance, L/m^2
New Asphaltic pavement	0.25	0.03
Old Asphaltic pavement, Portland Cement Concrete, Milled Surface	0.35	0.05

6.3.3.3 Tack coat shall be placed with sufficient time to cure prior to paving. Asphalt mix shall not be placed on tack coated areas until the tack coat is cured for a minimum of three (3) hours or until tack coat cannot be tracked by foot traffic and tires. If trackless tack is used, the curing time can be reduced in accordance with the manufacturer's specifications unless otherwise specified by the Contract Administrator. Paving and construction equipment shall not be permitted onto the tack coat until it has cured and set. Traffic shall not be permitted on the tack coat.

6.3.3.4 Tack coat shall be visually uniform. Areas of insufficient or non-uniform tack coat coverage shall be re-sprayed. Hand spray can be used to apply tack material to areas missed or inaccessible by the distributor including curb areas attached to the asphalt. When tack coating is performed using hand spray, the visual appearance of such areas shall be consistent with the adjacent areas of machine applied material.

6.3.3.5 Tack coat shall not be applied when the weather is foggy or rainy or when the ambient temperature is less than 5°C. If the ambient temperature is less than 5°C as forecast by the nearest official meteorological office, the product used for tack coat shall be approved by the Contract Administrator.

6.3.3.6 Tack coat shall be inspected and approved by the Contract Administrator before any asphalt is placed. Otherwise the asphalt shall be rejected by the Contract Administrator and shall be removed by the Contractor at his own expense.

6.4 Placing Asphalt Paving Mixture

6.4.1 General

6.4.1.1 The Contract Administrator shall approve the surface upon which new asphalt is to be placed before paving operations may begin.

6.4.1.2 The mixture shall be delivered to the job and placed at a temperature that allows for proper compaction, taking into consideration the weather conditions, the temperature of the surface on which the mixture is to be placed, and the thickness of the lift. In no case shall the asphalt mixture be placed at a temperature lower than the values specified in Table CW 3410.8.

Table CW 3410.8: Limits for Asphalt Mixes Temperatures

Asphalt Type	Temperature for Asphalt before Placing, °C		Minimum Temperature During Rolling, °C
	Minimum	Maximum	
HMA	125	160	90
WMA	115	155	80

6.4.1.3 Unless otherwise permitted by the Contract Administrator, the mixture shall be spread by means of a mechanical self-powered paver capable of spreading the mixture true to the line, grade and crown required.

6.4.1.4 Pavers shall be equipped with hoppers and distributing screws of the reversing type to place the mixture evenly in front of adjustable screeds. The mixture shall be dumped in the centre of the hoppers and care exercised to avoid overloading and slopping over of the mixture upon the base.

6.4.1.5 When laying the mixture, pavers shall operate so as to provide as continuous an operation as possible at a speed of between three meters and six meters per minute. They shall be equipped with a quick and efficient steering device and shall have forward and reverse travelling speeds of not less than 25 meters per minute.

6.4.1.6 Pavers shall be capable of spreading the mixture, without segregation, in thicknesses as specified on the Drawings or approved by the Contract Administrator. Placement widths shall vary from a minimum of 1.5 meters to a maximum of 4.5 meters unless approved by the Contract Administrator. They shall be equipped with blending or joint levelling devices for smoothing and adjusting all longitudinal joints between strips or courses of the same thickness. Pavers shall be equipped with screeds.

6.4.1.7 The term screed includes any strike-off device operated at workable temperature without tearing, shoving or gouging the finished surface.

6.4.1.8 The minimum and maximum thickness of a compacted lift for reconstruction shall be in accordance with Table CW 3410.9, unless otherwise specified by the Contract Administrator.

Table CW 3410.9: Lift Thicknesses

Mix Type	Thickness, mm	
	Minimum	Maximum
MS1	35	55
MS2	50	75
SP1	35	55
SP2	50	75

6.4.1.9 No construction traffic shall travel on the finished surface until the surface has cooled to a temperature of 60°C or less.

6.4.2 Main Line Paving

6.4.2.1 Main line paving shall include the placement of bottom and top lifts for asphalt pavements and overlays utilizing mechanical pavers with automatic grade control for:

6.4.2.1.1 All through and parallel turning lanes greater than 15.0 meters in length;

6.4.2.1.2 Other lanes greater than 15.0 metres in length; and,

6.4.2.1.3 Intersections through which the main line continues.

6.4.2.2 Main line paving with mechanical pavers shall utilize automatic grade control, except for:

6.4.2.2.1 Intersections through which the main line continues and where traffic must be maintained; and,

6.4.2.2.2 The side of the paver adjacent active traffic.

6.4.2.3 Hand placement shall be minimized. Hand placed asphalt shall be spread and compacted to match the finished grade to the satisfaction of the Contract Administrator.

6.4.3 Tie-Ins and Approaches

6.4.3.1 Tie-Ins and approaches shall include the placement of leveling and surface courses for pavements and overlays for all areas other than main line paving lanes. This includes intersecting side streets to the main road under construction except as noted in Section 6.4.2 of this specification, intersection turnouts, right turn cut-offs, median openings, and private approaches. Tie-ins include miscellaneous asphalt for temporary ramping, sidewalk in-fill and isolations.

6.4.3.2 Tie-Ins and approaches shall utilize mechanical pavers where possible with or without automatic grade control, or hand methods as approved by the Contract Administrator.

6.4.3.3 Hand placement shall be minimized. Hand placed asphalt materials shall be spread and compacted to match the finished grade to the satisfaction of the Contract Administrator.

6.4.4 Weather Limitations

6.4.4.1 Asphalt shall be laid upon a surface which is dry, clean and free from standing water, and only when weather conditions are suitable in accordance with Table CW 3410.10.

Table CW 3410.10: Minimum Placement Temperature for Asphalt

Asphalt Type	Location	Lift Thickness, mm	Temperature*, C°	
			Wind Speed, km/hr > 10	Wind Speed, km/hr ≤ 10
HMA	Top Lift	< 50	10°C	6°C
		≥ 50	8°C	6°C
	Other than top lift	> 50	2°C	2°C
WMA	Top Lift	< 50	4°C	0°C
		≥ 50	2°C	0°C
	Other than top lift	> 50	0°C	-2°C

*Temperature shall be based on the nearest official meteorological office. The Contract Administrator may confirm the temperature by measuring the temperature in the shade and 150 mm above the surface.

6.4.4.2 Asphalt shall be placed on unfrozen material, free of water, snow, and ice. Frozen 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 material will be considered frozen. The Contractor shall use suitable heating methods to maintain the surface temperature above 0°C. Salt shall not be used to thaw ice, snow, or frost.

6.4.4.3 Paving shall not be permitted while there is frost within 750 mm of the surface upon which the asphalt is to be placed. Asphalt shall only be laid under conditions that the Contract Administrator determines to be conducive to obtaining the specified results.

6.4.4.4 Notwithstanding the above, when weather conditions are unfavourable, or are likely to become unfavourable, paving operations shall be suspended.

6.5 Joints

6.5.1 General

6.5.1.1 Joints shall be smooth, well bonded and tightly sealed. Joints shall conform smoothly and accurately to adjacent pavement surfaces such that when tested with a 3-metre straight edge placed across the joint the distance between the straight edge and the surface of the pavement shall not exceed 5 mm at any point.

6.5.1.2 When matching a compacted joint, the depth of the uncompacted lift shall be set to allow for compaction. The paver screed shall overlap the adjoining lift by no more than 25 mm.

6.5.1.3 On straight sections the joint line shall not deviate from a straight line by more than 75 mm at any point. On curved or tapered sections, the joint shall be shaped so as to be as smooth as possible. Jagged, stepped or wandering edges shall be reshaped to a smooth line, to the satisfaction of the Contract Administrator, before the adjacent lift is laid.

6.5.2 Location of Joints

6.5.2.1 The location of joints shall be subject to the approval of the Contract Administrator and shall conform to the following requirements:

6.5.2.1.1 Longitudinal joints shall not be located within 150 mm of a longitudinal joint in any underlying pavement structure.

6.5.2.1.2 Transverse joints shall not be located within two (2) meters of any other transverse joint in the same paving course or within one (1) meter of a transverse joint in any underlying pavement structure.

6.5.2.2 Longitudinal cold joints are to be avoided wherever possible. Transverse joints shall be established with sufficient frequency to allow the full width of the paving course to be placed in a single shift. No paving lane shall progress more than 500 m beyond the end of an adjacent paving lane in the same course without the prior approval of the Contract Administrator.

6.5.3 Preparation of Joints

6.5.3.1 Hot Joints

6.5.3.1.1 Hot joints shall be considered to be those longitudinal joints between adjacent mats in which the previously laid lift retains sufficient heat, above 90 °C for HMA and 75 °C for WMA, to facilitate good bonding and sealing of the joint. The edge of the previously laid lift shall be inspected prior to laying

the new mat. Any areas not conforming to line and grade or having a rounded-off top corner shall be cut out to the full depth of the lift to a minimum width of 100 mm and replaced with fresh material and compacted when laying the new mat.

6.5.3.1.2 If the previously laid lift temperature is below 90 °C for HMA and 75 °C for WMA but higher than 60 °C, then the joints shall be painted with a thin uniform tack coat before the new asphalt is placed against it.

6.5.3.2 Cold Joints

6.5.3.2.1 Cold joints shall be considered to be those longitudinal and transverse joints where the existing adjacent pavement lift is at or below 60 °C. Transverse joints shall be cut back to a straight line for the full depth and width of the mat. The transverse joint shall be cut back to a location such that the pavement immediately before the joint, where checked with a 3-metre straight edge, exhibits no tapering or rounding.

6.5.3.2.2 Longitudinal edges of existing mats shall be inspected before laying the new mat. Any areas not conforming to line and grade shall be cut out full depth to a minimum width of 150 mm and replaced with fresh material and compacted when laying the new mat. Any areas with a rounded corner shall be cut back to the full depth of the lift to form a vertical face with a square corner.

6.5.3.2.3 Joints against existing asphalt pavements shall be prepared by saw cutting, cold planning or other method(s) approved by the Contract Administrator, such that the face of the existing pavement is vertical with a square corner.

6.5.3.2.4 All contact surfaces of cold joints shall be painted with a uniform coat of tack before the new asphalt is placed against them.

6.5.4 Construction of Joints

6.5.4.1 Fresh asphalt shall not be placed against the existing lift until the joint preparation has been completed in accordance with 6.5.3 and is approved by the Contract Administrator.

6.5.4.2 The fresh lift shall be laid to an elevation such that, when compacted, it will conform accurately to the grade of the existing pavement. Wherever practicable, this shall be done using mechanical pavers.

6.5.4.3 Joints shall always be rolled before the remainder of the mat. Wherever practicable the joint shall be rolled with the roller travelling parallel to the joint and with a

minimum of seventy-five (75%) percent of the width of the main roller(s) supported on the existing mat.

6.6 Asphalt Patching

6.6.1 Remove and replace existing asphalt pavements adjacent to proposed or renewed sidewalks and concrete approaches for grade adjustment to ensure drainage and rideability are maintained. Areas to be considered as asphalt patches shall be less than 1.5 meters in width. The locations requiring asphalt patching shall be shown on the Drawings or as directed by the Contract Administrator.

6.6.2 The Contractor shall saw cut the asphalt pavement full-depth along the limits designated. The asphalt pavement shall be removed and disposed of in accordance with CW 3110. Upon removal of asphalt, the existing base materials shall be levelled and compacted. The asphalt shall match the thickness of the existing pavement. The material shall be placed and compacted by acceptable methods in accordance with Clause 6.7 of this specification to the satisfaction of the Contract Administrator.

6.6.3 All costs incurred for asphalt removal, compaction of existing base materials and placement of Base Course and asphalt materials shall be included in the unit price for "Construction of Asphalt Patches"

6.7 Compaction of Asphalt Paving Mixture

6.7.1 General

6.7.1.1 A rolling pattern shall be established by the Contractor and approved by the Contract Administrator. The Contract Administrator shall approve any deviation from the rolling pattern.

6.7.1.2 The minimum number of rollers is identified in Table CW 3410.11.

Table CW 3410.11: Maximum Rates Per Paver and Roller Sequence

Asphalt Placement, tonnes/hr	Minimum Roller Combinations per Paver Breakdown + Intermediate + Finish*
≤ 100	S2 + R1 +S1 V1 + R1 + S1
> 100	S2 + 2 x R1 + S1 S2 + R2 + S1 V2 + 2 x R1 +S1 V2 + R2 + S1

*No vibration shall be used when paving bridge decks. If Class V rollers are used, they shall be in static mode. The V3 roller can be used as a substitute for the V2 roller.

6.7.1.3 The operating speed of rollers shall not exceed 5 km/hr and shall be slow enough to avoid undue displacement of the asphalt. Rollers shall operate with the drive wheel forward in the direction of paving.

6.7.1.4 Any displacement occurring as a result of reversing the direction of the roller or any other cause shall be corrected. Rolling shall proceed continuously until all roller marks are eliminated and no further compression is possible. To prevent adhesion of the mixture to the roller, the wheels shall be kept properly moistened with water, limewater, or an approved detergent. Excess moisture will not be permitted.

6.7.2 Rolling procedures

6.7.2.1 Compaction of the paving mixture shall consist of three (3) separate rolling operations as follows:

6.7.2.1.1 Breakdown rolling: Rolling shall start longitudinally at the sides and proceed toward the centre of the pavement overlapping on successive passes by at least 150 mm. Breakdown rolling shall consist of at least two complete coverages by the roller. Delays in rolling freshly placed asphalt shall not be permitted.

6.7.2.1.2 Intermediate rolling shall immediately follow breakdown rolling. Passes shall be arranged to ensure overlapping successive tire paths. The rolling operation shall prevent pick-up of the mixture on the tires.

6.7.2.1.3 Final rolling shall be undertaken while the paving mixture is still warm enough to eliminate roller marks. Where the width permits, the asphalt shall be rolled diagonally in two directions, the second diagonal rolling crossing the first rolling direction. Final rolling shall start longitudinally at the high edge and proceed towards the lower edge of the mat. Final rolling shall be continue until there is no evidence of consolidation.

6.8 Compaction of Irregular Areas

6.8.1 Along curbs, manholes and similar structures and at all places not accessible to rollers, compaction shall be performed by plate compactors to the satisfaction of the Contract Administrator. All joints around these structures shall be effectively sealed.

6.8.2 The asphalt may be heated to a maximum temperature of 120°C to facilitate the compaction where approved by the Contract Administrator.

6.9 Requirements After Final Rolling

6.9.1 After final rolling the surface of each lift shall be smooth and true to the established crown and grade. Any low or defective spots shall be remedied by milling to a minimum depth of 40 mm or as directed by the Contract Administrator, and replacing it with a fresh mixture.

6.9.2 The corrected area shall have a smooth transition to the surrounding pavement without negatively affecting any adjacent sections, impairing the functionality and the service life of the area.

6.10 Filling of Core Holes

6.10.1 Where cores are collected, the Contractor shall patch each core hole immediately with an approved cold asphalt product.

6.10.2 The patch shall be finished flush with the surface. Immediately before filling, the surface of each hole shall be thoroughly cleaned to ensure a proper bond. After filling each hole, all excess material shall be removed from the surface.

6.10.3 Where HMA or WMA are not available, use only those materials listed as Approved Products for Surface Works. The Approved Products are available in Adobe Acrobat (.pdf) format at the City of Winnipeg, Corporate Finance, Material Management Internet site at:
https://legacy.winnipeg.ca/matmgt/spec/default.stm

6.11 Surface Tolerance

6.11.1 The surface of the asphalt pavement shall be checked with a 3-metre straight edge and be within ± 5 mm from the surrounding area. Areas that do not meet these tolerances shall be corrected to the satisfaction of the Contract Administrator.

6.11.2 Where the posted speed limit is greater than 60 km/hr, the Contract Documents shall identify smoothness requirements for longitudinal profile of the pavement surface. The smoothness requirements shall be approved by the City of Winnipeg, Research and Standards Engineer.

6.12 Opening to Traffic

6.12.1 In no case shall traffic or construction equipment be allowed on the asphalt pavement until completion of quality assurance testing by the Contract Administrator and until the

completed pavement has cooled to atmospheric temperature or to such other temperature, as may be approved by the Contract Administrator, that will ensure no deformation of the pavement surface under traffic loading.

6.12.2 The Contract Administrator's decision as to when the pavement will be opened to traffic shall be final. Prior to opening to traffic, the pavement shall be clean and free of aggregates or other deleterious materials on the surface.

7. QUALITY ASSURANCE

7.1 General

7.1.1 Tests used for purposes of assessing compliance with this specification or for acceptance of any products shall be conducted by a certified laboratory approved by the City of Winnipeg, Research and Standards Engineer.

7.1.2 Field sampling and testing of asphalt shall be performed by a certified person.

7.1.3 The Contract Administrator shall be allowed access to all sampling locations and reserves the right to request quality assurance sample(s) at any time.

7.1.4 Samples shall be protected during transportation from any exposure to adverse conditions.

7.1.5 If any sample shows distinct evidence of improper sampling, handling, or testing, the test shall be disregarded and a new sample shall be collected.

7.1.6 Testing in addition to the requirements of this Specification shall be as directed by the Contract Administrator.

7.2 Testing Frequency

7.2.1 Asphalt shall be sampled for acceptance in accordance with Table CW 3410.12.

Table CW 3410.12: Frequency of Sampling and Testing of Asphalt

Asphalt Type	Quantity (tonnes)	Minimum Frequency
MS1, MS2	< 150 150 - 300 > 300	2 test/day 3 tests/day 2 test/150 tonnes
SP1, SP2	--	2 test/150 tonnes

7.2.2 Additional testing shall be as directed by the Contract Administrator.

7.2.3 Copies of all test results shall be sent to the City of Winnipeg, Research and Standards Engineer and to the Contract Administrator.

7.2.4 Copies of asphalt plant scale tickets shall be provided to the Contract Administrator.

7.3 Acceptance Criteria

7.3.1 The Contractor shall reimburse the City for any additional costs the City incurs as a result of failed tests.

7.3.2 Where the work is not funded or administered by the City of Winnipeg or their representative, the party approved by the City of Winnipeg to execute the work will be responsible for making pay adjustments to the City of Winnipeg.

7.3.3 All corrective actions shall be performed at the Contractor's expense.

7.3.4 Acceptance of asphalt shall be based on the following:

7.3.4.1 Visual Inspection:

7.3.4.1.1 The Contract Administrator may reject visually defective asphalt areas based on, but not limited to the following defects: flushing, bleeding, segregation, fat spot, surface damage, and surface contamination. Such defective areas shall be removed and replaced at the Contractor's expense.

7.3.4.2 Bituminous Mix Properties:

7.3.4.2.1 Air Voids: If the measured air voids fall outside the limits specified in Clause 3.3 of this Specification, the Contract Administrator shall apply a payment adjustment in accordance with Table CW 3410.13 against the entire Lot represented by the failed test(s).

TABLE CW 3410.13 – Payment Adjustment for Air Voids

Asphalt Type	Average of the Failed Tests	Percent of Price Reduction %
MS1, MS2, SP1, SP2	≤ 0.5%	0.0
	0.5% to 1%	0.0*
	> 1%	Remove and replace at Contractor's expense

*Paving shall be suspended until necessary adjustments are made and approved by the Contract Administrator.

7.3.4.2.2 Voids in Mineral Aggregate (VMA): If the measured voids in mineral aggregate falls outside the limits specified in Clause 3.3 of this Specification, the Contract Administrator shall apply a payment adjustment in accordance with Table CW 3410.14 against the entire Lot represented by the failed test(s).

TABLE CW 3410.14 – Payment Adjustment for Voids in Mineral Aggregate

Average of the Failed Tests	Percent of Price Reduction %
≤ 0.5%	0.0
0.5% to 1%	0.0*
1% to 2%	
> 2%	Remove and replace at Contractor's expense

*Paving shall be suspended until necessary adjustments are made and approved by the Contract Administrator.

7.3.4.2.3 Asphalt Cement Content: If the measured asphalt cement content falls outside the limits specified in Clause 3.3 of this Specification, the Contract Administrator shall apply a payment adjustment in accordance with Table CW 3410.15 against the entire Lot represented by the failed test(s).

TABLE CW 3410.15 – Payment Adjustment for Asphalt Cement Content

Average of the Failed Tests	Percent of Price Reduction %
≤ 0.15%	0.0
0.15% to 0.5%	0.0*
> 0.5%	Remove and replace at Contractor's expense

*Paving shall be suspended until necessary adjustments are made and approved by the Contract Administrator.

7.3.4.2.4 Gradation: If the gradation falls outside the limits specified in Table CW 3410.1, the Contract Administrator shall apply a payment adjustment in accordance with Table CW 3410.16 against the entire Lot represented by the failed test(s).

TABLE CW 3410.16 – Payment Adjustment for Gradation

Percent Passing Outside the JMF for Each Sieve			Percent of Price Reduction %
19, 16, 12.5, 9.5	4.75, 2.36, 1.18, 0.6, 0.15	0.075	
<2	<1	-	0.0
2-4	1-2	<1	0.0*
> 4	> 2	≥ 1	Remove and replace at Contractor's expense

*Paving shall be suspended until necessary adjustments are made and approved by the Contract Administrator.

7.3.4.3 Density:

7.3.4.3.1 Density testing shall be conducted at least once every 150 m^2. The Contract Administrator shall ensure that the density tests cover the full width of the construction area.

7.3.4.3.2 An area is deemed unacceptable if the compaction does not meet all of the following:

7.3.4.3.2.1 The average density results shall be between 93% and 95% of the theoretical maximum density; and,

7.3.4.3.2.2 No individual location shall be less than 90% or higher than 98% of the theoretical maximum density.

7.3.4.3.3 Nuclear density test gauge results shall be used to assess in-place density. When density test results do not meet the minimum percent density specified herein, a coring and testing program can be undertaken to verify density percentage of the mix by Core Density Testing. If core density results confirm the Nuclear density results, the Contractor shall reimburse the City

for any additional costs associated with coring, transmittal of cores, filling of cores and testing the City incurs as a result of failed tests.

7.3.4.3.4 The Contract Administrator shall apply a payment adjustment in accordance with Table CW 3410.17 against the entire lot represented by the failed test(s).

TABLE CW 3410.17 – Payment Adjustment for Density

Average of the Density Tests	Percent of Price Reduction %
> 98%	Remove and replace at Contractor's expense
97.9% to 97.1%	0%*
97% to 93%	0%
92.9% to 90%	0%*
< 90%	Remove and replace at Contractor's expense

*Paving shall be suspended until necessary adjustments are made and approved by the Contract Administrator.

7.3.4.4 Segregation and Surface Defects

7.3.4.4.1 Surface defects include but are not limited to: gouges, slippage, cracking, tearing, pocketing, blistering, shoving, wash boarding, surface depressions or surface defects shall be repaired to the satisfaction of the Contract Administrator.

7.3.4.5 Asphalt Thickness:

7.3.4.5.1 A Lot is deemed unacceptable if the asphalt thickness does not meet all of the following:

7.3.4.5.1.1 The average thickness is less than the required thickness; and,

7.3.4.5.1.2 No individual thickness shall be less than 90% of the required thickness.

7.3.4.5.2 The Contract Administrator shall apply a payment adjustment in accordance with Table CW 3410.19 against the entire Lot represented by the insufficient thickness.

TABLE CW 3410.19 – Payment Adjustment for Pavement Thickness

Average Thickness	Percent of Price Reduction %

Less than specified thickness but more than 90% of specified thickness	0.0*
Less than 90% of specified thickness	Remove and replace at Contractor's expense

*Paving shall be suspended until necessary adjustments are made and approved by the Contract Administrator.

8. MEASUREMENT AND PAYMENT

8.1 Construction of Asphalt Pavement

8.1.1 Construction of asphalt pavement will be measured and paid for at the Contract Unit Price per tonne 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 Main line Paving (*)"
ii. Construction of Tie-ins and Approaches (*)

* Specify either MS1, MS2, SP1, or SP2

8.1.2 The weight to be paid for shall be the total number of tonnes placed and compacted in accordance with this Specification and accepted by the Contract Administrator, as measured on a certified weigh scale.

8.2 Construction of Asphalt Patches

8.2.1 Construction of asphalt patches will be measured and paid for at the Contract Unit Price per square meter for "Construction of Asphalt Patches", 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.