



THE CITY OF WINNIPEG

TENDER

TENDER NO. 25-2021

**2021 REGIONAL STREET PAVEMENT RENEWALS DAY STREET AND PANDORA
AVENUE EAST**

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 2021 Regional Street Pavement Renewals Day Street and Pandora Avenue East

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, March 30, 2021.

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

B3. ENQUIRIES

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

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

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

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

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

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

B4. CONFIDENTIALITY

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

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

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

B5. ADDENDA

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

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

B6. SUBSTITUTES

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

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

B7. BID COMPONENTS

- B7.1 The Bid shall consist of the following components:
- (a) Form A: Bid;
 - (b) Form B: Prices; and
 - (c) Form G1: Bid Bond and Agreement to Bond.
- B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.
- B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely.
- B7.4 The Bid shall be submitted electronically through MERX at www.merx.com.
- B7.4.1 Bids will **only** be accepted electronically through MERX.
- B7.5 Bidders are advised that inclusion of terms and conditions inconsistent with the Tender document, including the General Conditions, will be evaluated in accordance with B17.1(a).

B8. BID

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

- (b) if the Bidder is a partnership, it shall be signed by the partner or partners who have authority to sign for the partnership;
- (c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers; or
- (d) if the Bidder is carrying on business under a name other than his/her own, it shall be signed by the registered owner of the business name, or by the registered owner's authorized officials if the owner is a partnership or a corporation.

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

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

B9. PRICES

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

B9.1.1 Prices stated on Form B: Prices shall not include any costs which may be incurred by the Contractor with respect to any applicable funding agreement obligations as outlined in D31. Any such costs shall be determined in accordance with D31.

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

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

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

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

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

B10. DISCLOSURE

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

B10.2 The Persons are:

- (a) N/A

B11. CONFLICT OF INTEREST AND GOOD FAITH

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

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

- (a) other commitments;
- (b) relationships;

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

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

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

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

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

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

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

B12. QUALIFICATION

B12.1 The Bidder shall:

- (a) undertake to be in good standing under The Corporations Act (Manitoba), or properly registered under The Business Names Registration Act (Manitoba), or otherwise properly registered, licensed or permitted by law to carry on business in Manitoba;
- (b) be financially capable of carrying out the terms of the Contract; and
- (c) have all the necessary experience, capital, organization, and equipment to perform the Work in strict accordance with the terms and provisions of the Contract.

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

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

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

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

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

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

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

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

B13. BID SECURITY

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

B14. OPENING OF BIDS AND RELEASE OF INFORMATION

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

B15. IRREVOCABLE BID

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

B16. WITHDRAWAL OF BIDS

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

B17. EVALUATION OF BIDS

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

B18. AWARD OF CONTRACT

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

- (d) only one (1) Bid is received; or
- (e) in the judgment of the Award Authority, the interests of the City would best be served by not awarding a Contract.

- B18.3 The Work of this Contract is contingent upon Council approval of sufficient funding in the 2021 Capital Budget. If the Capital Budget approved by Council does not include sufficient funding for the Work, the City will have no obligation to award a Contract.
- B18.4 If funding for the Work is provided to the City of Winnipeg by the Government of Manitoba and/or the Government of Canada, Bidders are advised that the terms of D31 shall immediately take effect upon confirmation of such funding, regardless of when funding is confirmed.
- B18.5 Where an award of Contract is made by the City, the award shall be made to the qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B17.
- B18.5.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

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

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. FORM OF CONTRACT DOCUMENTS

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

D3. SCOPE OF WORK

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

- (a) Rehabilitation:
 - (i) Day Street from Pandora Avenue East to Regent Avenue.
- (b) Reconstruction:
 - (i) Pandora Avenue East from Day Street to Wayoata Street.

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

- (a) Rehabilitation:
 - (i) planing of existing asphalt overlay;
 - (ii) full depth concrete repairs of existing slabs and joints (two hundred (200) millimetres (mm) plain-dowelled concrete pavement);
 - (iii) installation of catch basin and connection pipe;
 - (iv) adjustment of manholes, water valves and curb stops as required;
 - (v) concrete sidewalk renewal;
 - (vi) installation of detectable warning surface tiles;
 - (vii) concrete barrier curb and para ramp construction and renewal;
 - (viii) construction of concrete medians and bullnoses;
 - (ix) placement of asphalt overlay (average thickness – sixty (60) mm);
 - (x) placement of asphalt for tie-ins and approaches; and
 - (xi) topsoil and sodding;
- (b) Reconstruction:
 - (i) installation of thirty-five (35) metres (m) of four hundred fifty (450) mm diameter LDS sewer;
 - (ii) excavation of existing pavement and pavement structure to new structure depth;
 - (iii) install catch basins, catch basin leads and subdrains;
 - (iv) adjustment of water valves and manholes as required;
 - (v) compaction of sub grade;
 - (vi) placement of geotextile and geogrid;
 - (vii) placement of sub-base and base course materials;
 - (viii) construction of plain dowelled concrete roadway;
 - (ix) construction of new concrete curb (various types);
 - (x) construction of active transportation pathway:
 - ◆ excavation of pathway structure;

- ◆ compaction of sub grade;
 - ◆ placement of sub-base and base course Materials;
 - and◆ construction of asphalt pavement.
- (xi) boulevard restoration;
 - (xii) renewal of concrete sidewalk;
 - (xiii) topsoil and sodding; and
 - (xiv) placement of tie-in asphalt overlay for side streets and private approaches.

D4. CONTRACT ADMINISTRATOR

D4.1 The Contract Administrator is Dillon Consulting, represented by:

Taran J. Peters, P.Eng.
Project Manager

Telephone No. 204 453 2301
Email Address tpeters@dillon.ca

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

D5. CONTRACTOR'S SUPERVISOR

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

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

D6. NOTICES

D6.1 Except as provided for in C22.4, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid/Proposal.

D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator identified in D4.

D6.3 All notices, requests, nominations, Proposals, consents, approvals, statements, authorizations, documents or other communications required to be submitted or returned to the City Solicitor shall be sent to the following facsimile number:

The City of Winnipeg
Legal Services Department
Attn: Director of Legal Services
Facsimile No.: 204-947-9155

D7. FURNISHING OF DOCUMENTS

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

SUBMISSIONS

D8. AUTHORITY TO CARRY ON BUSINESS

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

D9. SAFE WORK PLAN

D9.1 The Contractor shall provide the Contract Administrator with a Safe Work Plan at least five (5) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.

D9.2 The Safe Work Plan shall be prepared and submitted in the format shown in the City's template which is available on the Information Connection page at The City of Winnipeg, Corporate Finance, Materials Management Division website at <http://www.winnipeg.ca/matmgmt/safety/default.stm>.

D9.3 Notwithstanding B12.4 at any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require an updated COR Certificate or Annual Letter of good Standing. A Contractor, who fails to provide a satisfactory COR Certificate or Annual Letter of good Standing, will not be permitted to continue to perform any Work.

D10. INSURANCE

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

- (a) commercial general liability insurance, in the amount of at least three million dollars (\$3,000,000.00) inclusive, with The City of Winnipeg and Manitoba and its Ministers, officers, employees and agents added as an additional insureds, 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 five million dollars (\$5,000,000.00) inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence;
- (c) an all risks Installation Floater carrying adequate limits to cover all machinery, equipment, supplies and/or Materials intended to enter into and form part of any installation; and
- (d) property insurance for all equipment, tools, field office and portable toilets used by the Contractor directly or indirectly in the performance of the Work on the Project that may be owned, rented, leased or borrowed.

D10.2 Deductibles shall be borne by the Contractor.

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

D10.4 All policies shall be taken out with insurers duly licensed to carry on business in the Province of Manitoba.

D10.5 The Contractor shall provide the City Solicitor and Manitoba 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.

D10.6 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

D11. CONTRACT SECURITY

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

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

D11.1.1 Where the Contract security is a performance bond, it may be submitted in hard copy or digital format. If submitted in digital format the Contract security must meet the following criteria:

- (a) the version submitted by the Contractor must have valid digital signatures and seals;
- (b) the version submitted by the Contractor must be verifiable by the City with respect to the totality and wholeness of the bond form, including: the content; all digital signatures and digital seals; with the surety company, or an approved verification service provider of the surety company;
- (c) the version submitted must be viewable, printable and storable in standard electronic file formats compatible with the City, and in a single file. Allowable formats include pdf;
- (d) the verification may be conducted by the City immediately or at any time during the life of the bond and at the discretion of the City with no requirement for passwords or fees; and
- (e) the results of the verification must provide a clear, immediate and printable indication of pass or fail regarding D11.1(b).

D11.1.2 Digital bonds failing the verification process will not be considered to be valid and may be determined to be an event of default in accordance with C18.1. If a digital bond fails the verification process, the Contractor may provide a replacement bond (in hard copy or digital format) within seven (7) Calendar Days of the City's request or within such greater period of time as the City in its discretion, exercised reasonably, allows.

D11.1.3 Digital bonds passing the verification process will be treated as original and authentic.

D11.2 The Contractor shall provide the City Solicitor with the required performance and labour and material payment bonds within seven (7) Calendar Days of notification of the award of the Contract by way of an award letter and prior to the commencement of any Work on the Site but in no event later than the date specified in C4.1 for the return of the executed Contract Documents, if applicable.

D11.3 The Contractor shall, as soon as practicable after entering into a contract with a Subcontractor:

- (a) give the Subcontractor written notice of the existence of the labour and Material payment bond in D11.1(b); and
- (b) post a notice of the bond and/or a copy of that bond in a conspicuous location at the Site of the Work.

D12. SUBCONTRACTOR LIST

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

D13. EQUIPMENT LIST

D13.1 The Contractor shall provide the Contract Administrator with a complete list of the equipment which the Contractor proposes to utilize (Form K: Equipment List) at or prior to a pre-construction meeting, or at least two (2) Business Days prior to the commencement of any Work on the Site but in no event later than the date specified in the C4.1 for the return of the executed Contract Documents, if applicable.

D14. DETAILED WORK SCHEDULE

D14.1 The Contractor shall provide the Contract Administrator with a detailed work schedule at least 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.

D14.2 The detailed work schedule shall consist of the following:
(a) a Gantt chart for the Work acceptable to the Contract Administrator.

D14.3 Further to D14.2(a), the Gantt chart shall show the time on a weekly basis, required to carry out the Work of each trade, or specification division. The time shall be on the horizontal axis, and the type of trade shall be on the vertical axis.

SCHEDULE OF WORK

D15. COMMENCEMENT

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

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

- (a) the Contract Administrator has confirmed receipt and approval of:
 - (i) evidence of authority to carry on business specified in D8;
 - (ii) evidence of the workers compensation coverage specified in C6.15;
 - (iii) the twenty-four (24) hour emergency response phone number specified in D5.2;
 - (iv) the Safe Work Plan specified in D9;
 - (v) evidence of the insurance specified in D10;
 - (vi) the contract security specified in D11;
 - (vii) the subcontractor list specified in D12;
 - (viii) the equipment list specified in D13; and
 - (ix) the detailed work schedule specified in D14.
- (b) the Contractor has attended a pre-construction meeting with the Contract Administrator, or the Contract Administrator has waived the requirement for a pre-construction meeting.

D15.3 The Contractor shall commence the Work on the Site within seven (7) Working Days of receipt of the award letter.

D15.4 The Contractor shall not commence the Work on the Site before June 7, 2021.

D15.5 The City intends to award this Contract by May 4, 2021.

D15.5.1 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D16. WORKING DAYS

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

D16.1.1 The Contract Administrator will determine daily if a Working Day has elapsed and will record his/her assessment. On a weekly basis the Contract Administrator will provide the Contractor with a record of the Working Days assessed for the preceding week. The Contractor shall sign each report signifying that he/she agrees with the Contract Administrator's determination of the Working Days assessed for the report period.

D16.1.2 Work done to restore the Site to a condition suitable for Work, shall not be considered "work" as defined in the definition of a Working Day.

D16.1.3 When the Work includes two (2) or more major types of Work that can be performed under different atmospheric conditions, the Contract Administrator shall consider all major types of Work in determining whether the Contractor was able to work in assessing Working Days.

D17. RESTRICTED WORK HOURS

D17.1 Further to clause 3.10 of CW 1130, the Contractor shall require written permission forty-eight (48) hours in advance from the Contract Administrator for any Work to be performed between 2000 hours and 0700 hours, or on Saturdays, Sundays, Statutory Holidays and or Civic Holidays.

D18. WORK BY OTHERS

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

- (a) City of Winnipeg Traffic Services Department – Provide necessary regulatory signs and replacement of signs and paint lines. The Contractor is expected to cooperate with the City of Winnipeg;
- (b) City of Winnipeg Traffic Signals – Traffic signal loops may require decommissioning and reinstallation. The Contractor is expected to cooperate with the City of Winnipeg;
- (c) City of Winnipeg Water and Waster Department – Watermain renewals on Melrose Avenue;
- (d) Winnipeg Transit – The Contractor will be required to coordinate with Winnipeg Transit to maintain service and minimize disruption during construction;
- (e) Manitoba Hydro – Adjustment of manholes where necessary; and
- (f) Bell MTS – Installation of new underground infrastructure on Day Street and manhole adjustments where necessary.

D19. SEQUENCE OF WORK

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

D19.1.1 The Work shall be divided into three (3) stages. The major items of Work for each stage are as outlined above in D3.2 and must be complete to move on to the subsequent stage.

- D19.1.2 **Stage IA** – Westbound Pandora Avenue East from Station 1-885 to Wayoata Street and eastbound Pandora Avenue East from Station 1+915 to Wayoata Street.
- D19.1.3 **Stage IB** – Reconstruction of westbound Pandora Avenue East from Station 1+600 to Station 1+885 and eastbound Pandora Avenue East from Station 1+600 to Station 1+915.
- D19.1.4 **Stage II** – Reconstruction of Pandora Avenue East from Day Street to Station 1+600 and Rehabilitation of Day Street from Pandora Avenue East to Regent Avenue.
- (a) The Contractor shall commence the Work on Day Street within the first week of commencing Stage II.
- D19.1.5 Immediately following the completion of the concrete paving of each stage, the Contractor shall clean up the Site and remove all Plant, surplus Material, waste and debris, other than that left by the City or other Contractors.
- D19.1.6 Work on Stage II of Pandora Avenue East such as underground work, sidewalk renewals and the construction of the Multi Use Path may be permitted during the construction of Stage IA and IB, upon written permission by the Contract Administrator as long as traffic within Stage II is maintained.

D20. CRITICAL STAGES

- D20.1 The Contractor shall achieve critical stages of the Work in accordance with the following requirements:
- (a) all Work on Day Street shall be completed within twenty (20) Working Days after the start of the commencement of the Work on Day Street.
- D20.2 When the Contractor considers the Work associated with each critical stage to be completed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Completion. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.
- D20.3 The date on which each critical stage of the Work has been accepted by the Contract Administrator as being completed to the requirements of the Contract is the date on which completion of each has been achieved.

D21. SUBSTANTIAL PERFORMANCE

- D21.1 The Contractor shall achieve Substantial Performance within eighty (80) consecutive Working Days of the commencement of the Work as specified in D15.
- D21.2 When the Contractor considers the Work to be substantially performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Substantial Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.
- D21.3 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

D22. TOTAL PERFORMANCE

- D22.1 The Contractor shall achieve Total Performance within eighty-five (85) consecutive Working Days of the commencement of the Work as specified in D15.
- D22.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the

Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.

- D22.3 The date on which the Work has been certified by the Contract Administrator as being totally performed to the requirements of the Contract through the issue of a certificate of Total Performance is the date on which Total Performance has been achieved.

D23. LIQUIDATED DAMAGES

- D23.1 If the Contractor fails to achieve Critical Stages, Substantial Performance or Total Performance in accordance with the Contract by the days 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) Day Street Critical Stage – five thousand two hundred fifty dollars (\$5,250.00);
- (b) Substantial Performance – five thousand two hundred fifty dollars (\$5,250.00); and
- (c) Total Performance – two thousand three hundred dollars (\$2,300.00).

- D23.2 The amounts specified for liquidated damages in D23.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve critical stages, Substantial Performance or Total Performance by the days fixed herein for same.

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

D24. COVID-19 SCHEDULE DELAYS

- D24.1 The City acknowledges that the schedule for this Contract may be impacted by the COVID-19 pandemic. Commencement and progress of the Work shall be performed by the Contractor with due consideration to the health and safety of workers and the public, directives from health authorities and various levels of government and in close consultation with the Contract Administrator.

- D24.2 If the Contractor is delayed in the performance of the Work by reason of the COVID-19 pandemic, the Work schedule may be adjusted by a period of time equal to the time lost due to such delay and costs related to such delay will be determined as identified herein.

- D24.3 A minimum of seven (7) Calendar Days prior to the commencement of Work, the Contractor shall declare whether COVID-19 will affect the start date. The Contractor shall provide sufficient evidence that the delay is directly related to COVID-19, including but not limited to evidence related to availability of staff, availability of Material or work by others.

- D24.4 For any delay related to COVID-19 and identified after Work has commenced, the Contractor shall within seven (7) Calendar Days of becoming aware of the anticipated delay declare the additional delay and shall provide sufficient evidence as indicated in D24.3. Failure to provide this notice will result in no additional time delays being considered by the City.

- D24.5 The Work schedule, including the durations identified in D17 to D22 where applicable, will be adjusted to reflect delays accepted by the Contract Administrator. No additional payment will be made for adjustment of schedules except where seasonal work, not previously identified in the Contract, is carried over to the following construction season.

- D24.6 Where Work not previously identified is being carried over solely as a result of delays related to COVID-19, as confirmed by the Contract Administrator, the cost of temporary works to maintain the Work in a safe manner until Work recommences, will be considered by the Contract Administrator. Where the Work is carried over only partially due to COVID-19, a partial consideration of the cost of temporary works will be considered by the Contract Administrator.

- D24.7 Any time or cost implications as a result of COVID-19 and in accordance with the above, as confirmed by the Contract Administrator, shall be documented in accordance with C7.

D25. SCHEDULED MAINTENANCE

- D25.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:
- (a) reflective crack maintenance as specified in CW 3250 R7; and
 - (b) sodding (Maintenance Period) as specified in CW 3510 R9.
- D25.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

CONTROL OF WORK

D26. JOB MEETINGS

- D26.1 Regular weekly job meetings will be held at the Site. These meetings shall be attended by a minimum of one (1) representative of the Contract Administrator, one (1) representative of the City and one (1) representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, the City and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.
- D26.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

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

- D27.1 Further to C6.26, the Contractor shall be the Prime Contractor and shall serve as, and have the duties of the Prime Contractor in accordance with The Workplace Safety and Health Act (Manitoba).

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

- D28.1 Further to B12.4, the Contractor/Subcontractor must, throughout the term of the Contract, have a Workplace Safety and Health Program meeting the requirements of The Workplace Safety and Health Act (Manitoba). At any time during the term of the Contract, the City may, at its sole discretion and acting reasonably, require updated proof of compliance, as set out in B12.4.

MEASUREMENT AND PAYMENT

D29. PAYMENT

- D29.1 Further to C12, the City may at its option pay the Contractor by direct deposit to the Contractor's banking institution.

WARRANTY

D30. WARRANTY

- D30.1 Notwithstanding C13.2, the warranty period shall begin on the date of Total Performance and shall expire one (1) year thereafter for pavement rehabilitation works, and two (2) years thereafter for pavement reconstruction works, unless extended pursuant to C13.2.1 or C13.2.2, in which case it shall expire when provided for thereunder.

- D30.2 Notwithstanding C13.2 or D30.1, the Contract Administrator may permit the warranty period for a portion or portions of the Work to begin prior to the date of Total Performance if:
- (a) a portion of the Work cannot be completed because of unseasonable weather or other conditions reasonably beyond the control of the Contractor but that portion does not prevent the balance of the Work from being put to its intended use.
- D30.2.1 In such case the date specified by the Contract Administrator for the warranty period to begin shall be substituted for the date specified in C13.2 for the warranty period to begin.

THIRD PARTY AGREEMENTS

D31. FUNDING AND/OR CONTRIBUTION AGREEMENT OBLIGATIONS

- D31.1 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.
- D31.2 Further to D31.1, in the event that the obligations in D31 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.
- D31.3 For the purposes of D31:
- (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.
- D31.4 Modified Insurance Requirements
- D31.4.1 If not already required under the insurance requirements identified in D10, the Contractor will be required to provide wrap-up liability insurance in an amount of no less than two million dollars (\$2,000,000.00) inclusive per occurrence. Such policy will be written in the joint names of the City, Contractor, Consultants and all Subcontractors and sub-consultants and include twelve (12) months completed operations. The Government of Manitoba and its Ministers, officers, employees, and agents shall be added as additional insureds.
- D31.4.2 If not already required under the insurance requirements identified in D10, 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.
- D31.4.3 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.
- D31.4.4 Further to D10.5, 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.
- D31.4.5 All policies must be taken out with insurers licensed to carry on business in the Province of Manitoba.
- D31.5 Indemnification By Contractor

- D31.5.1 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.
- D31.6 Records Retention and Audits
- D31.6.1 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.
- D31.6.2 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 D31.6.1 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.
- D31.7 Other Obligations
- D31.7.1 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.
- D31.7.2 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.
- D31.7.3 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.
- D31.7.4 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.

FORM H1: PERFORMANCE BOND
(See D11)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

_____ dollars (\$_____)

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

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

TENDER NO. 25-2021

2021 Regional Street Pavement Renewals Day Street and Pandora Avenue East
which is by reference made part hereof and is hereinafter referred to as the "Contract".

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

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

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

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

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

_____ day of _____, 20_____ .

SIGNED AND SEALED
in the presence of:

(Witness as to Principal if no seal)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

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

FORM H2: LABOUR AND MATERIAL PAYMENT BOND
(See D11)

KNOW ALL MEN BY THESE PRESENTS THAT

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

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

_____ dollars (\$_____)

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

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

TENDER NO. 25-2021

2021 Regional Street Pavement Renewals Day Street and Pandora Avenue East

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

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

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

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

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

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

_____ day of _____, 20____.

SIGNED AND SEALED
in the presence of:

(Witness as to Principal if no seal)

(Name of Principal)

Per: _____ (Seal)

Per: _____

(Name of Surety)

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

FORM K: EQUIPMENT
(See D13)

2021 Regional Street Pavement Renewals Day Street and Pandora Avenue East

<p>1. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>2. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>3. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>

FORM K: EQUIPMENT
(See D13)

2021 Regional Street Pavement Renewals Day Street and Pandora Avenue East

<p>4. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>5. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>
<p>6. Category/type:</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p> <p>Make/Model/Year: _____ Serial No.: _____</p> <p>Registered owner: _____</p>

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

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

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
01	COVER SHEET	11x17
02	DAY ST. PLAN PROFILE (START TO STA: 1+110)	11x17
03	DAY ST. PLAN PROFILE (STA: 1+110 TO END)	11x17
04	PANDORA AVE. EAST PLAN PROFILE (START TO STA: 1+130)	11x17
05	PANDORA AVE. EAST PLAN PROFILE (STA: 1+130 TO STA: 1+265)	11x17
06	PANDORA AVE. EAST PLAN PROFILE (STA: 1+265 TO STA: 1+400)	11x17
07	PANDORA AVE. EAST PLAN PROFILE (STA: 1+400 TO STA: 1+515)	11x17
08	PANDORA AVE. EAST PLAN PROFILE (STA: 1+515 TO STA: 1+645)	11x17
09	PANDORA AVE. EAST PLAN PROFILE (STA: 1+645 TO STA: 1+780)	11x17
10	PANDORA AVE. EAST PLAN PROFILE (STA: 1+780 TO STA: 1+880)	11x17

<u>Drawing No.</u>	<u>Drawing Name/Title</u>	<u>Drawing (Original) Sheet Size</u>
11	PANDORA AVE. EAST PLAN PROFILE (STA: 1+880 TO END)	11x17
12	PANDORA AVE. EAST TYPICAL CROSS SECTION AND CONCRETE JOINT LAYOUT	11x17
13	PANDORA AVE. EAST 450 DIA. LDS EXTENSION	11x17
14	DAY ST. AND PANDORA AVE. EAST STAGING	11x17

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 and/or Sites; and
 - (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; and
 - (iv) general cleanup and housekeeping needed to restore a neat and orderly Project Site.

E2.5 Access to the Site, equipment parking, and staging areas are limited to that shown on the Drawings or as approved by the Contract Administrator.

MEASUREMENT AND PAYMENT

E2.6 The lump-sum price for the Mobilization and Demobilization Bid item shall not exceed five percent (5.00%) of the total Bid price for the Contract.

E2.6.1 Further to B9, B17, C12 and E2.6, should the lump sum price exceed five percent (5%) of the Total Bid Price the lump sum price will be reduced to five percent (5%) of the Total Bid Price, the Total Bid Price will be determined using the reduced lump sum price and payment will be based on the reduced lump sum price.

E2.7 Payment for Mobilization:

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

E2.8 Payment for Demobilization:

(a) the remaining forty percent (40%) of the lump-sum price will be paid upon:

- (i) restoration of the Site and/or Sites to the satisfaction of the Contract Administrator; and
- (ii) distribution of the Declaration of Total Performance.

E2.9 Mobilization and Demobilization will be paid only once (to a maximum of one hundred percent (100%)), regardless of the number of times the Contractor mobilizes to the Site and/or Sites.

E3. GEOTECHNICAL REPORT

E3.1 Further to C3.1, the geotechnical report is provided to aid the Contractor's evaluation of the pavement structure and/or existing soil conditions. The geotechnical report is contained in Appendix 'A'.

E4. OFFICE FACILITIES

E4.1 The Contractor shall supply office facilities meeting the following requirements:

- (a) the field office shall be for the exclusive use of the Contract Administrator;
- (b) the building shall be conveniently located near the Site of the Work;
- (c) the building shall have a minimum floor area of twenty (20) square metres, a height of 2.4 m with two (2) windows for cross ventilation and a door entrance with a suitable lock;
- (d) the building shall be suitable for all weather use. It shall be equipped with an electric heater and air conditioner so that the room temperature can be maintained between either sixteen (16) to eighteen (18) degrees Celsius or twenty-four (24) to twenty-five (25) degrees Celsius;
- (e) the building shall be adequately lighted with fluorescent fixtures and have a minimum of three (3) wall outlets;
- (f) the building shall be furnished with one (1) desk, one (1) drafting table, one (1) meeting table, one (1) stool, one (1) legal size filing cabinet and a minimum of eight (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; and
- (h) the field office building and the portable toilet shall be cleaned on a weekly basis immediately prior to each Site meeting. The Contract Administrator may request additional cleaning when he/she deems it necessary.

- E4.2 The Contractor shall be responsible for all installation and removal costs, all operating costs, and the general maintenance of the office facilities.
- E4.3 The office facilities will be provided from the date of the commencement of the Work to the date of Total Performance.
- E4.4 On a one (1) time basis, where directed by the Contract Administrator, the Contractor shall relocate the office facilities to a location more convenient for the remaining Work.

E5. PROTECTION OF EXISTING TREES

- E5.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing boulevard trees within the limits of the construction area:
- (a) the Contractor shall not stockpile materials and soil or park vehicles and equipment on boulevards within two (2) m of trees;
 - (b) trees identified to be at risk by the Contract Administrator are to be strapped with twenty-five (25) by one hundred (100) by two thousand four hundred (2400) mm 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; and
 - (e) Work on-site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.
- E5.2 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his/her designate.
- E5.3 No separate measurement or payment will be made for the protection of trees.
- E5.4 Except as required in clause E5.1(c) and E5.1(e), Elm trees shall not be pruned at any time between April 1 and July 31.

E6. TRAFFIC CONTROL

- E6.1 Further to clauses 3.6, 3.7 and 3.8 of CW 1130:
- (a) where directed by the Contract Administrator, the Contractor shall construct and maintain temporary asphalt ramps to alleviate vertical pavement obstructions such as manholes and planing drop-offs to the satisfaction of the Contract Administrator. Payment shall be in accordance with CW3410; and
 - (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 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.

- E6.2 Notwithstanding E6.1, in accordance with the MTTC, the Contract Administrator shall make arrangements with the **Traffic Services Branch of the City of Winnipeg** to place, maintain, and remove all **regulatory signs** and traffic control devices authorized and/or required by the Traffic Management Branch in the following situations:
- (a) parking restrictions;
 - (b) stopping restrictions;
 - (c) turn restrictions;
 - (d) diamond lane removal;
 - (e) full or directional closures on a Regional Street;
 - (f) traffic routed across a median;
 - (g) 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; and
 - (h) approved Designated Construction Zones with a temporary posted speed limit reduction. Traffic Services will be responsible for placing all of the advance signs and 'Construction Ends' (TC-4) signs. The Contractor is still responsible for all other temporary traffic control including but not limited to barricades, barrels and tall cones.
- E6.2.1 An exception to E6.2 is the 'KEEP RIGHT/KEEP LEFT' sign (RB-25 / RB-25L) which shall be supplied, installed, and maintained by the Contractor at their own expense.
- E6.2.2 Further to E6.2, where the Contract Administrator has determined that the services of the Traffic Services Branch are required, the City shall bear the costs associated with the placement of temporary traffic control devices by the Traffic Services Branch of the City of Winnipeg in connection with the works undertaken by the Contractor.

E7. TRAFFIC MANAGEMENT

- E7.1 Further to clause 3.7 of CW 1130:
- (a) Single lane closures on intersecting and/or adjoining Regional Streets shall only be permitted during non-peak periods when required for construction activities when approved by the Traffic Management Branch. Storage/parking of materials, equipment or vehicles is not permitted on Regional Streets at any time unless approved by the Contract Administrator, in consultation with the Traffic Management Branch.
- E7.1.1 Intersecting local street, median opening and private approach access shall be maintained at all times unless joint/slab repairs or planing/paving operations require temporary closure. Temporary closures are to be staggered such that consecutive intersections are not closed at the same time.
- E7.1.2 Flag persons may be necessary to maintain the flow of traffic during certain Work operations.
- E7.1.3 Should the Contractor be unable to maintain pedestrian or vehicular access to a residence or business, he/she shall review the planned disruption with the business or residence and the Contract Administrator, and take reasonable measures to minimize the impact. The Contractor shall provide a minimum of twenty-four (24) hours notification to the affected residence or business and the Contract Administrator, prior to disruption of access.
- E7.1.4 Pedestrian access must be maintained on Day Street at all times.
- E7.1.5 Ambulance/emergency vehicle access must be maintained at all times.
- E7.2 Further to clause E7.1 the Contractor shall ensure traffic is maintained as per the following requirements by stage and location:
- E7.2.1 Stage IA:
- (a) within the limits shown in the Staging Plan and as confirmed on-site by the Contract Administrator, Pandora Avenue East shall be fully closed during construction. The

Contractor shall make every reasonable effort to minimize the length of time the full closure is required;

- (b) the Contractor shall ensure vehicle access is maintained to the western approach of the East End Community Club on Pandora Avenue East; and
- (c) the Contractor shall ensure vehicle access is maintained to the western approach of the CN Training Campus on Pandora Avenue East;

E7.2.2 Stage IB:

- (a) within the limits shown in the Staging Plan and as confirmed on-site by the Contract Administrator, Pandora Avenue East shall be fully closed during construction. The Contractor shall make every reasonable effort to minimize the length of time the full closure is required;
- (b) the Contractor shall ensure vehicle access is maintained to the eastern approach of the East End Community Club on Pandora Avenue East;
- (c) the Contractor shall ensure vehicle access is maintained to the eastern approach of the CN Training Campus on Pandora Avenue East; and
- (d) the Contractor shall begin Work at the east end of the stage, making every reasonable effort to construct the pavement for the approach to the CN Training Campus and the adjacent eastbound lane of Pandora Avenue East as early as possible;

E7.2.3 Stage II:

- (a) within the limits shown in the Staging Plan and as confirmed on-site by the Contract Administrator, Pandora Avenue East shall be fully closed during construction. The Contractor shall make every reasonable effort to minimize the length of time the full closure is required;
- (b) maintain a minimum of one (1) lane of traffic in each direction on Day Street; and
- (c) maintain access from Day Street to and from Melrose Avenue, lanes and private approached whenever possible.

E8. WATER OBTAINED FROM THE CITY

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

E9. SURFACE RESTORATIONS

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

E10. INFRASTRUCTURE SIGNS

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

E11. PARTIAL DEPTH PATCHING OF EXISTING JOINTS

DESCRIPTION

E11.1 General

E11.1.1 This specification covers the Partial Depth Patching of existing concrete pavement joints.

E11.2 Referenced Standard Construction Specifications:

- (a) CW 3230 – Full-Depth Patching of Existing Slabs and Joints; and
- (b) CW 3410 – Asphalt Concrete Pavement Works.

MATERIALS

E11.3 Asphalt Materials

E11.3.1 Asphalt material will be Type 1A supplied in accordance with Sections 5 and 6 of CW 3410.

E11.4 Tack Coat

E11.4.1 Tack Coat will be undiluted SS-1 emulsified asphalt.

CONSTRUCTION METHODS

E11.5 Placement of Asphalt Material

E11.5.1 Prior to placement of asphalt Material, the joint shall be swept or blow clean of any loose material.

E11.5.2 Apply Tack Coat uniformly on the entire surface of the joint. The application rate shall not exceed 0.23 litres per square metre. The joint shall be dry prior to applying the tack coat.

E11.5.3 Place and compact asphalt material in accordance with Section 9.3 of CW 3410 to the satisfaction of the Contract Administrator. The finished elevation of the patch shall be flush with surrounding pavement surface.

E11.5.4 Compact the asphalt material to an average ninety-five percent (95%) of the 75 blow Marshall Density of the paving mixture with no individual test being less than ninety percent (90%).

E11.5.5 Ensure that no traffic is allowed to travel over the patched area until the asphalt has cooled to atmospheric temperature.

MEASUREMENT AND PAYMENT

E11.6 Asphalt Patching of Partial Depth Joints

E11.7 Asphalt Patching of Partial Depth Joints will be measured on an area basis and paid for at the Contract Unit Price per square metre for "Asphalt Patching of Partial Depth Joints". The area to be paid for will be the total number of square metres of joints patched in accordance with this specification, accepted, and measured by the Contract Administrator.

E12. REMOVAL OF EXISTING 450 CONCRETE PIPE

DESCRIPTION

E12.1 General

E12.1.1 This specification covers the removal of existing concrete four hundred fifty (450) mm land drainage sewer pipe.

E12.2 Referenced Standard Construction Specifications:

- (a) CW 1130 – Site Requirements; and
- (b) CW 2130 – Gravity Sewers.

CONSTRUCTION METHODS

E12.3 Removal of Existing Four Hundred Fifty (450) mm Concrete Sewer Pipe

- E12.3.1 Remove existing four hundred fifty (450) mm concrete sewer pipe as directed by the Contract Administrator within the limits of the Contract.
- E12.3.2 The concrete pipe to remain in place as directed by the Contract Administrator shall be protected from damage during the removal of the adjacent pipe. Removal shall be done in a manner that does not damage any underground infrastructure to remain as determined by the Contract Administrator. Any pipes not indicated for removal by the Contract Administrator that are damaged by the Contractor shall be replaced at the Contractor's own expense.

E12.4 Disposal of Existing Four Hundred Fifty (450) mm Concrete Sewer Pipe

- E12.4.1 Dispose of removed concrete pipes in accordance with Section 3.4 and 3.5 of CW 1130.

MEASUREMENT AND PAYMENT

E12.5 Removal of Existing Four Hundred Fifty (450) mm Concrete Sewer Pipe

- E12.5.1 Removal of existing four hundred fifty (450) mm concrete sewer pipes shall be measured on a linear measure basis and paid for at the Contract Unit Price per metre for "Removal of Existing Four Hundred Fifty (450) mm Concrete Land Drainage Sewer Pipe". The length to be paid for shall be the total number of metres of existing concrete pipe removed in accordance with this specification, as accepted and measured by the Contract Administrator.
 - E12.5.2 The linear measurement of existing concrete pipe shall be measured horizontally at grade above the centre line of the pipe.
 - E12.5.3 Excavation and disposal of surplus Material due to removal of existing concrete sewer pipes or portions of damaged concrete sewer pipes shall be included in the payment for "Removal of Existing Four Hundred Fifty (450) mm Concrete Land Drainage Sewer Pipe".
 - E12.5.4 No payment shall be made for backfill of excavated area with suitable Site Material which shall be incidental to the Contract.
- ##### E12.6 Disposal of Existing Four Hundred Fifty (450) mm Concrete Sewer Pipe
- E12.6.1 Disposal of existing concrete sewer pipes shall be included in the payment for "Removal of Existing Four Hundred Fifty (450) mm Concrete Land Drainage Sewer Pipe".

E13. USAGE OF EXCAVATED MATERIAL AS FILL MATERIAL

- E13.1 The Contractor shall make every reasonable effort to use excavated material from the Site for fill placement. The Contractor shall plan the Work in such a way that any Material needed to meet grading requirements shall be utilized from excavation performed within the Site.

APPENDIX 'A'

GEOTECHNICAL REPORT






Geotechnical Investigation

City of Winnipeg Street Investigation (Project 20-2914)

Day Street and Pandora Avenue, Winnipeg, Manitoba

WX19168

2 October 2020

 Environment & Infrastructure Solutions 440 Dovercourt Drive, Winnipeg Manitoba, Canada R3Y 1N4 Phone: (204) 488-2997 www.woodplc.com			
Geotechnical Investigation City of Winnipeg Street Investigation (Project 20-2914) Wood Project Number - WX19168			
Prepared for:	Dillon Consulting Ltd. 1558 Willson Pl. Winnipeg, Manitoba R3T 0Y4		
Contact:	Taran Peters, P.Eng.		
Report Distribution:			
Dillon Consulting Ltd.:	Taran Peters, P.Eng.		
Third Party:			
Report Classification:	Confidential		
	Name	Job Title	Signature
Prepared by:	Jason Plohman, P.Eng.	Geotechnical Engineer	
Reviewed by:	Brad Wiebe., P.Eng.	Manager of Geotechnical Services, Saskatchewan/Manitoba	
Project Manager:	Jason Plohman, P.Eng.	Geotechnical Engineer	
Other Technical Contributors			
Rev.	Date	Revision Notes	
0	2 October 2020	Issued Final to Client	
Permit Stamp		Engineer Seal	
			



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Appendix A

Day Street

Appendix B

Pandora Avenue



1.0 Introduction

At the authorization of Mr. Taran Peters, P. Eng., of Dillon Consulting Ltd. (Dillon), Wood Environment & Infrastructure Solutions, a division of Wood Canada Limited (Wood), completed a pavement coring and test hole drilling program related to the pavement evaluation and potential asphalt reconstruction and rehabilitation along a section of Day Street and Pandora Avenue in Winnipeg, Manitoba. Test hole locations and scope of work for each street are itemized in Table 1-1.

Table 1-1: Street Location and Investigation Scope

Street Name	Location	Total Number of Test Holes	Number of Cores Tested	Test Hole Numbers
Day Street	Pandora Avenue to Regent Avenue	4	2	DAY-01 to DAY-04
Pandora Avenue	Day Street to Wayoata Street	8	0	PAN-01 to PAN-08
	Total	12	2	

The geotechnical investigation was completed in general accordance with the Scope of Work and Terms and Conditions outlined in Wood Proposal No. WPG2020.464Rev01, dated 10 August 2020.

2.0 Geotechnical Investigation

Prior to initiating the field investigation, Wood notified public utility providers (i.e. Manitoba Hydro, Bell MTS, Shaw, etc.) of the intent to drill in order to clear public utilities. All field activities were completed without incident.

On 18 September and 26 September 2020, Wood supervised the coring and drilling of twelve holes on Day Street and Pandora Avenue in Winnipeg, Manitoba. The test hole locations are illustrated in Figure 1. All locations were cored using a 137.5 mm diameter core barrel, while test hole drilling was conducted using a truck mounted Mobile B40 drill rig equipped with 125 mm solid stem augers, owned and operated by Maple Leaf Drilling of Springfield, Manitoba. Approximate coring and test hole locations were selected by Dillon, however underground utilities required some adjustments to the original test hole locations. Specifically, test hole PAN-01 was moved 1.7 m to the east of the original test hole location and test hole DAY-01 was moved 3.2 m to the north of the original test hole location.

At each test hole location drilled below the asphalt/concrete pavement (all test holes with the exception of DAY-01 to Day-03), Wood field personnel visually classified the soil stratigraphy within the test holes in accordance with the Modified Unified Soil Classification System (MUSCS) and noted observed seepage and/or sloughing conditions. The in-situ relative consistency of cohesive soil (i.e. clay) was evaluated using a pocket penetrometer. The recorded pocket penetrometer readings are shown on the test hole logs in terms of compressive strength (kPa). Soil sampling consisted of grab samples obtained at regular depth intervals. All core and grab samples were retained in sealed plastic bags and shipped to Wood's Winnipeg laboratory for review and select testing.

Upon completion of drilling at each test hole location, the holes were left open for 5 minutes and the depths to accumulated slough and groundwater level were measured prior to backfill. Upon obtaining the measurements, all test holes were subsequently backfilled to grade with auger cuttings and bentonite, and patched with cold mix asphalt at the surface.

Following completion of the field drilling program, a laboratory testing program was conducted on select soil samples obtained from the test holes. The laboratory testing program consisted of moisture content determinations, Atterberg limits, particle size distributions (hydrometer method), and California Bearing Ratio (CBR) evaluations on the anticipated subgrade soils as outlined in Dillon's Request for Proposal (RFP). A summary of the laboratory testing results for soil and core strength are shown in Table 2-1 and Table 2-2, respectively.

Table 2-1: Summary of Atterberg and Particle Size Analysis Results

Test Hole	Depth (m)	MUSCS Symbol	Atterberg Limits		Particle Size Distribution Results			
			Liquid Limit (%)	Plastic Limit (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
PAN-01	0.9	CH	70.3	19.4	0.0	2.7	28.9	68.4
PAN-02	0.9	CH	80.5	18.8	0.0	1.3	18.1	80.5
PAN-04	0.9	CICH	50.1	15.7	0.0	0.6	46.1	53.2
PAN-05	0.9	CH	82.9	21.8	0.0	0.7	29.0	70.3
PAN-07	0.9	CH	89.4	20.7	0.0	0.5	10.5	89.1

Table 2-2: Summary of Concrete Core Strengths

Test Hole	Concrete Core Strength (MPa)
DAY-03	38.9
DAY-04	37.8

It should be noted that at the time this report was prepared all the above testing has been completed with the exception of CBR testing. CBR results will be provided upon their completion.

3.0 Subsurface Conditions

3.1 Day Street

A thin layer of asphalt was encountered at the surface of all the test holes drilled along Day Street which varied in thickness from 58 to 85 mm. The asphalt was underlain by concrete which varied in thickness from 200 to 210 mm. The soil stratigraphy below the pavement, as determined in test hole DAY-04, consisted of a layer of clay fill that extended to a depth of about 450 mm below existing grade which was further underlain by native, high plastic clay to the depth explored (1.8 m).

3.2 Pandora Avenue

A thin layer of asphalt was encountered at the surface of all the test holes drilled along Pandora Avenue which varied in thickness from 38 to 65 mm. A 75 and 150 gravel fill layer was present below the concrete in test holes PAN-01 and PAN-04, respectively. Clay fill was encountered below the gravel fill and below the concrete in test holes PAN-02, PAN-03, PAN-06, PAN-07 and PAN-08. The clay fill ranged in thickness from 90 mm in test hole PAN-07 to 850 mm in test hole PAN-03 and extended to a maximum depth of 1.1 m in test holes PAN-03 and PAN-06. The gravel and clay fill were underlain by native clay which extended to the depths explored. A 100 to 450 mm thick layer of silt was encountered in test holes PAN-01, PAN-06 and PAN-08 beginning at depths ranging from 1.1 m in test hole PAN-06 to 1.7 m in PAN-08.

Detailed test hole logs summarizing the sampling, field testing, laboratory test results, and subsurface conditions encountered at the test hole locations as well as photographs of the asphalt and concrete cores obtained from each test hole location are presented in Appendices A and B for Day Street and Pandora Avenue, respectively. Actual depths noted on the test hole logs may vary by ± 0.3 m from those recorded due to the method by which the soil cuttings are returned to the surface. Summaries of the terms and symbols used on the test hole logs and of the Modified Unified Soil Classification System are also presented in Appendix A.

4.0 Closure

The findings of this report were based on the results of field and laboratory investigations at test hole locations determined based on the requirements provided by Dillon in conjunction with revisions due to the presence of underground utilities.

The site investigation was conducted for the sole purpose of profiling the pavement and subsurface conditions. Although no environmental issues were identified during the fieldwork, this does not indicate that no such issues exist. If the owner or other parties have any concern regarding the presence of environmental issues, then an appropriate level environmental assessment should be conducted.

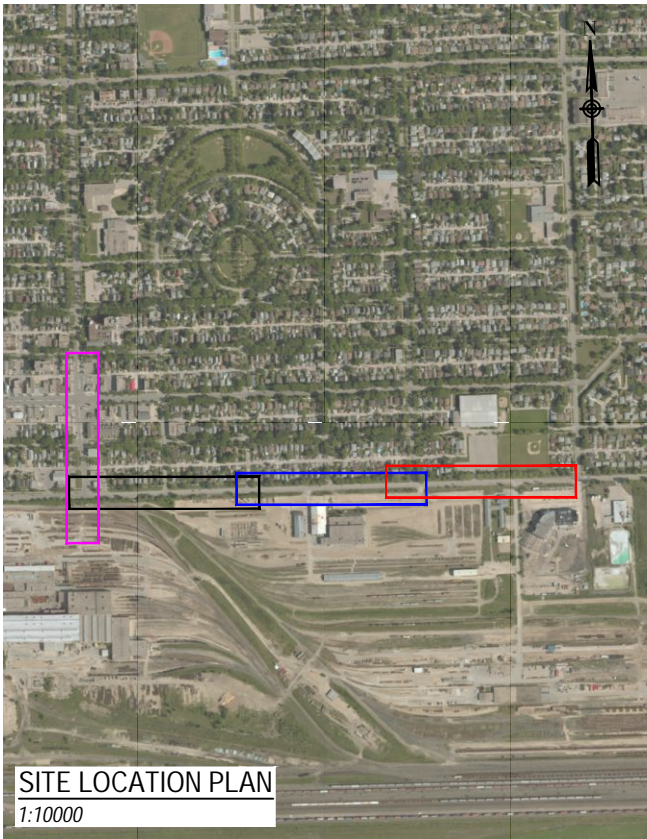
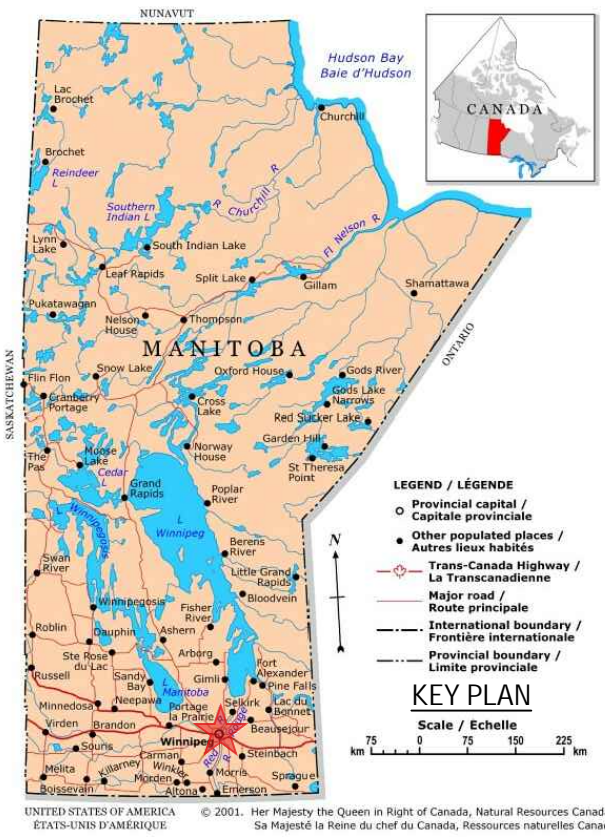
Soil conditions, by their nature, can be highly variable across a site. The placement of fill and prior construction activities on a site can contribute to the variability especially near surface soil conditions. A contingency should always be included in any construction budget to allow for the possibility of variation in soil conditions, which may result in modification of any potential design and construction procedures which may arise from this factual investigative report.

This report has been prepared for the exclusive use of Dillon Consulting Ltd., and their agents, for specific application to the project described in this report. The data and recommendations provided herein should not be used for any other purpose, or by any other parties, without review and written advice from Wood. Any use that a third party makes of this report, or any reliance or decisions made based on this report, are the responsibility of those parties. Wood accepts no responsibility for damages suffered by a third party as a result of decisions made or actions based on this report.

This report has been prepared in accordance with generally accepted geotechnical engineering practices. No other warranty, either expressed or implied, is made.

Respectfully submitted,

**Wood Environment & Infrastructure Solutions,
a Division of Wood Canada Limited**



NOTES: SITE FEATURES AND LOCATIONS ARE APPROXIMATE ONLY. IMAGES FROM AUTODESK IMAGERY AND TOPO MAPS.

LEGEND:

TEST HOLE

REVISION	BY	DATE
----	----	----

REVISION	BY	DATE
----	----	----

CLIENT:

DILLON CONSULTING LTD.

wood.

440 DOVERCOURT DRIVE
WINNIPEG, MANITOBA R3Y 1N4
PHONE: 204.488.2997 FAX:204.489.8261

DWN BY:	MD
CHK'D BY:	JP
DATUM:	---
PROJECTION:	---
SCALE:	AS SHOWN

CITY OF WINNIPEG STREET INVESTIGATION
PROJECT 20-2914
WINNIPEG, MANITOBA

SITE AND TEST HOLE LOCATION PLAN

DATE:	OCTOBER 2020
PROJECT NO.:	WX19168
REV. NO.:	A
FIGURE NO.:	FIGURE 1

Appendix A

Day Street

- Core Photos
- Test Hole Logs



DAY-01: Asphalt Layer, Plan View




DAY-01: Asphalt Layer, Profile View



DAY-01: Concrete Layer, Plan View



DAY-01: Concrete Layer, Profile View

	CORE PHOTOGRAPHS DAY STREET BETWEEN PANDORA AVENUE AND REGENT AVENUE WINNIPEG, MANITOBA			
Wood Environment and Infrastructure Solutions	Dillon Consulting Ltd.			
Drawn: AL	Scale: N/A	Date: 02 October 2020	Project No.: WX19168	



DAY-02: Asphalt Layer, Plan View



DAY-02: Asphalt Layer, Profile View



DAY-02: Concrete Layer, Plan View



DAY-02: Concrete Layer, Profile View



DAY-03: Asphalt Layer, Plan View




DAY-03: Asphalt Layer, Profile View



DAY-03: Concrete Layer, Plan View



DAY-03: Concrete Layer, Profile View

	<p>CORE PHOTOGRAPHS DAY STREET BETWEEN PANDORA AVENUE AND REGENT AVENUE WINNIPEG, MANITOBA</p>
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<p>Wood Environment and Infrastructure Solutions</p>	<p>Dillon Consulting Ltd.</p>
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DAY-04: Asphalt Layer, Plan View



DAY-04: Asphalt Layer, Profile View



DAY-04: Concrete Layer, Plan View



DAY-04: Concrete Layer, Profile View

PROJECT: City of Wpg Street Investigation (20-2914)	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: DAY-01
CLIENT: Dillon Consulting	DRILL RIG: Truck Mounted B40	PROJECT No: WX19168
LOCATION: Day Street, Winnipeg, MB	DRILL METHOD: 138mm Core & 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE	<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample	<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout	<input type="checkbox"/> Slough	<input type="checkbox"/> Sand

DEPTH (m)	UNCONFINED COMPRESSION (kPa)		SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
	100	200							
	POCKET PENETROMETER (kPa)								
	100	200	300	400					
	PLASTIC		M.C.	LIQUID					
	20	40	60	80					
0				ASPH CONC					
0				ASPHALT - 58mm thick					
0				CONCRETE SLAB - 210mm thick					
0				TEST HOLE TERMINATED AT 268mm BELOW GRADE.					
0				NOTES:					
0				- Test hole filled with asphalt cold patch.					
1									1
2									2
3									3
4									4
5									5
6									6
7									7
8									8
9									9
10									10

WX19168 - DILLON_DAY_ST. R1.GPJ_20/10/02.02:09 PM (WPG - GEOTECH LOG 1)



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LOGGED BY: JP	COMPLETION DEPTH: 0.2 m
REVIEWED BY: BW	COMPLETION DATE: September 26, 2020
Figure No.	Sheet 1 of 1

PROJECT: City of Wpg Street Investigation (20-2914)	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: DAY-02
CLIENT: Dillon Consulting	DRILL RIG: Truck Mounted B40	PROJECT No: WX19168
LOCATION: Day Street, Winnipeg, MB	DRILL METHOD: 138mm Core & 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE	<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample	<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout	<input type="checkbox"/> Slough	<input type="checkbox"/> Sand

DEPTH (m)	UNCONFINED COMPRESSION (kPa)		SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
	100	200							
0	POCKET PENETROMETER (kPa)		MUSCS	ASPH - 65mm thick CONC - 205mm thick TEST HOLE TERMINATED AT 270mm BELOW GRADE. NOTES: - Test hole filled with asphalt cold patch.					0
1	PLASTIC M.C. LIQUID								1
2									2
3									3
4									4
5									5
6									6
7									7
8									8
9									9
10									10

WX19168 - DILLON_DAY_ST. R1.GPJ_20/10/02:02:10 PM (WPG - GEOTECH LOG 1)



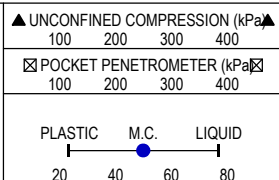
Wood Environment & Infrastructure Solutions
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LOGGED BY: JP	COMPLETION DEPTH: 0.2 m
REVIEWED BY: BW	COMPLETION DATE: September 26, 2020
Figure No.	Sheet 1 of 1

PROJECT: City of Wpg Street Investigation (20-2914)	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: DAY-03
CLIENT: Dillon Consulting	DRILL RIG: Truck Mounted B40	PROJECT No: WX19168
LOCATION: Day Street, Winnipeg, MB	DRILL METHOD: 138mm Core & 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE	<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample	<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout	<input type="checkbox"/> Slough	<input type="checkbox"/> Sand

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	COMMENTS	DEPTH (m)
0	ASPH CONC	ASPHALT - 85mm thick CONCRETE SLAB - 205mm thick TEST HOLE TERMINATED AT 290mm BELOW GRADE. NOTES: - Test hole filled with asphalt cold patch.				Compressive Core Strength of Concrete = 38.9 MPa	0
1							1
2							2
3							3
4							4
5							5
6							6
7							7
8							8
9							9
10							10



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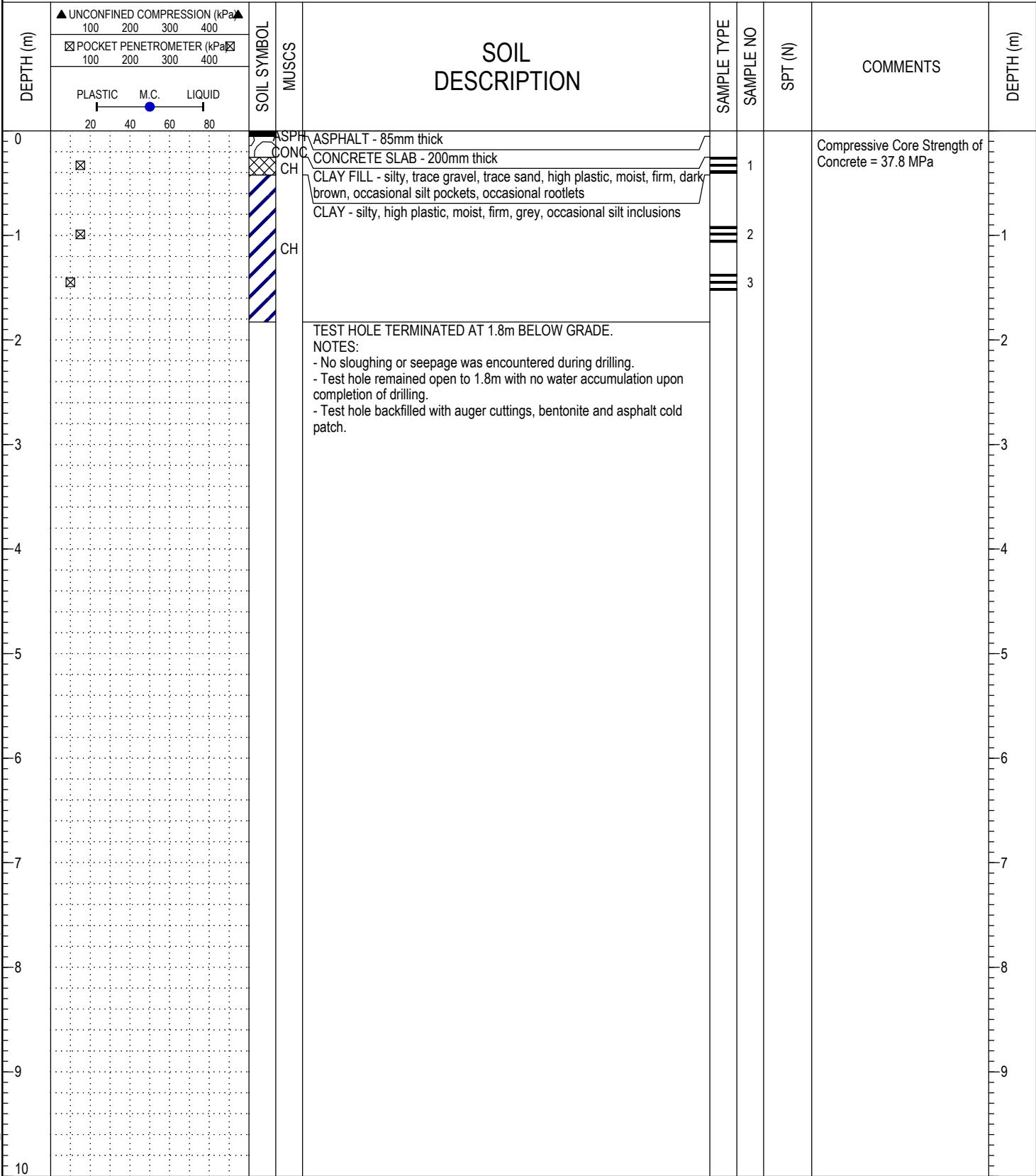


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LOGGED BY: JP	COMPLETION DEPTH: 0.2 m
REVIEWED BY: BW	COMPLETION DATE: September 26, 2020
Figure No.	Sheet 1 of 1

PROJECT: City of Wpg Street Investigation (20-2914)	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: DAY-04
CLIENT: Dillon Consulting	DRILL RIG: Truck Mounted B40	PROJECT No: WX19168
LOCATION: Day Street, Winnipeg, MB	DRILL METHOD: 138mm Core & 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE	<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample	<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout	<input type="checkbox"/> Slough	<input type="checkbox"/> Sand



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LOGGED BY: JP	COMPLETION DEPTH: 1.8 m
REVIEWED BY: BW	COMPLETION DATE: September 26, 2020
Figure No.	Sheet 1 of 1

EXPLANATION OF TERMS AND SYMBOLS

The terms and symbols used on the borehole logs to summarize the results of field investigation and subsequent laboratory testing are described in these pages.

It should be noted that materials, boundaries and conditions have been established only at the borehole locations at the time of investigation and are not necessarily representative of subsurface conditions elsewhere across the site.

TEST DATA

Data obtained during the field investigation and from laboratory testing are shown at the appropriate depth interval.

Abbreviations, graphic symbols, and relevant test method designations are as follows:

*C	Consolidation test	*ST	Swelling test
D _R	Relative density	TV	Torvane shear strength
*k	Permeability coefficient	VS	Vane shear strength
*MA	Mechanical grain size analysis and hydrometer test	w	Natural Moisture Content (ASTM D2216)
N	Standard Penetration Test (CSA A119.1-60)	w _l	Liquid limit (ASTM D 423)
N _d	Dynamic cone penetration test	w _p	Plastic Limit (ASTM D 424)
NP	Non plastic soil	E _f	Unit strain at failure
pp	Pocket penetrometer strength	γ	Unit weight of soil or rock
*q	Triaxial compression test	γ _d	Dry unit weight of soil or rock
q _u	Unconfined compressive strength	ρ	Density of soil or rock
*SB	Shearbox test	ρ _d	Dry Density of soil or rock
SO ₄	Concentration of water-soluble sulphate	C _u	Undrained shear strength
		→	Seepage
		▼	Observed water level

* The results of these tests are usually reported separately

Soils are classified and described according to their engineering properties and behaviour.

The soil of each stratum is described using the Unified Soil Classification System¹ modified slightly so that an inorganic clay of "medium plasticity" is recognized.

The modifying adjectives used to define the actual or estimated percentage range by weight of minor components are consistent with the Canadian Foundation Engineering Manual².

Relative Density and Consistency:

<u>Cohesionless Soils</u>		<u>Cohesive Soils</u>		
Relative Density	SPT (N) Value	Consistency	Undrained Shear Strength c _u (kPa)	Approximate SPT (N) Value
Very Loose	0-4	Very Soft	0-12	0-2
Loose	4-10	Soft	12-25	2-4
Compact	10-30	Firm	25-50	4-8
Dense	30-50	Stiff	50-100	8-15
Very Dense	>50	Very Stiff	100-200	15-30
		Hard	>200	>30

Standard Penetration Resistance ("N" value)

The number of blows by a 63.6kg hammer dropped 760 mm to drive a 50 mm diameter open sampler attached to "A" drill rods for a distance of 300 mm after an initial penetration of 150 mm.

¹ "Unified Soil Classification System", Technical Memorandum 36-357 prepared by Waterways Experiment Station, Vicksburg, Mississippi, Corps of Engineers, U.S. Army. Vol. 1 March 1953.

² "Canadian Foundation Engineering Manual", 3rd Edition, Canadian Geotechnical Society, 1992.

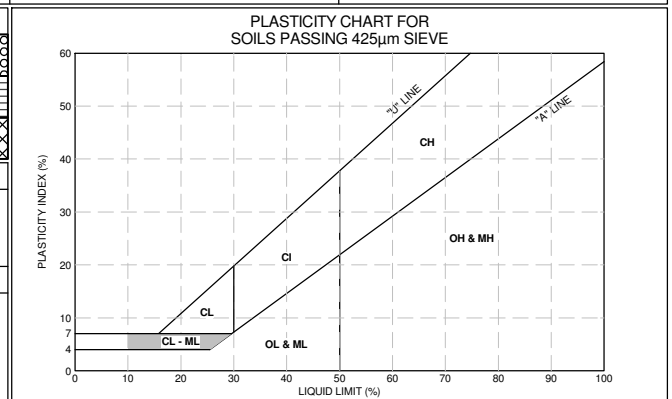
MODIFIED UNIFIED CLASSIFICATION SYSTEM FOR SOILS

MAJOR DIVISIONS			SYMBOLS			TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA	
			USCS	GRAPH	COLOUR			
COARSE GRAINED SOILS (MORE THAN HALF BY WEIGHT LARGER THAN 75µm)	GRAVELS MORE THAN HALF THE COARSE FRACTION LARGER THAN 4.75mm	CLEAN GRAVELS (TRACE OR NO FINES)	GW		RED	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	$C_u = D_{60}/D_{10} > 4$; $C_c = (D_{30})^2 / (D_{10} \times D_{60}) = 1 \text{ to } 3$	
			GP		RED	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS	
		DIRTY GRAVELS (WITH SOME OR MORE FINES)	GM		YELLOW	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	ATTERBERG LIMITS BELOW "A" LINE OR PI LESS THAN 4	
			GC		YELLOW	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES	ATTERBERG LIMITS ABOVE "A" LINE AND PI MORE THAN 7	
	SANDS MORE THAN HALF THE COARSE FRACTION SMALLER THAN 4.75mm	CLEAN SANDS (TRACE OR NO FINES)	SW		RED	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	$C_u = D_{60}/D_{10} > 6$; $C_c = (D_{30})^2 / (D_{10} \times D_{60}) = 1 \text{ to } 3$	
			SP		RED	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS	
		DIRTY SANDS (WITH SOME OR MORE FINES)	SM		YELLOW	SILTY SANDS, SAND-SILT MIXTURES	ATTERBERG LIMITS BELOW "A" LINE OR PI LESS THAN 4	
			SC		YELLOW	CLAYEY SANDS, SAND-CLAY MIXTURES	ATTERBERG LIMITS ABOVE "A" LINE AND PI MORE THAN 7	
FINE-GRAINED SOILS (MORE THAN HALF BY WEIGHT SMALLER THAN 75µm)	SILTS BELOW "A" LINE NEGLECTIBLE ORGANIC CONTENT	$W_L < 50\%$	ML		GREEN	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	CLASSIFICATION IS BASED UPON PLASTICITY CHART (SEE BELOW)	
		$W_L > 50\%$	MH		BLUE	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SAND OR SILTY SOILS		
	CLAYS ABOVE "A" LINE NEGLECTIBLE ORGANIC CONTENT	$W_L < 30\%$	CL		GREEN	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY OR SILTY CLAYS, LEAN CLAYS		
		$30\% < W_L < 50\%$	CI		GREEN-BLUE	INORGANIC CLAYS OF MEDIUM PLASTICITY, SILTY CLAYS		
		$W_L > 50\%$	CH		BLUE	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS		
	ORGANIC SILTS & CLAYS BELOW "A" LINE	$W_L < 50\%$	OL		GREEN	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY		WHENEVER THE NATURE OF THE FINES CONTENT HAS NOT BEEN DETERMINED, IT IS DESIGNATED BY THE LETTER "F", E.G. SF IS A MIXTURE OF SAND WITH SILT OR CLAY
		$W_L > 50\%$	OH		BLUE	ORGANIC CLAYS OF HIGH PLASTICITY		
	HIGHLY ORGANIC SOILS			PT		ORANGE		PEAT AND OTHER HIGHLY ORGANIC SOILS

SPECIAL SYMBOLS			
LIMESTONE		OILSAND	
SANDSTONE		SHALE	
SILTSTONE		FILL (UNDIFFERENTIATED)	

SOIL COMPONENTS				
FRACTION	U.S. STANDARD METRIC SIEVE SIZE		DEFINING RANGES OF PERCENT BY WEIGHT OF MINOR COMPONENTS	
	PASSING	RETAINED	PERCENT	DESCRIPTOR
GRAVEL	76mm	19mm	35 - 50	AND
	COARSE	19mm		
SAND	COARSE	4.75mm	2.00mm	Y / EY
	MEDIUM	2.00mm	425µm	SOME
	FINE	425µm	75µm	TRACE
FINES (SILT OR CLAY BASED ON PLASTICITY)	75µm		1 - 10	TRACE

OVERSIZED MATERIAL	
ROUNDED OR SUBROUNDED: COBBLES 76mm to 200mm BOULDERS > 200mm	NOT ROUNDED: ROCK FRAGMENTS ? 76mm ROCKS > 0.76 CUBIC METRE IN VOLUME



- NOTES:**
- ALL SIEVE SIZES MENTIONED ARE U.S. STANDARD ASTM E.11.
 - COARSE GRAINED SOILS WITH TRACE TO SOME FINES GIVEN COMBINED GROUP SYMBOLS, E.G. GW-GC IS A WELL GRADED GRAVEL SAND MIXTURE WITH TRACE TO SOME CLAY.
 - DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS.

Appendix B

Pandora Avenue

- Core Photos
- Test Hole Logs



PAN-01: Asphalt Layer, Plan View



PAN-01: Asphalt Layer, Profile View



PAN-01: Concrete Layer, Plan View



PAN-01: Concrete Layer, Profile View



PAN-02: Asphalt Layer, Plan View



PAN-02: Asphalt Layer, Profile View



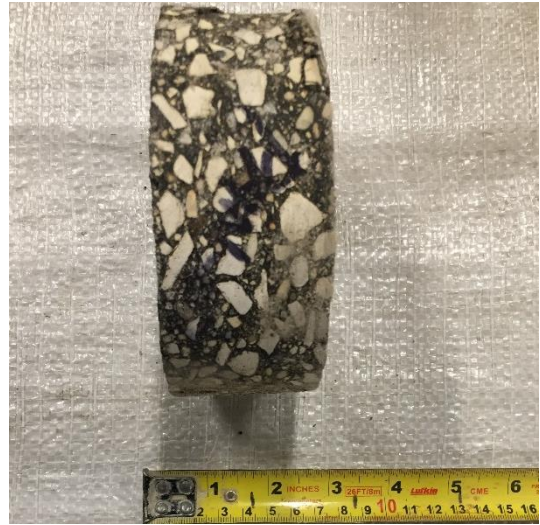
PAN-02: Concrete Layer, Plan View



PAN-02: Concrete Layer. Profile View



PAN-03: Asphalt Layer, Plan View




PAN-03: Asphalt Layer. Profile View



PAN-03: Concrete Layer, Plan View



PAN-03: Concrete Layer. Profile View

	<p>CORE PHOTOGRAPHS PANDORA AVENUE BETWEEN DAY STREET AND WAYOATA STREET WINNIPEG, MANITOBA</p>		
<p>Wood Environment and Infrastructure Solutions</p>	<p>Dillon Consulting Ltd.</p>		
<p>Drawn: AL</p>	<p>Scale: N/A</p>	<p>Date: 02 October 2020</p>	<p>Project No.: WX19168</p>



PAN-04: Intact Core, Plan View




PAN-04: Intact Core, Profile View



PAN-05: Intact Core, Plan View



PAN-05: Intact Core, Profile View

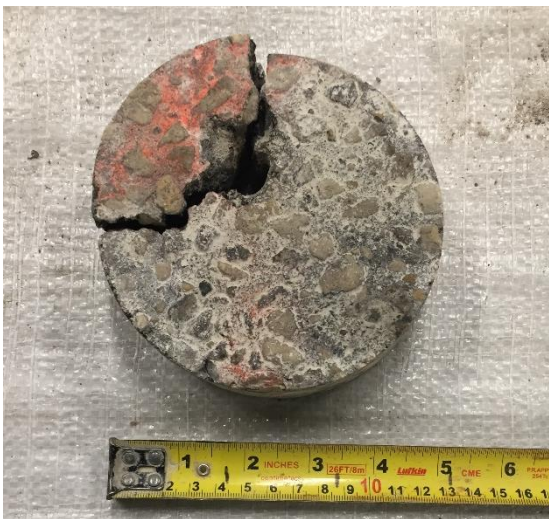
	<p>CORE PHOTOGRAPHS PANDORA AVENUE BETWEEN DAY STREET AND WAYOATA STREET WINNIPEG, MANITOBA</p>			
<p>Wood Environment and Infrastructure Solutions</p>	<p>Dillon Consulting Ltd.</p>			
<p>Drawn: AL</p>	<p>Scale: N/A</p>	<p>Date: 02 October 2020</p>	<p>Project No.: WX19168</p>	



PAN-06: Intact Core, Plan View




PAN-06: Intact Core, Profile View



PAN-07: Asphalt Layer, Plan View



PAN-07: Asphalt Layer, Profile View

	<p>CORE PHOTOGRAPHS PANDORA AVENUE BETWEEN DAY STREET AND WAYOATA STREET WINNIPEG, MANITOBA</p>			
<p>Wood Environment and Infrastructure Solutions</p>	<p>Dillon Consulting Ltd.</p>			
<p>Drawn: AL</p>	<p>Scale: N/A</p>	<p>Date: 02 October 2020</p>	<p>Project No.: WX19168</p>	



PAN-07: Concrete Layer, Plan View



PAN-07: Concrete Layer, Profile View



PAN-08: Asphalt Layer, Plan View




PAN-08: Asphalt Layer, Profile View



PAN-08: Concrete Layer, Plan View

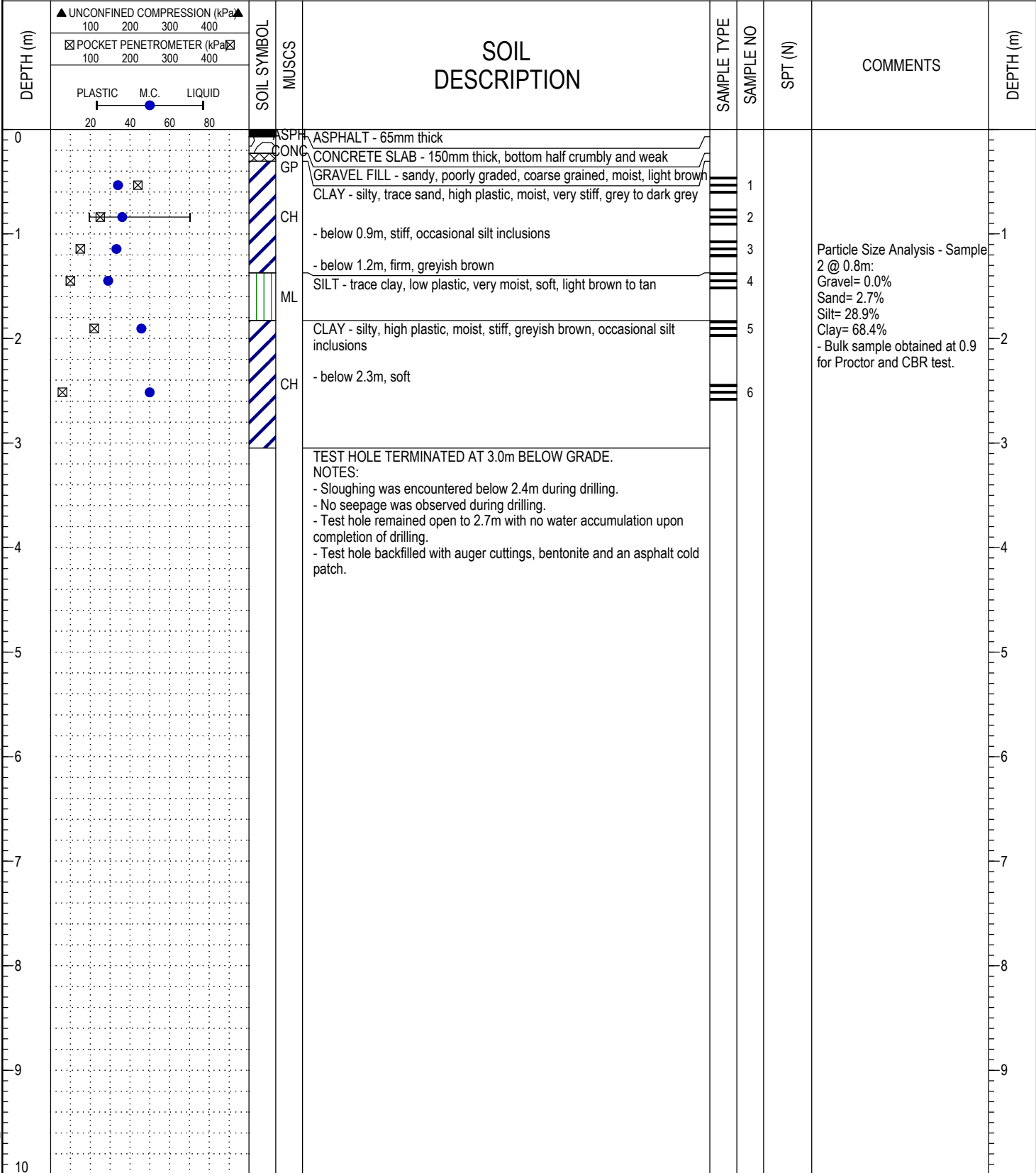


PAN-08: Concrete Layer, Profile View

	<p>CORE PHOTOGRAPHS PANDORA AVENUE BETWEEN DAY STREET AND WAYOATA STREET WINNIPEG, MANITOBA</p>			
<p>Wood Environment and Infrastructure Solutions</p>	<p>Dillon Consulting Ltd.</p>			
<p>Drawn: AL</p>	<p>Scale: N/A</p>	<p>Date: 02 October 2020</p>	<p>Project No.: WX19168</p>	

PROJECT: City of Wpg Street Investigation (20-2914)	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: PAN-01
CLIENT: Dillon Consulting	DRILL RIG: Truck Mounted B40	PROJECT No: WX19168
LOCATION: Pandora Ave, East, Winnipeg, MB	DRILL METHOD: 138mm Core & 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE	<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample	<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout	<input type="checkbox"/> Slough	<input type="checkbox"/> Sand



WX19168 - DILLON_PANDORA_AVE. E.R1.GPJ 20/10/20 01:57 PM (WPG - GEOTECH LOG 1)

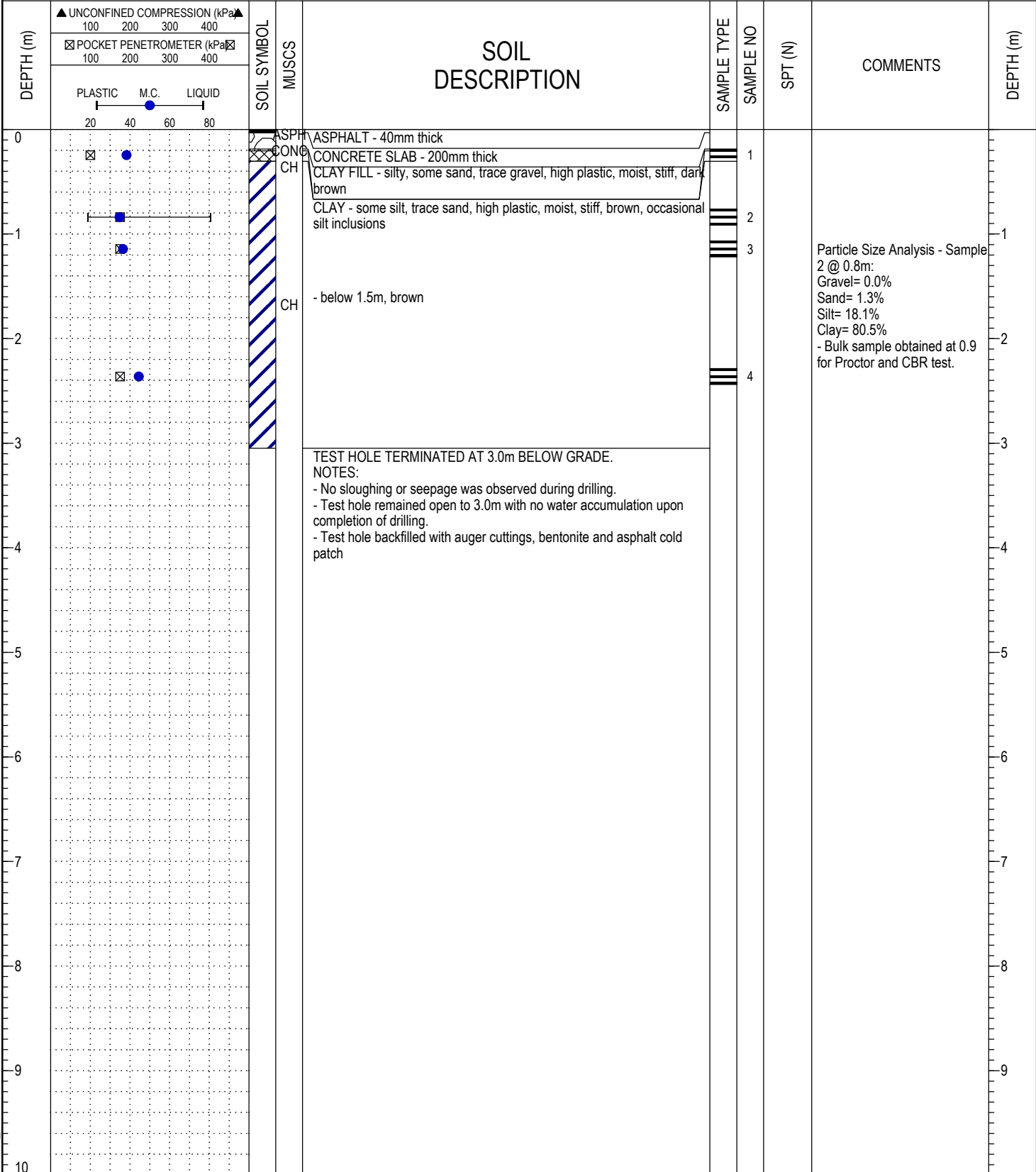


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LOGGED BY: AL	COMPLETION DEPTH: 3 m
REVIEWED BY: JP	COMPLETION DATE: September 18, 2020
Figure No.	Sheet 1 of 1

PROJECT: City of Wpg Street Investigation (20-2914)	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: PAN-02
CLIENT: Dillon Consulting	DRILL RIG: Truck Mounted B40	PROJECT No: WX19168
LOCATION: Pandora Ave, East, Winnipeg, MB	DRILL METHOD: 138mm Core & 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE	<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample	<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout	<input type="checkbox"/> Slough	<input type="checkbox"/> Sand



WX19168 - DILLON_PANDORA_AVE. E.R1.GPJ 20/10/20 01:57 PM (WPG - GEOTECH LOG 1)

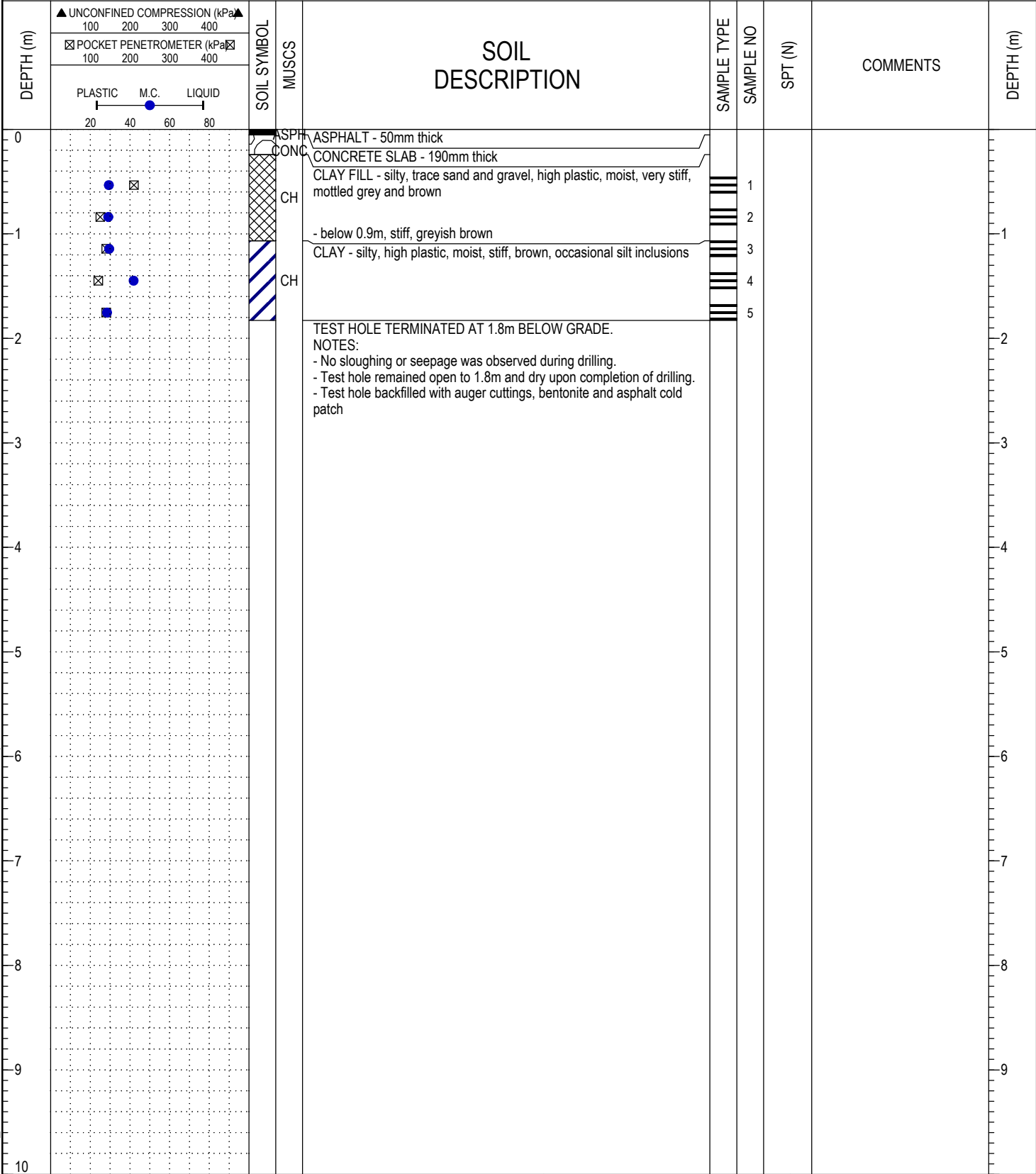


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LOGGED BY: JP	COMPLETION DEPTH: 3 m
REVIEWED BY: JP	COMPLETION DATE: September 27, 2020
Figure No.	Sheet 1 of 1

PROJECT: City of Wpg Street Investigation (20-2914)	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: PAN-03
CLIENT: Dillon Consulting	DRILL RIG: Truck Mounted B40	PROJECT No: WX19168
LOCATION: Pandora Ave, East, Winnipeg, MB	DRILL METHOD: 138mm Core & 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE	<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample	<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout	<input type="checkbox"/> Slough	<input type="checkbox"/> Sand



WX19168 - DILLON_PANDORA_AVE. E R1.GPJ 20/10/20 01:58 PM (WPG - GEOTECH LOG 1)

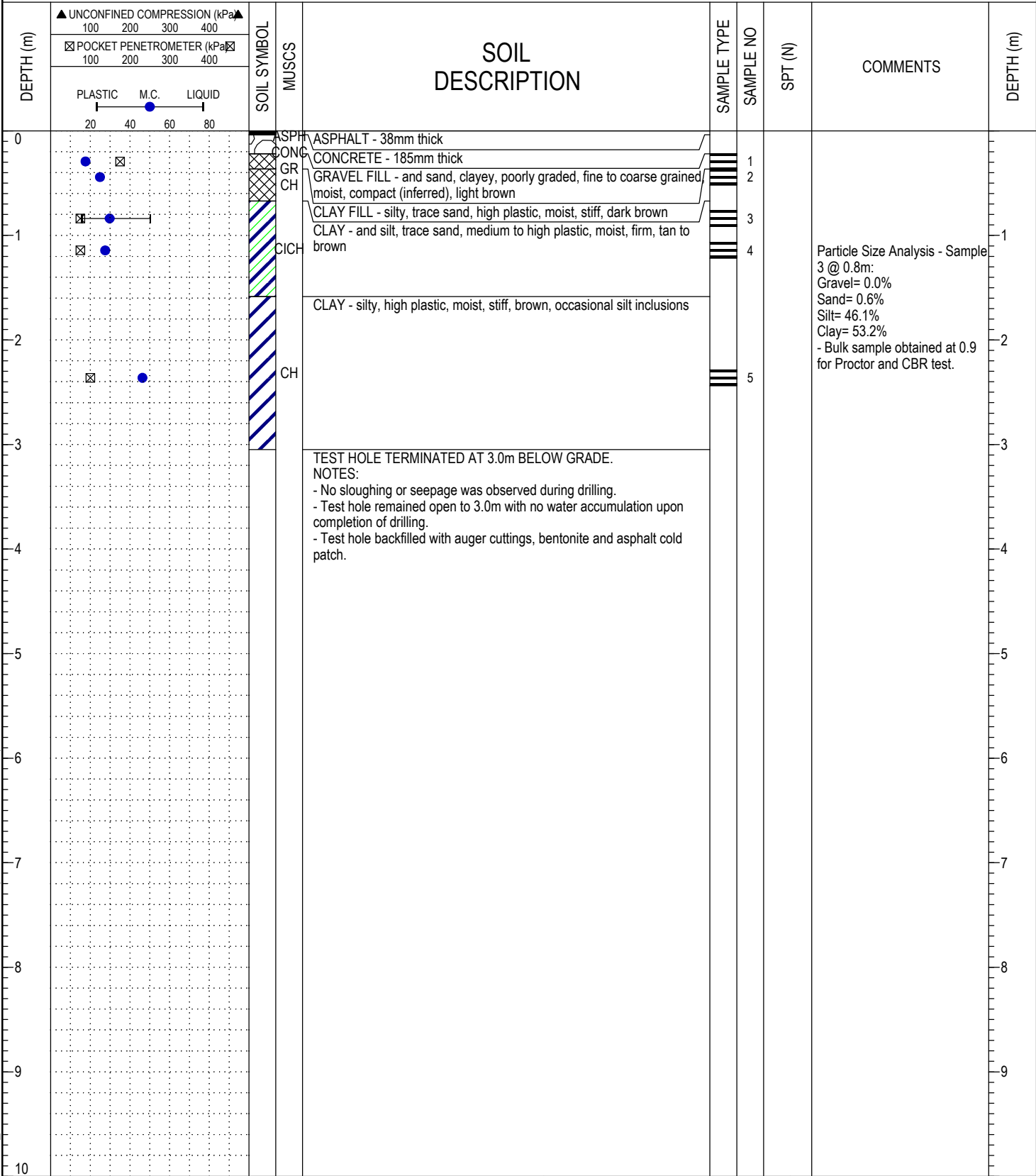


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REVIEWED BY: JP	COMPLETION DATE: September 18, 2020
Figure No.	Sheet 1 of 1

PROJECT: City of Wpg Street Investigation (20-2914)	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: PAN-04
CLIENT: Dillon Consulting	DRILL RIG: Truck Mounted B40	PROJECT No: WX19168
LOCATION: Pandora Ave, East, Winnipeg, MB	DRILL METHOD: 138mm Core & 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE	<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample	<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout	<input type="checkbox"/> Slough	<input type="checkbox"/> Sand



WX19168 - DILLON_PANDORA_AVE. E.R1.GPJ 20/10/20 01:58 PM (WPG - GEOTECH LOG 1)

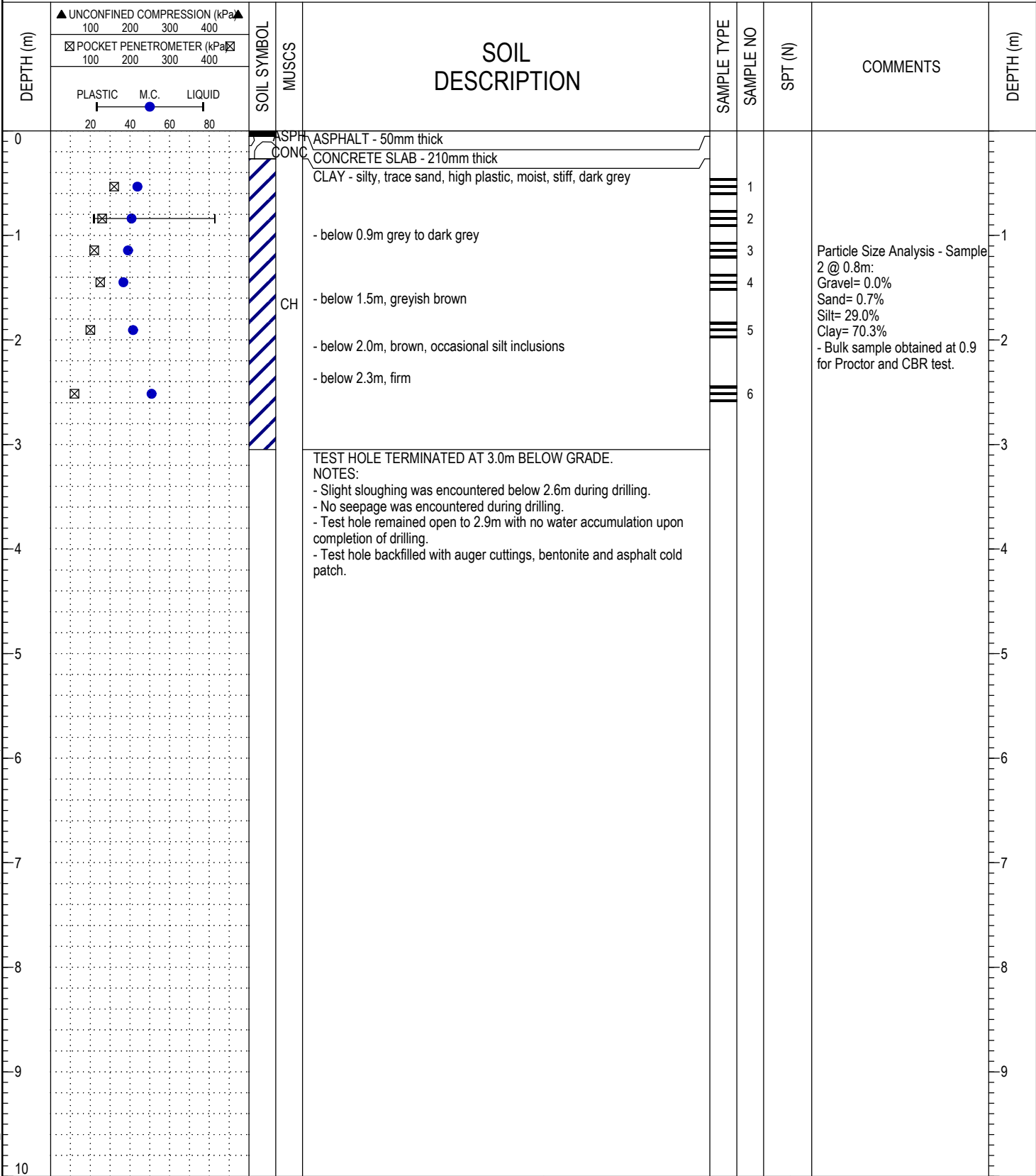


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LOGGED BY: JP	COMPLETION DEPTH: 3 m
REVIEWED BY: JP	COMPLETION DATE: September 27, 2020
Figure No.	Sheet 1 of 1

PROJECT: City of Wpg Street Investigation (20-2914)	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: PAN-05
CLIENT: Dillon Consulting	DRILL RIG: Truck Mounted B40	PROJECT No: WX19168
LOCATION: Pandora Ave, East, Winnipeg, MB	DRILL METHOD: 138mm Core & 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE	<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample	<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout	<input type="checkbox"/> Slough	<input type="checkbox"/> Sand



WX19168 - DILLON_PANDORA_AVE. ER1.GPJ 20/10/20 01:58 PM (WPG - GEOTECH LOG 1)

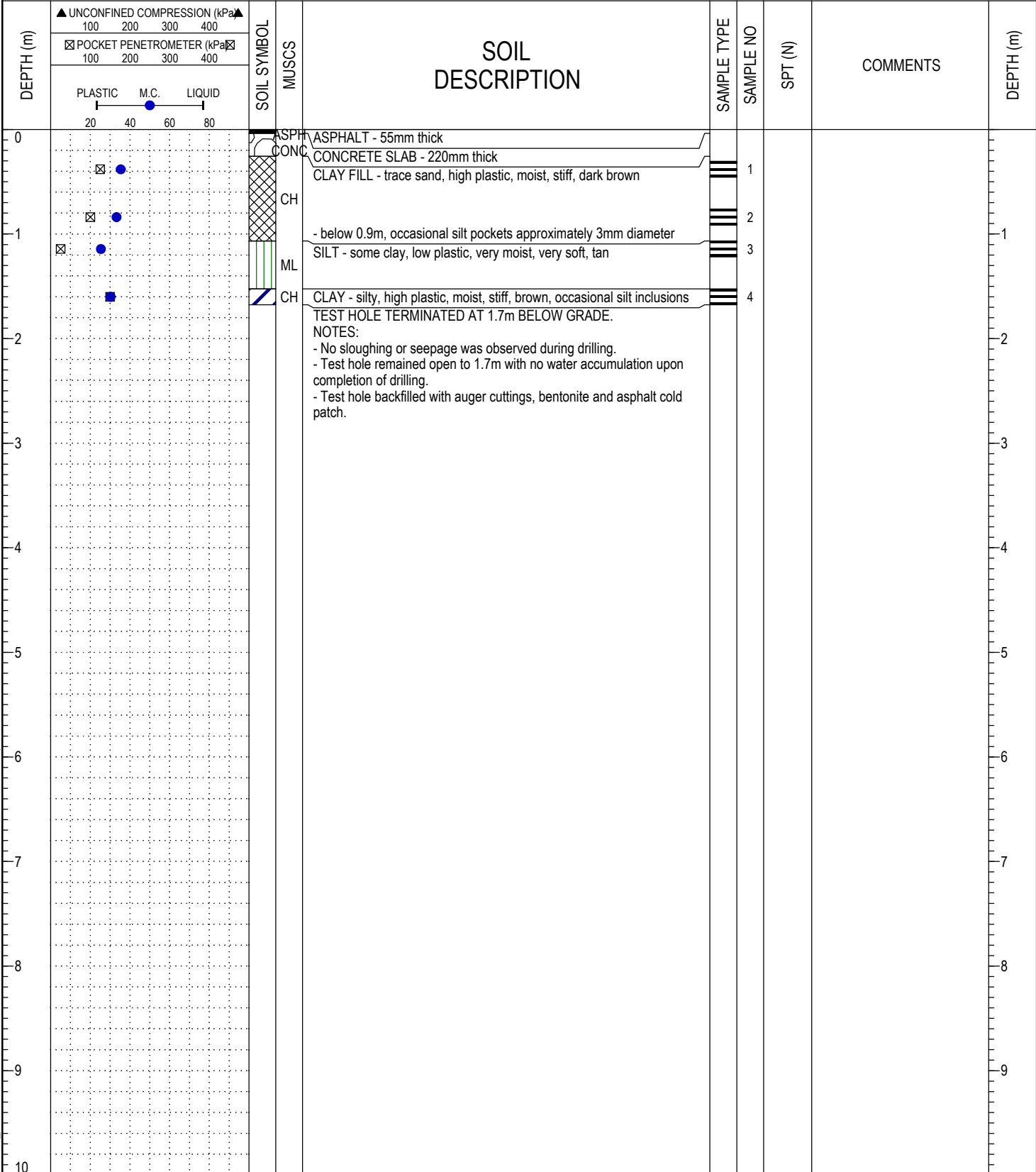


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LOGGED BY: AL	COMPLETION DEPTH: 3 m
REVIEWED BY: JP	COMPLETION DATE: September 18, 2020
Figure No.	Sheet 1 of 1

PROJECT: City of Wpg Street Investigation (20-2914)	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: PAN-06
CLIENT: Dillon Consulting	DRILL RIG: Truck Mounted B40	PROJECT No: WX19168
LOCATION: Pandora Ave, East, Winnipeg, MB	DRILL METHOD: 138mm Core & 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE	<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample	<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout	<input type="checkbox"/> Slough	<input type="checkbox"/> Sand



WX19168 - DILLON_PANDORA_AVE_E.R1.GPJ 20/10/2020 01:58 PM (WPG - GEOTECH LOG 1)

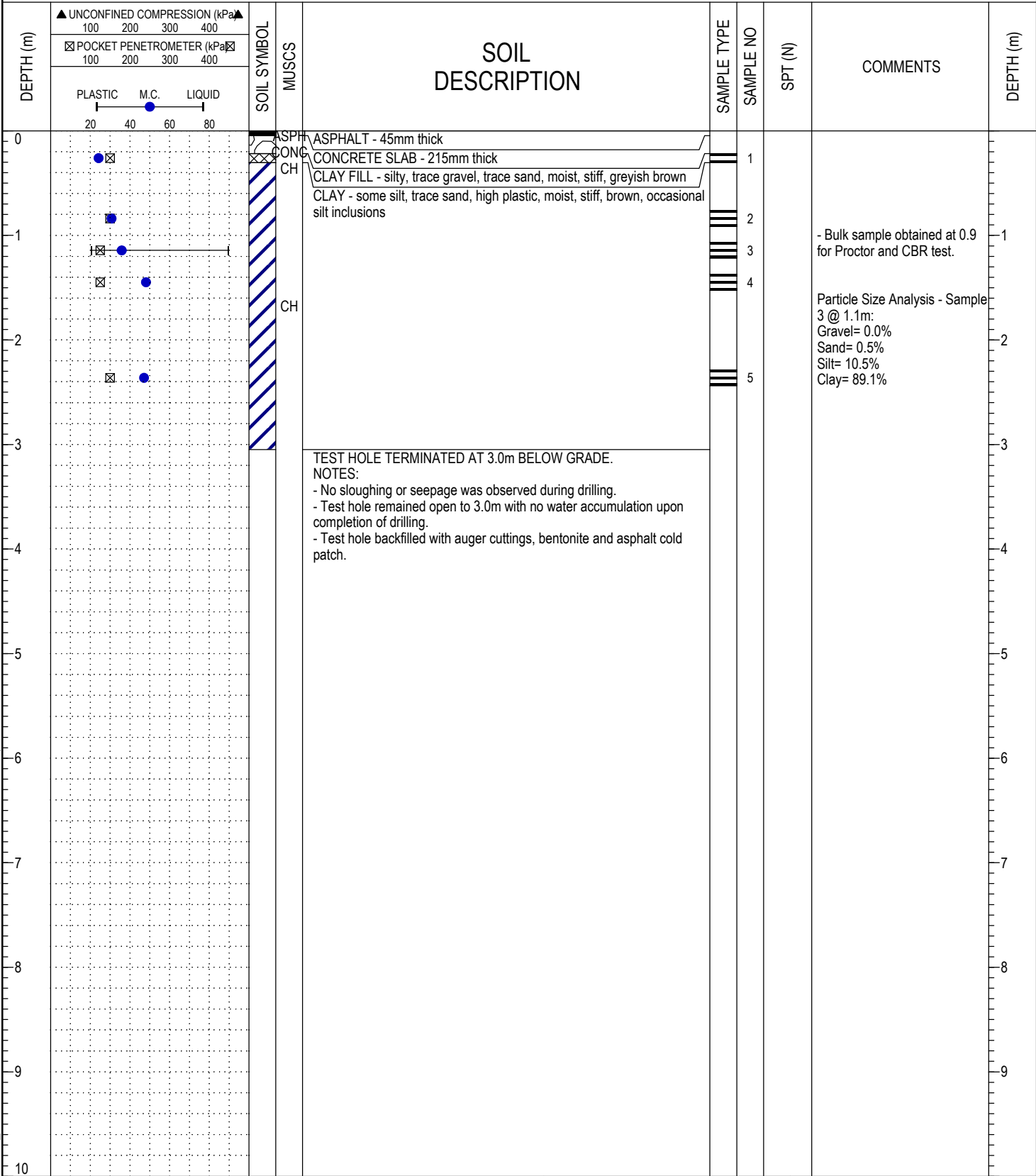


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LOGGED BY: JP	COMPLETION DEPTH: 1.7 m
REVIEWED BY: JP	COMPLETION DATE: September 26, 2020
Figure No.	Sheet 1 of 1

PROJECT: City of Wpg Street Investigation (20-2914)	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: PAN-07
CLIENT: Dillon Consulting	DRILL RIG: Truck Mounted B40	PROJECT No: WX19168
LOCATION: Pandora Ave, East, Winnipeg, MB	DRILL METHOD: 138mm Core & 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE	<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample	<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout	<input type="checkbox"/> Slough	<input type="checkbox"/> Sand



WX19168 - DILLON_PANDORA_AVE. E.R1.GPJ 20/10/02 01:58 PM (WPG - GEOTECH LOG 1)

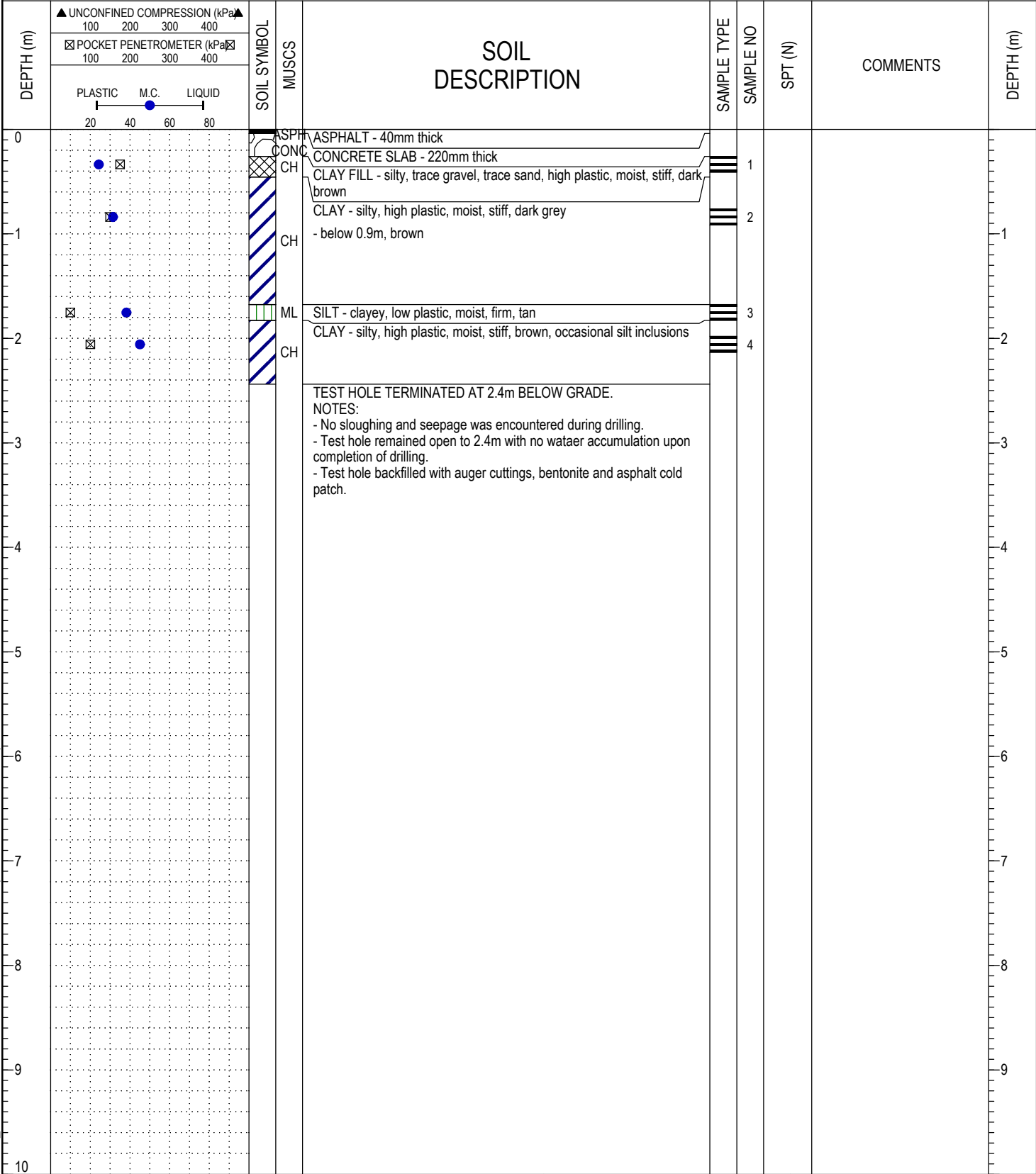


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LOGGED BY: JP	COMPLETION DEPTH: 3 m
REVIEWED BY: JP	COMPLETION DATE: September 26, 2020
Figure No.	Sheet 1 of 1

PROJECT: City of Wpg Street Investigation (20-2914)	DRILLER: Maple Leaf Drilling Ltd.	TEST HOLE ID: PAN-08
CLIENT: Dillon Consulting	DRILL RIG: Truck Mounted B40	PROJECT No: WX19168
LOCATION: Pandora Ave, East, Winnipeg, MB	DRILL METHOD: 138mm Core & 125mm SSA	ELEVATION: Not Surveyed

SAMPLE TYPE	<input checked="" type="checkbox"/> Shelby Tube	<input type="checkbox"/> No Recovery	<input checked="" type="checkbox"/> SPT (N)	<input type="checkbox"/> Grab Sample	<input type="checkbox"/> Split-Pen	<input type="checkbox"/> Core
BACKFILL TYPE	<input checked="" type="checkbox"/> Bentonite	<input type="checkbox"/> Pea Gravel	<input checked="" type="checkbox"/> Drill Cuttings	<input type="checkbox"/> Grout	<input type="checkbox"/> Slough	<input type="checkbox"/> Sand



WX19168 - DILLON_PANDORA_AVE. E.R1.GPJ 20/10/20 01:58 PM (WPG - GEOTECH LOG 1)



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REVIEWED BY: JP	COMPLETION DATE: September 26, 2020
Figure No.	Sheet 1 of 1

EXPLANATION OF TERMS AND SYMBOLS

The terms and symbols used on the borehole logs to summarize the results of field investigation and subsequent laboratory testing are described in these pages.

It should be noted that materials, boundaries and conditions have been established only at the borehole locations at the time of investigation and are not necessarily representative of subsurface conditions elsewhere across the site.

TEST DATA

Data obtained during the field investigation and from laboratory testing are shown at the appropriate depth interval.

Abbreviations, graphic symbols, and relevant test method designations are as follows:

*C	Consolidation test	*ST	Swelling test
D _R	Relative density	TV	Torvane shear strength
*k	Permeability coefficient	VS	Vane shear strength
*MA	Mechanical grain size analysis and hydrometer test	w	Natural Moisture Content (ASTM D2216)
N	Standard Penetration Test (CSA A119.1-60)	w _l	Liquid limit (ASTM D 423)
N _d	Dynamic cone penetration test	w _p	Plastic Limit (ASTM D 424)
NP	Non plastic soil	E _f	Unit strain at failure
pp	Pocket penetrometer strength	γ	Unit weight of soil or rock
*q	Triaxial compression test	γ _d	Dry unit weight of soil or rock
q _u	Unconfined compressive strength	ρ	Density of soil or rock
*SB	Shearbox test	ρ _d	Dry Density of soil or rock
SO ₄	Concentration of water-soluble sulphate	C _u	Undrained shear strength
		→	Seepage
		▼	Observed water level

* The results of these tests are usually reported separately

Soils are classified and described according to their engineering properties and behaviour.

The soil of each stratum is described using the Unified Soil Classification System¹ modified slightly so that an inorganic clay of "medium plasticity" is recognized.

The modifying adjectives used to define the actual or estimated percentage range by weight of minor components are consistent with the Canadian Foundation Engineering Manual².

Relative Density and Consistency:

<u>Cohesionless Soils</u>		<u>Cohesive Soils</u>		
Relative Density	SPT (N) Value	Consistency	Undrained Shear Strength c _u (kPa)	Approximate SPT (N) Value
Very Loose	0-4	Very Soft	0-12	0-2
Loose	4-10	Soft	12-25	2-4
Compact	10-30	Firm	25-50	4-8
Dense	30-50	Stiff	50-100	8-15
Very Dense	>50	Very Stiff	100-200	15-30
		Hard	>200	>30

Standard Penetration Resistance ("N" value)

The number of blows by a 63.6kg hammer dropped 760 mm to drive a 50 mm diameter open sampler attached to "A" drill rods for a distance of 300 mm after an initial penetration of 150 mm.

¹ "Unified Soil Classification System", Technical Memorandum 36-357 prepared by Waterways Experiment Station, Vicksburg, Mississippi, Corps of Engineers, U.S. Army. Vol. 1 March 1953.

² "Canadian Foundation Engineering Manual", 3rd Edition, Canadian Geotechnical Society, 1992.

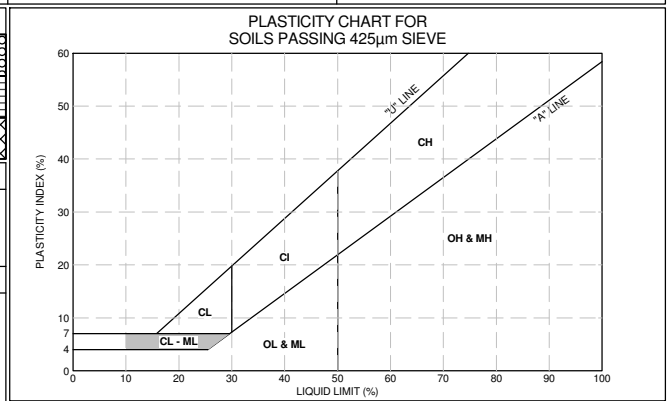
MODIFIED UNIFIED CLASSIFICATION SYSTEM FOR SOILS

MAJOR DIVISIONS			SYMBOLS			TYPICAL DESCRIPTION	LABORATORY CLASSIFICATION CRITERIA
			USCS	GRAPH	COLOUR		
COARSE GRAINED SOILS (MORE THAN HALF BY WEIGHT LARGER THAN 75µm)	GRAVELS MORE THAN HALF THE COARSE FRACTION LARGER THAN 4.75mm	CLEAN GRAVELS (TRACE OR NO FINES)	GW		RED	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	$C_u = D_{60}/D_{10} > 4$; $C_c = (D_{30})^2 / (D_{10} \times D_{60}) = 1 \text{ to } 3$
			GP		RED	POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS
		DIRTY GRAVELS (WITH SOME OR MORE FINES)	GM		YELLOW	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	ATTERBERG LIMITS BELOW "A" LINE OR PI LESS THAN 4
			GC		YELLOW	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES	ATTERBERG LIMITS ABOVE "A" LINE AND PI MORE THAN 7
	SANDS MORE THAN HALF THE COARSE FRACTION SMALLER THAN 4.75mm	CLEAN SANDS (TRACE OR NO FINES)	SW		RED	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	$C_u = D_{60}/D_{10} > 6$; $C_c = (D_{30})^2 / (D_{10} \times D_{60}) = 1 \text{ to } 3$
			SP		RED	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	NOT MEETING ABOVE REQUIREMENTS
		DIRTY SANDS (WITH SOME OR MORE FINES)	SM		YELLOW	SILTY SANDS, SAND-SILT MIXTURES	ATTERBERG LIMITS BELOW "A" LINE OR PI LESS THAN 4
			SC		YELLOW	CLAYEY SANDS, SAND-CLAY MIXTURES	ATTERBERG LIMITS ABOVE "A" LINE AND PI MORE THAN 7
FINE-GRAINED SOILS (MORE THAN HALF BY WEIGHT SMALLER THAN 75µm)	SILTS BELOW "A" LINE NEGLECTIBLE ORGANIC CONTENT	$W_L < 50\%$	ML		GREEN	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY SANDS OF SLIGHT PLASTICITY	CLASSIFICATION IS BASED UPON PLASTICITY CHART (SEE BELOW)
		$W_L > 50\%$	MH		BLUE	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS, FINE SAND OR SILTY SOILS	
	CLAYS ABOVE "A" LINE NEGLECTIBLE ORGANIC CONTENT	$W_L < 30\%$	CL		GREEN	INORGANIC CLAYS OF LOW PLASTICITY, GRAVELLY, SANDY OR SILTY CLAYS, LEAN CLAYS	
		$30\% < W_L < 50\%$	CI		GREEN-BLUE	INORGANIC CLAYS OF MEDIUM PLASTICITY, SILTY CLAYS	
		$W_L > 50\%$	CH		BLUE	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS	
	ORGANIC SILTS & CLAYS BELOW "A" LINE	$W_L < 50\%$	OL		GREEN	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	WHENEVER THE NATURE OF THE FINES CONTENT HAS NOT BEEN DETERMINED, IT IS DESIGNATED BY THE LETTER "F", E.G. SF IS A MIXTURE OF SAND WITH SILT OR CLAY
		$W_L > 50\%$	OH		BLUE	ORGANIC CLAYS OF HIGH PLASTICITY	
	HIGHLY ORGANIC SOILS			PT		ORANGE	PEAT AND OTHER HIGHLY ORGANIC SOILS

SPECIAL SYMBOLS			
LIMESTONE		OILSAND	
SANDSTONE		SHALE	
SILTSTONE		FILL (UNDIFFERENTIATED)	

SOIL COMPONENTS				
FRACTION	U.S. STANDARD METRIC SIEVE SIZE		DEFINING RANGES OF PERCENT BY WEIGHT OF MINOR COMPONENTS	
	PASSING	RETAINED	PERCENT	DESCRIPTOR
GRAVEL	76mm	19mm	35 - 50	AND
	COARSE	19mm		
SAND	COARSE	4.75mm	2.00mm	Y / EY
	MEDIUM	2.00mm	425µm	SOME
	FINE	425µm	75µm	TRACE
FINES (SILT OR CLAY BASED ON PLASTICITY)	75µm		1 - 10	TRACE

OVERSIZED MATERIAL	
ROUNDED OR SUBROUNDED: COBBLES 76mm to 200mm BOULDERS > 200mm	NOT ROUNDED: ROCK FRAGMENTS ? 76mm ROCKS > 0.76 CUBIC METRE IN VOLUME



- NOTES:**
- ALL SIEVE SIZES MENTIONED ARE U.S. STANDARD ASTM E.11.
 - COARSE GRAINED SOILS WITH TRACE TO SOME FINES GIVEN COMBINED GROUP SYMBOLS, E.G. GW-GC IS A WELL GRADED GRAVEL SAND MIXTURE WITH TRACE TO SOME CLAY.
 - DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS.

California Bearing Ratio

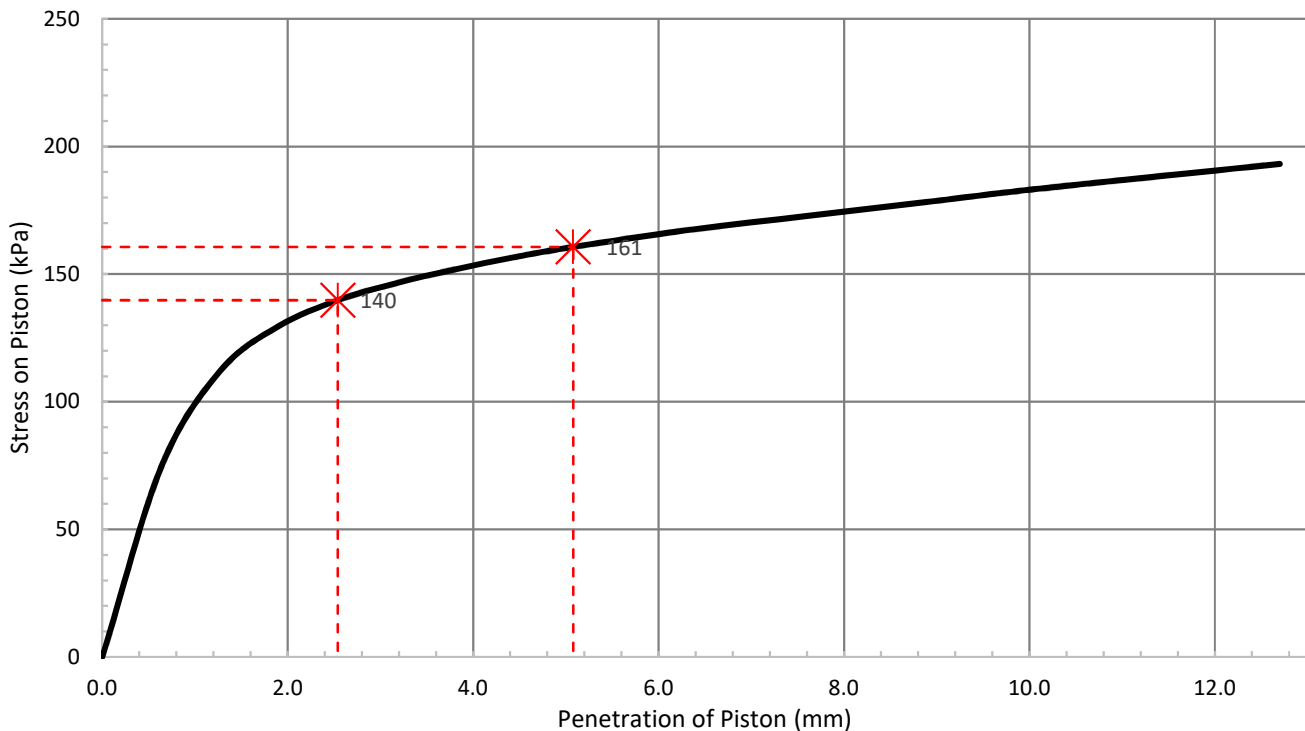
ASTM D1883-16, Soaking Method



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Type of Preparation	Standard ASTM D698	Sample Preparation	Soaked
Maximum Dry Density	1453 kg/m ³	Soaking time	96 hrs
Optimum Moisture Content	27.3 %	Top 1 Inch Soaked Moisture	39.4 %
Compacted Dry Density	1458 kg/m ³	Bottom 1 Inch Soaked Moisture	32.4 %
Compacted Moisture Content	27.7 %	Average Soaked Moisture	34.7 %
Percent Compaction	100% %	Mass of Surcharge	4.54 kg

Corrected Penetration (mm)	Standard Load of Crushed Stone (kPa)	Corrected Load (kPa)	CBR (%)
2.540	6900	140	2.0
5.080	10300	161	1.6



Client: Dillon
 Project No: WX19168
 Date: October 20, 2020
 Technologist: Mdnazri Mohidin

Project: C.O.W. Street Investigation
 Site Location: TH01-PAN
 Request No: N/A
 Reviewed By: Caolan McEvoy

Soil Description: Clay

Liquid Limit _____ Plastic Limit _____ Plasticity Index _____ Swell 0.96%

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of the test results will be provided only upon written request. If you are not the Intended recipient please notify us by telephone as soon as possible and either return the message by post or destroy it. If you are not the intended recipient, any use by you of its contents is prohibited.

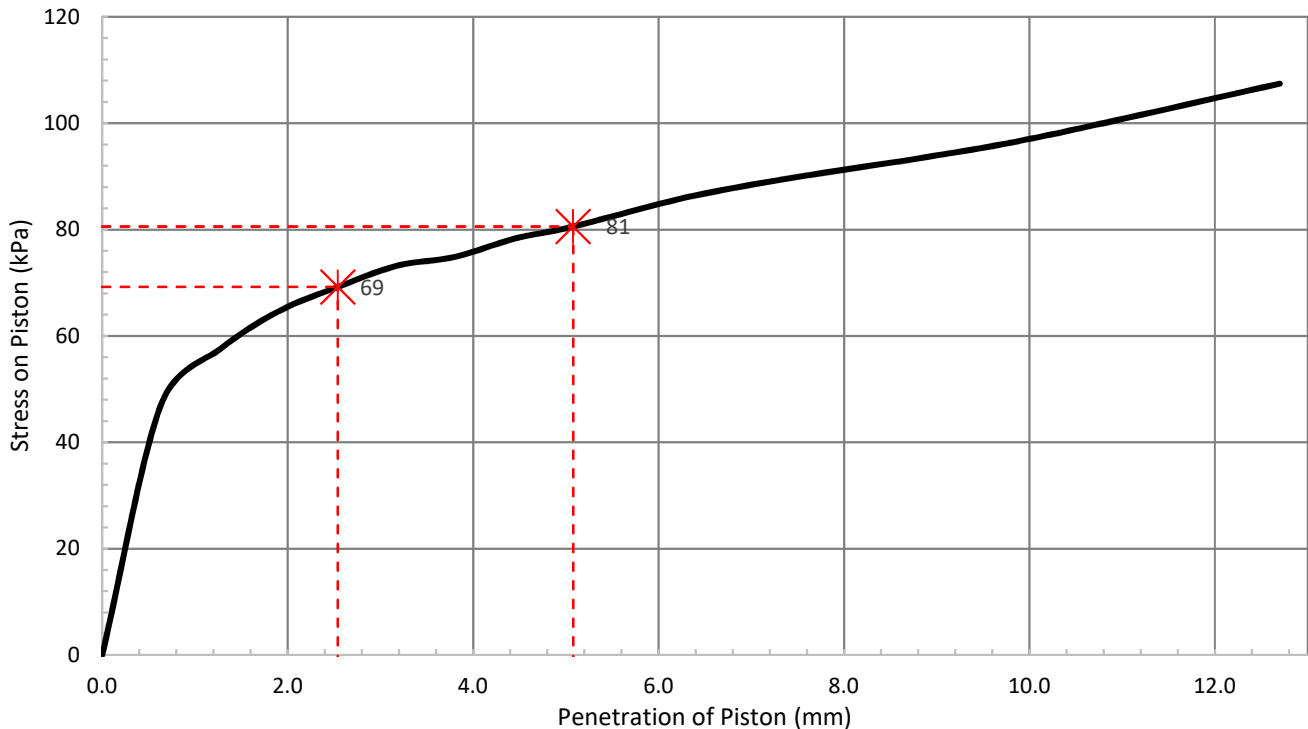
California Bearing Ratio
ASTM D1883-16, Soaking Method



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Type of Preparation	Standard ASTM D698	Sample Preparation	Soaked
Maximum Dry Density	1343 kg/m ³	Soaking time	96 hrs
Optimum Moisture Content	31.3 %	Top 1 Inch Soaked Moisture	52.2 %
Compacted Dry Density	1338 kg/m ³	Bottom 1 Inch Soaked Moisture	37.5 %
Compacted Moisture Content	30.7 %	Average Soaked Moisture	42.9 %
Percent Compaction	100% %	Mass of Surcharge	4.54 kg

Corrected Penetration (mm)	Standard Load of Crushed Stone (kPa)	Corrected Load (kPa)	CBR (%)
2.540	6900	69	1.0
5.080	10300	81	0.8



Client: Dillon
 Project No: WX19168
 Date: October 20, 2020
 Technologist: Mdnazri Mohidin

Project: C.O.W. Street Investigation
 Site Location: TH02-PAN
 Request No: N/A
 Reviewed By: Caolan McEvoy

Soil Description: Clay

Liquid Limit _____ Plastic Limit _____ Plasticity Index _____ Swell 0.81%

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of the test results will be provided only upon written request. If you are not the Intended recipient please notify us by telephone as soon as possible and either return the message by post or destroy it. If you are not the intended recipient, any use by you of its contents is prohibited.

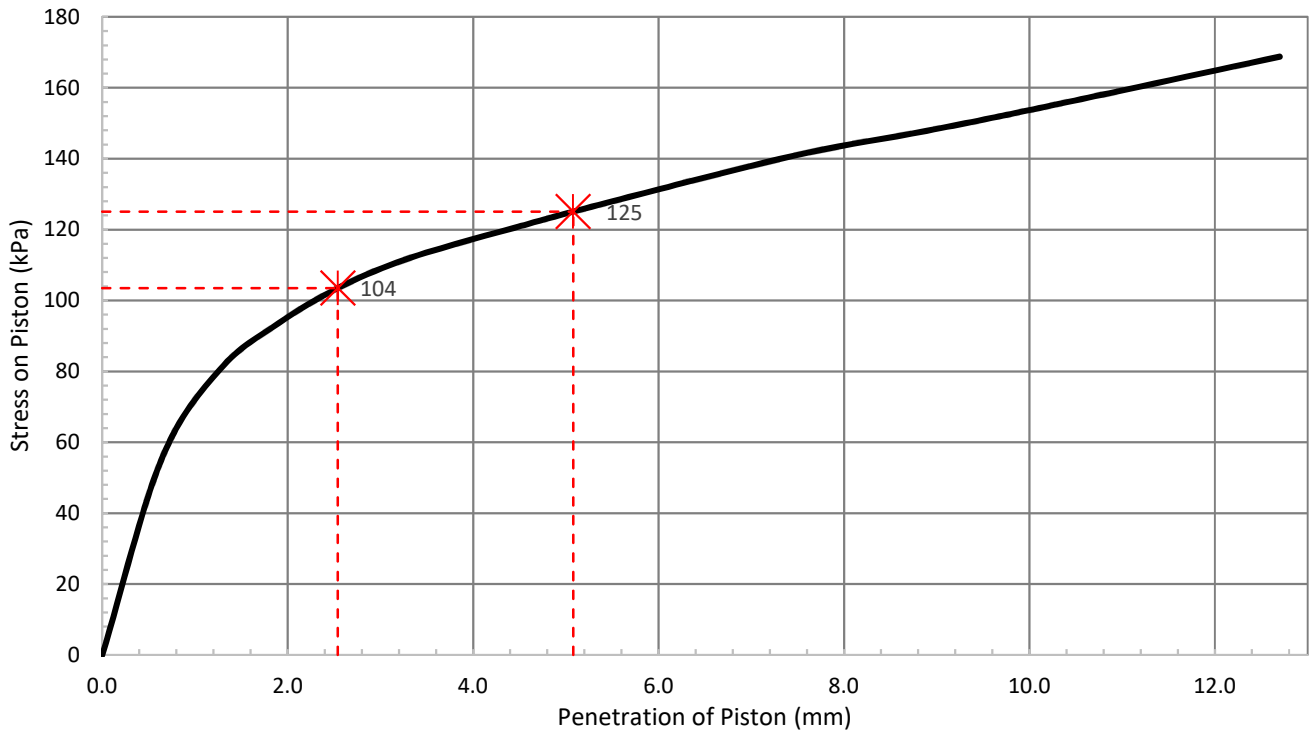
California Bearing Ratio
ASTM D1883-16, Soaking Method



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Type of Preparation	Standard ASTM D698	Sample Preparation	Soaked
Maximum Dry Density	1467 kg/m ³	Soaking time	96 hrs
Optimum Moisture Content	26.2 %	Top 1 Inch Soaked Moisture	41.9 %
Compacted Dry Density	1461 kg/m ³	Bottom 1 Inch Soaked Moisture	30.3 %
Compacted Moisture Content	26.4 %	Average Soaked Moisture	34.3 %
Percent Compaction	100% %	Mass of Surcharge	4.54 kg

Corrected Penetration (mm)	Standard Load of Crushed Stone (kPa)	Corrected Load (kPa)	CBR (%)
2.540	6900	104	1.5
5.080	10300	125	1.2



Client: Dillon
 Project No: WX19168
 Date: October 27, 2020
 Technologist: Mdnazri Mohidin

Project: C.O.W. Street Investigation
 Site Location: PAN-TH04
 Request No: N/A
 Reviewed By: Caolan McEvoy

Soil Description: Clay

Liquid Limit _____ Plastic Limit _____ Plasticity Index _____ Swell 0.56%

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of the test results will be provided only upon written request. If you are not the Intended recipient please notify us by telephone as soon as possible and either return the message by post or destroy it. If you are not the intended recipient, any use by you of its contents is prohibited.

California Bearing Ratio

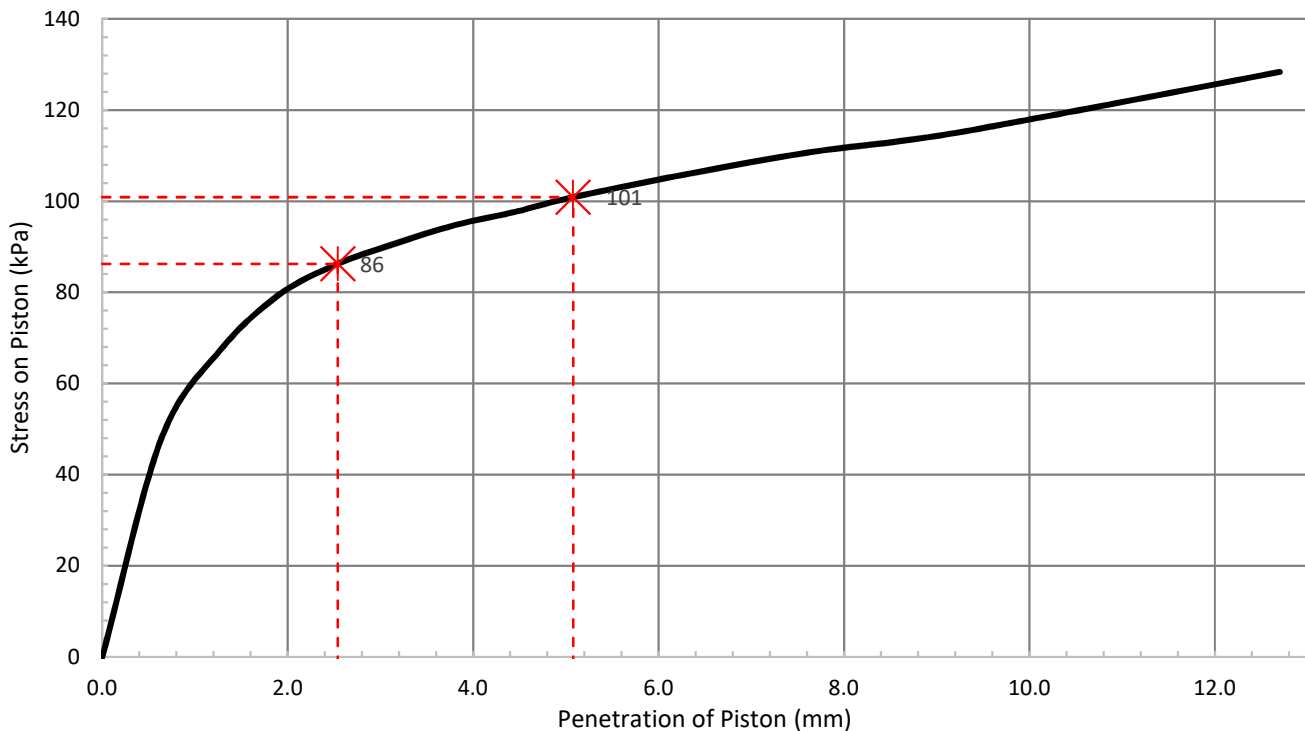
ASTM D1883-16, Soaking Method



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Type of Preparation	Standard ASTM D698	Sample Preparation	Soaked
Maximum Dry Density	1372 kg/m ³	Soaking time	96 hrs
Optimum Moisture Content	30.7 %	Top 1 Inch Soaked Moisture	47.9 %
Compacted Dry Density	1366 kg/m ³	Bottom 1 Inch Soaked Moisture	35.4 %
Compacted Moisture Content	30.4 %	Average Soaked Moisture	39.9 %
Percent Compaction	100% %	Mass of Surcharge	4.54 kg

Corrected Penetration (mm)	Standard Load of Crushed Stone (kPa)	Corrected Load (kPa)	CBR (%)
2.540	6900	86	1.3
5.080	10300	101	1.0



Client: Dillon
 Project No: WX19168
 Date: October 27, 2020
 Technologist: Mdnazri Mohidin

Project: C.O.W. Street Investigation
 Site Location: PAN-TH05
 Request No: N/A
 Reviewed By: Caolan McEvoy

Soil Description: Clay

Liquid Limit _____ Plastic Limit _____ Plasticity Index _____ Swell 1.67%

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of the test results will be provided only upon written request. If you are not the Intended recipient please notify us by telephone as soon as possible and either return the message by post or destroy it. If you are not the intended recipient, any use by you of its contents is prohibited.

California Bearing Ratio

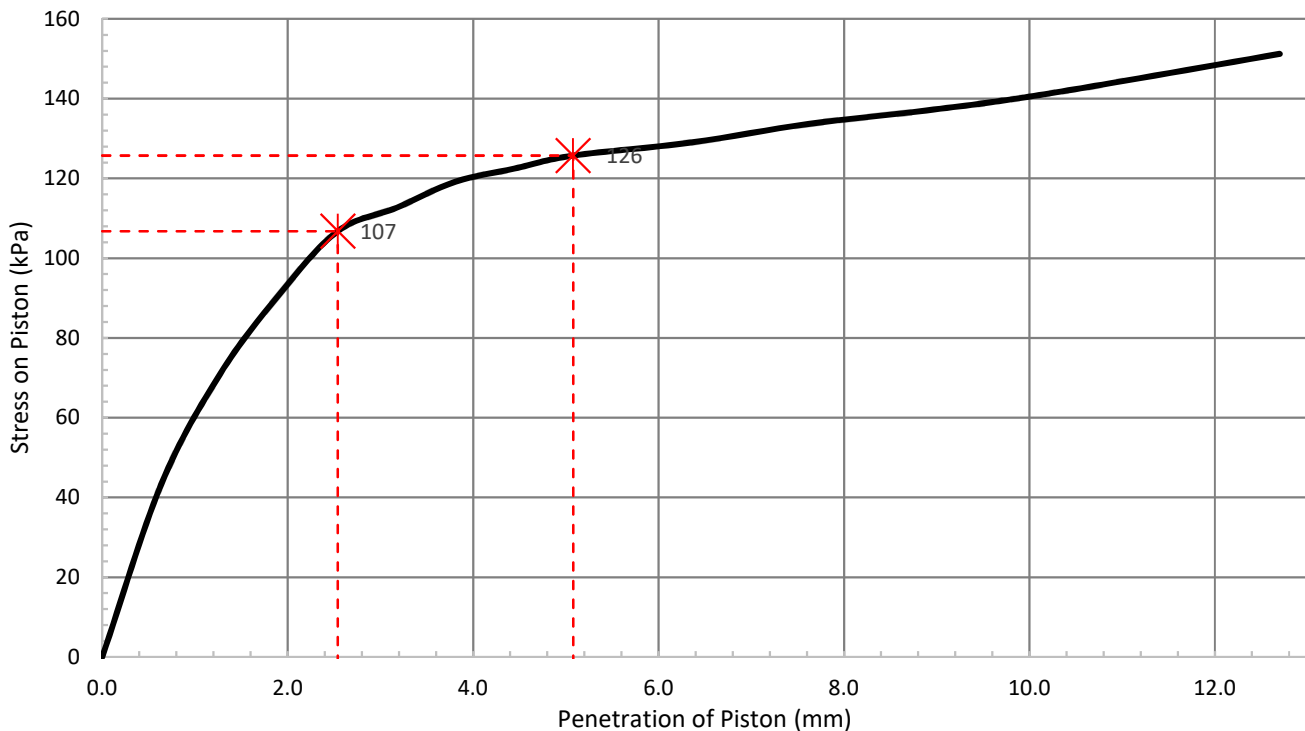
ASTM D1883-16, Soaking Method



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Type of Preparation	Standard ASTM D698	Sample Preparation	Soaked
Maximum Dry Density	1397 kg/m ³	Soaking time	96 hrs
Optimum Moisture Content	29 %	Top 1 Inch Soaked Moisture	43.8 %
Compacted Dry Density	1391 kg/m ³	Bottom 1 Inch Soaked Moisture	33.6 %
Compacted Moisture Content	28.9 %	Average Soaked Moisture	37.2 %
Percent Compaction	100% %	Mass of Surcharge	4.54 kg

Corrected Penetration (mm)	Standard Load of Crushed Stone (kPa)	Corrected Load (kPa)	CBR (%)
2.540	6900	107	1.5
5.080	10300	126	1.2



Client: Dillon
 Project No: WX19168
 Date: October 27, 2020
 Technologist: Mdnazri Mohidin

Project: C.O.W. Street Investigation
 Site Location: PAN-TH07
 Request No: N/A
 Reviewed By: Caolan McEvoy

Soil Description: Clay

Liquid Limit _____ Plastic Limit _____ Plasticity Index _____ Swell 1.45%

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of the test results will be provided only upon written request. If you are not the Intended recipient please notify us by telephone as soon as possible and either return the message by post or destroy it. If you are not the intended recipient, any use by you of its contents is prohibited.