THE CITY OF WINNIPEG

BID OPPORTUNITY

BID OPPORTUNITY NO. 64-2016

2016 LOCAL STREET RENEWAL PROGRAM: AIKINS STREET AND VARIOUS OTHER LOCATIONS

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PART B - BIDDING PROCEDURES

B1. CONTRACT TITLE

B1.1 2016 LOCAL STREET RENEWAL PROGRAM: AIKINS STREET AND VARIOUS OTHER LOCATIONS

B2. SUBMISSION DEADLINE

B2.1 The Submission Deadline is 12:00 noon Winnipeg time, April 14, 2016.

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

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

B3. ENQUIRIES

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

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

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

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

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

B4. CONFIDENTIALITY

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

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

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

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

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

B5. ADDENDA

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

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

B5.2.1 Addenda will be available on the Bid Opportunities page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/bidopp.asp

B5.2.2 The Bidder is responsible for ensuring that he/she has received all addenda and is advised to check the Materials Management Division website for addenda regularly and shortly before the Submission Deadline, as may be amended by addendum.

B5.3 The Bidder shall acknowledge receipt of each addendum in Paragraph 10 of Form A: Bid. Failure to acknowledge receipt of an addendum may render a Bid non-responsive.

B6. SUBSTITUTES

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

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

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

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

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

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

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

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

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

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

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

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

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

B6.8 If the Contract Administrator approves a substitute as an “approved alternative”, any Bidder bidding that approved alternative may base his/her Total Bid Price upon the specified item but may also indicate an alternative price based upon the approved alternative. Such alternatives will be evaluated in accordance with B16.

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, hard copy;

(c) Bid Security

(i) Form G1: Bid Bond and Agreement to Bond, or
Form G2: Irrevocable Standby Letter of Credit and Undertaking, or
a certified cheque or draft;

B7.2 Further to B7.1, the Bidder should include the written correspondence from the Contract Administrator approving a substitute in accordance with B6.

B7.3 All components of the Bid shall be fully completed or provided, and submitted by the Bidder no later than the Submission Deadline, with all required entries made clearly and completely, to constitute a responsive Bid.

B7.4 The Bid shall be submitted enclosed and sealed in an envelope clearly marked with the Bid Opportunity number and the Bidder's name and address.

B7.4.1 Samples or other components of the Bid which cannot reasonably be enclosed in the envelope may be packaged separately, but shall be clearly marked with the Bid Opportunity number, the Bidder's name and address, and an indication that the contents are part of the Bidder’s Bid.

B7.4.2 A hard copy of Form B: Prices must be submitted with the Bid. If there is any discrepancy between the Adobe PDF version of Form B: Prices and the Microsoft Excel version of Form B: Prices, the PDF version shall take precedence.

B7.5 Bidders are advised not to include any information/literature except as requested in accordance with B7.1.

B7.6 Bidders are advised that inclusion of terms and conditions inconsistent with the Bid Opportunity document, including the General Conditions, will be evaluated in accordance with B16.1(a).

B7.7 Bids submitted by facsimile transmission (fax) or internet electronic mail (e-mail) will not be accepted.

B7.8 Bids shall be submitted to:

The City of Winnipeg
Corporate Finance Department
Materials Management Division
185 King Street, Main Floor
Winnipeg MB R3B 1J1

B8. BID

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

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

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

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

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

(d) if the Bidder is carrying on business under a name other than his/her own, the business name and the name of every partner or corporation who is the owner of such business name shall be inserted.

B8.2.1 If a Bid is submitted jointly by two or more persons, each and all such persons shall identify themselves in accordance with B8.2.

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

B8.4 Paragraph 12 of Form A: Bid shall be signed in accordance with the following requirements:

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

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

(c) if the Bidder is a corporation, it shall be signed by its duly authorized officer or officers and the corporate seal, if the corporation has one, shall be affixed;

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

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

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

B9. PRICES

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

B9.1.1 For the convenience of Bidders, and pursuant to B7.4.2 and B16.4.2, an electronic spreadsheet Form B: Prices in Microsoft Excel (.xls) format is available along with the Adobe PDF documents for this Bid Opportunity on the Bid Opportunities page at the Materials Management Division website at http://www.winnipeg.ca/matmgt/

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).

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. QUALIFICATION

B11.1 The Bidder shall:

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

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

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

B11.2 The Bidder and any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

B11.3 The Bidder and/or any proposed Subcontractor (for the portion of the Work proposed to be subcontracted to them) shall:

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

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

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

B11.4 Further to B11.3(c), the Bidder shall, within five (5) Business Days of a request by the Contract Administrator, provide proof satisfactory to the Contract Administrator that the Bidder/Subcontractor has a workplace safety and health program meeting the requirements of The Workplace Safety and Health Act (Manitoba), by providing:

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

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

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

B11.5 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.

B11.6 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.

B12. BID SECURITY

B12.1 The Bidder shall provide bid security in the form of:

(a) a bid bond, in the amount of at least ten percent (10%) of the Total Bid Price, and agreement to bond of a company registered to conduct the business of a surety in Manitoba, in the form included in the Bid Submission (Form G1: Bid Bond and Agreement to Bond); or

(b) an irrevocable standby letter of credit, in the amount of at least ten percent (10%) of the Total Bid Price, and undertaking issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form included in the Bid Submission (Form G2: Irrevocable Standby Letter of Credit and Undertaking); or

(c) a certified cheque or draft payable to "The City of Winnipeg", in the amount of at least fifty percent (50%) of the Total Bid Price, drawn on a bank or other financial institution registered to conduct business in Manitoba.

B12.1.1 If the Bidder submits alternative bids, the bid security shall be in the amount of the specified percentage of the highest Total Bid Price submitted.

B12.1.2 All signatures on bid securities shall be original.

B12.1.3 The Bidder shall sign the Bid Bond.

B12.1.4 The Surety shall sign and affix its corporate seal on the Bid Bond and the Agreement to Bond.

B12.2 The bid security of the successful Bidder and the next two lowest evaluated responsive and responsible Bidders will be released by the City when a Contract for the Work has been duly executed by the successful Bidder and the performance security furnished as provided herein. The bid securities of all other Bidders will be released when a Contract is awarded.

B12.2.1 Where the bid security provided by the successful Bidder is in the form of a certified cheque or draft pursuant to B12.1(c), it will be deposited and retained by the City as the performance security and no further submission is required.

B12.2.2 The City will not pay any interest on certified cheques or drafts furnished as bid security or subsequently retained as performance security.

B12.3 The bid securities of all Bidders will be released by the City as soon as practicable following notification by the Contract Administrator to the Bidders that no award of Contract will be made pursuant to the Bid Opportunity.

B13. OPENING OF BIDS AND RELEASE OF INFORMATION

B13.1 Bids will be opened publicly, after the Submission Deadline has elapsed, in the office of the Corporate Finance Department, Materials Management Division, or in such other office as may be designated by the Manager of Materials.

B13.1.1 Bidders or their representatives may attend.

B13.1.2 Bids determined by the Manager of Materials, or his/her designate, to not include the bid security specified in B12 will not be read out.

B13.2 Following the submission deadline, the names of the Bidders and their Total Bid Prices (unevaluated, and pending review and verification of conformance with requirements) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page at The City of Winnipeg, Corporate Finance, Materials Management Division website at http://www.winnipeg.ca/matmgt/

B13.3 After award of Contract, the name(s) of the successful Bidder(s) and the Contract amount(s) will be available on the Closed Bid Opportunities (or Public/Posted Opening & Award Results) page

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

B13.4 The Bidder is advised that any information contained in any Bid may be released if required by City policy or procedures, by The Freedom of Information and Protection of Privacy Act (Manitoba), by other authorities having jurisdiction, or by law.

B14. IRREVOCABLE BID

B14.1 The Bid(s) submitted by the Bidder shall be irrevocable for the time period specified in Paragraph 11 of Form A: Bid.

B14.2 The acceptance by the City of any Bid shall not release the Bids of the next two lowest evaluated responsive Bidders and these Bidders shall be bound by their Bids on such Work until a Contract for the Work has been duly executed and the performance security furnished as herein provided, but any Bid shall be deemed to have lapsed unless accepted within the time period specified in Paragraph 11 of Form A: Bid.

B15. WITHDRAWAL OF BIDS

B15.1 A Bidder may withdraw his/her Bid without penalty by giving written notice to the Manager of Materials at any time prior to the Submission Deadline.

B15.1.1 Notwithstanding C23.3, the time and date of receipt of any notice withdrawing a Bid shall be the time and date of receipt as determined by the Manager of Materials.

B15.1.2 The City will assume that any one of the contact persons named in Paragraph 3 of Form A: Bid or the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid, and only such person, has authority to give notice of withdrawal.

B15.1.3 If a Bidder gives notice of withdrawal prior to the Submission Deadline, the Manager of Materials will:

(a) retain the Bid until after the Submission Deadline has elapsed;

(b) open the Bid to identify the contact person named in Paragraph 3 of Form A: Bid and the Bidder's authorized representatives named in Paragraph 12 of Form A: Bid; and

(c) if the notice has been given by any one of the persons specified in B15.1.3(b), declare the Bid withdrawn.

B15.2 A Bidder who withdraws his/her Bid after the Submission Deadline but before his/her Bid has been released or has lapsed as provided for in B14.2 shall be liable for such damages as are imposed upon the Bidder by law and subject to such sanctions as the Chief Administrative Officer considers appropriate in the circumstances. The City, in such event, shall be entitled to all rights and remedies available to it at law, including the right to retain the Bidder's bid security.

B16. EVALUATION OF BIDS

B16.1 Award of the Contract shall be based on the following bid evaluation criteria:

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

(b) qualifications of the Bidder and the Subcontractors, if any, pursuant to B11 (pass/fail);

(c) Total Bid Price;

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

B16.2 Further to B16.1(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.

B16.3 Further to B16.1(b), the Award Authority shall reject any Bid submitted by a Bidder who does not demonstrate, in his/her Bid or in other information required to be submitted, that he/she is responsible and qualified.

B16.4 Further to B16.1(c), the Total Bid Price shall be the sum of the quantities multiplied by the unit rices for each item shown on Form B: Prices.

B16.4.1 Further to B16.1(a), in the event that a unit price is not provided on Form B: Prices, the City will determine the unit price by dividing the Amount (extended price) by the approximate quantity, for the purposes of evaluation and payment.

B16.4.2 The electronic Form B: Prices and the formulas imbedded in that spreadsheet are only provided for the convenience of Bidders. The City makes no representations or warranties as to the correctness of the imbedded formulas. It is the Bidder's responsibility to ensure the extensions of the unit prices and the sum of Total Bid Price performed as a function of the formulas within the electronic Form B: Prices are correct.

B17. AWARD OF CONTRACT

B17.1 The City will give notice of the award of the Contract or will give notice that no award will be made.

B17.2 The City will have no obligation to award a Contract to a Bidder, even though one or all of the Bidders are determined to be responsible and qualified, and the Bids are determined to be responsive.

B17.2.1 Without limiting the generality of B17.2, the City will have no obligation to award a Contract where:

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

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

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

(d) only one Bid is received; or

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

B17.3 The Work of this Contract is contingent upon Council approval of sufficient funding in the 2016 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.

B17.4 Where an award of Contract is made by the City, the award shall be made to the responsible and qualified Bidder submitting the lowest evaluated responsive Bid, in accordance with B16.

B17.4.1 Following the award of contract, a Bidder will be provided with information related to the evaluation of his/her Bid upon written request to the Contract Administrator.

PART C - GENERAL CONDITIONS

C0. GENERAL CONDITIONS

C0.1 The *General Conditions for Construction* (Revision 2006 12 15) are applicable to the Work of the Contract.

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

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

PART D - SUPPLEMENTAL CONDITIONS

GENERAL

D1. GENERAL CONDITIONS

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

D2. SCOPE OF WORK

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

(a) Concrete Reconstruction and Associated Works
  (i) Carruthers Avenue from Arlington Street to Parr Street
  (ii) Carruthers Avenue from McKenzie Street to McGregor Street
  (iii) Carruthers Avenue from Powers Street to Salter Street

(b) Asphalt Reconstruction and Associated Works
  (i) Powers Street from Burrows Avenue to Redwood Avenue
  (ii) Powers Street from Carruthers Avenue to Smithfield Avenue
  (iii) Aikins Street from Atlantic Avenue to Carruthers Avenue

D2.2 The major components of the Work are as follows:

(a) Concrete Reconstruction and Associated Works
  (i) Planing of existing asphalt at intersections for tie-ins as required
  (ii) Removal of existing pavement
  (iii) Removal of existing curb and sidewalk
  (iv) Excavation
  (v) Compaction of existing sub-grade
  (vi) Installation of catch basins and sewer service pipes
  (vii) Installation of subdrains
  (viii) Adjustment of existing pavement and boulevard structures
  (ix) Placement of separation geotextile fabric and geogrid
  (x) Placement of sub-base and base course materials
  (xi) Construct 150mm reinforced concrete pavement
  (xii) Construct 150mm concrete pavement (reinforced) at private approaches and tie-ins
  (xiii) Renewal of existing curbs as required
  (xiv) Renewal of existing sidewalks as required
  (xv) Installation of detectable warning surface tiles
  (xvi) Boulevard restoration
  (xvii) Placement of asphalt pavement at tie-ins as required

(b) Asphalt Reconstruction and Associated Works
  (i) Planing of existing asphalt at intersections for tie-ins as required
  (ii) Removal of existing pavement
  (iii) Removal of existing curb and sidewalk
  (iv) Excavation
  (v) Compaction of existing sub-grade
  (vi) Installation of catch basins and sewer service pipes
  (vii) Installation of subdrains
  (viii) Sewer repairs

(ix) Install new Manhole (Aikins)
(x) Adjustment of existing pavement and boulevard structures
(xi) Insulation of water services
(xii) Placement of separation geotextile fabric and geogrid
(xiii) Placement of sub-base and base course materials
(xiv) Construct 180mm barrier and modified barrier curb and gutter utilizing slip form paving equipment
(xv) Construct 150mm concrete pavement (reinforced) at commercial/private approaches and tie-ins
(xvi) Renewal of existing curbs as required
(xvii) Installation of detectable warning surface tiles
(xviii) Boulevard restoration
(xix) Placement of first 50mm of asphalt
(xx) Placement of final 50mm of asphalt
(xxi) Placement of asphalt pavement at tie-ins as required
(xxii) Renewal of existing sidewalks as required

D3. CONTRACT ADMINISTRATOR

D3.1 The Contract Administrator is:

Brad Besyk, C.E.T.
Technologist 3

Telephone No. (204) 470-4907
Facsimile No. (204) 986-5302

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

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

D4. CONTRACTOR'S SUPERVISOR

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

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

D5. OWNERSHIP OF INFORMATION, CONFIDENTIALITY AND NON DISCLOSURE

D5.1 The Contract, all deliverables produced or developed, and information provided to or acquired by the Contractor are the property of the City and shall not be appropriated for the Contractors own use, or for the use of any third party.

D5.2 The Contractor shall not make any public announcements or press releases regarding the Contract, without the prior written authorization of the Contract Administrator.

D5.3 The following shall be confidential and shall not be disclosed by the Contractor to the media or any member of the public without the prior written authorization of the Contract Administrator;

(a) information provided to the Contractor by the City or acquired by the Contractor during the course of the Work;

(b) the Contract, all deliverables produced or developed; and

(c) any statement of fact or opinion regarding any aspect of the Contract.

D5.4 A Contractor who violates any provision of D5 may be determined to be in breach of Contract.

D6. NOTICES

D6.1 Except as provided for in C23.2.2, all notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the Contractor shall be sent to the address or facsimile number identified by the Contractor in Paragraph 2 of Form A: Bid.

D6.2 All notices, requests, nominations, proposals, consents, approvals, statements, authorizations, documents or other communications to the City, except as expressly otherwise required in D6.3 or elsewhere in the Contract, shall be sent to the attention of the Contract Administrator at the facsimile number identified in D3.1.

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

The City of Winnipeg
Legal Services Department
Attn: Director of Legal Services

Facsimile No.: 204-947-9155

D6.4 Bids Submissions must be submitted to the address in B7.8.

D7. FURNISHING OF DOCUMENTS

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

SUBMISSIONS

D8. AUTHORITY TO CARRY ON BUSINESS

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

D9. SAFE WORK PLAN

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

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

D10. INSURANCE

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

(a) commercial general liability insurance, in the amount of at least two million dollars ($2,000,000.00) inclusive, with The City of Winnipeg added as an additional insured, with a cross-liability clause, such liability policy to also contain contractual liability, unlicensed motor vehicle liability, non-owned automobile liability, broad form property damage cover and products and completed operations, to remain in place at all times during the performance of the Work and throughout the warranty period;

(b) if applicable, Automobile Liability Insurance covering all motor vehicles, owned and operated and used or to be used by the Contractor directly or indirectly in the performance of the Work. The Limit of Liability shall not be less than $2,000,000 inclusive for loss or damage including personal injuries and death resulting from any one accident or occurrence;

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

D10.2 Deductibles shall be borne by the Contractor.

D10.3 The Contractor shall provide the City Solicitor with a certificate(s) of insurance, in a form satisfactory to the City Solicitor, at least two (2) Business Days prior to the commencement of any Work but in no event later than the date specified in the C4.1 for the return of the executed Contract.

D10.4 The Contractor shall not cancel, materially alter, or cause each policy to lapse without providing at least thirty (30) Calendar Days prior written notice to the Contract Administrator.

D11. PERFORMANCE SECURITY

D11.1 The Contractor shall provide and maintain performance security until the expiration of the warranty period in the form of:

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

(b) an irrevocable standby letter of credit issued by a bank or other financial institution registered to conduct business in Manitoba and drawn on a branch located in Winnipeg, in the form attached to these Supplemental Conditions (Form H2: Irrevocable Standby Letter of Credit), in the amount of fifty percent (50%) of the Contract Price; or

(c) a certified cheque or draft payable to “The City of Winnipeg”, drawn on a bank or other financial institution registered to conduct business in Manitoba, in the amount of fifty percent (50%) of the Contract Price.

D11.1.1 Where the performance security is in the form of a certified cheque or draft, it will be deposited by the City. The City will not pay any interest on certified cheques or drafts furnished as performance security.

D11.2 If the bid security provided in his/her Bid was not a certified cheque or draft pursuant to B12.1(c), the Contractor shall provide the City Solicitor with the required performance security within seven (7) Calendar Days of notification of the award of the Contract by way of letter of intent and prior to the commencement of any Work on the Site and in no event later than the date specified in the C4.1 for the return of the executed Contract.

D12. SUBCONTRACTOR LIST

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

D13. DETAILED WORK SCHEDULE

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

D13.2 The detailed work schedule shall consist of the following:

(a) a Gantt chart for the Work based on the C.P.M. schedule; and

acceptable to the Contract Administrator.

D13.3 Further to D13.2(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

D14. COMMENCEMENT

D14.1 The Contractor shall not commence any Work until he/she is in receipt of a letter of intent from the Award Authority authorizing the commencement of the Work.

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

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

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

D14.3 The Contractor shall not commence the Work on the Site before May 9, 2016, and shall commence the Work on Site no later than May 24, 2016, as directed by the Contract Administrator and weather permitting.

D14.4 The City intends to award this Contract by May 12, 2016.

D14.4.1 If the actual date of award is later than the intended date, the dates specified for Critical Stages, Substantial Performance, and Total Performance will be adjusted by the difference between the aforementioned intended and actual dates.

D15. WORKING DAYS

D15.1 Further to C1.1(jj);

D15.1.1 The Contract Administrator will determine daily if a Working Day has elapsed and will record his/her assessment. On a weekly basis the Contract Administrator will provide the Contractor with a record of the Working Days assessed for the preceding week. The Contractor shall sign each report signifying that he/she agrees with the Contract Administrator's determination of the Working Days assessed for the report period.

D15.1.2 Work done to restore the Site to a condition suitable for Work, shall not be considered "work" as defined in the definition of a Working Day.

D15.1.3 When the Work includes two or more major types of Work that can be performed under different atmospheric conditions, the Contract Administrator shall consider all major types of Work in determining whether the Contractor was able to work in assessing Working Days.

D16. RESTRICTED WORK HOURS

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

D17. WORK BY OTHERS

D17.1 Work by others on or near the Site will include but not necessarily be limited to:

(a) City of Winnipeg Geomatics Branch – various works on survey monuments;

(b) MTS – adjusting MTS manhole frames.

D18. SEQUENCE OF WORK

D18.1 Further to C6.1, the sequence of work shall comply with the following:

D18.1.1 Providing that the Work on each street is completed in a similar order to the order that the Work was commenced in, the Contractor will be permitted to have a maximum of three (3) streets under construction at any one time. Completion of a street means that all of the necessary concrete, asphalt including approaches and landscaping Work is completed to the satisfaction of the Contract Administrator.

D18.1.2 Where the Contractor utilizes two (2) or more crews that work independently on the same major component of the Work as identified in D2, the Contract Administrator may approve an increase to the maximum number of streets under construction at any time.

D18.1.3 Placing the topsoil and finished grading of all boulevard and median areas shall be completed prior to commencing construction of asphaltic concrete overlays, including scratch courses.

D18.1.4 At the end of the day, there shall be no drop-off along any longitudinal joint, except the longitudinal joint between the gutter and approaches.

D18.1.5 Immediately following the completion of the asphaltic concrete works, 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.

D18.1.6 The Work on Aikins Street will be divided into two stages. The Work will be divided as follows:

(a) **Stage I** – Atlantic Avenue to Inkster Boulevard (Eastbound).

(i) The Contractor shall complete all Work as outlined in D2.2(b).

(b) **Stage 2** – Inkster Boulevard (Westbound) to Carruthers Avenue.

(i) The Contractor shall complete all Work as outlined in D2.2(b).

D19. CRITICAL STAGES

D19.1 The Contractor shall achieve critical stages of the Work in accordance with the following equirements:

(a) Powers Street from Carruthers Avenue to Smithfield Avenue - The Contractor shall not commence the Work on the Site before July 3, 2016, and shall complete all the Work on Site as outlined in D2.5(b) no later than August 26, 2016, as directed by the Contract Administrator

(b) Carruthers Avenue from Powers Street to Salter Street - The Contractor shall not commence the Work on the Site before July 3, 2016, and shall complete all the Work on Site as outlined in D2.5(b) no later than August 26, 2016, as directed by the Contract Administrator

D19.2 When the Contractor considers the Work associated with D19.1 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.

D19.3 The date on which the D19.1 Work has been accepted by the Contract Administrator as being completed to the requirements of the Contract is the date on which completion of D19.1 has been achieved.

D20. SUBSTANTIAL PERFORMANCE

D20.1 The Contractor shall achieve Substantial Performance within sixty-five (65) consecutive Working Days of the commencement of the Work as specified in D14.

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

D20.3 The date on which the Work has been certified by the Contract Administrator as being substantially performed to the requirements of the Contract through the issue of a certificate of Substantial Performance is the date on which Substantial Performance has been achieved.

D21. TOTAL PERFORMANCE

D21.1 The Contractor shall achieve Total Performance within seventy (70) consecutive Working Days of the commencement of the Work as specified in D14.

D21.2 When the Contractor or the Contract Administrator considers the Work to be totally performed, the Contractor shall arrange, attend and assist in the inspection of the Work with the Contract Administrator for purposes of verifying Total Performance. Any defects or deficiencies in the Work noted during that inspection shall be remedied by the Contractor at the earliest possible instance and the Contract Administrator notified so that the Work can be re-inspected.

D21.3 The date on which the Work has been certified by the Contract Administrator as being totally performed to the requirements of the Contract through the issue of a certificate of Total Performance is the date on which Total Performance has been achieved.

D22. LIQUIDATED DAMAGES

D22.1 If the Contractor fails to achieve Critical Stages, Substantial Performance or Total Performance in accordance with the Contract by the days fixed herein for same, the Contractor shall pay the City the following amounts per Working Day for each and every Working Day following the days fixed herein for same during which such failure continues:

(a) Critical Stage - Powers Street from Carruthers Avenue to Smithfield Avenue – Three Thousand dollars ($3000.00);

(b) Critical Stage - Carruthers Avenue from Powers Street to Salter Street – Three Thousand dollars ($3000.00);

(c) Substantial Performance – Three Thousand dollars ($3000.00);

(d) Total Performance – One Thousand dollars ($1000.00).

D22.2 The amounts specified for liquidated damages in D22.1 are based on a genuine pre-estimate of the City's losses in the event that the Contractor does not achieve critical stages, Substantial Performance or Total Performance by the days fixed herein for same.

D22.3 The City may reduce any payment to the Contractor by the amount of any liquidated damages assessed.

D23. SCHEDULED MAINTENANCE

D23.1 The Contractor shall perform the following scheduled maintenance in the manner and within the time periods required by the Specifications:

(a) Sod Maintenance as specified in CW 3510-R9;

(b) Reflective Crack Maintenance as specified in CW 3250-R7.

D23.2 Determination of Substantial Performance and Total Performance shall be exclusive of scheduled maintenance identified herein. All scheduled maintenance shall be completed prior to the expiration of the warranty period. Where the scheduled maintenance cannot be completed during the warranty period, the warranty period shall be extended for such period of time as it takes the Contractor to complete the scheduled maintenance.

CONTROL OF WORK

D24. JOB MEETINGS

D24.1 Regular weekly job meetings will be held at the site. These meetings shall be attended by a minimum of one representative of the Contract Administrator, and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Contract Administrator, and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

D24.2 The Contract Administrator reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

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

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

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

D26.1 Further to B11.4, 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 B11.4.

MEASUREMENT AND PAYMENT

D27. PAYMENT

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

WARRANTY

D28. WARRANTY

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

FORM H1: PERFORMANCE BOND
(See D11)

KNOW ALL MEN BY THESE PRESENTS THAT

_____
(hereinafter called the "Principal"), and

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

_____

_____ dollars ($_____.____)

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

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

BID OPPORTUNITY NO. 64-2016

2016 LOCAL STREET RENEWAL PROGRAM: AIKINS STREET AND VARIOUS OTHER LOCATIONS
which is by reference made part hereof and is hereinafter referred to as the “Contract”.

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

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

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

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

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

_____ day of _____ , 20____ .

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SIGNED AND SEALED
in the presence of:

_____
(Witness as to Principal if no seal)

_____
(Name of Principal)

Per: _____ (Seal)

Per: _____

_____
(Name of Surety)

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

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

_____
(Date)

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

RE: PERFORMANCE SECURITY – BID OPPORTUNITY NO. 64-2016

2016 LOCAL STREET RENEWAL PROGRAM: AIKINS STREET AND VARIOUS OTHER LOCATIONS

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

_____ ,
(Name of Contractor)

_____
(Address of Contractor)

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

_____

_____ Canadian dollars.

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

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

Partial drawings are permitted.

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

_____
(Address)

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

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

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

_____ .
(Date)

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

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

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

_____
(Name of bank or financial institution)

Per: _____
(Authorized Signing Officer)

Per: _____
(Authorized Signing Officer)

FORM J: SUBCONTRACTOR LIST
(See D12)

2016 LOCAL STREET RENEWAL PROGRAM: AIKINS STREET AND VARIOUS OTHER LOCATIONS

Portion of the Work	Name	Address
SURFACE WORKS:		
Supply of Materials:		
Geotextile Fabrics		
Sub-base and Base Course		
Concrete		
Topsoil/Sod		
Installation/Placement:		
Geotextile Fabrics		
Sub-base and Base Course		
Concrete		
Asphalt		
Topsoil/Sod		
Joint Sealant		
UNDERGROUND WORKS:		
Supply of Materials:		
Pre-cast Concrete Catch Pit/Catch Basin/Risers		
Catch Pit/Catch Basin/Manhole Frames, Covers and Boxes		
Drainage Connection Pipes/Sewer Service Pipes		
Watermain Valve/Service Boxes		
Subdrains		
Installation/Placement:		
Pre-cast Concrete Catch Pit/Catch Basin/Risers		
Catch Pit/Catch Basin/Manhole Frames, Covers and Boxes		
Drainage Connection Pipes/Sewer Service Pipes		

PART E - SPECIFICATIONS

GENERAL

E1. APPLICABLE SPECIFICATIONS AND DRAWINGS

E1.1 These Specifications shall apply to the Work.

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

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

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

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

E1.3 The following are applicable to the Work:

Drawing No.	Drawing Name/Title	Drawing (Original) Sheet Size
	Cover Sheet	A1
SE-16-01	Aikins Street from Sta 0+91 to Sta 2+00	A1
SE-16-02	Aikins Street from Sta 2+00 to Sta 3+15	A1
SE-16-03	Aikins Street from Sta 3+15 to Sta 4+51	A1
SE-16-04	Powers Street from Sta 0+95 to Sta 2+25	A1
SE-16-05	Powers Street from Sta 2+25 to Sta 3+49	A1
SE-16-06	Powers Street from Sta 0+95 to Sta 2+25	A1
SE-16-07	Powers Street from Sta 2+25 to Sta 3+46	A1
SE-16-08	Carruthers Avenue from Sta 0+94 to Sta 2+00	A1
SE-16-09	Carruthers Avenue from Sta 2+00 to Sta 2+88	A1
SE-16-10	Carruthers Avenue from Sta 0+72 to Sta 2+00	A1
SE-16-11	Carruthers Avenue from Sta 2+00 to Sta 2+98	A1
SE-16-12	Carruthers Avenue from Sta 0+94 to Sta 2+00	A1
SE-16-13	Carruthers Avenue from Sta 2+00 to Sta 2+86	A1

E2. GEOTECHNICAL REPORT

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

E3. PROTECTION OF EXISTING TREES

E3.1 The Contractor shall take the following precautionary steps to prevent damage from construction activities to existing boulevard trees within the limits of the construction area:

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

(b) Trees identified to be at risk by the Contract Administrator are to be strapped with 25 x 100 x 2400mm wood planks, or suitably protected as approved by the Contract Administrator.

(c) Excavation shall be performed in a manner that minimizes damage to the existing root systems. Where possible, excavation shall be carried out such that the edge of the excavation shall be a minimum of 1.5 times the diameter (measured in inches), with the

outcome read in feet, from the closest edge of the trunk. Where roots must be cut to facilitate excavation, they shall be pruned neatly at the face of excavation.

(d) Operation of equipment within the dripline of the trees shall be kept to the minimum required to perform the work required. Equipment shall not be parked, repaired, refuelled; construction materials shall not be stored, and earth materials shall not be stockpiled within the driplines of trees. The dripline of a tree shall be considered to be the ground surface directly beneath the tips of its outermost branches. The Contractor shall ensure that the operations do not cause flooding or sediment deposition on areas where trees are located.

(e) Work on-site shall be carried out in such a manner so as to minimize damage to existing tree branches. Where damage to branches does occur, they shall be neatly pruned.

E3.2 All damage to existing trees caused by the Contractor's activities shall be repaired to the requirements and satisfaction of the Contract Administrator and the City Forester or his/her designate.

E3.3 No separate measurement or payment will be made for the protection of trees.

E3.4 Except as required in clause E3.1(c) and E3.1(e), Elm trees shall not be pruned at any time between April 1 and July 31.

E4. TRAFFIC CONTROL

E4.1 Further to clauses 3.6, 3.7 and 3.8 of CW 1130:

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

(b) In accordance with the Manual of Temporary Traffic Control on City Streets (MTTC), the Contractor ("Construction Agency" in the manual) shall be responsible for placing, maintaining and removing the appropriate temporary traffic control devices as specified by the MTTC 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.

E4.2 Notwithstanding E4.1, 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.

(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.

E4.2.1 An exception to E4.2 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.

E4.2.2 Further to E4.2, 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.

E5. TRAFFIC MANAGEMENT

E5.1 Further to clause 3.7 of CW 1130:

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

(a) Powers Street from Burrows Avenue to Redwood Avenue will be closed to all traffic. The Contractor shall sign the street “Road Closed “ in accordance with the Manual of Temporary Traffic Control.

(b) Powers Street from Carruthers Avenue to Smithfield Avenue will be closed to all traffic. The Contractor shall sign the street “Road Closed “ in accordance with the Manual of Temporary Traffic Control.

(c) Aikins Street from Atlantic Avenue to Carruthers Avenue will be closed to all traffic. The Contractor shall sign the street “Road Closed “ in accordance with the Manual of Temporary Traffic Control.

(d) Carruthers Avenue from Arlington Street to Parr Street, Mckenzie Street to Mcgregor Street, and Powers Street to Salter Street will be closed to all traffic. The Contractor shall sign the street “Road Closed “ in accordance with the Manual of Temporary Traffic Control.

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

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

E6. REFUSE AND RECYCLING COLLECTION

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

E6.2 Collection Schedule:

Powers Street - from Burrows Avenue to Redwood Avenue.

Collection Day(s):	**Fridays**
Collection Time:	**0700-1800**
Common Collection Area:	**Front street collection, maintain access to accommodate collection or contractor to move refuse/recycling/yard waste to common collection point.**

Powers Street - from Carruthers Avenue to Smithfield Avenue.

Collection Day(s):	**Wednesday**
Collection Time:	**0700-1800**
Common Collection Area:	**No collection issues**

Aikins Street - from Atlantic Avenue to Carruthers Avenue.

Collection Day(s):	**Friday**
Collection Time:	**0700-1800**
Common Collection Area:	**Back lane pickup**

Carruthers Avenues - (All Locations).

Collection Day(s):	**Wednesday**
Collection Time:	**0700-1800**
Common Collection Area:	**Front street collection, Pickup made on Lansdowne/Matheson Avenue.**

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

E7. WATER OBTAINED FROM THE CITY

E7.1 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.

E8. SURFACE RESTORATIONS

E8.1 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.

E9. INFRASTRUCTURE SIGNS

E9.1 The Contractor shall obtain infrastructure signs from the Traffic Services Sign Shop at 421 Osborne Street. The Contractor shall mount each sign securely to a rigid backing material approved by the Contract Administrator. The Contractor shall fasten each sign to a suitable support and erect and maintain one sign at each street as directed by the Contract Administrator. When the Contract Administrator considers the Work on the street complete, the Contractor shall remove and dispose of the signs and supports. No measurement for payment will be made for performing all operations herein described and all other items incidental to the work described

E10. SUPPLY AND INSTALL WATERMAIN AND WATER SERVICE INSULATION

DESCRIPTION

E10.1 Notwithstanding 3.12 of CW 2110, this specification covers the supply and installation of insulation in roadway excavations over watermains and water services.

E10.2 Referenced Standard Construction Specifications

(a) CW 2030 – Excavation Bedding and Backfill

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

E10.3 Referenced Standard Details

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

MATERIALS

E10.4 Acceptable insulation is:

(a) Extruded Polystyrene rigid foam insulation – Type 4, 4" in thickness.

DOW - Roofmate or Highload 40

Owen's Corning - Foamular 350 or Foamular 400.

2" X 48" X 96", 2" X 24" X 96", 4" X 24" X 96"

E10.5 Sand Bedding :

(a) In accordance with CW 2030

CONSTRUCTION METHODS

E10.6 Prior to the installation of any sub-base material or geotextile material, locate all existing water services.

E10.7 Further to SD-018, where directed by the Contract Administrator, excavate the sub-grade to allow the top of the insulation to be installed flush with the surrounding sub-grade. Install the insulation on a level surface centered over the located watermain or water service for the full width of the roadway excavation. Install sand bedding if required to level the surface.

E10.8 Stockpile and dispose of excavated material in accordance with CW 3110.

E10.9 Thickness of insulation is 100 mm (4"). If using 50 mm (2") panels 2 layers are required. Total width of insulation to be as directed by the Contract Administrator. Place sufficient full width panels to meet or exceed the specified width.

E10.10 Place insulation panels adjacent to each other over the specified area with no gaps between panels and less than 15mm of elevation difference along the adjoined edges. Where 2" thick panels are being used, offset the top layer to prevent the panel joints from aligning with the joints in the lower layer.

E10.11 Use full panels of insulation where possible. Where necessary cut insulation panels to obtain coverage to specified lengths. Insulation pieces shall be a minimum of dimension of 300 mm in width or length.

E10.12 Take appropriate measures to ensure panels are not displaced when installing geotextiles and during backfilling operations.

MEASUREMENT AND PAYMENT

E10.13 Watermain and Water Service Insulation shall be measured on an area basis and paid for at the Contract Unit Price per square metre of "Watermain and Water Service Insulation". The area to be paid for shall be the total square meters of watermain and water service insulation supplied and installed in accordance with this specification, accepted and measured by the Contract Administrator.

E10.14 Excavation of the roadway subgrade in accordance with E10.7 will not be measured for payment and will be included in the payment for "Watermain and Water Service Insulation".

APPENDIX ‘A’

GEOTECHNICAL REPORT

APPENDIX 'A' - GEOTECHNICAL REPORT

GEOTECHNICAL REPORT FOR:

I. Aikins Street from Atlantic Avenue to Carruthers Avenue.
II. Carruthers Avenue from Arlington street to Parr Street.
III. Carruthers Avenue from McKenzie Street to McGregor Street.
IV Carruthers Avenue from Powers Street to Salter Street.
V. Powers Street from Burrows Avenue to Redwood Avenue.
VI. Powers Street from Carruthers Avenue to Smithfield Avenue.

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

2016 Residential Street Renewal Program

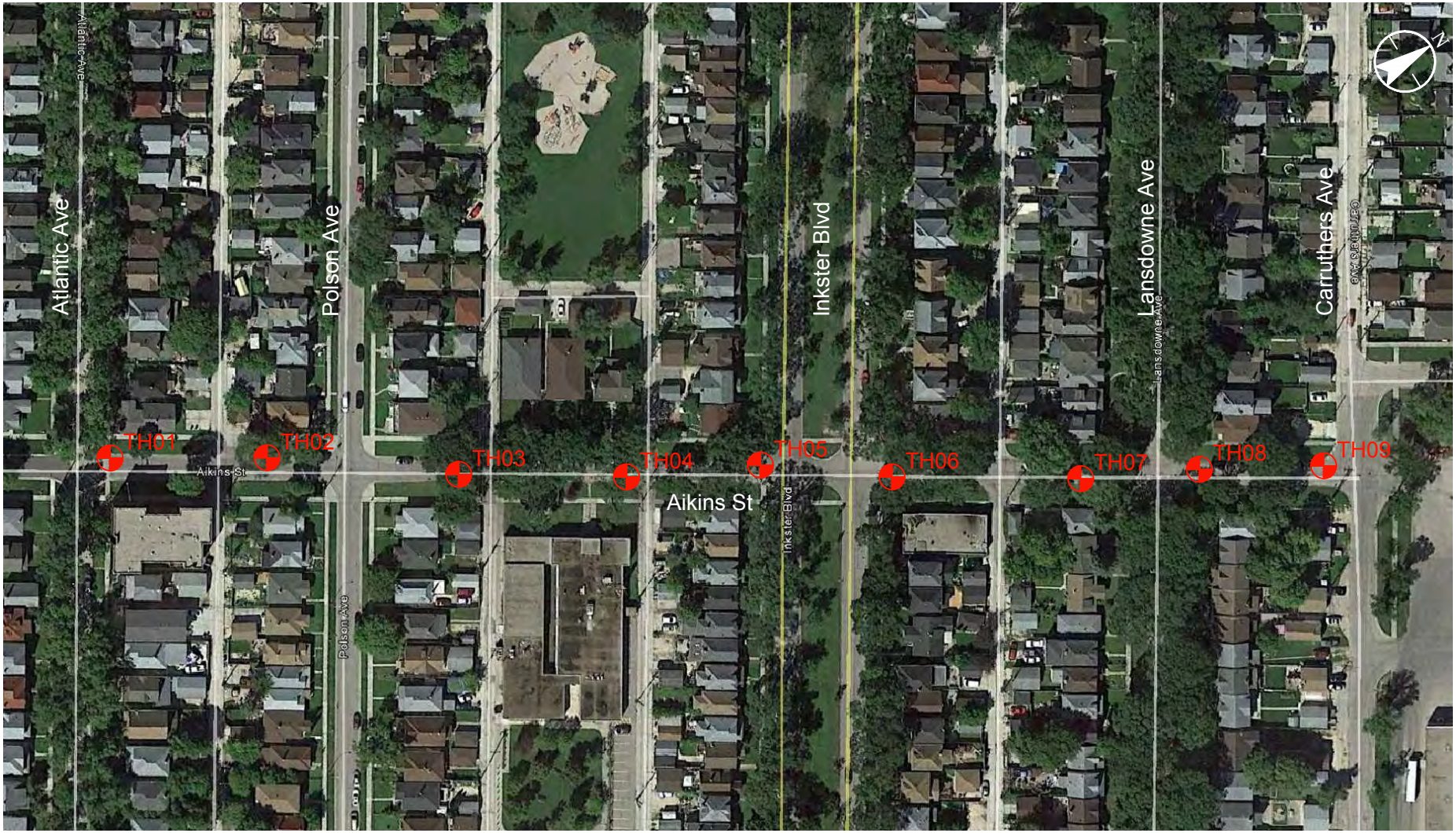
Geotechnical Investigation - Aikins Street from Atlantic Avenue to Carruthers Avenue

Prepared for:
City of Winnipeg
Engineering Division
Public Works Department
106-1155 Pacific Avenue
Winnipeg, Manitoba R3E 3P1

Prepared by:
Stantec Consulting Ltd.
500-311 Portage Avenue
Winnipeg, Manitoba R3B 2B9

Project No. 123312305

January 21, 2016



January, 2016
123312305

ORIGINAL SHEET - ISO 8.5x11 H - v14.06

V:\1233\active\123312305\0300_drawing\testhole Location Plans\12305_aikins_carruthers_atlantic_thlp.dwg 1
2016/01/20 1:59 PM By: Bun, Sothea

Stantec

Stantec Consulting Ltd.
Suite 500, 311 Portage Avenue
Winnipeg MB Canada R3B 2B9
Tel. 204.489.5900 Fax. 204.453.9012
www.stantec.com

Legend

TESTHOLE

Notes

- IMAGE SOURCE: GOOGLE EARTH
- SITE: AIKINS STREET FROM CARRUTHERS AVENUE TO ATLANTIC AVENUE

Client/Project
CITY OF WINNIPEG
2016 RESIDENTIAL STREET RENEWAL PROGRAM
WINNIPEG, MB

Figure No.
1

Title
TESTHOLE LOCATION PLAN

TABLE 1
2016 RESIDENTIAL STREET RENEWAL PROGRAM
AIKINS STREET FROM ATLANTIC AVENUE TO CARRUTHERS AVENUE
GEOTECHNICAL INVESTIGATION

Testhole ID	Testhole Location	Pavement Surface		Pavement Structure		Sample Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH01	Aikins Street 5.0 m North of Northwest corner Atlantic Avenue and Aikins Street 2.0 m East of West curb	Asphalt	35	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	145												
TH02	Aikins Street 15.0 m South of Southwest corner Polson Avenue and Aikins Street 2.0 m East of West curb	Asphalt	60	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	150												
TH03	Aikins Street 25.5 m North of Northeast corner Polson Avenue and Aikins Street 2.0 m West of East curb	Asphalt	35	-	-	Silt	0.9	23	0.7	6.3	73.4	19.6	28	18	10
		Concrete	140												
TH04	Aikins Street 42.0 m South of Southeast corner Inkster Boulevard and Aikins Street 2.0 m West of East curb	Asphalt	40	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	130												
TH05	Aikins Street 4.0 m South of Southwest corner Inkster Boulevard and Aikins Street 2.0 m East of West curb	Asphalt	30	-	-	Clay	0.6	38	0.0	4.5	24.3	71.2	92	34	58
		Concrete	160												
TH06	Aikins Street 4.0 m North of Northeast corner Inkster Boulevard and Aikins Street 1.5 m West of East curb	Asphalt	50	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	130												
TH07	Aikins Street 21.5 m South of Southwest corner Lansdowne Avenue and Aikins Street 2.0 m East of West curb	Asphalt	35	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	210												
TH08	Aikins Street 6.0 m North of Northwest corner Lansdowne Avenue and Aikins Street 2.0 m East of West curb	Asphalt	20	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	180												
TH09	Aikins Street 3.0 m South of Southwest corner Carruthers Avenue and Aikins Street 2.0 m East of West curb	Asphalt	55	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	165												

TH01 TESTHOLE RECORD

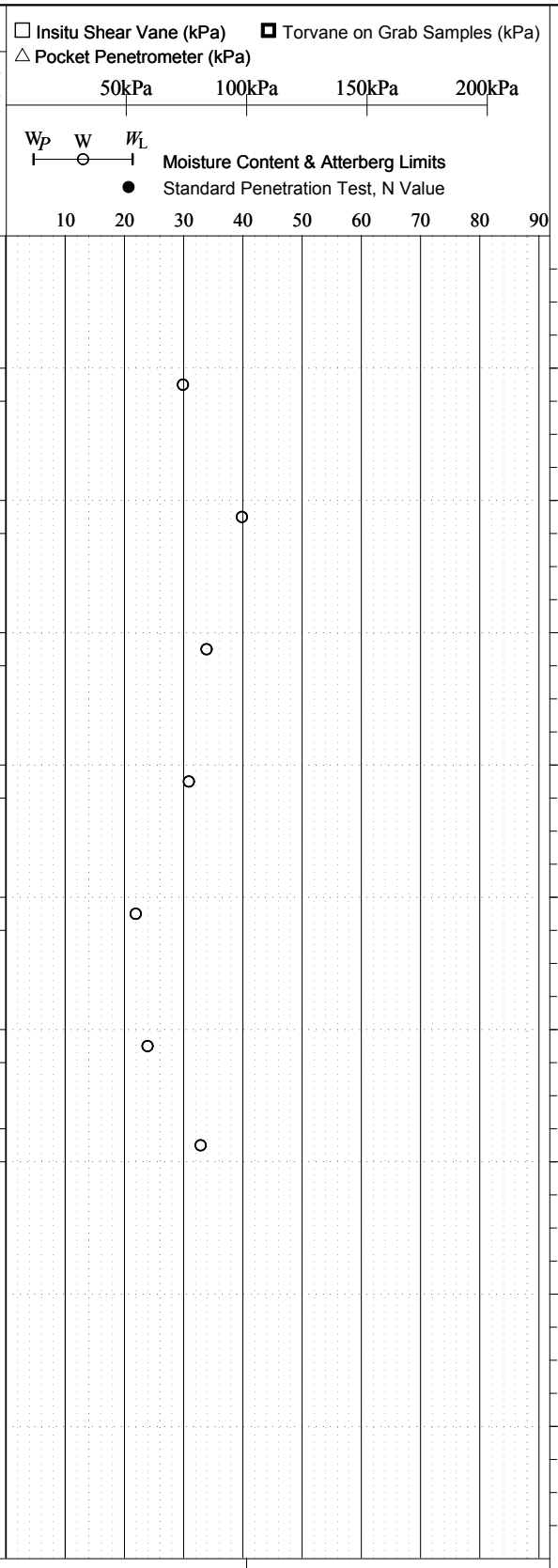
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Aikins St from Atlantic Ave to Carruthers Ave ELEVATION EASTING

DRILLING DATE December 16, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
	CH		Firm black fat CLAY (CH) with trace organic and trace fine sand	GS		30
				GS		40
1				GS		34
				GS		31
	ML		Soft tan SILT (ML)	GS		22
				GS		24
2	CH		Firm brown fat CLAY (CH)	GS		33
			TESTHOLE LOCATION: 5.0 m North of Northwest corner Atlantic Avenue and Aikins Street, 2.0 m East of West curb.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.			
3						



DEPTH (ft): 0, 2, 4, 6, 8, 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH02 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Aikins St from Atlantic Ave to Carruthers Ave ELEVATION EASTING

DRILLING DATE December 16, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
	CH		Firm black fat CLAY (CH) with trace organic and trace fine sand	GS		33
				GS		35
1				GS		32
	ML		Soft tan SILT (ML)	GS		22
	CH		Firm brown fat CLAY (CH)	GS		30
	ML		Soft tan SILT (ML)	GS		22
2				GS		22
			TESTHOLE LOCATION: 15.0 m South of Southwest corner Polson Avenue and Aikins Street, 2.0 m East of West curb.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling.			
			• Testhole terminated at a depth of 2.1 m.			
3						

☐ Insitu Shear Vane (kPa) ■ Torvane on Grab Samples (kPa)
△ Pocket Penetrometer (kPa)

50kPa 100kPa 150kPa 200kPa

W_P W W_L Moisture Content & Atterberg Limits

● Standard Penetration Test, N Value

10 20 30 40 50 60 70 80 90

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH03 TESTHOLE RECORD

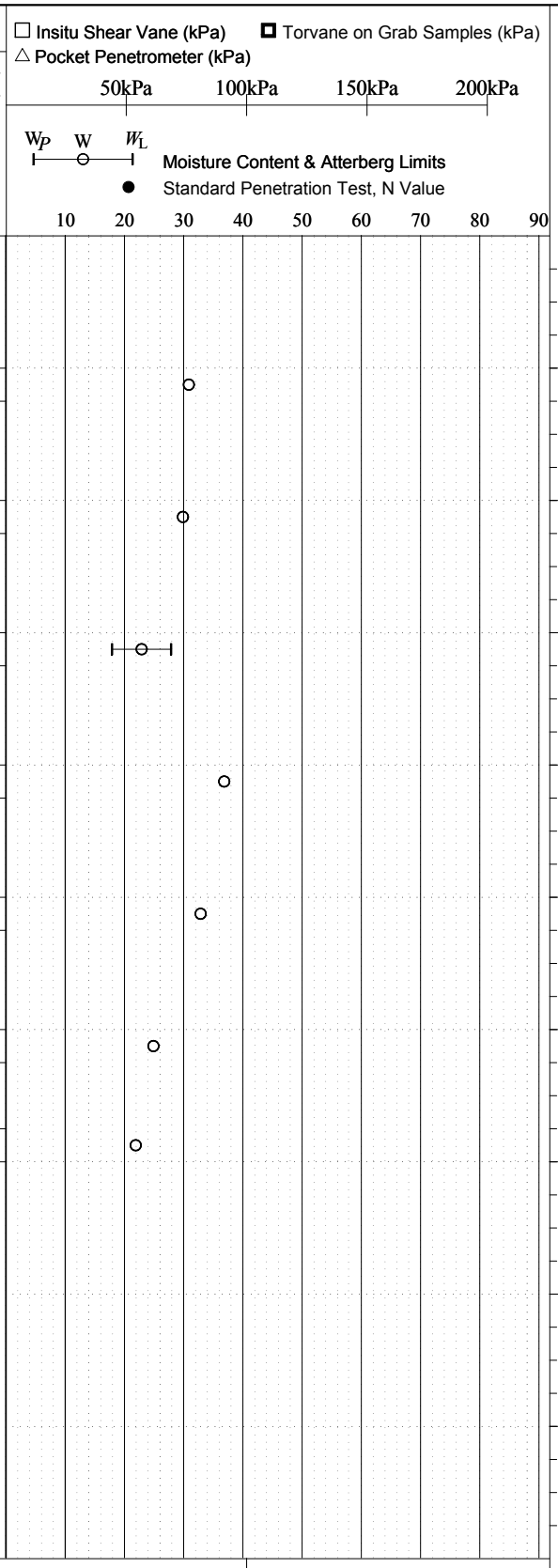
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Aikins St from Atlantic Ave to Carruthers Ave ELEVATION EASTING

DRILLING DATE December 16, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
	CH		Firm black fat CLAY (CH) with trace organic and trace fine sand	GS		31
				GS		30
	ML		Soft tan SILT (ML) Particle Size Analysis at 0.9 m: 0.7% Gravel, 6.3% Sand, 73.4% Silt, 19.6% Clay	GS		23
1	CH		Firm brown fat CLAY (CH)	GS		37
				GS		33
	ML		Soft tan SILT (ML)	GS		25
2				GS		22
			TESTHOLE LOCATION: 25.5 m North of Northeast corner Polson Avenue and Aikins Street, 2.0 m West of East curb. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.			
3						



DEPTH (ft): 0, 2, 4, 6, 8, 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH04 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Aikins St from Atlantic Ave to Carruthers Ave ELEVATION EASTING

DRILLING DATE December 16, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
	CH		Firm black fat CLAY (CH) with trace organic and trace fine sand	GS		38
				GS		37
1				GS		30
				GS		30
				GS		32
	CL ML		Firm tan SILTY CLAY (CL-ML)	GS		32
2				GS		38
			TESTHOLE LOCATION: 42.0 m South of Southeast corner Inkster Boulevard and Aikins Street, 2.0 m West of East curb.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.			
3						

☐ Insitu Shear Vane (kPa) ■ Torvane on Grab Samples (kPa)
△ Pocket Penetrometer (kPa)

50kPa 100kPa 150kPa 200kPa

W_P W W_L Moisture Content & Atterberg Limits

● Standard Penetration Test, N Value

10 20 30 40 50 60 70 80 90

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH05 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Aikins St from Atlantic Ave to Carruthers Ave ELEVATION EASTING

DRILLING DATE December 16, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
	CH		Firm black fat CLAY (CH) with trace organic and trace fine sand	GS		33
			Particle Size Analysis at 0.6 m: 0.0% Gravel, 4.5% Sand, 24.3% Silt, 71.2% Clay	GS		38
1				GS		35
				GS		31
				GS		27
	CL ML		Firm tan SILTY CLAY (CL-ML)	GS		32
2				GS		35
			TESTHOLE LOCATION: 4.0 m South of Southwest corner Inkster Boulevard and Aikins Street, 2.0 m East of West curb.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.			
3						

☐ Insitu Shear Vane (kPa) ■ Torvane on Grab Samples (kPa)
△ Pocket Penetrometer (kPa)

50kPa 100kPa 150kPa 200kPa

W_P W W_L Moisture Content & Atterberg Limits

● Standard Penetration Test, N Value

10 20 30 40 50 60 70 80 90

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH06 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Aikins St from Atlantic Ave to Carruthers Ave ELEVATION EASTING

DRILLING DATE December 16, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
	CH		Firm black fat CLAY (CH) with trace organic and trace fine sand	GS		37
				GS		36
1				GS		33
				GS		32
				GS		30
			brown below 1.7 m	GS		33
2				GS		25
			TESTHOLE LOCATION: 4.0 m North of Northeast corner Inkster Boulevard and Aikins Street, 1.5 m West of East curb.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.			
3						

□ Insitu Shear Vane (kPa) ■ Torvane on Grab Samples (kPa)
△ Pocket Penetrometer (kPa)

50kPa 100kPa 150kPa 200kPa

W_P W W_L Moisture Content & Atterberg Limits

● Standard Penetration Test, N Value

10 20 30 40 50 60 70 80 90

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH07 TESTHOLE RECORD

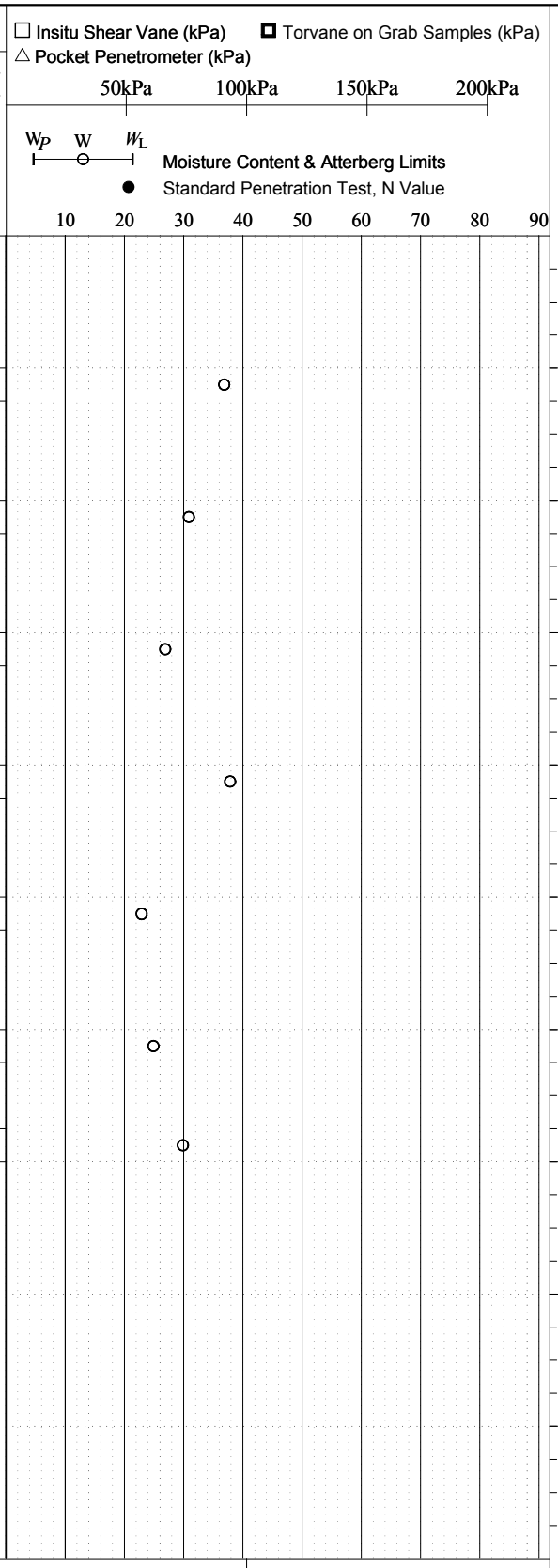
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Aikins St from Atlantic Ave to Carruthers Ave ELEVATION EASTING

DRILLING DATE December 16, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
	CH		Firm black fat CLAY (CH) with trace organic and trace fine sand	GS		37
				GS		31
1	ML		Soft tan SILT (ML)	GS		27
	CH		Firm brown fat CLAY (CH)	GS		38
	ML		Soft tan SILT (ML)	GS		23
				GS		25
2	CL ML		Firm brown SILTY CLAY (CL-ML)	GS		30
			TESTHOLE LOCATION: 21.5 m South of Southwest corner Lansdowne Avenue and Aikins Street, 2.0 m East of West curb.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling.			
			• Testhole terminated at a depth of 2.1 m.			
3						



DEPTH (ft): 0, 2, 4, 6, 8, 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH08 TESTHOLE RECORD

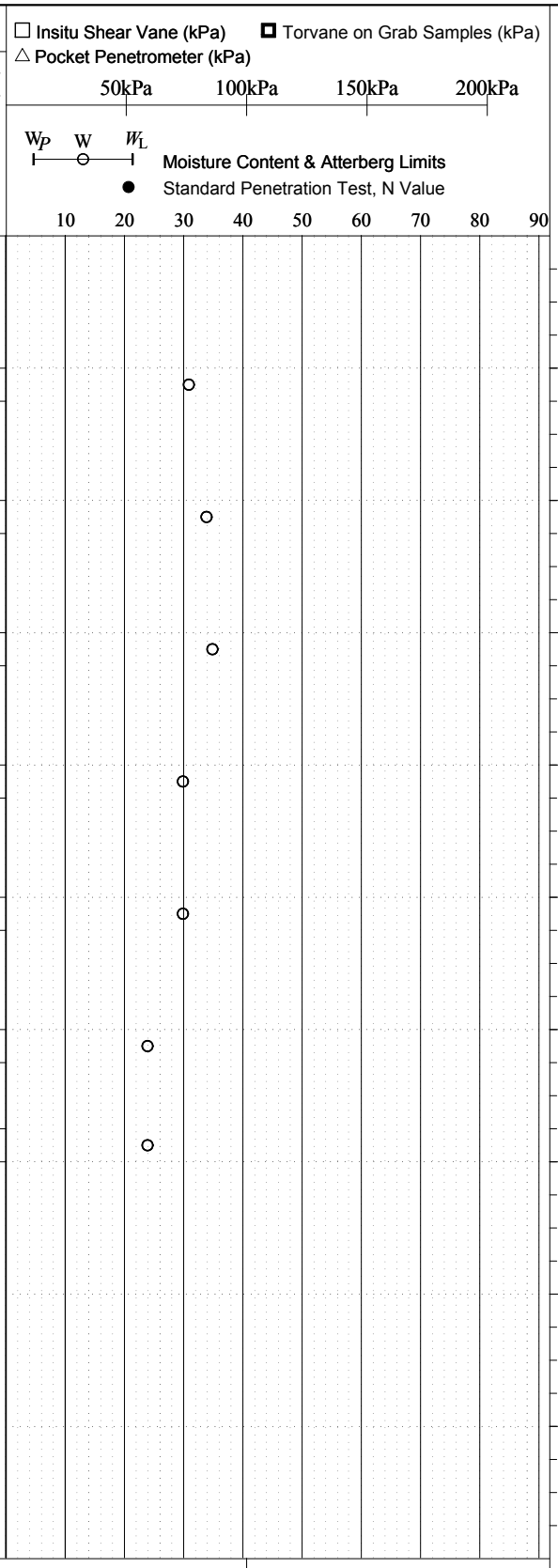
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Aikins St from Atlantic Ave to Carruthers Ave ELEVATION EASTING

DRILLING DATE December 16, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
			Firm black fat CLAY (CH) with trace organic and trace fine sand	GS		31
				GS		34
1	CH			GS		35
				GS		30
			brown, trace silt below	GS		30
2	ML		Soft tan SILT (ML)	GS		24
				GS		24
			TESTHOLE LOCATION: 6.0 m North of Northwest corner Lansdowne Avenue and Aikins Street, 2.0 m East of West curb.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.			
3						



DEPTH (ft): 0, 2, 4, 6, 8, 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH09 TESTHOLE RECORD

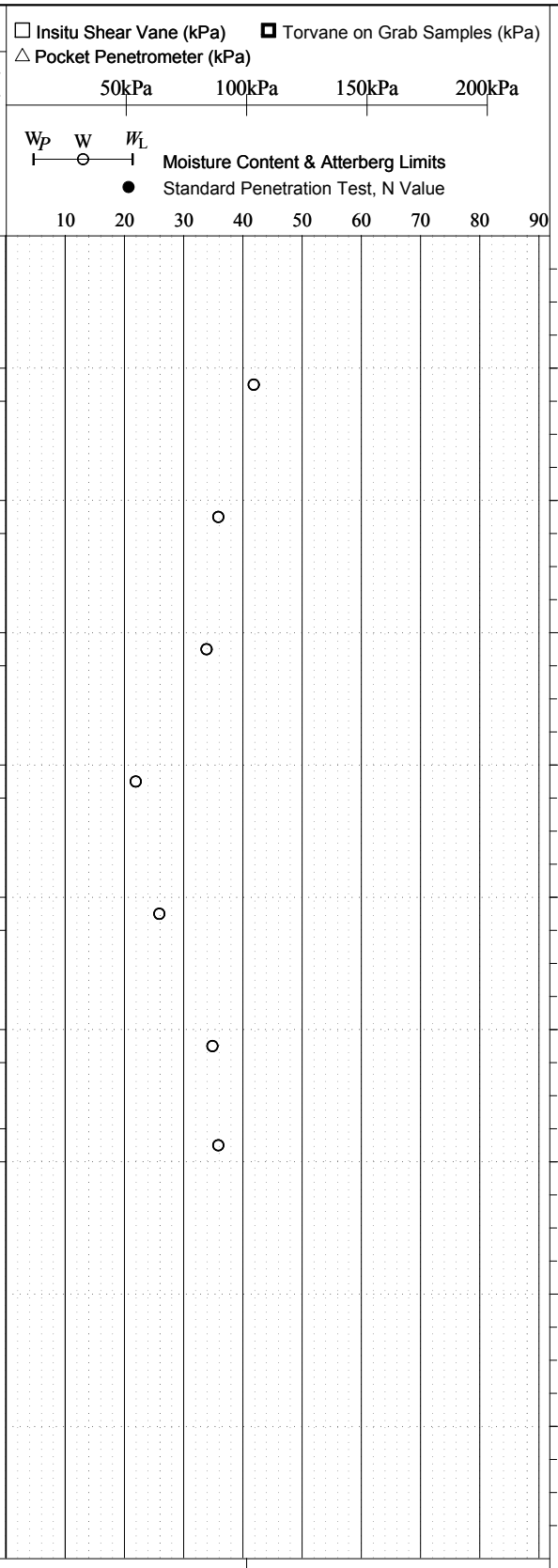
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Aikins St from Atlantic Ave to Carruthers Ave ELEVATION EASTING

DRILLING DATE December 16, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
	CH		Firm black fat CLAY (CH) with trace organic and trace fine sand	GS		42
				GS		36
1				GS		34
	ML		Soft tan SILT (ML)	GS		22
				GS		26
	CH		Firm brown fat CLAY (CH)	GS		35
2				GS		36
			TESTHOLE LOCATION: 3.0 m South of Southwest corner Carruthers Avenue and Aikins Street, 2.0 m East of West curb.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling.			
			• Testhole terminated at a depth of 2.1 m.			
3						



DEPTH (ft): 0, 2, 4, 6, 8, 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

Photo 1 – Core sample from Testhole TH01

Photo 2 – Core sample from Testhole TH02

Photo 3 – Core sample from Testhole TH03

Photo 4 – Core sample from Testhole TH04

Photo 5 – Core sample from Testhole TH05

Photo 6 – Core sample from Testhole TH06

Photo 7 – Core sample from Testhole TH07

Photo 8 – Core sample from Testhole TH08

Photo 9 – Core sample from Testhole TH09

LABORATORY
199 Henlow Bay
Winnipeg MB R3Y 1G4
Tel: (204) 488-6999

PARTICLE SIZE ANALYSIS
ASTM D422

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

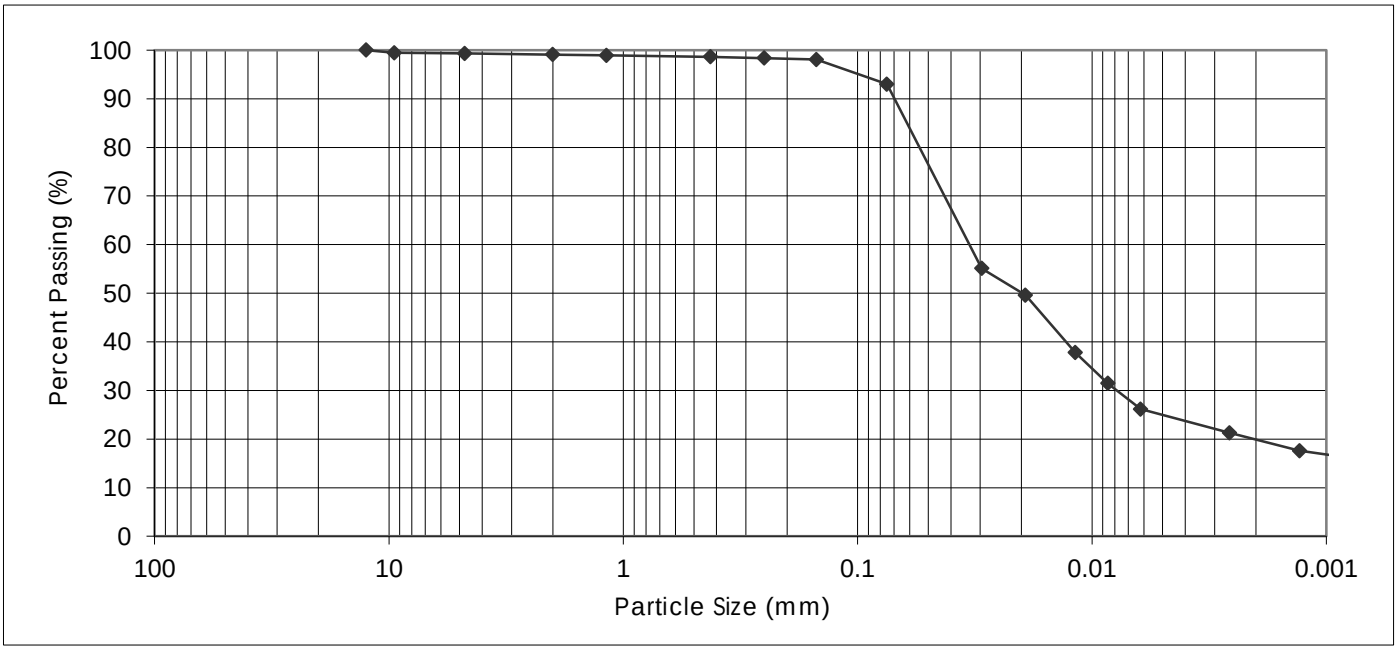
PROJECT: 2016 Residential Street Renewal Program
Aikins Street from Atlantic Avenue
to Carruthers Avenue

Attention: Brad Besyk

PROJECT NO.: 123312305

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH03 @ 0.9 m

DATE RECEIVED: January 12, 2016
TESTED BY: Larry Presado, C.Tech



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	99.4
4.75 mm	99.3
2.00 mm	99.1

PARTICLE SIZE	PERCENT PASSING
1.18 mm	98.9
0.425 mm	98.6
0.250 mm	98.4
0.150 mm	98.1
0.075 mm	93.0
0.005 mm	24.5
0.002 mm	19.6
0.001 mm	16.8

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.7	0.2	0.5	5.6	73.4	19.6	16.8

REPORT DATE: January 18, 2016

REVIEWED BY: Jason Thompson, C.E.T.

LABORATORY
199 Henlow Bay
Winnipeg MB R3Y 1G4
Tel: (204) 488-6999

PARTICLE SIZE ANALYSIS
ASTM D422

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

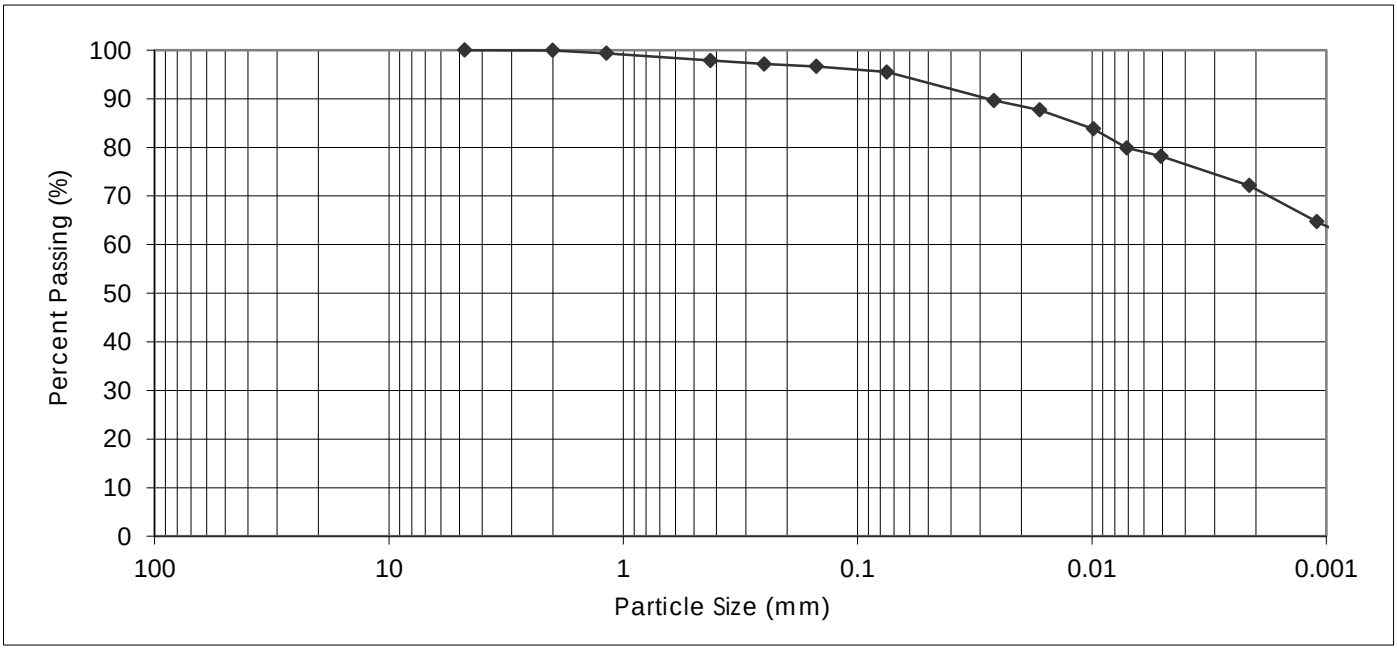
PROJECT: 2016 Residential Street Renewal Program
Aikins Street from Atlantic Avenue
to Carruthers Avenue

Attention: Brad Besyk

PROJECT NO.: 123312305

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH05 @ 0.6 m

DATE RECEIVED: January 12, 2016
TESTED BY: Larry Presado, C.Tech



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	100.0
2.00 mm	99.9

PARTICLE SIZE	PERCENT PASSING
1.18 mm	99.4
0.425 mm	97.9
0.250 mm	97.2
0.150 mm	96.7
0.075 mm	95.5
0.005 mm	78.0
0.002 mm	71.2
0.001 mm	63.7

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	0.1	2.0	2.4	24.3	71.2	63.7

REPORT DATE: January 18, 2016

REVIEWED BY: Jason Thompson, C.E.T.

2016 Residential Street Renewal Program

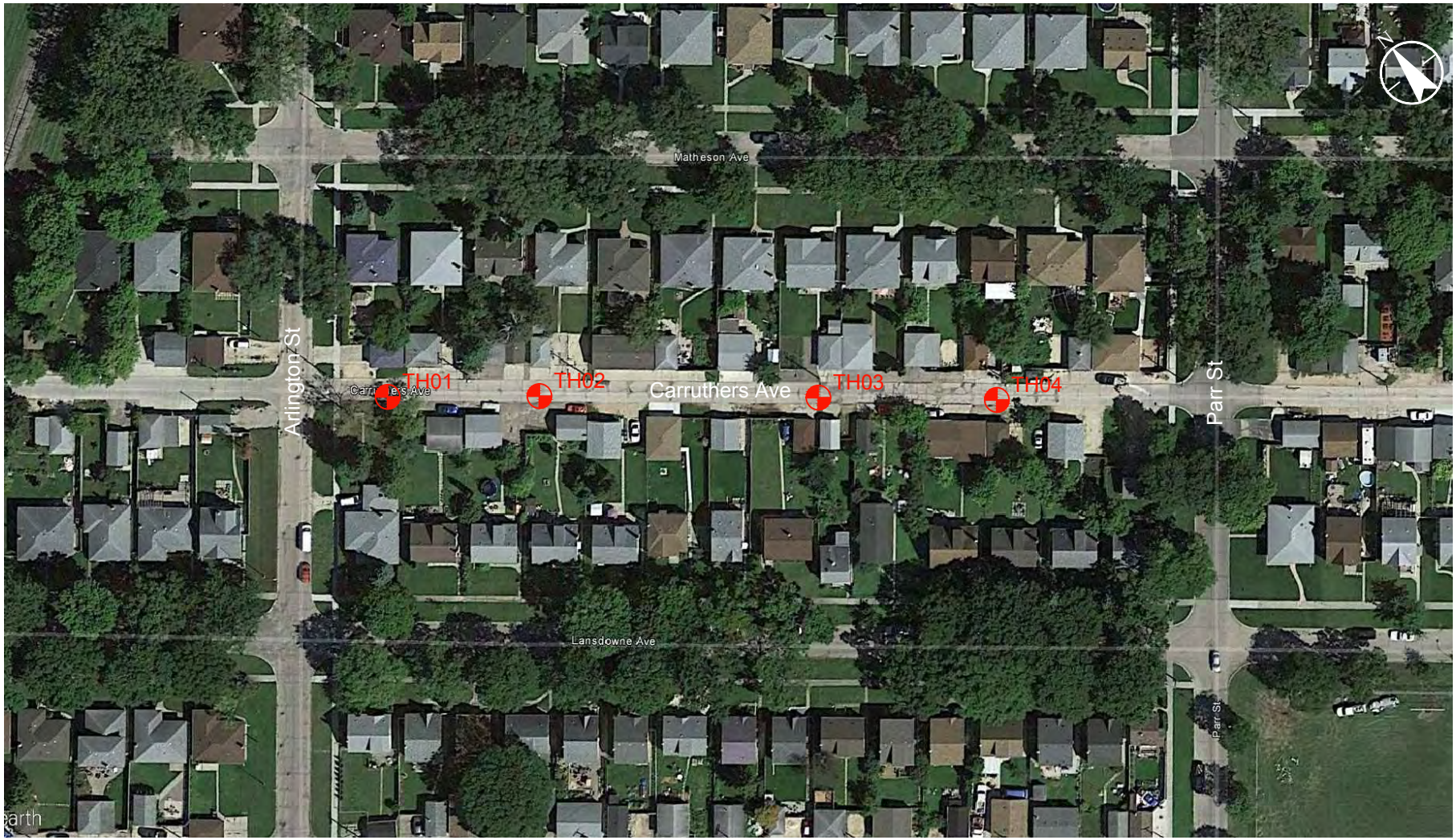
Geotechnical Investigation - Carruthers Avenue from Arlington Street to Parr Street

Prepared for:
City of Winnipeg
Engineering Division
Public Works Department
106-1155 Pacific Avenue
Winnipeg, Manitoba R3E 3P1

Prepared by:
Stantec Consulting Ltd.
500-311 Portage Avenue
Winnipeg, Manitoba R3B 2B9

Project No. 123312305

January 21, 2016



January, 2016
123312305

ORIGINAL SHEET - ISO 8.5x11 H - v14.06

V:\1233\active\123312305\0300_drawing\testhole Location Plans\123305_carruthers_arlington_parr_thlp.dwg 1
2016/01/20 10:42 AM By: Bun, Sothea

Stantec

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www.stantec.com

Legend

TESTHOLE

Notes

- IMAGE SOURCE: GOOGLE EARTH
- SITE: CARRUTHERS AVENUE FROM ARLINGTON STREET TO PARR STREET

Client/Project

CITY OF WINNIPEG

2016 RESIDENTIAL STREET RENEWAL PROGRAM
WINNIPEG, MB

Figure No.

1

Title

TESTHOLE LOCATION PLAN

TABLE 1
2016 RESIDENTIAL STREET RENEWAL PROGRAM
CARRUTHERS AVENUE FROM ARLINGTON STREET TO PARR STREET
GEOTECHNICAL INVESTIGATION

Testhole ID	Testhole Location	Pavement Surface		Pavement Structure		Sample Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH01	Carruthers Avenue 15.0 m East of Southeast corner Carruthers Avenue and Arlington Street 1.0 m North of property line 697 Lansdowne Avenue	Concrete	175	-	-	Clay Fill	0.6	32	0.0	17.1	37.1	45.8	67	23	44
TH02	Carruthers Avenue 45.0 m East of Southeast corner Carruthers Avenue and Arlington Street 1.0 m North of property line 691 Lansdowne Avenue	Concrete	160	-	-	-	-	-	-	-	-	-	-	-	-
TH03	Carruthers Avenue 110.0 m East of Southeast corner Carruthers Avenue and Arlington Street 1.0 m North between property lines 671 and 675 Lansdowne Avenue	Asphalt Concrete	30 150	-	-	-	-	-	-	-	-	-	-	-	-
TH04	Carruthers Avenue 38.5 m West of Southwest corner Carruthers Avenue and Parr Street 1.0 m North of property line 661 Lansdowne Avenue	Concrete	135	-	-	Silty Clay	0.6	23	0.0	14.4	47.8	37.8	52	17	35

TH01 TESTHOLE RECORD

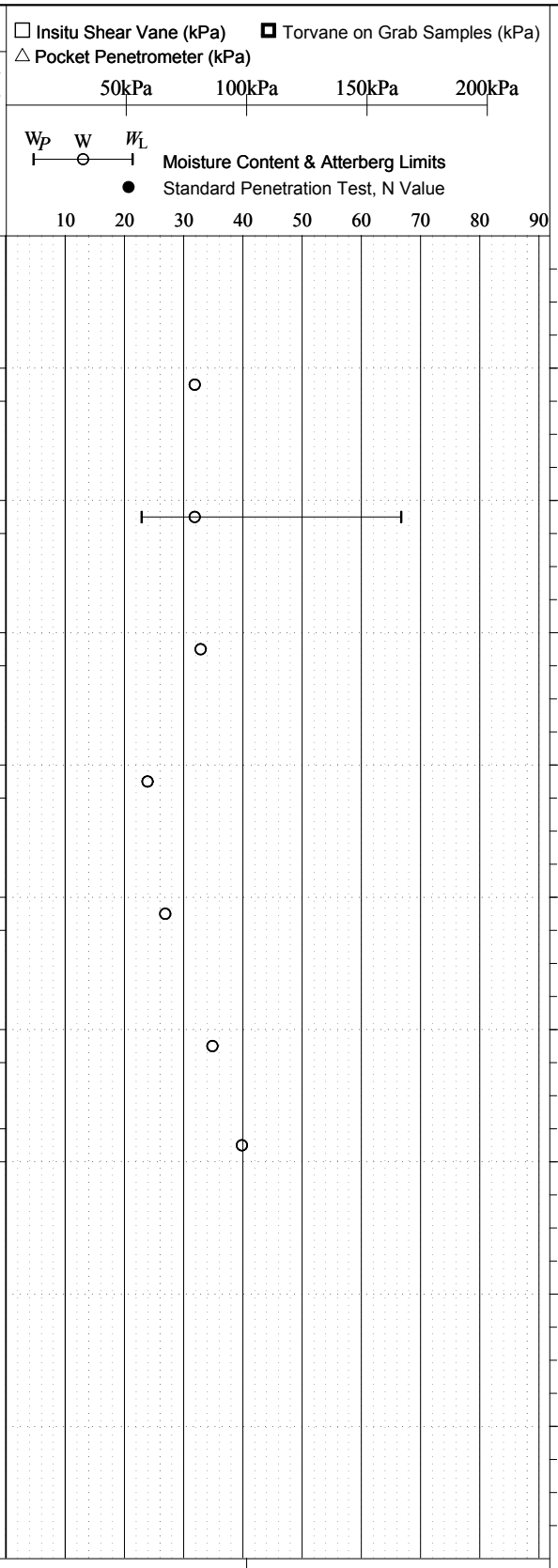
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Carruthers Ave from Arlington St and Parr St ELEVATION EASTING

DRILLING DATE December 15, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	CO		CONCRETE			
	FL		FILL: black silty clay with trace organic and some sand	GS		32
			Particle Size Analysis at 0.6 m: 0.0% Gravel, 17.1% Sand, 37.1% Silt, 45.8% Clay	GS		32
1				GS		33
	CL ML		Soft tan SILTY CLAY (CL-ML)	GS		24
				GS		27
	CH		Stiff brown fat CLAY (CH)	GS		35
2				GS		40
			TESTHOLE LOCATION: 15.0 m East of Southeast corner Carruthers Avenue and Arlington Street, 1.0 m North of property line 697 Lansdowne Avenue.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling.			
			• Testhole terminated at a depth of 2.1 m.			
3						



DEPTH (ft): 0, 2, 4, 6, 8, 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH02 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Carruthers Ave from Arlington St and Parr St ELEVATION EASTING

DRILLING DATE December 15, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	CO		CONCRETE			
	FL		FILL: black silty clay with trace organic and some sand	GS		48
				GS		31
1	CL ML		Soft tan SILTY CLAY (CL-ML)	GS		27
				GS		27
	CH		Stiff brown fat CLAY (CH)	GS		32
2				GS		40
				GS		39
			TESTHOLE LOCATION: 45.0 m East of Southeast corner Carruthers Avenue and Arlington Street, 1.0 m North of property line 691 Lansdowne Avenue. NOTE: Testhole location moved due to overhead lines. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.			
3						

☐ Insitu Shear Vane (kPa) ■ Torvane on Grab Samples (kPa)
△ Pocket Penetrometer (kPa)

50kPa 100kPa 150kPa 200kPa

W_P W W_L Moisture Content & Atterberg Limits

● Standard Penetration Test, N Value

10 20 30 40 50 60 70 80 90

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH03 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Carruthers Ave from Arlington St and Parr St ELEVATION EASTING

DRILLING DATE December 15, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
	FL		FILL: black silty clay with trace organic and some sand	GS		39
	CL ML		Soft brown SILTY CLAY (CL-ML)	GS		23
1				GS		29
	CH		Firm brown fat CLAY (CH)	GS		36
				GS		38
				GS		44
2				GS		43
			TESTHOLE LOCATION: 110.0 m East of Southeast corner Carruthers Avenue and Arlington Street, 1.0 m North between property lines 671 and 675 Lansdowne Avenue.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling.			
3			• Testhole terminated at a depth of 2.1 m.			

☐ Insitu Shear Vane (kPa) ■ Torvane on Grab Samples (kPa)

△ Pocket Penetrometer (kPa)

50kPa 100kPa 150kPa 200kPa

W_P W W_L Moisture Content & Atterberg Limits

● Standard Penetration Test, N Value

10 20 30 40 50 60 70 80 90

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH04 TESTHOLE RECORD

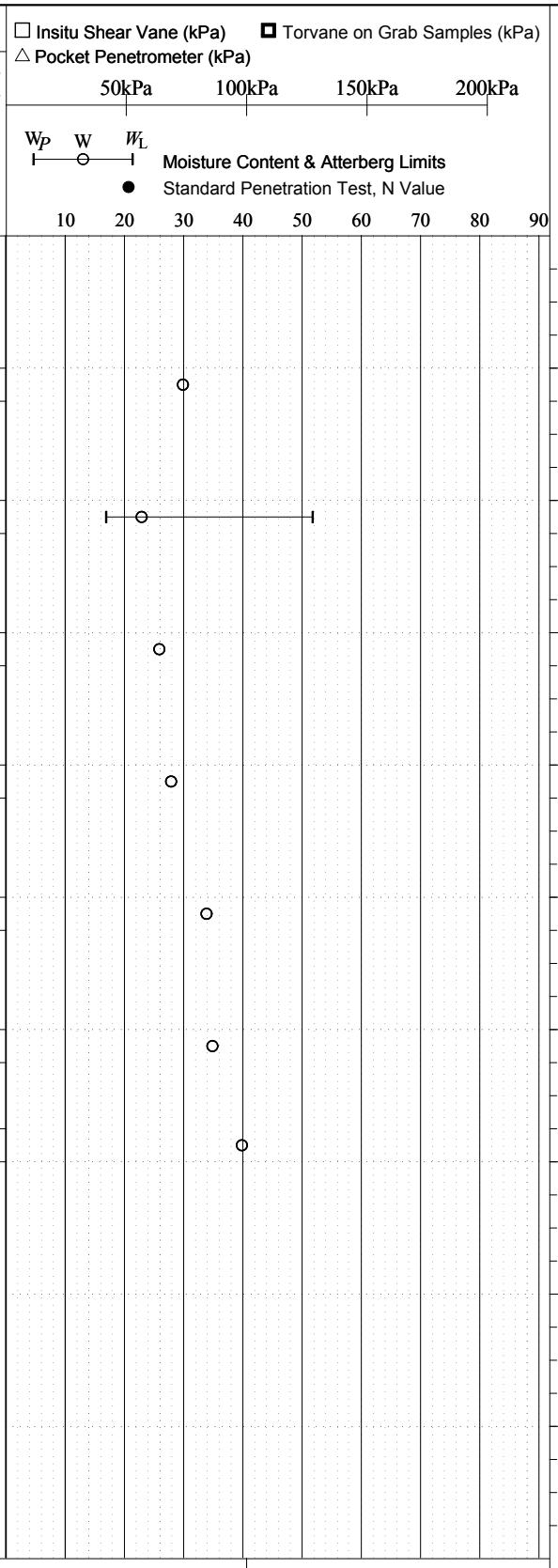
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Carruthers Ave from Arlington St and Parr St ELEVATION EASTING

DRILLING DATE December 15, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	CO		CONCRETE			
	FL		FILL: black silty clay with trace organic and some sand	GS		30
	CL ML		Soft tan SILTY CLAY (CL-ML) Particle Size Analysis at 0.6 m: 0.0% Gravel, 14.4% Sand, 47.8% Silt, 37.8% Clay	GS		23
1				GS		26
				GS		28
	CH		Firm brown fat CLAY (CH)	GS		34
				GS		35
2				GS		40
			TESTHOLE LOCATION: 38.5 m West of Southwest corner Carruthers Avenue and Parr Street, 1.0 m North of property line 661 Lansdowne Avenue. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.			
3						



DEPTH (ft): 0, 2, 4, 6, 8, 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

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Photo 1 – Core sample from Testhole TH01

Photo 2 – Core sample from Testhole TH02

Photo 3 – Core sample from Testhole TH03

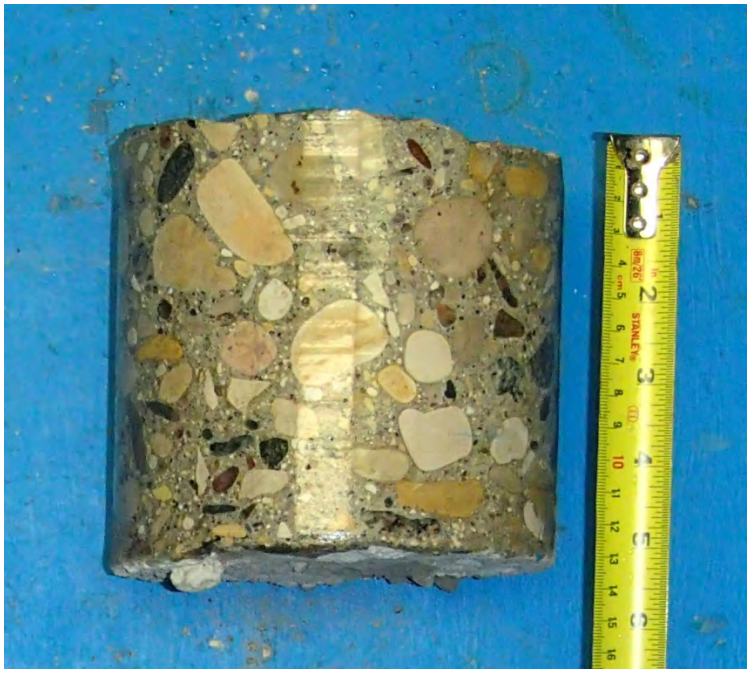


Photo 4 – Core sample from Testhole TH04

LABORATORY
199 Henlow Bay
Winnipeg MB R3Y 1G4
Tel: (204) 488-6999

PARTICLE SIZE ANALYSIS
ASTM D422

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

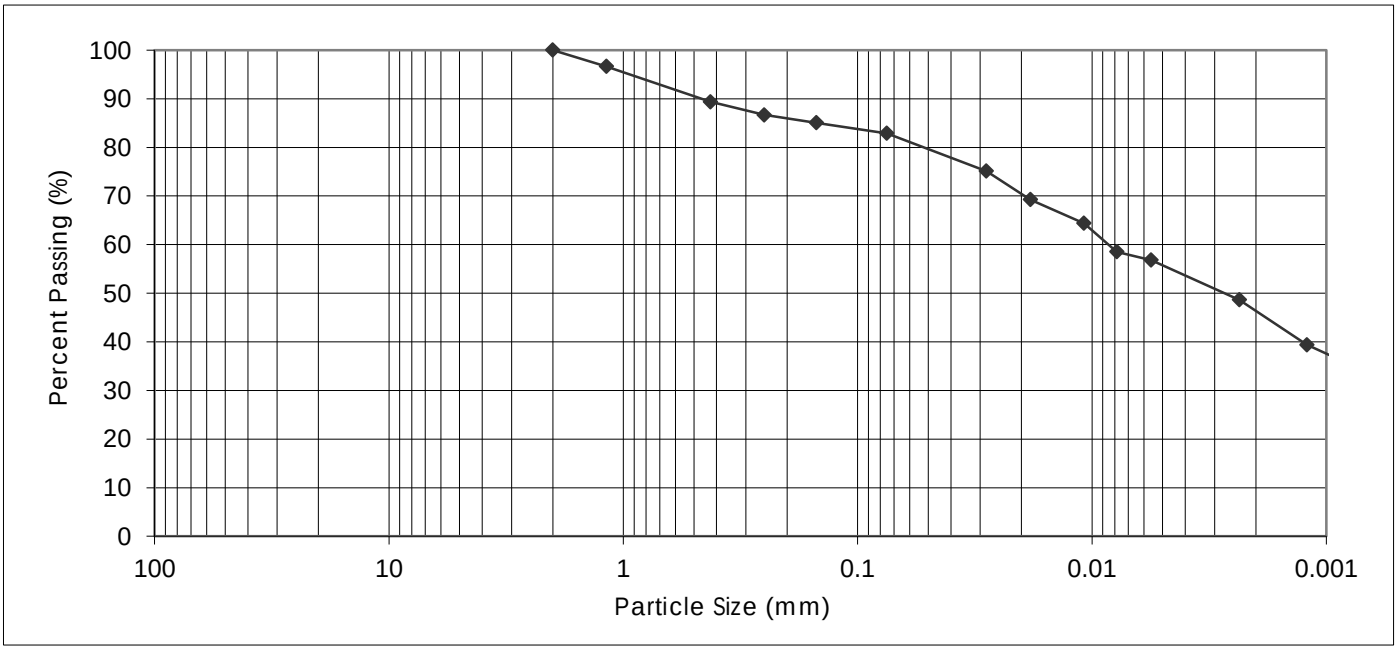
PROJECT: 2016 Residential Street Renewal Program
Carruthers Avenue from Arlington
Street to Parr Street

Attention: Brad Besyk

PROJECT NO.: 123312305

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH01 @ 0.6 m

DATE RECEIVED: January 12, 2016
TESTED BY: Larry Presado, C.Tech



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	100.0
2.00 mm	100.0

PARTICLE SIZE	PERCENT PASSING
1.18 mm	96.7
0.425 mm	89.4
0.250 mm	86.7
0.150 mm	85.1
0.075 mm	82.9
0.005 mm	55.3
0.002 mm	45.8
0.001 mm	37.4

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	0.0	10.6	6.5	37.1	45.8	37.4

REPORT DATE: January 18, 2016

REVIEWED BY: Jason Thompson, C.E.T.

LABORATORY
199 Henlow Bay
Winnipeg MB R3Y 1G4
Tel: (204) 488-6999

PARTICLE SIZE ANALYSIS
ASTM D422

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

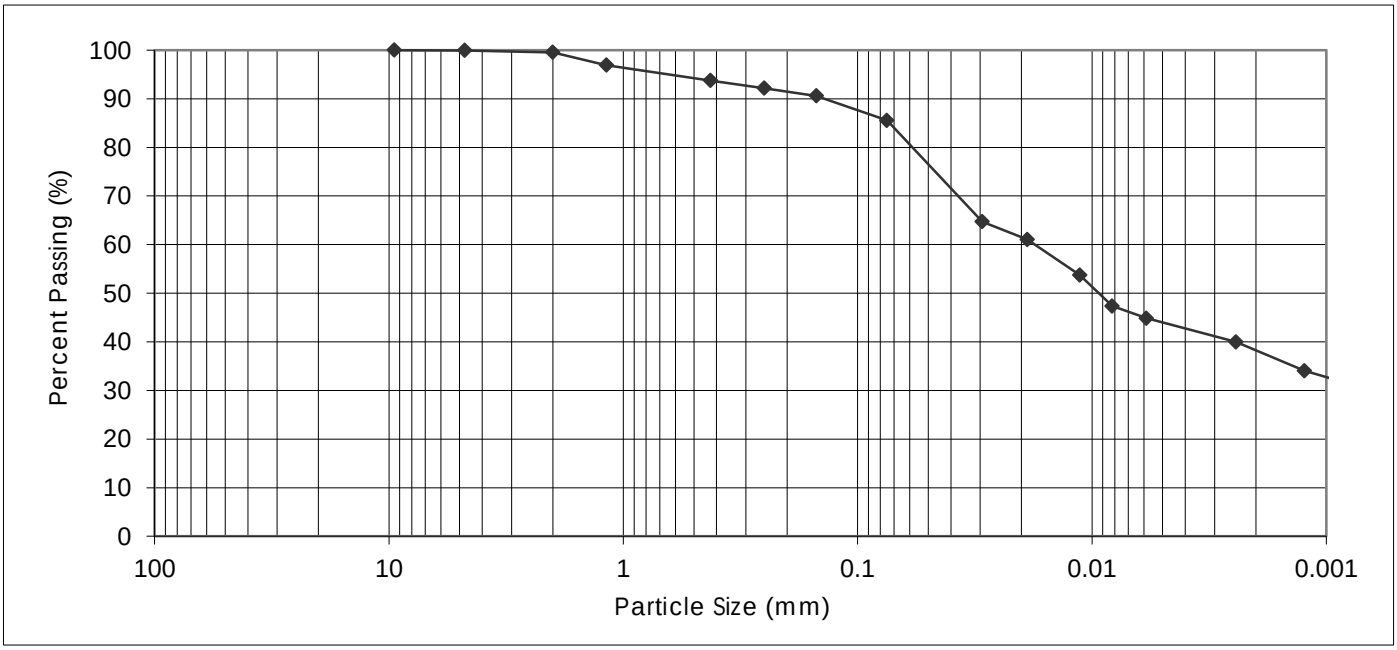
PROJECT: 2016 Residential Street Renewal Program
Carruthers Avenue from Arlington
Street to Parr Street

Attention: Brad Besyk

PROJECT NO.: 123312305

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH04 @ 0.6 m

DATE RECEIVED: January 12, 2016
TESTED BY: Larry Presado, C.Tech



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	100.0
2.00 mm	99.6

PARTICLE SIZE	PERCENT PASSING
1.18 mm	96.9
0.425 mm	93.8
0.250 mm	92.2
0.150 mm	90.6
0.075 mm	85.6
0.005 mm	43.6
0.002 mm	37.8
0.001 mm	32.7

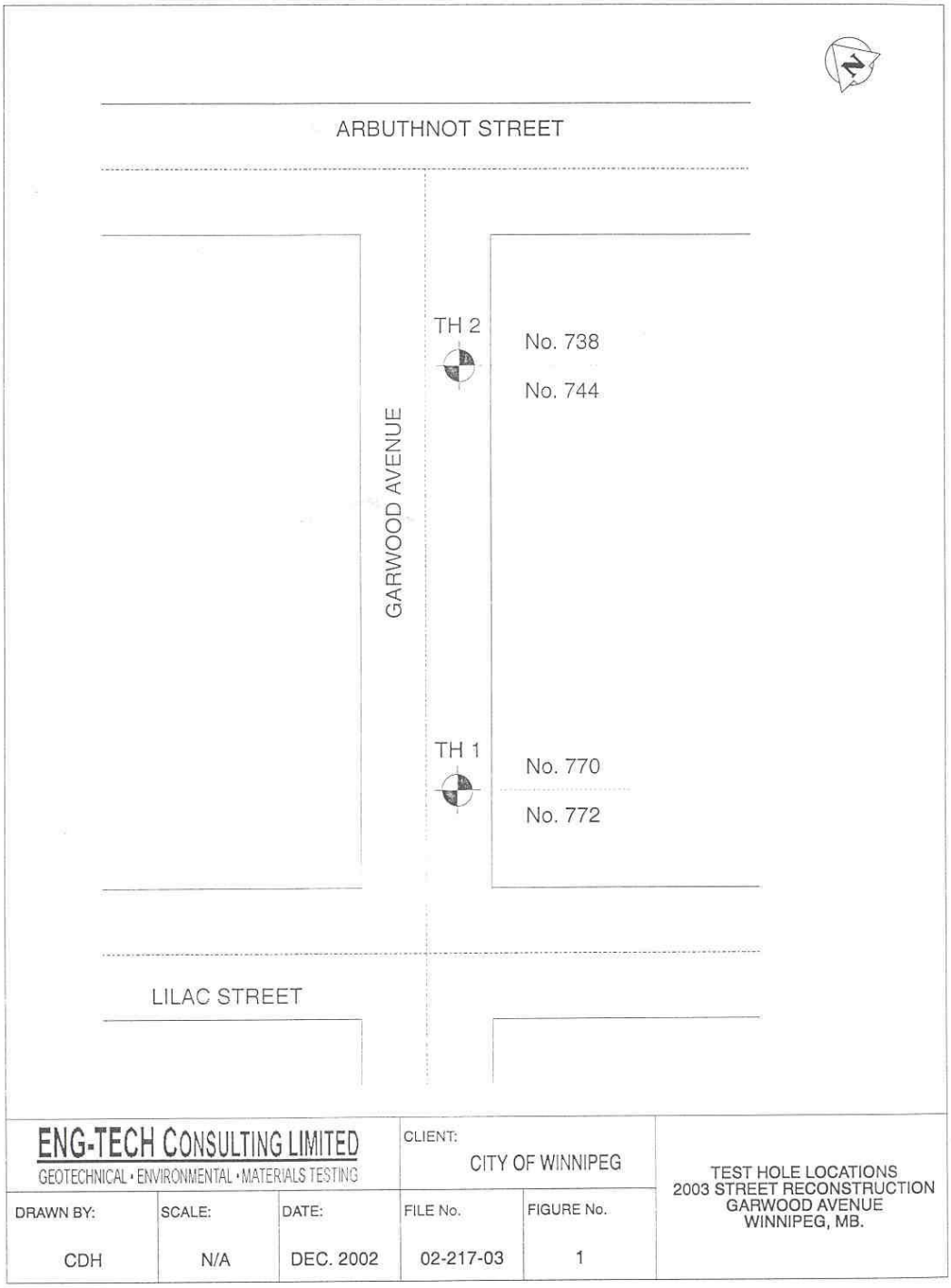
Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	0.4	5.8	8.2	47.8	37.8	32.7

REPORT DATE: January 18, 2016

REVIEWED BY: Jason Thompson, C.E.T.

Geotechnical Report for ^

Test Hole Locations



2016 Residential Street Renewal Program

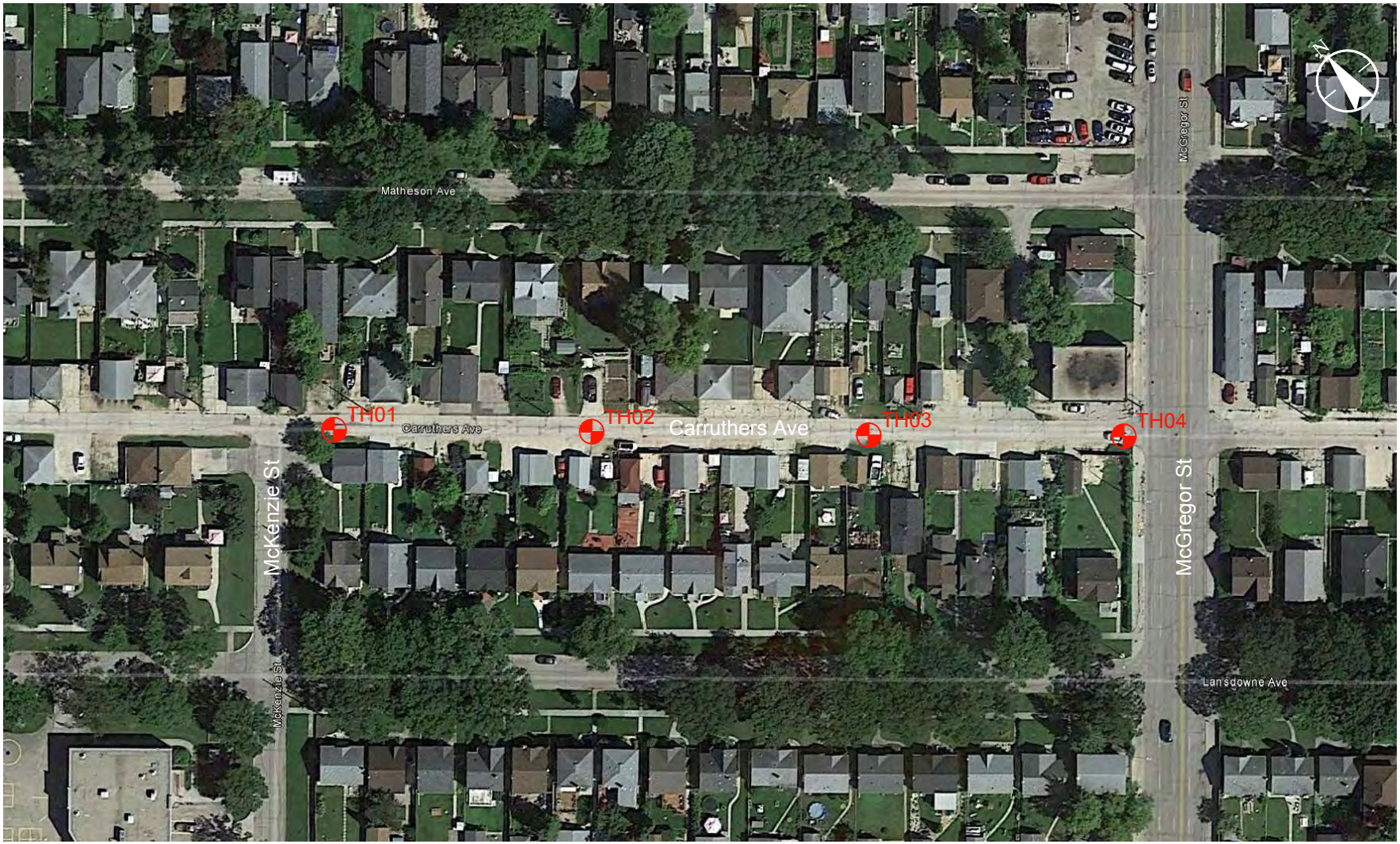
Geotechnical Investigation - Carruthers Avenue from McKenzie Street to McGregor Street

Prepared for:
City of Winnipeg
Engineering Division
Public Works Department
106-1155 Pacific Avenue
Winnipeg, Manitoba R3E 3P1

Prepared by:
Stantec Consulting Ltd.
500-311 Portage Avenue
Winnipeg, Manitoba R3B 2B9

Project No. 123312305

January 21, 2016



January, 2016
123312305

ORIGINAL SHEET - ISO 8.5x11 H - v14.06

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2016/01/20 5:06 PM By: Bun, Sothea

Stantec

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www.stantec.com

Legend

TESTHOLE

Notes

- IMAGE SOURCE: GOOGLE EARTH
- SITE: CARRUTHERS AVENUE FROM MCKENZIE AVENUE TO MCGREGOR AVENUE

Client/Project

CITY OF WINNIPEG

2016 RESIDENTIAL STREET RENEWAL PROGRAM
WINNIPEG, MB

Figure No.

1

Title

TESTHOLE LOCATION PLAN

TABLE 1
2016 RESIDENTIAL STREET RENEWAL PROGRAM
CARRUTHERS AVENUE FROM MCKENZIE STREET TO MCGREGOR STREET
GEOTECHNICAL INVESTIGATION

Testhole ID	Testhole Location	Pavement Surface		Pavement Structure		Sample Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH01	Carruthers Avenue 5.5 m East of Southeast corner of Carruthers Avenue and McKenzie Street 1.0 m North of property line 597 Lansdowne Avenue	Concrete	155	-	-	Clay	0.9	33	0.0	10.2	24.8	65.0	84	26	58
TH02	Carruthers Avenue 123.0 m West of Southwest corner Carruthers Avenue and McGregor Street 1.0 m North of property line 581 Lansdowne Avenue	Concrete	140	-	-	Silt	0.9	18	0.0	5.3	82.8	11.9	24	17	7
TH03	Carruthers Avenue 62.0 m West of Southwest corner Carruthers Avenue and McGregor Street 1.0 m North of property line 565 Lansdowne Avenue	Concrete	165	-	-	-	-	-	-	-	-	-	-	-	-
TH04	Carruthers Avenue 6.0 m West of Southwest corner Carruthers Avenue and McGregor Street 1.0 m North of property line 551 Lansdowne Avenue	Concrete	170	-	-	-	-	-	-	-	-	-	-	-	-

TH01 TESTHOLE RECORD

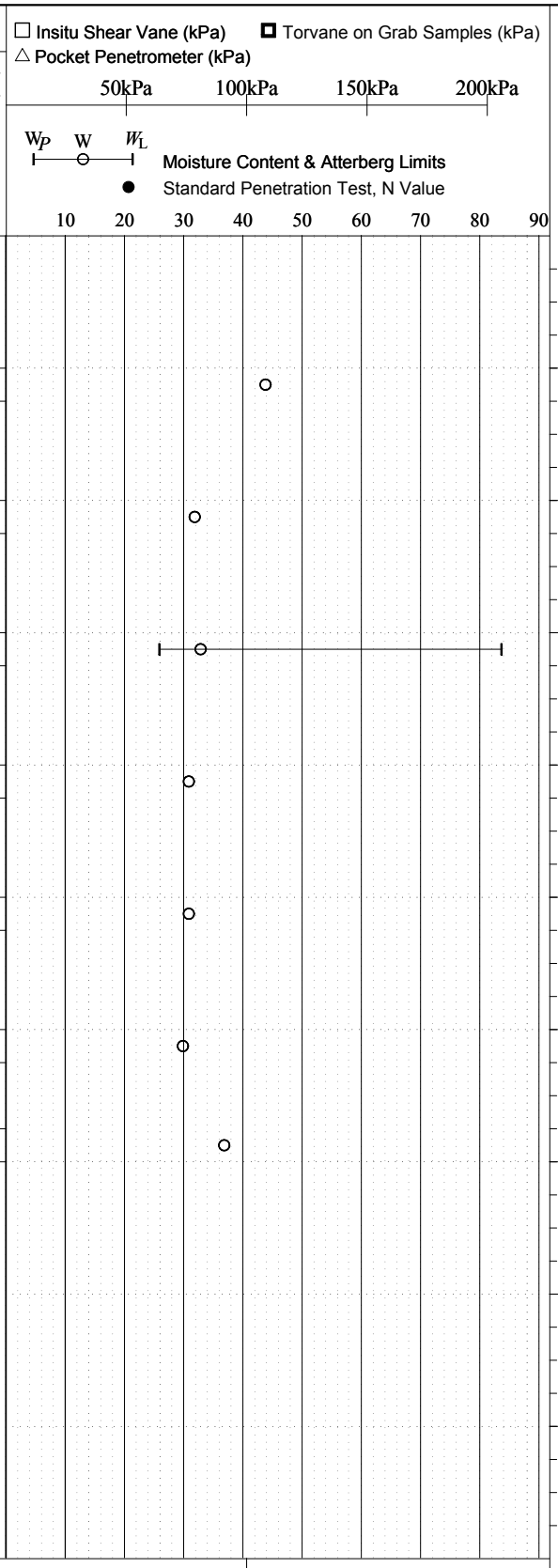
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Carruthers Ave from McKenzie St to McGregor St ELEVATION EASTING

DRILLING DATE December 15, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	CO	CONCRETE			
	FL	FILL: black clay with trace organic	GS		44
			GS		32
1	CH	Firm brown fat CLAY (CH) with some sand and silt Particle Size Analysis at 0.9 m: 0.0% Gravel, 10.2% Sand, 24.8% Silt, 65.0% Clay	GS		33
			GS		31
			GS		31
2	CL ML	Firm brown SILTY CLAY (CL-ML)	GS		30
			GS		37
3		TESTHOLE LOCATION: 5.5 m East of Southeast corner Carruthers Avenue and McKenzie Street, 1.0 m North of property line 597 Lansdowne Avenue. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.			



DEPTH (ft): 0, 2, 4, 6, 8, 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH02 TESTHOLE RECORD

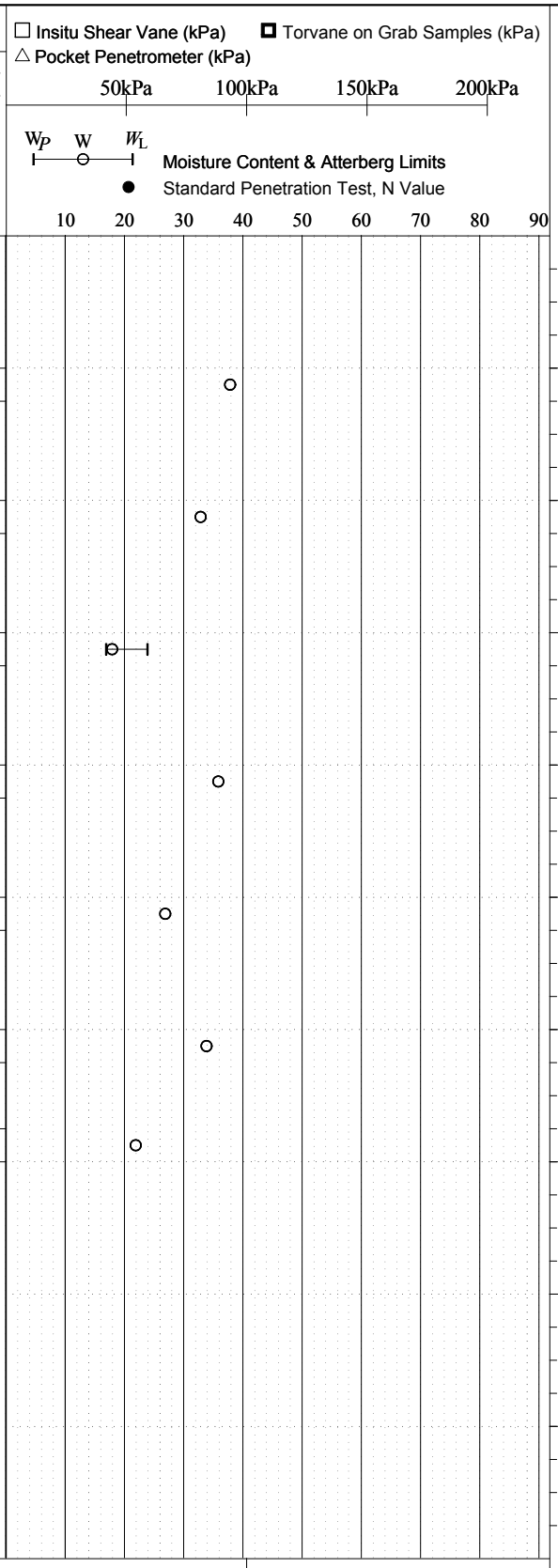
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Carruthers Ave from McKenzie St to McGregor St ELEVATION EASTING

DRILLING DATE December 15, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	CO	CONCRETE			
	FL	FILL: black clay with trace organic	GS		38
	ML	Soft tan SILT (ML) with trace sand and some clay	GS		33
1	ML	Particle Size Analysis at 0.9 m: 0.0% Gravel, 5.3% Sand, 82.8% Silt, 11.9% Clay	GS		18
	CH	Firm brown fat CLAY (CH) with some sand and silt	GS		36
	CH		GS		27
	CH		GS		34
2	ML	Soft tan SILT (ML)	GS		22
		TESTHOLE LOCATION: 123.0 m West of Southwest corner Carruthers Avenue and McGregor Street, 1.0 m North of property line 581 Lansdowne Avenue.			
		• No groundwater seepage or soil sloughing was observed during or upon completion of drilling.			
3		• Testhole terminated at a depth of 2.1 m.			



Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH03 TESTHOLE RECORD

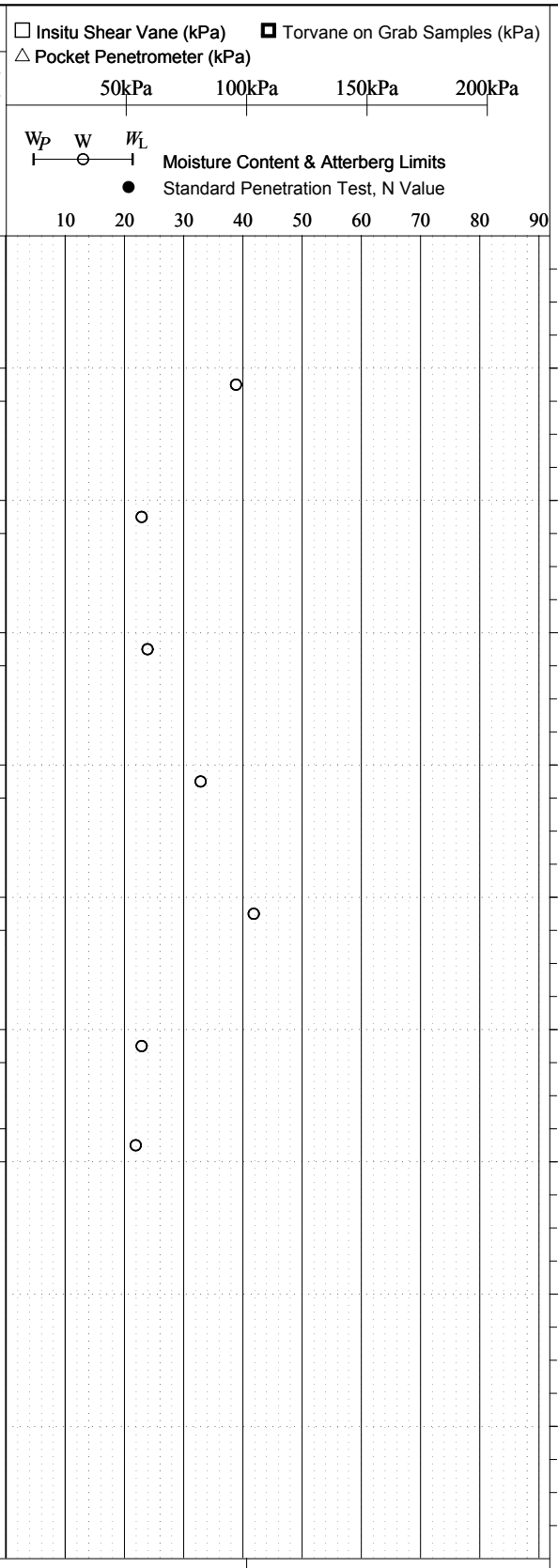
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Carruthers Ave from McKenzie St to McGregor St ELEVATION EASTING

DRILLING DATE December 15, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	CO	CONCRETE			
	FL	FILL: black clay with trace organic	GS		39
			GS		23
	ML	Soft tan SILT (ML) with trace sand and some clay			
1	CH	Firm brown fat CLAY (CH) with some sand and silt	GS		24
			GS		33
			GS		42
2	ML	Soft tan SILT (ML)	GS		23
			GS		22
3		TESTHOLE LOCATION: 62.0 m West of Southwest corner Carruthers Avenue and McGregor Street, 1.0 m North of property line 565 Lansdowne Avenue. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.			



DEPTH (ft): 0, 2, 4, 6, 8, 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH04 TESTHOLE RECORD

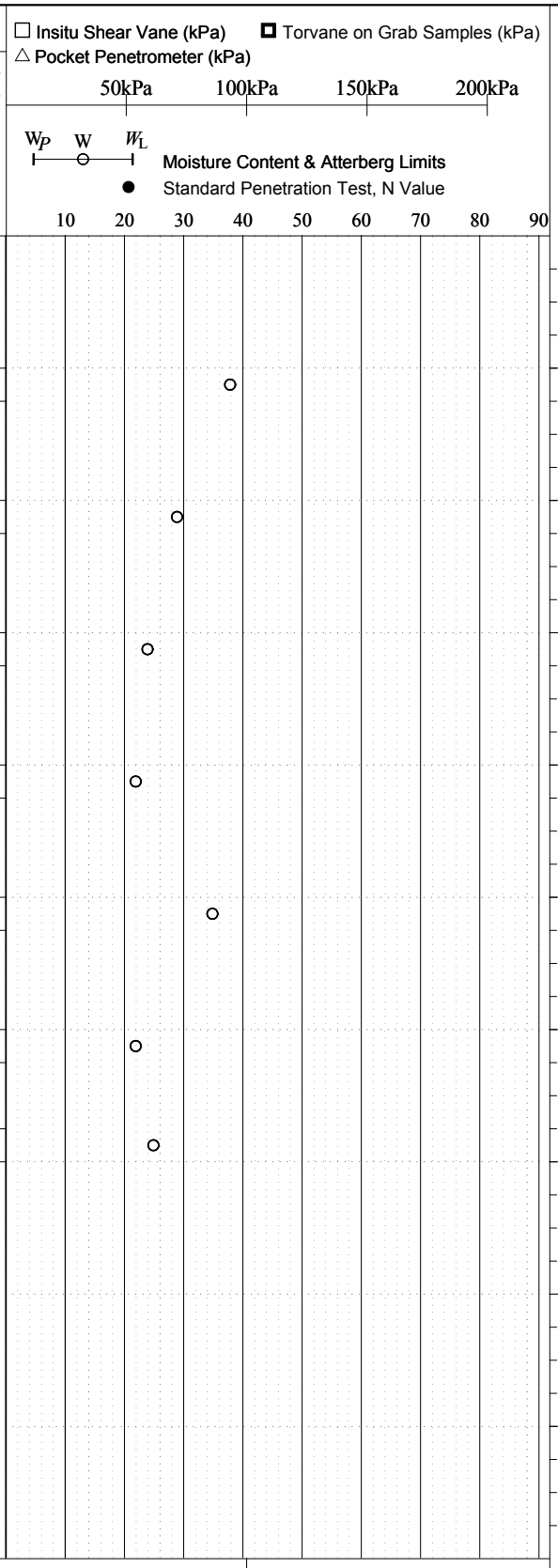
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Carruthers Ave from McKenzie St to McGregor St ELEVATION EASTING

DRILLING DATE December 15, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	CO	CONCRETE			
	FL	FILL: black clay with trace organic	GS		38
			GS		29
1	ML	Soft tan SILT (ML) with trace sand and some clay	GS		24
			GS		22
	CH	Firm brown fat CLAY (CH) with some sand and silt	GS		35
	ML	Soft tan SILT (ML)	GS		22
2			GS		25
		TESTHOLE LOCATION: 6.0 m West of Southwest corner Carruthers Avenue and McGregor Street, 1.0 m North of property line 551 Lansdowne Avenue.			
		• No groundwater seepage or soil sloughing was observed during or upon completion of drilling.			
		• Testhole terminated at a depth of 2.1 m.			
3					



DEPTH (ft): 0, 2, 4, 6, 8, 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

Photo 1 – Core sample from Testhole TH01

Photo 2 – Core sample from Testhole TH02

Photo 3 – Core sample from Testhole TH03

Photo 4 – Core sample from Testhole TH04

LABORATORY
199 Henlow Bay
Winnipeg MB R3Y 1G4
Tel: (204) 488-6999

PARTICLE SIZE ANALYSIS
ASTM D422

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

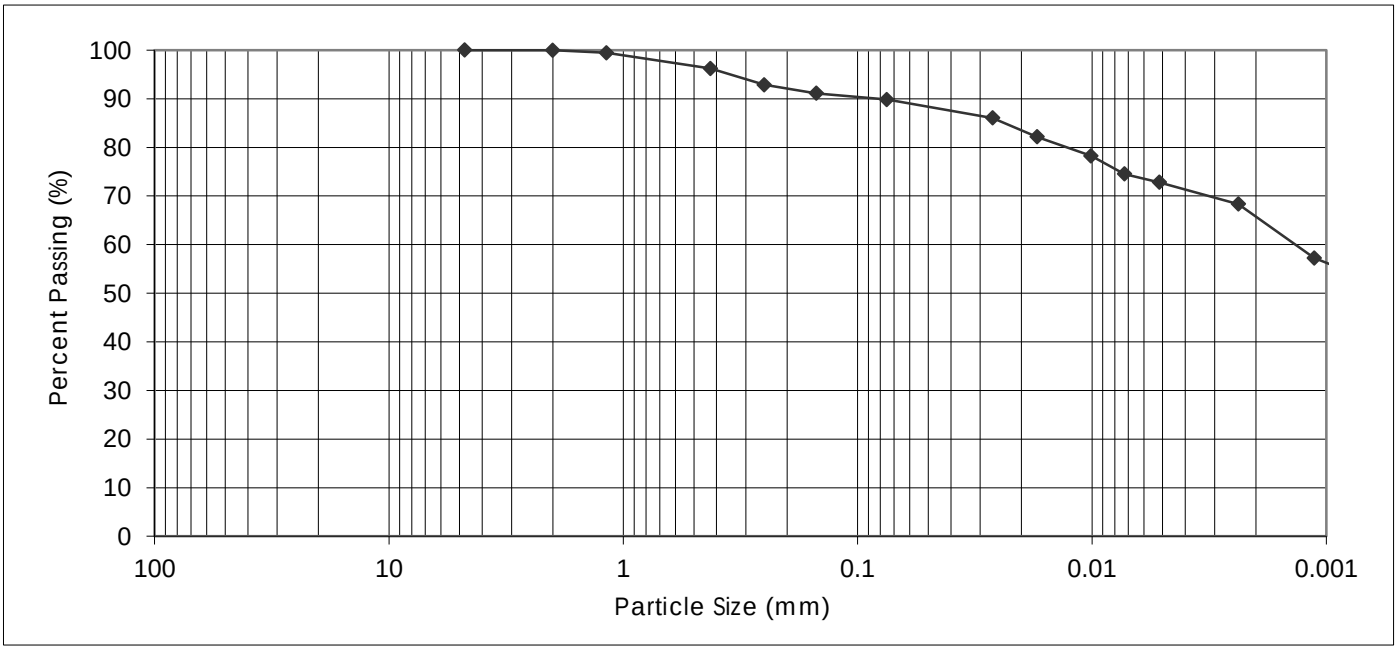
PROJECT: 2016 Residential Street Renewal Program
Carruthers Avenue from McKenzie Street to McGregor Street

Attention: Brad Besyk

PROJECT NO.: 123312305

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH01 @ 0.9 m

DATE RECEIVED: January 12, 2016
TESTED BY: Larry Presado, C.Tech



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	100.0
2.00 mm	100.0

PARTICLE SIZE	PERCENT PASSING
1.18 mm	99.5
0.425 mm	96.2
0.250 mm	92.9
0.150 mm	91.1
0.075 mm	89.8
0.005 mm	72.6
0.002 mm	65.0
0.001 mm	56.2

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	0.0	3.8	6.4	24.8	65.0	56.2

REPORT DATE: January 18, 2016

REVIEWED BY: Jason Thompson, C.E.T.

LABORATORY
199 Henlow Bay
Winnipeg MB R3Y 1G4
Tel: (204) 488-6999

PARTICLE SIZE ANALYSIS
ASTM D422

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

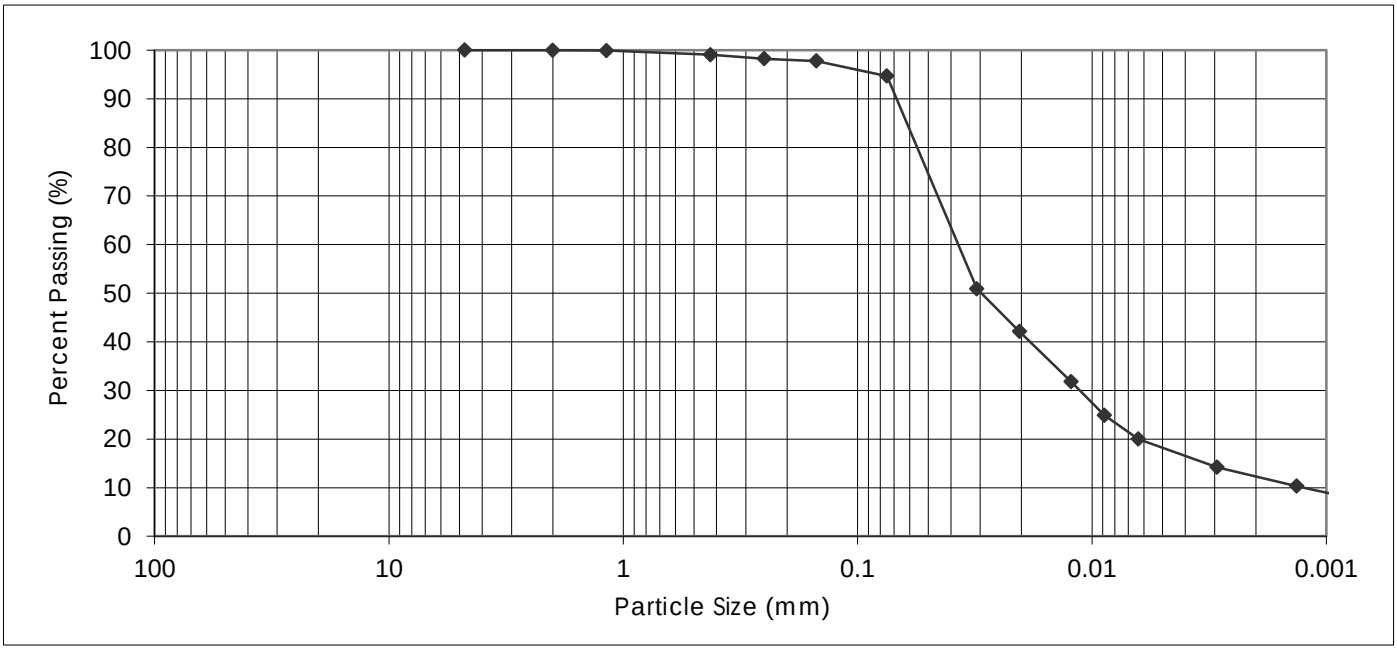
PROJECT: 2016 Residential Street Renewal Program
Carruthers Avenue from McKenzie Street to McGregor Street

Attention: Brad Besyk

PROJECT NO.: 123312305

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH02 @ 0.9 m

DATE RECEIVED: January 12, 2016
TESTED BY: Larry Presado, C.Tech



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	100.0
2.00 mm	100.0

PARTICLE SIZE	PERCENT PASSING
1.18 mm	99.9
0.425 mm	99.1
0.250 mm	98.3
0.150 mm	97.8
0.075 mm	94.7
0.005 mm	17.7
0.002 mm	11.9
0.001 mm	9.0

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	0.0	0.9	4.4	82.8	11.9	9.0

REPORT DATE: January 18, 2016

REVIEWED BY: Jason Thompson, C.E.T.

2016 Residential Street Renewal Program

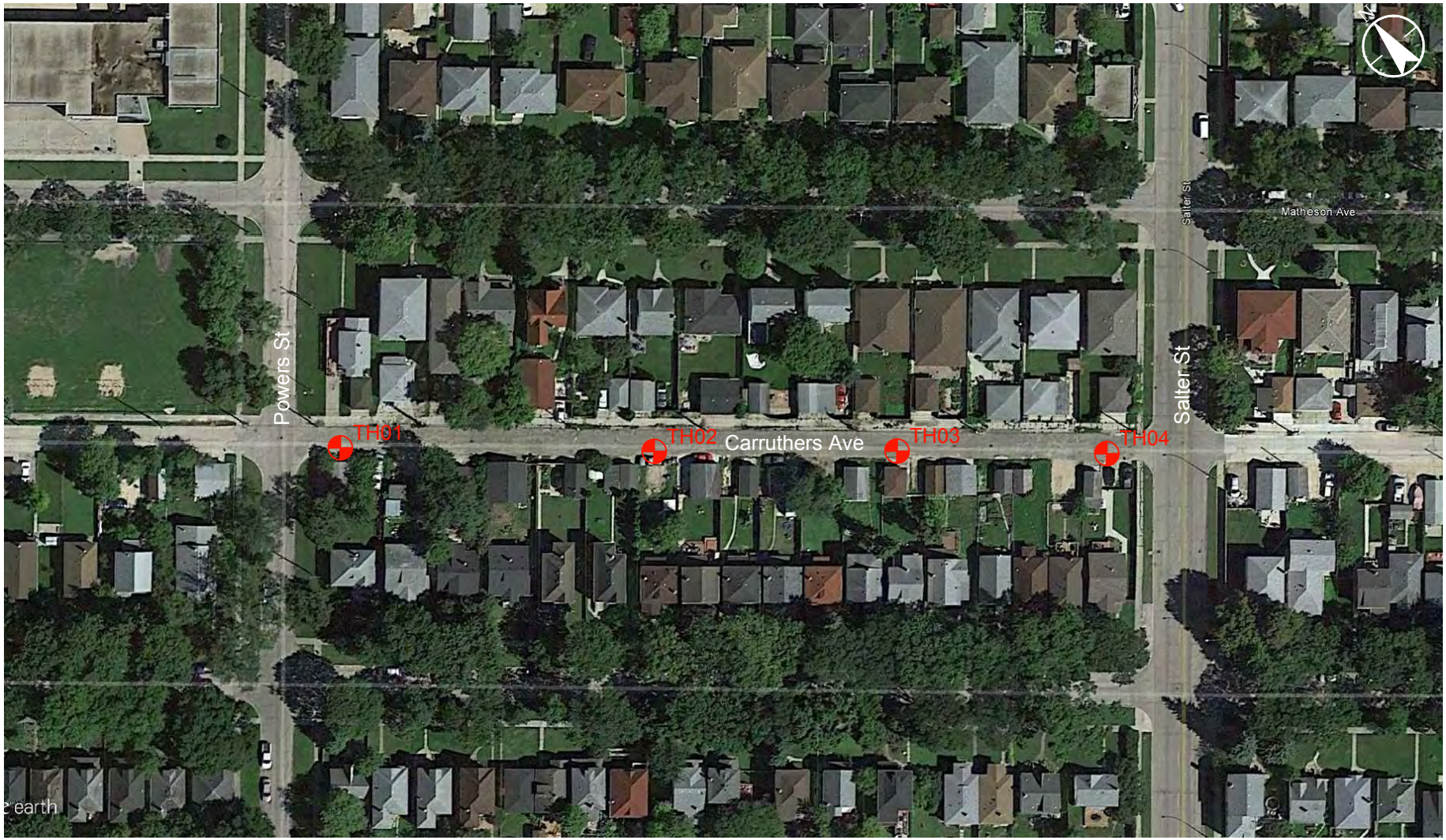
Geotechnical Investigation - Carruthers Avenue from Powers Street to Salter Street

Prepared for:
City of Winnipeg
Engineering Division
Public Works Department
106-1155 Pacific Avenue
Winnipeg, Manitoba R3E 3P1

Prepared by:
Stantec Consulting Ltd.
500-311 Portage Avenue
Winnipeg, Manitoba R3B 2B9

Project No. 123312305

January 21, 2016



January, 2016
123312305

ORIGINAL SHEET - ISO 8.5x11 H - v14.06

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2016/01/20 11:29 AM By: Bun, Sothea

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Tel. 204.489.5900 Fax. 204.453.9012
www.stantec.com

Legend

TESTHOLE

Notes

- IMAGE SOURCE: GOOGLE EARTH
- SITE: CARRUTHERS AVENUE FROM POWERS STREET TO SALTER STREET

Client/Project

CITY OF WINNIPEG

2016 RESIDENTIAL STREET RENEWAL PROGRAM
WINNIPEG, MB

Figure No.

1

Title

TESTHOLE LOCATION PLAN

TABLE 1
2016 RESIDENTIAL STREET RENEWAL PROGRAM
CARRUTHERS AVENUE FROM POWERS STREET TO SALTER STREET
GEOTECHNICAL INVESTIGATION

Testhole ID	Testhole Location	Pavement Surface		Pavement Structure		Sample Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH01	Carruthers Avenue 9.5 m East of Southeast Carruthers Avenue and Powers Street 1.0 m North of property line 375 Lansdowne Avenue	Asphalt Concrete	35 300	-	-	Clayey Silt	0.9	25	0.3	8.2	62.2	28.9	33	16	17
TH02	Carruthers Avenue 80.5 m East of Southeast corner Carruthers Avenue and Powers Street 1.0 m North of property line 359 Lansdowne Avenue	Asphalt Concrete	20 170	-	-	-	-	-	-	-	-	-	-	-	-
TH03	Carruthers Avenue 132.5 m East of Southeast corner Carruthers Avenue and Powers Street 1.0 m North of property line 347 Lansdowne Avenue	Asphalt Concrete	30 260	-	-	Clay	0.6	32	0.0	5.1	28.4	66.5	83	25	58
TH04	Carruthers Avenue 11.0 m West of Southwest corner Carruthers Avenue and Salter Street 1.0 m North of property line 337 Lansdowne Avenue	Asphalt Concrete	30 200	-	-	-	-	-	-	-	-	-	-	-	-

TH01 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Carruthers Ave from Powers St and Salter St ELEVATION EASTING

DRILLING DATE December 15, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
	CH		Black firm fat CLAY (CH) with trace organic and sand, some silt	GS		32
				GS		38
1	ML		Soft tan CLAYEY SILT (ML) with trace sand Particle Size Analysis at 0.9 m: 0.3% Gravel, 8.2% Sand, 62.2% Silt, 28.9% Clay	GS		25
				GS		26
				GS		27
2				GS		25
				GS		26
3			TESTHOLE LOCATION: 9.5 m East of Southeast corner Carruthers Avenue and Powers Street, 1.0 m North of property line 375 Lansdowne Avenue. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.			

☐ Insitu Shear Vane (kPa) ■ Torvane on Grab Samples (kPa)
△ Pocket Penetrometer (kPa)

50kPa 100kPa 150kPa 200kPa

W_P W W_L Moisture Content & Atterberg Limits

● Standard Penetration Test, N Value

10 20 30 40 50 60 70 80 90

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH02 TESTHOLE RECORD

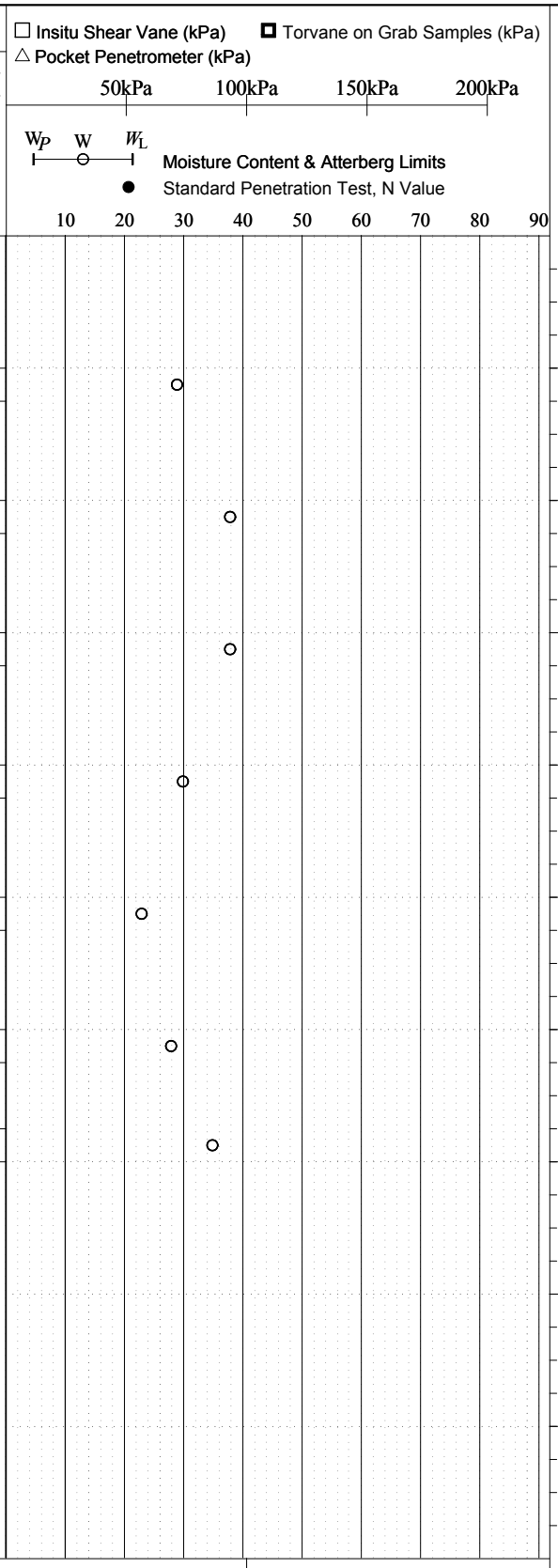
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Carruthers Ave from Powers St and Salter St ELEVATION EASTING

DRILLING DATE December 15, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
	CH		Black firm fat CLAY (CH) with trace organic and sand, some silt	GS		29
				GS		38
1				GS		38
				GS		30
	ML		Soft tan CLAYEY SILT (ML) with trace sand	GS		23
	CL ML		Firm brown SILTY CLAY (CL-ML)	GS		28
2				GS		35
			TESTHOLE LOCATION: 80.5 m East of Southeast corner Carruthers Avenue and Powers Street, 1.0 m North of property line 359 Lansdowne Avenue.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling.			
			• Testhole terminated at a depth of 2.1 m.			
3						



DEPTH (ft): 0, 2, 4, 6, 8, 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH03 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Carruthers Ave from Powers St and Salter St ELEVATION EASTING

DRILLING DATE December 15, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
	CH		Black firm fat CLAY (CH) with trace organic and sand, some silt	GS		36
				GS		32
1	CH		Particle Size Analysis at 0.9 m: 0.0% Gravel, 5.1% Sand, 28.4% Silt, 66.5% Clay	GS		36
				GS		32
				GS		34
	CL ML		Firm brown SILTY CLAY (CL-ML)	GS		31
2				GS		44
			TESTHOLE LOCATION: 132.5 m East of Southeast corner Carruthers Avenue and Powers Street, 1.0 m North of property line 347 Lansdowne Avenue.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling.			
			• Testhole terminated at a depth of 2.1 m.			
3						

☐ Insitu Shear Vane (kPa) ■ Torvane on Grab Samples (kPa)
△ Pocket Penetrometer (kPa)

50kPa 100kPa 150kPa 200kPa

W_P W W_L Moisture Content & Atterberg Limits

● Standard Penetration Test, N Value

10 20 30 40 50 60 70 80 90

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH04 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Carruthers Ave from Powers St and Salter St ELEVATION EASTING

DRILLING DATE December 15, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
			FILL: tan sand with gravel	GS		7
				GS		9
1	SP			GS		8
				GS		4
				GS		3
	CH		Soft brown fat CLAY (CH) with trace silt	GS		29
2				GS		33
			TESTHOLE LOCATION: 11.0 m West of Southwest corner Carruthers Avenue and Salter Street, 1.0 m North of property line 337 Lansdowne Avenue.			
			NOTE: All underground utilities were cleared at testhole location.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling.			
3			• Testhole terminated at a depth of 2.1 m.			

☐ Insitu Shear Vane (kPa) ■ Torvane on Grab Samples (kPa)
△ Pocket Penetrometer (kPa)

50kPa 100kPa 150kPa 200kPa

W_P W W_L Moisture Content & Atterberg Limits

● Standard Penetration Test, N Value

10 20 30 40 50 60 70 80 90

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

Photo 1 – Core sample from Testhole TH01

Photo 2 – Core sample from Testhole TH02

Photo 3 – Core sample from Testhole TH03

Photo 4 – Core sample from Testhole TH04

LABORATORY
199 Henlow Bay
Winnipeg MB R3Y 1G4
Tel: (204) 488-6999

PARTICLE SIZE ANALYSIS
ASTM D422

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

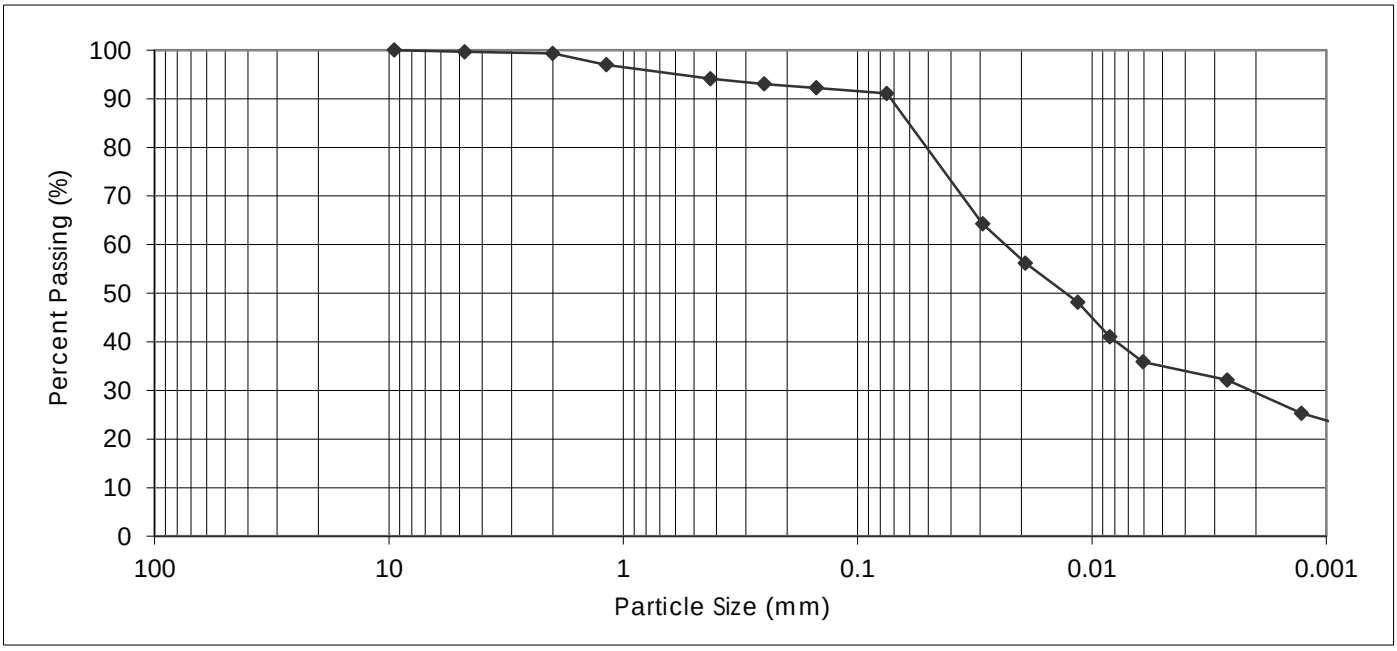
PROJECT: 2016 Residential Street Renewal Program
Carruthers Avenue from Powers
Street to Salter Street

Attention: Brad Besyk

PROJECT NO.: 123312305

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH01 @ 0.9 m

DATE RECEIVED: January 12, 2016
TESTED BY: Larry Presado, C.Tech



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	99.7
2.00 mm	99.3

PARTICLE SIZE	PERCENT PASSING
1.18 mm	97.0
0.425 mm	94.1
0.250 mm	93.0
0.150 mm	92.2
0.075 mm	91.1
0.005 mm	34.7
0.002 mm	28.9
0.001 mm	23.8

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.3	0.4	5.2	3.0	62.2	28.9	23.8

REPORT DATE: January 18, 2016

REVIEWED BY: Jason Thompson, C.E.T.

LABORATORY
199 Henlow Bay
Winnipeg MB R3Y 1G4
Tel: (204) 488-6999

PARTICLE SIZE ANALYSIS
ASTM D422

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

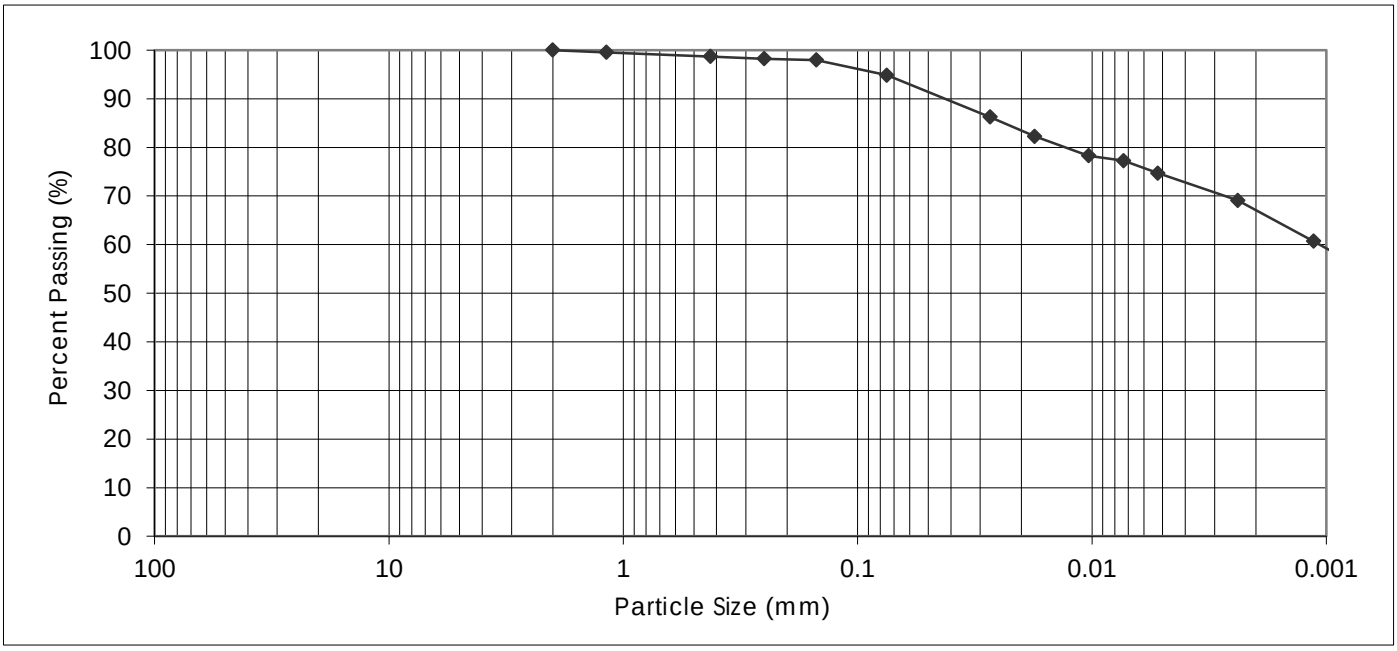
PROJECT: 2016 Residential Street Renewal Program
Carruthers Avenue from Powers
Street to Salter Street

Attention: Brad Besyk

PROJECT NO.: 123312305

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH03 @ 0.6 m

DATE RECEIVED: January 12, 2016
TESTED BY: Larry Presado, C.Tech



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	100.0
2.00 mm	100.0

PARTICLE SIZE	PERCENT PASSING
1.18 mm	99.6
0.425 mm	98.7
0.250 mm	98.2
0.150 mm	98.0
0.075 mm	94.9
0.005 mm	74.2
0.002 mm	66.5
0.001 mm	59.1

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	0.0	1.3	3.8	28.4	66.5	59.1

REPORT DATE: January 18, 2016

REVIEWED BY: Jason Thompson, C.E.T.

2016 Residential Street Renewal Program

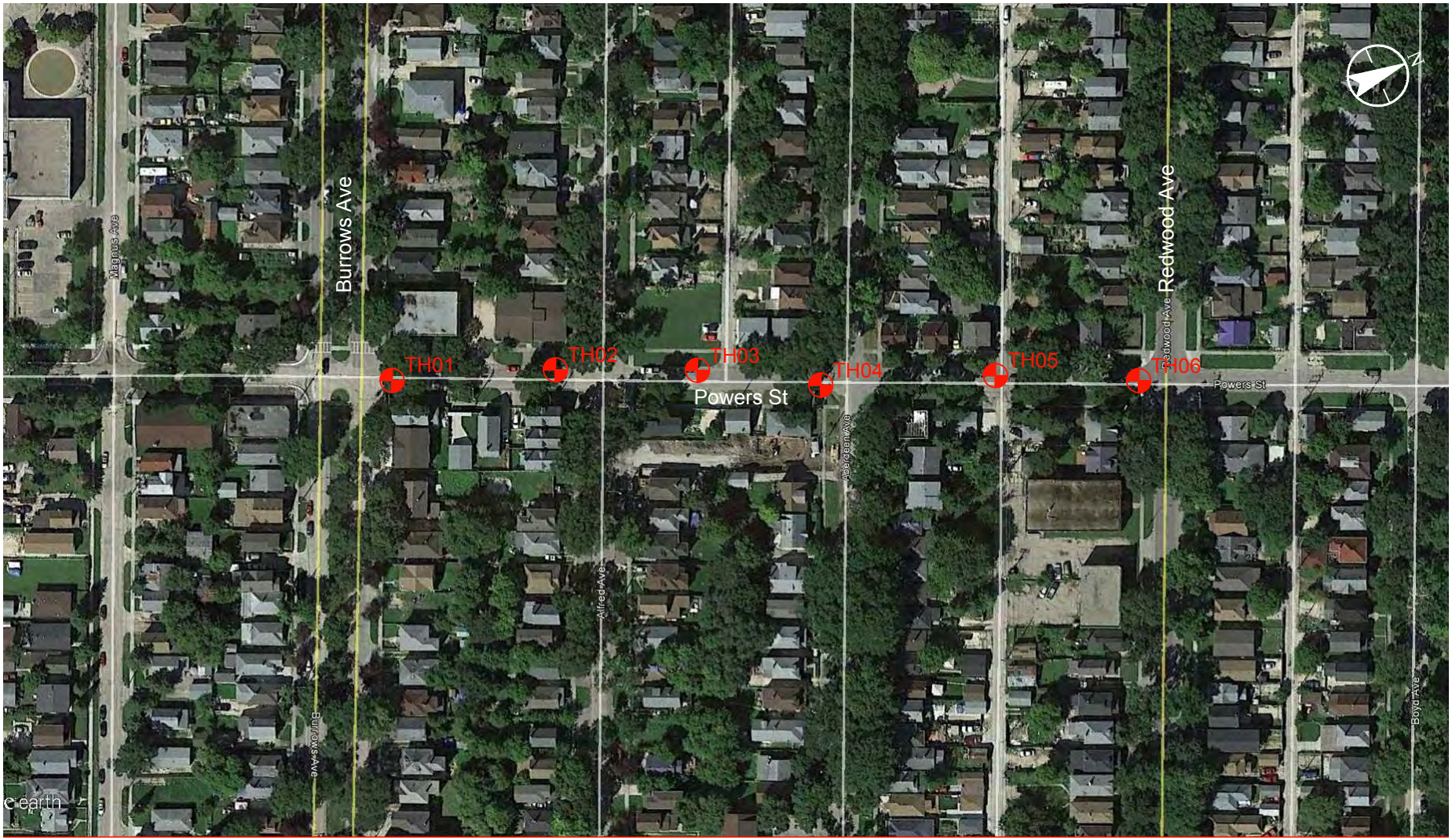
Geotechnical Investigation - Powers Street from Burrows Avenue to Redwood Avenue

Prepared for:
City of Winnipeg
Engineering Division
Public Works Department
106-1155 Pacific Avenue
Winnipeg, Manitoba R3E 3P1

Prepared by:
Stantec Consulting Ltd.
500-311 Portage Avenue
Winnipeg, Manitoba R3B 2B9

Project No. 123312305

January 21, 2016



January, 2016
123312305

ORIGINAL SHEET - ISO 8.5x11 H - v14.06

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2016/01/20 11:37 AM By: Bun, Sothea

Stantec

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www.stantec.com

Legend

TESTHOLE

Notes

- IMAGE SOURCE: GOOGLE EARTH
- SITE: POWERS STREET FROM BURROWS AVENUE TO REDWOOD AVENUE

Client/Project

CITY OF WINNIPEG

2016 RESIDENTIAL STREET RENEWAL PROGRAM
WINNIPEG, MB

Figure No.

1

Title

TESTHOLE LOCATION PLAN

TABLE 1
2016 RESIDENTIAL STREET RENEWAL PROGRAM
POWERS STREET FROM BURROWS AVENUE TO REDWOOD AVENUE
GEOTECHNICAL INVESTIGATION

Testhole ID	Testhole Location	Pavement Surface		Pavement Structure		Sample Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH01	Powers Street 4.0 m North of Northeast corner Powers Street and Burrows Street 2.0 m West of East curb	Concrete	205	-	-	Silt	0.9	20	0.2	8.0	77.8	14.0	25	18	7
TH02	Powers Street 12.5 m South of Southwest corner Powers Street and Alfred Avenue 2.0 m East of West curb	Asphalt Concrete	45 145	-	-	-	-	-	-	-	-	-	-	-	-
TH03	Powers Street 27.0 m North of Northwest corner Powers Street and Alfred Avenue 2.0 m East of West curb	Asphalt Concrete	30 150	-	-	Clay	0.9	29	0.1	5.8	29.3	64.8	79	22	57
TH04	Powers Street 5.5 m South of Southeast corner Powers Street and Aberdeen Avenue 2.0 m West of East curb	Asphalt Concrete	50 195	-	-	-	-	-	-	-	-	-	-	-	-
TH05	Powers Street 43.0 m North of Northwest corner Powers Street and Aberdeen Avenue 1.5 m East of West curb	Asphalt Concrete	20 170	-	-	-	-	-	-	-	-	-	-	-	-
TH06	Powers Street 5.0 m South of Southeast corner Powers Street and Redwood Avenue 2.0 m West of East curb	Asphalt Concrete	60 160	Crushed Limestone	540	Clay	0.9	32	0.4	9.6	29.9	60.1	86	26	60

TH01 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Powers St from Burrows Ave to Redwood Ave ELEVATION EASTING

DRILLING DATE December 16, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	CO	CONCRETE			
	FL	FILL: black silty clay with trace organic, sand and gravel	GS		18
	ML	Soft tan SILT (ML) with trace clay, sand and gravel	GS		27
1	ML	Particle Size Analysis at 0.9 m: 0.2% Gravel, 8.0% Sand, 77.8% Silt, 14.0% Clay	GS		20
	ML		GS		20
	ML		GS		24
	CH	Firm brown fat CLAY (CH)	GS		29
2	CH		GS		40
		TESTHOLE LOCATION: 4.0 m North of Northeast corner Powers Street and Burrows Avenue, 2.0 m West of East curb.			
		• No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.			
3					

□ Insitu Shear Vane (kPa) ■ Torvane on Grab Samples (kPa)
△ Pocket Penetrometer (kPa)

50kPa 100kPa 150kPa 200kPa

W_P W W_L Moisture Content & Atterberg Limits

● Standard Penetration Test, N Value

10 20 30 40 50 60 70 80 90

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH02 TESTHOLE RECORD

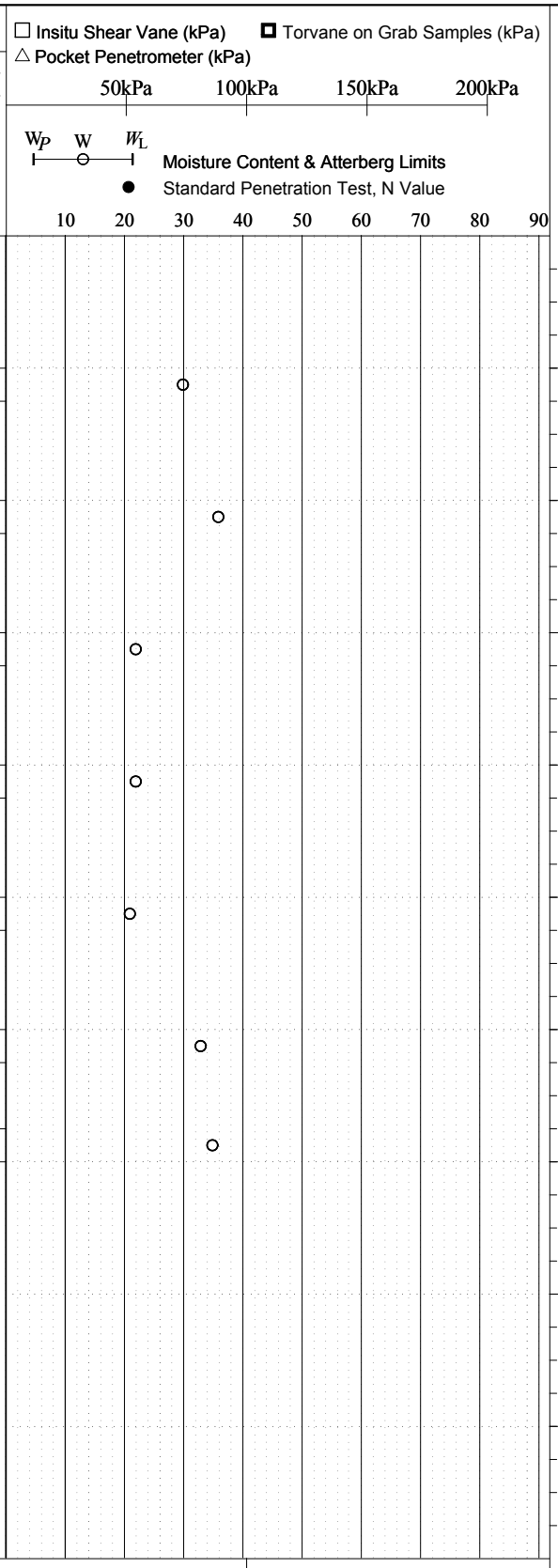
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Powers St from Burrows Ave to Redwood Ave ELEVATION EASTING

DRILLING DATE December 16, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS	ASPHALT			
	CO	CONCRETE			
	FL	FILL: black silty clay with trace organic, sand and gravel	GS		30
	CH	Firm black fat CLAY (CH) with some silt, trace sand and gravel	GS		36
1	ML	Soft tan SILT (ML) with trace clay, sand and gravel	GS		22
			GS		22
			GS		21
2	CH	Firm brown fat CLAY (CH)	GS		33
			GS		35
3		TESTHOLE LOCATION: 12.5 m South of Southwest corner Powers Street and Alfred Avenue, 2.0 m East of West curb. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.			



DEPTH (ft): 0, 2, 4, 6, 8, 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH03 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Powers St from Burrows Ave to Redwood Ave ELEVATION EASTING

DRILLING DATE December 16, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
	CH		Firm black fat CLAY (CH) with trace organic, some silt, trace sand and gravel	GS		29
				GS		33
1			Particle Size Analysis at 0.9 m: 0.1% Gravel, 5.8% Sand, 29.3% Silt, 64.8% Clay	GS		29
				GS		28
	CL ML		Soft brown SILTY CLAY (CL-ML)	GS		27
2				GS		22
				GS		24
			TESTHOLE LOCATION: 27.0 m North of Northwest corner Powers Street and Alfred Avenue, 2.0 m East of West curb.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.			
3						

☐ Insitu Shear Vane (kPa) ■ Torvane on Grab Samples (kPa)
△ Pocket Penetrometer (kPa)

50kPa 100kPa 150kPa 200kPa

W_P W W_L Moisture Content & Atterberg Limits

● Standard Penetration Test, N Value

10 20 30 40 50 60 70 80 90

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH04 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Powers St from Burrows Ave to Redwood Ave ELEVATION EASTING

DRILLING DATE December 16, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
	CH		Firm black fat CLAY (CH) with trace organic, some silt, trace sand and gravel	GS		35
				GS		32
1				GS		30
	ML		Soft tan SILT (ML) with trace clay, sand and gravel	GS		27
				GS		25
				GS		23
2				GS		23
			TESTHOLE LOCATION: 5.5 m South of Southeast corner Powers Street and Aberdeen Avenue, 2.0 m West of East curb.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling.			
			• Testhole terminated at a depth of 2.1 m.			
3						

☐ Insitu Shear Vane (kPa) ■ Torvane on Grab Samples (kPa)
△ Pocket Penetrometer (kPa)

50kPa 100kPa 150kPa 200kPa

W_P W W_L Moisture Content & Atterberg Limits

● Standard Penetration Test, N Value

10 20 30 40 50 60 70 80 90

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH05 TESTHOLE RECORD

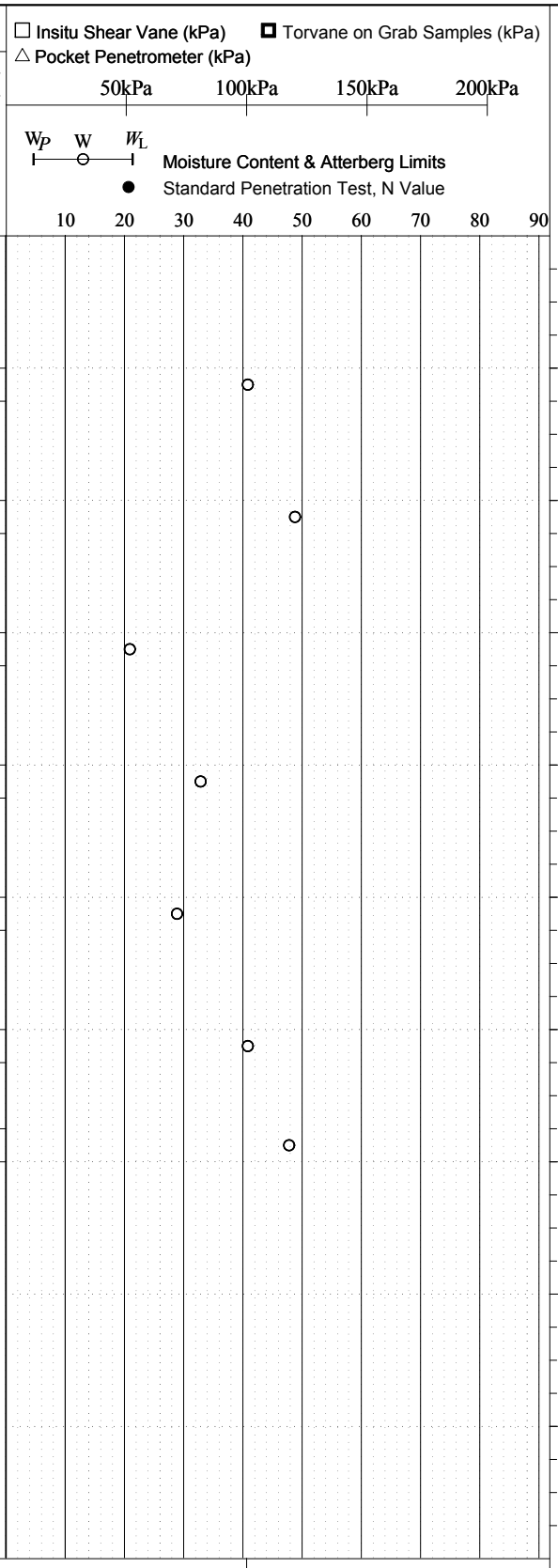
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Powers St from Burrows Ave to Redwood Ave ELEVATION EASTING

DRILLING DATE December 16, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
	CH		Firm black fat CLAY (CH) with trace organic, some silt, trace sand and gravel	GS		41
				GS		49
	ML		Soft tan SILT (ML) with trace clay, sand and gravel	GS		21
1	CH		Firm brown fat CLAY (CH) with some silt, trace sand and gravel	GS		33
				GS		29
				GS		41
2				GS		48
			TESTHOLE LOCATION: 43.0 m North of Northwest corner Powers Street and Aberdeen Avenue, 1.5 m East of West curb.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling.			
			• Testhole terminated at a depth of 2.1 m.			
3						



DEPTH (ft): 0, 2, 4, 6, 8, 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH06 TESTHOLE RECORD

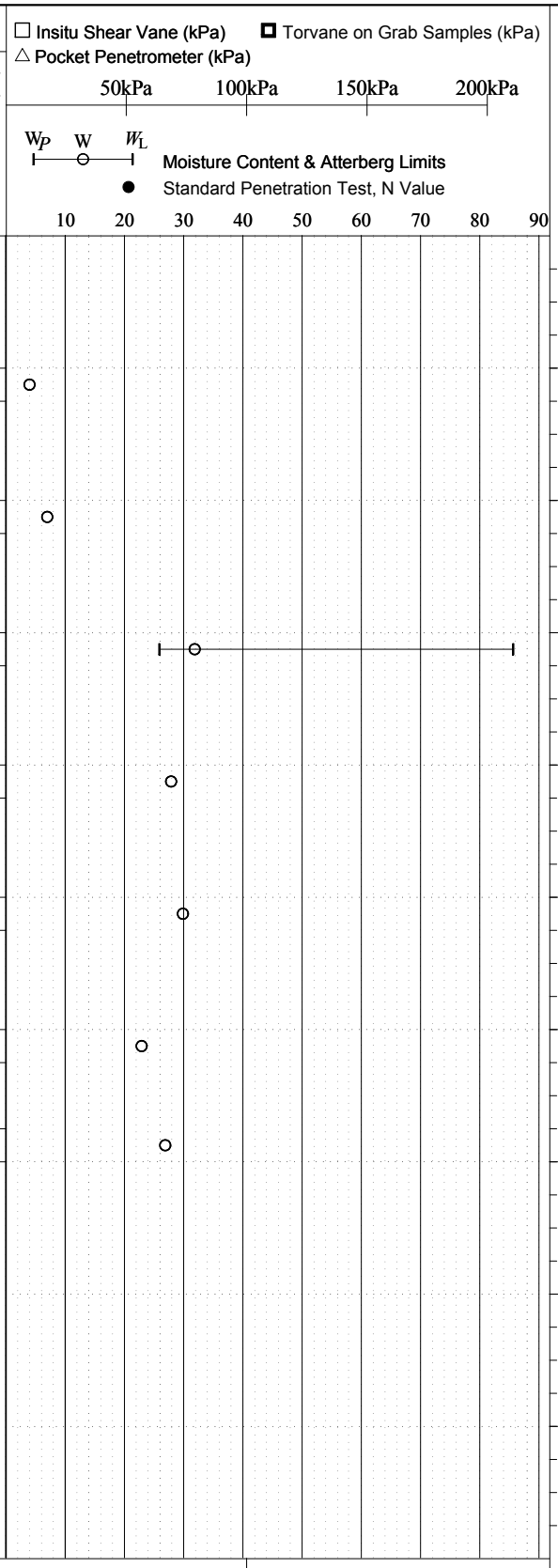
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Powers St from Burrows Ave to Redwood Ave ELEVATION EASTING

DRILLING DATE December 16, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 125 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	AS		ASPHALT			
	CO		CONCRETE			
	GW		CRUSHED LIMESTONE	GS		4
				GS		7
1	CH		Firm brown fat CLAY (CH) with some silt, trace sand and gravel			
			Particle Size Analysis at 0.9 m: 0.4% Gravel, 9.6% Sand, 29.9% Silt, 60.1% Clay	GS		32
				GS		28
				GS		30
2				GS		23
				GS		27
			TESTHOLE LOCATION: 5.0 m South from Southeast corner Powers Street and Redwood Avenue, 2.0 m West of East curb.			
			NOTE: Testhole located at a section where there was new pavement.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling.			
3			• Testhole terminated at a depth of 2.1 m.			



Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

Photo 1 – Core sample from Testhole TH01

Photo 2 – Core sample from Testhole TH02

Photo 3 – Core sample from Testhole TH03

Photo 4 – Core sample from Testhole TH04

Photo 5 – Core sample from Testhole TH05

Photo 6 – Core sample from Testhole TH06

LABORATORY
199 Henlow Bay
Winnipeg MB R3Y 1G4
Tel: (204) 488-6999

PARTICLE SIZE ANALYSIS
ASTM D422

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

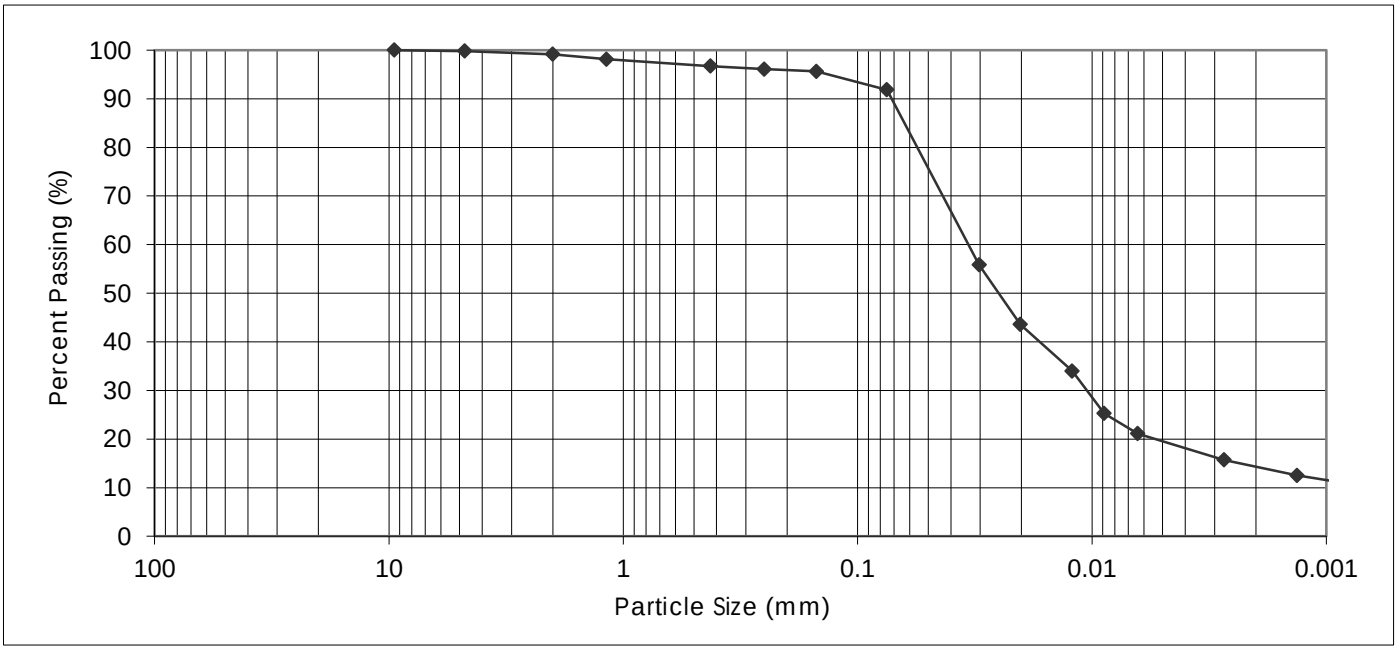
PROJECT: 2016 Residential Street Renewal Program
Powers Street from Burrows Avenue
to Redwood Avenue

Attention: Brad Besyk

PROJECT NO.: 123312305

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH01 @ 0.9 m

DATE RECEIVED: January 12, 2016
TESTED BY: Larry Presado, C.Tech



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	99.8
2.00 mm	99.2

PARTICLE SIZE	PERCENT PASSING
1.18 mm	98.1
0.425 mm	96.7
0.250 mm	96.1
0.150 mm	95.6
0.075 mm	91.8
0.005 mm	19.1
0.002 mm	14.0
0.001 mm	11.6

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.2	0.6	2.5	4.9	77.8	14.0	11.6

REPORT DATE: January 18, 2016

REVIEWED BY: Jason Thompson, C.E.T.

LABORATORY
199 Henlow Bay
Winnipeg MB R3Y 1G4
Tel: (204) 488-6999

PARTICLE SIZE ANALYSIS
ASTM D422

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

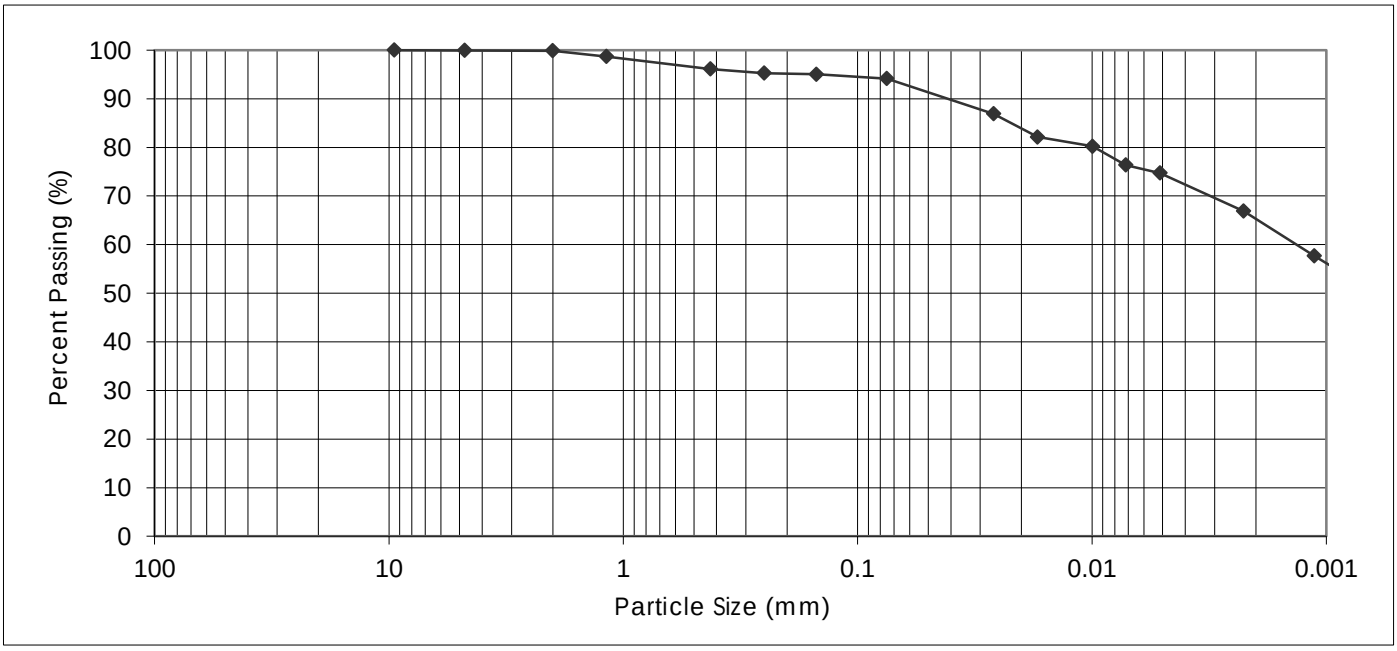
PROJECT: 2016 Residential Street Renewal Program
Powers Street from Burrows Avenue
to Redwood Avenue

Attention: Brad Besyk

PROJECT NO.: 123312305

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH03 @ 0.9 m

DATE RECEIVED: January 12, 2016
TESTED BY: Larry Presado, C.Tech



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	99.9
2.00 mm	99.9

PARTICLE SIZE	PERCENT PASSING
1.18 mm	98.7
0.425 mm	96.1
0.250 mm	95.3
0.150 mm	95.0
0.075 mm	94.1
0.005 mm	74.4
0.002 mm	64.8
0.001 mm	56.0

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.1	0.0	3.8	2.0	29.3	64.8	56.0

REPORT DATE: January 18, 2016

REVIEWED BY: Jason Thompson, C.E.T.

LABORATORY
199 Henlow Bay
Winnipeg MB R3Y 1G4
Tel: (204) 488-6999

PARTICLE SIZE ANALYSIS
ASTM D422

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

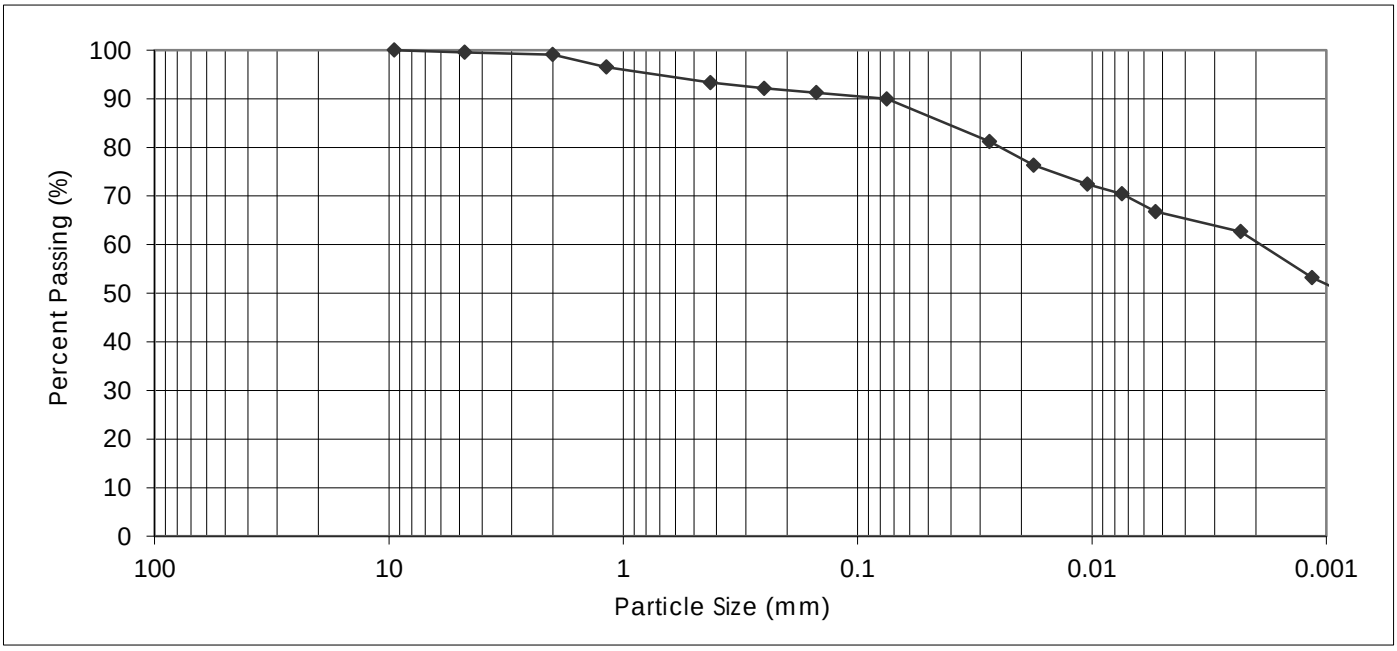
PROJECT: 2016 Residential Street Renewal Program
Powers Street from Burrows Avenue
to Redwood Avenue

Attention: Brad Besyk

PROJECT NO.: 123312305

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH06 @ 0.9 m

DATE RECEIVED: January 12, 2016
TESTED BY: Larry Presado, C.Tech



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	99.6
2.00 mm	99.1

PARTICLE SIZE	PERCENT PASSING
1.18 mm	96.5
0.425 mm	93.3
0.250 mm	92.1
0.150 mm	91.2
0.075 mm	90.0
0.005 mm	66.3
0.002 mm	60.1
0.001 mm	51.7

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.4	0.5	5.8	3.3	29.9	60.1	51.7

REPORT DATE: January 18, 2016

REVIEWED BY: Jason Thompson, C.E.T.

2016 Residential Street Renewal Program

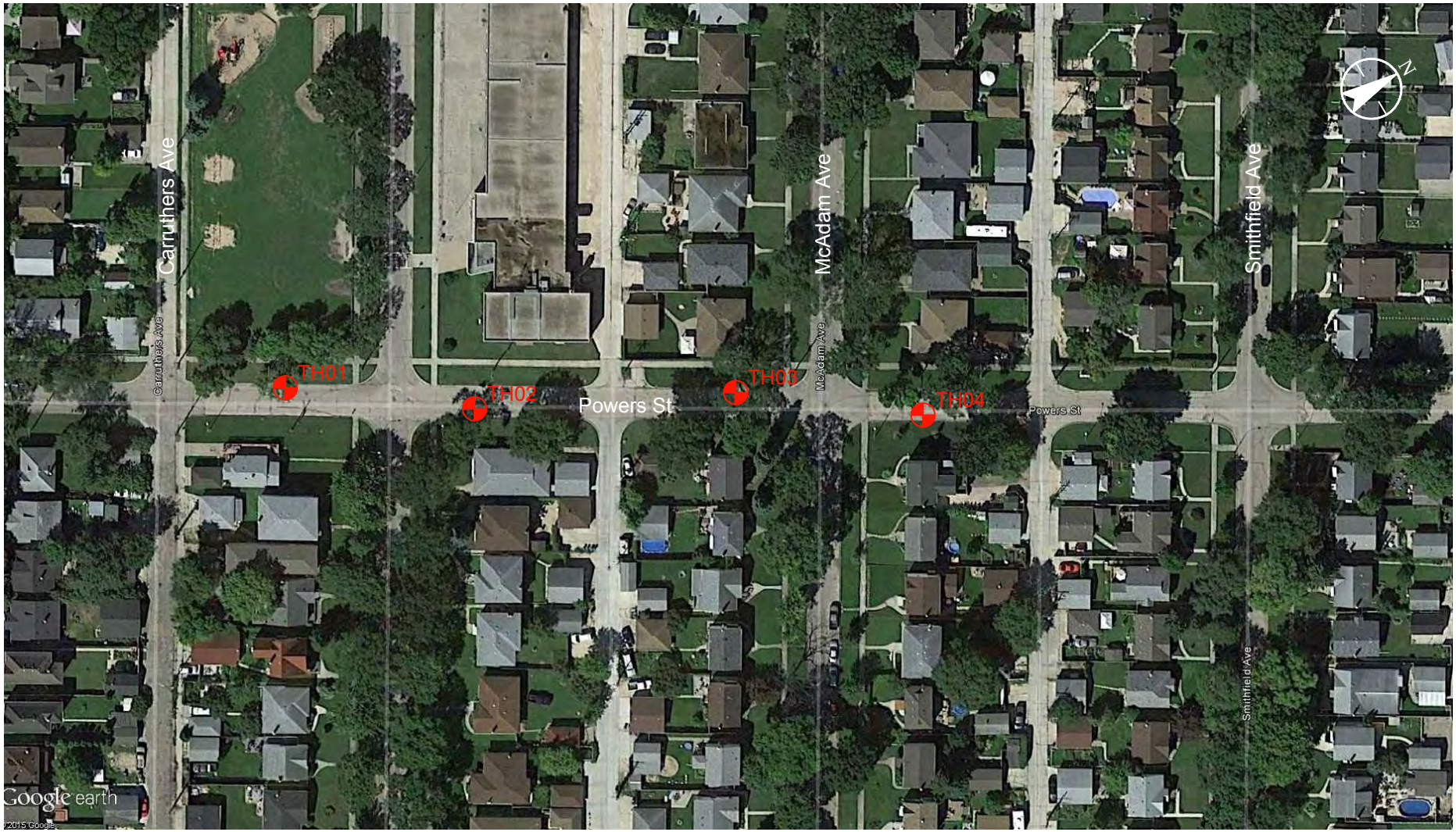
Geotechnical Investigation - Powers Street from Carruthers Avenue to Smithfield Avenue

Prepared for:
City of Winnipeg
Engineering Division
Public Works Department
106-1155 Pacific Avenue
Winnipeg, Manitoba R3E 3P1

Prepared by:
Stantec Consulting Ltd.
500-311 Portage Avenue
Winnipeg, Manitoba R3B 2B9

Project No. 123312305

January 21, 2016



January, 2016
123312305

ORIGINAL SHEET - ISO 8.5x11 H - v14.06

V:\1233\active\123312305\0300_drawing\testhole Location Plans\12305_powers_carruthers_smithfield_thlp.dwg 1
2016/01/20 11:42 AM By: Bun, Sothea

Stantec

Stantec Consulting Ltd.
Suite 500, 311 Portage Avenue
Winnipeg MB Canada R3B 2B9
Tel. 204.489.5900 Fax. 204.453.9012
www.stantec.com

Legend

TESTHOLE

Notes

- IMAGE SOURCE: GOOGLE EARTH
- SITE: POWERS STREET FROM CARRUTHERS AVENUE TO SMITHFIELD AVENUE

Client/Project

CITY OF WINNIPEG
2016 RESIDENTIAL STREET RENEWAL PROGRAM
WINNIPEG, MB

Figure No.

1

Title

TESTHOLE LOCATION PLAN

TABLE 1
2016 RESIDENTIAL STREET RENEWAL PROGRAM
POWERS STREET FROM CARRUTHERS AVENUE TO SMITHFIELD AVENUE
GEOTECHNICAL INVESTIGATION

Testhole ID	Testhole Location	Pavement Surface		Pavement Structure		Sample Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH01	Powers Street 17.0 m North of Northwest corner Powers Street and Carruthers Avenue 2.0 m East of West curb	Concrete	150	-	-	-	-	-	-	-	-	-	-	-	-
TH02	Powers Street 19.5 m North of Northeast corner of Powers Street and Matheson Avenue 1.0 m West of East curb	Concrete	140	-	-	Silty Clay	0.6	36	0.0	8.0	30.6	61.4	80	27	53
TH03	Powers Street 20.0 m South of Southwest corner Powers Street and McAdam Avenue 2.0 m East of West curb	Concrete	180	-	-	-	-	-	-	-	-	-	-	-	-
TH04	Powers Street 19.0 m North of Northeast corner Powers Street and McAdam Avenue 1.25 m West of East curb	Concrete	180	-	-	Silt	0.9	22	1.2	6.7	74.0	18.1	30	18	12

TH01 TESTHOLE RECORD

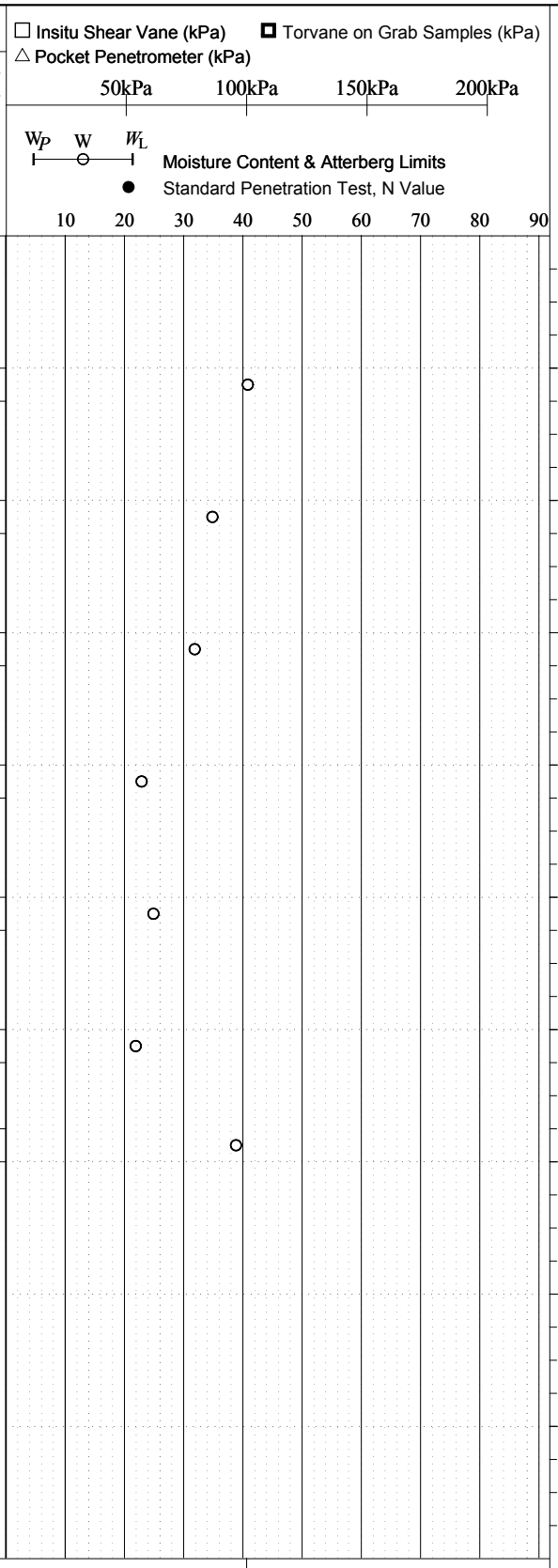
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Powers St from Carruthers Ave and Smithfield Ave ELEVATION EASTING

DRILLING DATE December 15, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	CO	CONCRETE			
	CL ML	Firm black SILTY CLAY (CL-ML) with trace organic and sand	GS		41
			GS		35
1	CH	Firm black fat CLAY (CH)	GS		32
	ML	Soft tan SILT (ML) with trace sand and gravel	GS		23
			GS		25
			GS		22
2	CH	Stiff brown fat CLAY (CH)	GS		39
		TESTHOLE LOCATION: 17.0 m North of Northwest corner Powers Street and Carruthers Avenue, 2.0 m East of West curb.			
		• No groundwater seepage or soil sloughing was observed during or upon completion of drilling.			
3		• Testhole terminated at a depth of 2.1 m.			



DEPTH (ft): 0, 2, 4, 6, 8, 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH02 TESTHOLE RECORD

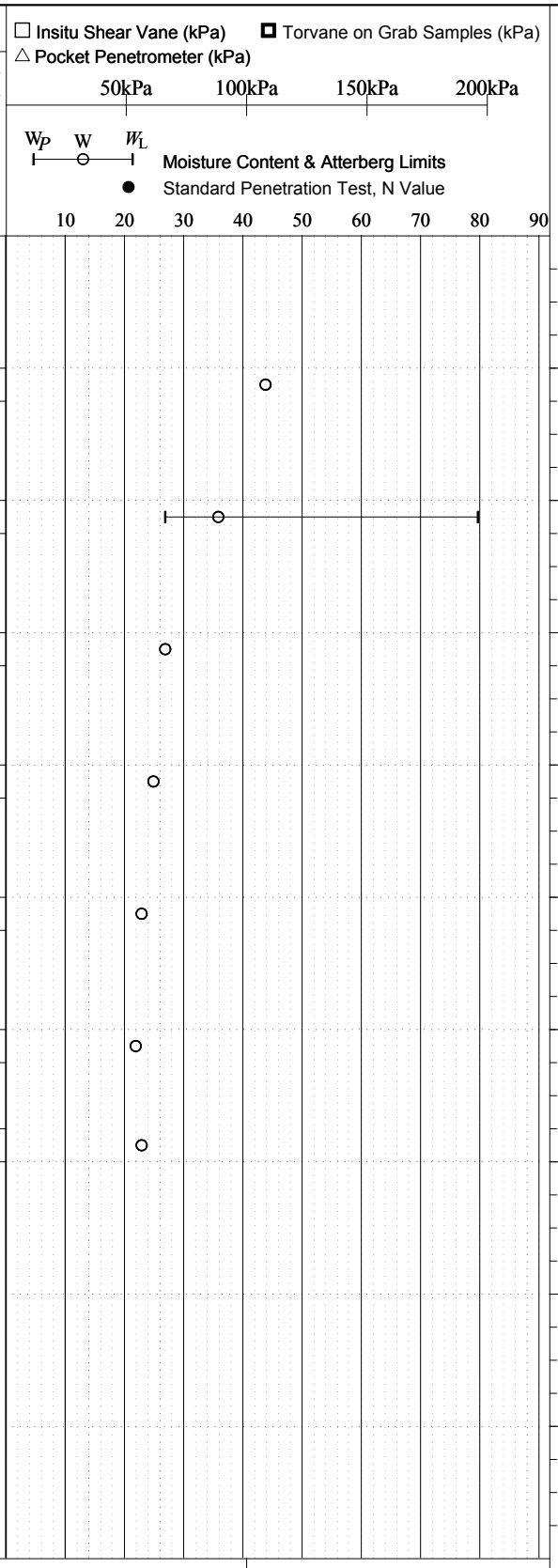
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Powers St from Carruthers Ave and Smithfield Ave ELEVATION EASTING

DRILLING DATE December 15, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	CO		CONCRETE			
	CL ML		Firm black SILTY CLAY (CL-ML) with trace organic and sand	GS		44
			Particle Size Analysis at 0.6 m: 0.0% Gravel, 8.0% Sand, 30.6% Silt, 61.4% Clay	GS		36
1				GS		27
	ML		Soft tan SILT (ML) with trace sand and gravel	GS		25
				GS		23
				GS		22
2				GS		23
			TESTHOLE LOCATION: 19.5 m North of Northeast corner Powers Street and Matheson Avenue, 1.0 m West of East curb.			
			• No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.			
3						



DEPTH (ft): 0, 2, 4, 6, 8, 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH03 TESTHOLE RECORD

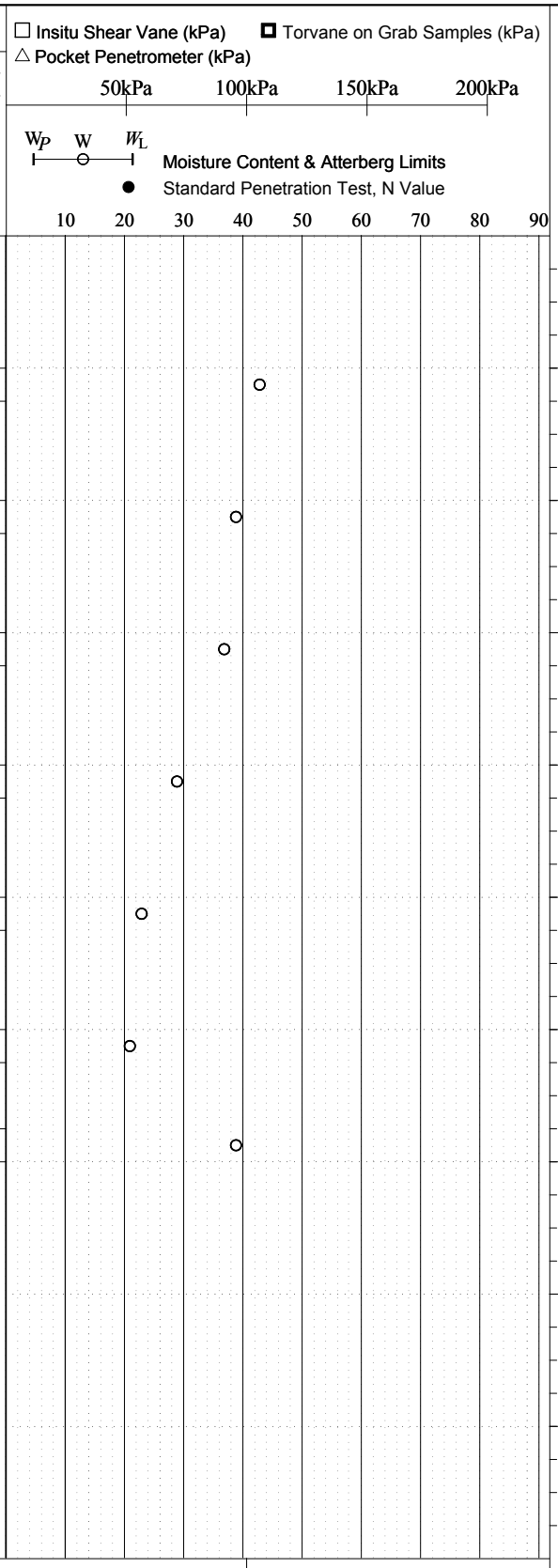
CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Powers St from Carruthers Ave and Smithfield Ave ELEVATION EASTING

DRILLING DATE December 15, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	CO	CONCRETE			
	CL ML	Firm black SILTY CLAY (CL-ML) with trace organic and sand	GS		43
			GS		39
1			GS		37
	ML	Soft tan SILT (ML) with trace sand and gravel	GS		29
			GS		23
			GS		21
2	CH	Stiff brown fat CLAY (CH)	GS		39
		TESTHOLE LOCATION: 20.0 m South of Southwest corner Powers Street and McAdam Avenue, 2.0 m East of West curb.			
		• No groundwater seepage or soil sloughing was observed during or upon completion of drilling.			
3		• Testhole terminated at a depth of 2.1 m.			



DEPTH (ft): 0, 2, 4, 6, 8, 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

TH04 TESTHOLE RECORD

CLIENT City of Winnipeg PROJECT No. 123312305

PROJECT 2016 Residential Street Renewal Program DATUM NORTHING

LOCATION Powers St from Carruthers Ave and Smithfield Ave ELEVATION EASTING

DRILLING DATE December 15, 2015 DRILLING CO. Paddock Drilling Ltd. DRILLING METHOD 100 mm SSA

DEPTH (m)	SOIL TYPE	SOIL DESCRIPTION	SAMPLES TYPE	SAMPLES NUMBER	MOISTURE CONTENT (%)
0	CO	CONCRETE			
	CL ML	Firm black SILTY CLAY (CL-ML) with trace organic and sand	GS		21
	ML	Soft tan SILT (ML) with trace sand and gravel	GS		20
1		Particle Size Analysis at 0.9 m: 1.2% Gravel, 6.7% Sand, 74.0% Silt, 18.1% Clay	GS		22
	CH	Firm brown fat CLAY (CH)	GS		29
			GS		28
2			GS		40
			GS		43
3		TESTHOLE LOCATION: 19.0 m North of Northeast corner Powers Street and McAdam Avenue, 1.25 m West of East curb. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.1 m.			

□ Insitu Shear Vane (kPa) ■ Torvane on Grab Samples (kPa)
△ Pocket Penetrometer (kPa)

50kPa 100kPa 150kPa 200kPa

W_P W W_L Moisture Content & Atterberg Limits

● Standard Penetration Test, N Value

10 20 30 40 50 60 70 80 90

DEPTH (ft): 0 2 4 6 8 10

Sample Type: GS - Grab Sample SPT - Standard Penetration Test
ST - Shelby Tube PT - Piston Tube VT - Shear Vane Test

Piezometer Backfill Type: Bentonite Drill Cuttings Sand Slough

Logged by: Nestor Abarca

Reviewed by: German Leal

Stantec

Photo 1 – Core sample from Testhole TH01

Photo 2 – Core sample from Testhole TH02

Photo 3 – Core sample from Testhole TH03

Photo 4 – Core sample from Testhole TH04

LABORATORY
199 Henlow Bay
Winnipeg MB R3Y 1G4
Tel: (204) 488-6999

PARTICLE SIZE ANALYSIS
ASTM D422

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

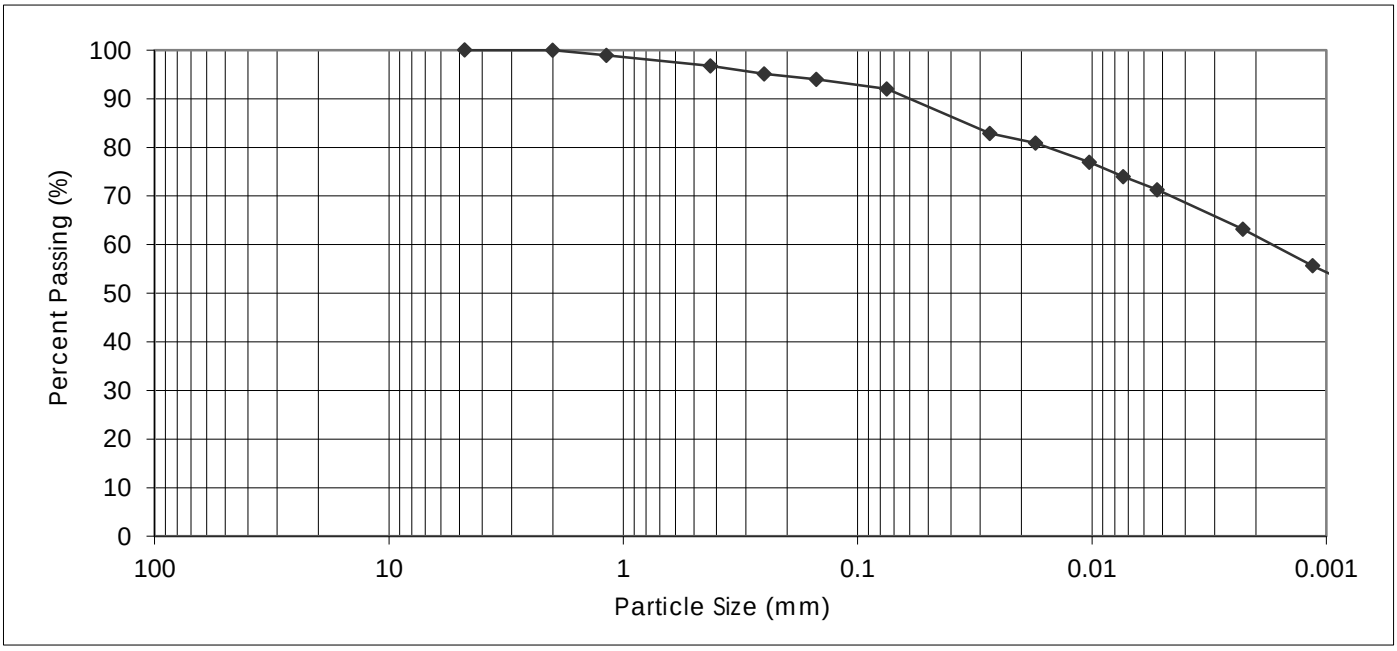
PROJECT: 2016 Residential Street Renewal Program
Powers Street from Carruthers Avenue
to Smithfield Avenue

Attention: Brad Besyk

PROJECT NO.: 123312305

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH02 @ 0.6 m

DATE RECEIVED: January 12, 2016
TESTED BY: Larry Presado, C.Tech



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	100.0
2.00 mm	100.0

PARTICLE SIZE	PERCENT PASSING
1.18 mm	98.9
0.425 mm	96.8
0.250 mm	95.1
0.150 mm	94.0
0.075 mm	92.0
0.005 mm	70.5
0.002 mm	61.4
0.001 mm	54.2

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	0.0	3.2	4.8	30.6	61.4	54.2

REPORT DATE: January 18, 2016

REVIEWED BY: Jason Thompson, C.E.T.

LABORATORY
199 Henlow Bay
Winnipeg MB R3Y 1G4
Tel: (204) 488-6999

PARTICLE SIZE ANALYSIS
ASTM D422

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

PROJECT: 2016 Residential Street Renewal Program
Powers Street from Carruthers Avenue
to Smithfield Avenue

Attention: Brad Besyk

PROJECT NO.: 123312305

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH04 @ 0.9 m

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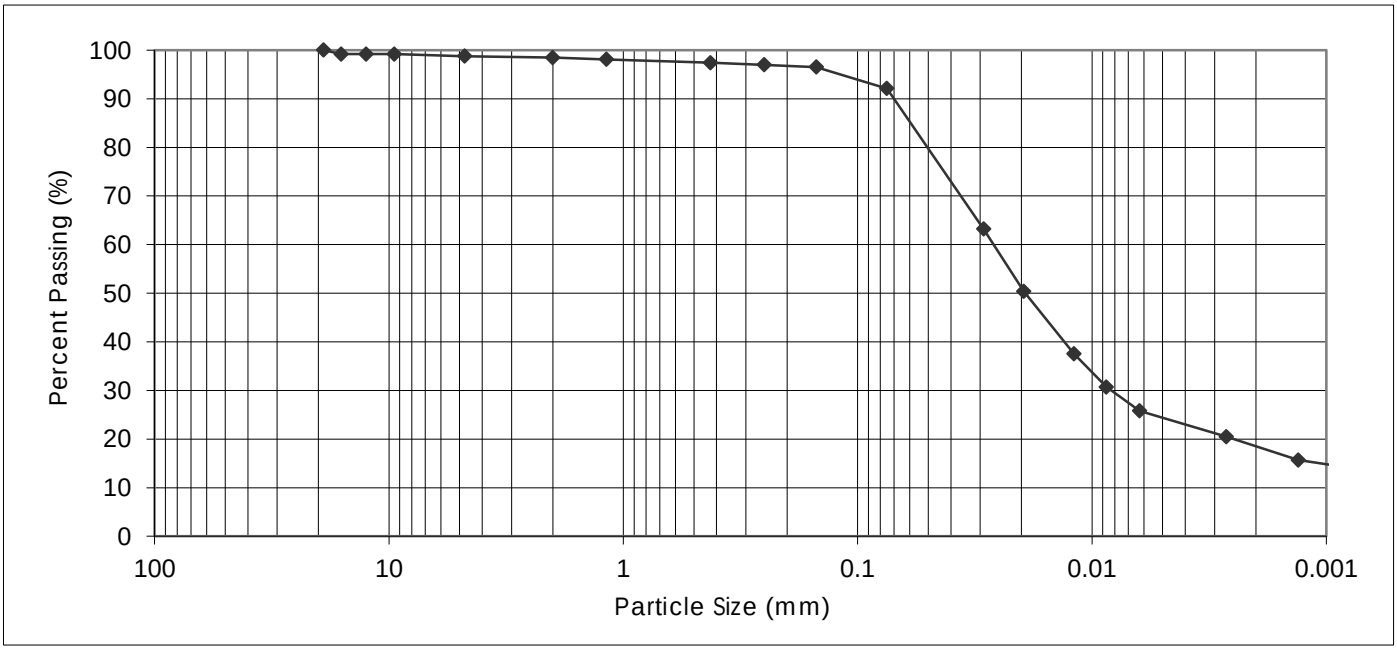

PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	99.2
12.50 mm	99.2
9.50 mm	99.2
4.75 mm	98.8
2.00 mm	98.5

PARTICLE SIZE	PERCENT PASSING
1.18 mm	98.1
0.425 mm	97.4
0.250 mm	97.0
0.150 mm	96.5
0.075 mm	92.1
0.005 mm	23.9
0.002 mm	18.1
0.001 mm	14.8

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
1.2	0.3	1.1	5.3	74.0	18.1	14.8

REPORT DATE: January 18, 2016

REVIEWED BY: Jason Thompson, C.E.T.