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APPENDIX A (R1) GEOTECHNICAL REPORT



P 204-896-1209 **F** 204-896-0754

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April 15, 2025

KGS Group 895 Waverley Street Winnipeg, Manitoba, R3T 5P4

- Attention: Mr. Craig Rowbotham, P.Eng. Transportation Department Head
- Re: 2025 City of Winnipeg Local Street Program 25-R-05 Report of Geotechnical Investigations and Test Results - Rev 1

Dear Mr. Rowbotham

This letter summarizes KGS Group's geotechnical investigation and assessment results for the 2025 City of Winnipeg (COW) Local Street Program – 25-R-05 in Winnipeg, Manitoba. KGS Group's scope of service for this project was outlined in our proposal no. 25-000-0102 titled "City of Winnipeg 2025 Local Street Program 25-R-05 – Geotechnical Services" dated January 23, 2025.

Kontzamanis Graumann Smith MacMillan Inc. (KGS Group) was retained to complete pavement and subsurface investigations for approximately 2.2 km of local streets at eight (8) sites included in the 2025 project scope. Of the eight (8) sites, two (2) were identified as minor rehabilitations, one (1) was identified as a thin bituminous overlay, and five (5) were identified as reconstructions. Pavement coring and granular base investigations were completed for all eight (8) sites, with subgrade drilling investigations completed for the five (5) sites classified as reconstruction. This report has been updated to include moisture-density relationship (standard Proctor) and California Bearing Ration (CBR) testing results.

1.0 GEOTECHNICAL INVESTIGATIONS

Coring and subsequent identification of base materials was conducted at each of the eight (8) sites, with subgrade drilling and soil sampling completed at Whyte Avenue, Elgin Avenue, Kate Street, Prince Edward Street, and McFarlane Street N (Sites 03, 04, 05, 07, and 08, respectively). Only pavement coring was conducted at Irysh Avenue, Bury Street, and Alexander Avenue (Sites 01, 02, and 06, respectively). The scope of work required for each site investigation, such as the need for subgrade investigations, number of cores and test holes, and their locations were determined in accordance with the City of Winnipeg RFQ No. 331-2024 Stage 2 RFP Specifications (the "Specifications"). Core and test hole locations for each site are shown in the attached Figures 1 through 6, with location descriptions and approximate coordinates provided in Table 1.



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1.1 Coring and Sampling

Pavement coring was completed at each of the seven (7) sites using a surface mounted coring machine, fitted with either a 150 mm or 175 mm (approximately 6 in or 7 in) diameter core barrel. Upon completion of coring, KGS Group measured the granular base thickness via hand excavation and visually classified the material. Each test location was then backfilled to the bottom of pavement with excavated fill and patched to surface with asphalt cold patch. Individual cores were placed in pre-labeled bags and retained for photographs. Table 2 attached summarizes coring results in detail. Individual core photos can be found in Appendix A.

1.2 Subgrade Drilling and Sampling

Subgrade drilling and soil sampling were conducted along the streets set for reconstruction in accordance with the Specifications. This included Whyte Avenue, Elgin Avenue, Kate Street, Prince Edward Street, and McFarlane Street N (Sites 03, 04, 05, 07, and 08, respectively). Fifteen (15) test holes were advanced between the five (5) reconstruction project sites, as follows:

- Whyte Avenue: three (3) test holes
- Elgin Avenue: four (4) test holes
- Kate Street: two (2) test holes
- Prince Edward Street: three (3) test holes
- McFarlane Street N: three (3) test holes

Test holes were advanced using a truck-mounted geotechnical drill rig. Public utility clearances were obtained prior to the investigation program. Private utility clearances were not obtained, and as such, the locations of watermain and sewer service lines provided to KGS Group were approximate. Therefore, eight (8) test holes which were located in areas with a high number of service lines were advanced to a depth of 2.0 m (6.5 ft) below ground surface (BGS), and the remaining seven (7) test holes were advanced to a depth of 3.0 m (10 ft) BGS. Soil samples were collected at regular increments, at depths of approximately 0.6, 0.9, 1.2, 1.6, and 2.0 below the pavement surface. Visual identification of the encountered soils was completed throughout the full depth of each test hole. There was no water encountered in any of the test holes during drilling. Observations were made throughout drilling and upon completion for sloughing, squeezing, and caving-in depths of the test holes and summarized in Table 3 below. All test holes were backfilled with auger cuttings combined with bentonite chips to the base of pavement and patched to surface with asphalt cold mix.



P 204-896-1209 **F** 204-896-0754

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Site No, Name	Test Hole ID	Depth of Drilling (m)	Depth of Hole Upon Completion (m)
	TH25-07	3.0	3.0
03, Whyte Avenue	TH25-08	2.0	2.0
	TH25-09	2.0	1.5
	TH25-03	2.0	1.5
	TH25-04	2.0	2.0
04, Eigin Avenue	TH25-05	3.0	2.4
	TH25-06	3.0	2.9
OF Kata Streat	TH25-01	3.0	2.7
US, Kale Sileet	TH25-02	3.0	2.7
	TH25-10	3.0	2.7
07, Prince Edward Street	TH25-11	3.0	3.0
	TH25-12	2.0	2.0
	TH25-13	2.0	1.8
08, McFarlane Street N	TH25-14	2.0	2.0
	TH25-15	2.0	1.8

TABLE 3: OBSERVED TEST HOLE CONDITIONS

Note: No groundwater was observed either during or upon completion of drilling for all test holes.

Detailed Test holes logs for the above sites are attached within Appendix B.

1.3 Laboratory Testing

Laboratory testing was completed on select soil samples from the sites set for reconstruction. The frequency of testing was conducted in accordance with the Specifications. Testing was completed in a Canadian Council of Independent Laboratories (CCiL) certified laboratory. Testing for each site included the following:

- Five (5) moisture contents per test hole, for every test hole advanced
- One (1) Atterberg Limits and one (1) particle size analysis per test hole, for each test hole required to be tested as per Table 2 of the Specifications
- One (1) moisture-density relationship (standard Proctor) test, and one (1) California Bearing Ratio (CBR) test completed per project site. A bulk soil sample was collected from approximately 0.3 m to 0.9 m (1 ft to 3 ft) BGS of each test hole. The samples were then combined with other bulk samples from within the same site to make a composite sample, for the Proctor and CBR testing.



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Standard Proctor and CBR testing results, as well as all other laboratory testing results have been included in this updated report, attached in Appendix C.

2.0 INVESTIGATION RESULTS

2.1 Pavement Structure and Stratigraphy

Table 2 attached provides a summary of the coring and test hole results. Site-specific summaries are presented in the following sections.

SITE 01: IRYSH AVENUE

A core investigation was conducted along Irysh Avenue, involving the extraction of three (3) cores from mid-slab locations. Locations of joints were difficult to find due to thick snow and ice cover during the time of the investigation. The pavement surface was composed of concrete with thicknesses ranging from 150 to 175 mm, generally increasing in thickness in the westbound direction. Granular base was observed below the pavement structure at all core locations with thicknesses varying between 86 and 117 mm. Dense, frozen conditions of the gravel base prevented observation of the underlying subgrade. Detailed core locations are illustrated in Figure 1.

SITE 02: BURY STREET

A core investigation was conducted along Bury Street, involving the extraction of three (3) cores: two (2) from mid-slab locations and one (1) from a joint location. The pavement surface was composed of concrete with thicknesses ranging from 155 to 175 mm. Granular base was observed below the pavement structure at all core locations with thicknesses varying between 28 to 43 mm, generally increasing in thickness in the southbound direction. Dense, frozen conditions of the gravel base prevented observation of the underlying subgrade. Detailed core locations are also illustrated in Figure 1.

SITE 03: WHYTE AVENUE

A core investigation was conducted along Whyte Avenue, involving the extraction of three (3) cores. Additional soil investigations were conducted at each of the test hole locations; one (1) advanced to a depth of 3.0 m (10 ft) below pavement surface, and two (2) advanced to a depth of 2.0 m (6.5 ft) below pavement surface. The general stratigraphy encountered within the test holes consisted of concrete pavement with clay fill base overlying lean and fat clay. A further description of each layer is provided below, with test hole logs provided in Appendix B and test hole locations shown in Figure 2.



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Asphalt – The pavement surface consisted of asphalt with varying thicknesses of 60 to 140 mm.

Concrete – Concrete was encountered directly below the asphalt with varying thicknesses of 75 to 135 mm.

Gravel Fill – Gravel fill was encountered directly below the concrete in one test hole, TH25-09, with a thickness of 95 mm. The fill was frozen, fine grained, and with fine to coarse sand.

Clay Fill – Clay fill material was encountered directly below the concrete in two test holes and below the gravel fill in TH25-09. The thickness varied between 170 to 180 mm. The fill was dark grey, frozen, and intermixed with granular.

Lean Clay (CL) – Lean clay was encountered below the clay fill in all test holes, except TH25-09. The lean clay was light brown, frozen, silty, trace fine sand.

One (1) Atterberg limits test was completed on the lean clay with results indicating a liquid limit of 28, plastic limit of 17, and plasticity index of 11, classifying the material as low plasticity. One (1) particle size analysis test was completed and indicated 0% gravel, 9% sand, 75% silt, and 16% clay. Moisture contents within the clay ranged from 18 to 22%.

Fat Clay (CH) – Fat clay was generally encountered below the lean clay, except for TH25-09 where it was encountered below the clay fill and to the depth of exploration in all test holes. The fat clay was generally brown, frozen, trace to with silt, trace fine to coarse sand, and moist below frozen material.

Undrained shear strengths of the clay were estimated during drilling using a handheld Torvane and ranged from 15 kPa to 90 kPa, classifying the clay as soft to stiff in consistency. One (1) Atterberg limits test was completed on the fat clay with results indicating a liquid limit of 67, plastic limit of 24, and plasticity index of 43, classifying the material as high plasticity. One (1) particle size analysis test was completed and indicated 1% gravel, 7% sand, 74% silt, and 18% clay. Moisture contents within the clay ranged from 21 to 54% and generally increased with depth.

Additional Laboratory Testing – One (1) moisture density relationship test (standard Proctor) and one (1) CBR test were completed on a composite sample consisting of clay collected from approximately 0.3 m to 0.9 m (1 ft to 3 ft) BGS in all test holes. Results indicated a maximum dry density of 1650 kg/m³, an optimum moisture content of 20.5%, and a CBR of 5.3 remolded to 95% of the SPDD at optimum moisture content. All laboratory test reports can be found attached in Appendix C.

SITE 04: ELGIN AVENUE

A core investigation was conducted along Elgin Avenue, involving the extraction of four (4) cores. Additional soil investigations were conducted at each of the test hole locations; two (2) advanced to a depth of 3.0 m (10 ft) below pavement surface, and two (2) advanced to a depth of 2.0 m (6.5 ft) below pavement surface. The general stratigraphy encountered within the test holes consisted of asphalt pavement with gravel and clay fill overlying lean clay. A further description of each layer is provided below, with test hole logs provided in Appendix B and test hole locations shown in Figure 3.

Asphalt – The pavement surface consisted of asphalt with varying thicknesses of 60 to 125 mm.



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Gravel Fill – Gravel fill was encountered directly below the concrete in all the test hole and had a varying thickness of 85 to 275 mm. The fill was frozen, fine grained, and with fine to coarse sand.

Clay Fill – Clay fill was encountered directly below the gravel fill in all the test holes, except TH25-05. The thickness varied between 230 to 300 mm. The fill was dark grey to brown, frozen, some to with silt, and intermixed with granular.

Lean Clay (CL) – Lean clay was encountered below the granular fill and clay fill in all test holes, except TH25-05. The lean clay was light brown to brown, frozen, silty, trace to with sand, and moist below frozen material.

Undrained shear strength of the clay was estimated during drilling below frozen material using a handheld Torvane and resulted in 15 kPa, classifying the clay as soft in consistency. Two (2) Atterberg limits tests were completed on the lean clay with results indicating liquid limits of 30 to 33, plastic limits of 16 to 17, and plasticity indices of 14 to 16, classifying the material as low plasticity. Two (2) particle size analysis tests were completed and indicated 0% gravel, 4% sand, 75 to 78% silt, and 18 to 21% clay. Moisture contents within the clay ranged from 20 to 30%.

Fat Clay (CH) – Fat clay was generally encountered below the lean clay in all test holes and to the depth of exploration, except for TH25-05 where it was encountered below the gravel fill. The fat clay was generally grey to brown, frozen, trace to with silt, trace sand, and moist below frozen material.

Undrained shear strengths of the clay were estimated during drilling using a handheld Torvane and ranged from 20 kPa to 95 kPa, classifying the clay as soft to stiff in consistency. One (1) Atterberg limits test was completed on the fat clay with results indicating a liquid limit of 80, plastic limit of 25, and plasticity index of 55, classifying the material as high plasticity. One (1) particle size analysis test was completed and indicated 0% gravel, 2% sand, 26% silt, and 72% clay. Moisture contents within the clay ranged from 20 to 55%.

Additional Laboratory Testing – One (1) moisture density relationship test (standard Proctor) and one (1) CBR test were completed on a composite sample consisting of clay collected from approximately 0.3 m to 0.9 m (1 ft to 3 ft) BGS in all test holes. Results indicated a maximum dry density of 1660 kg/m³, an optimum moisture content of 21.0%, and a CBR of 3.7 remolded to 95% of the SPDD at optimum moisture content. All laboratory test reports can be found attached in Appendix C.

SITE 05: KATE STREET

A core investigation was conducted along Kate Street, involving the extraction of two (2) cores from mid-slab locations. Additional soil investigations were conducted at each of the test hole locations and were advanced to a depth of 3.0 m (10 ft) below pavement surface. The general stratigraphy encountered within the test holes consisted of asphalt pavement overlying concrete, overlying granular and clay fill, overlying lean clay. A further description of each layer is provided below, with test hole logs provided in Appendix B and test hole locations shown in Figure 3.

Asphalt – The pavement surface consisted of asphalt with varying thicknesses of 40 to 170 mm.

Concrete – Concrete was encountered directly below the asphalt in only one test hole, TH25-01 with thicknesses of 70 mm.



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Gravel Fill – Gravel fill was encountered directly below the concrete in all the test hole and had a varying thickness of 70 to 170 mm. The fill was frozen, fine grained, and with fine to coarse sand.

Clay Fill – Clay fill was encountered directly below the gravel fill in TH25-01 with thickness of 125 mm. The fill was black, frozen, and trace fine to medium sand.

Lean Clay (CL) – Lean clay was encountered below the granular fill and clay fill in all test holes. The lean clay was light brown, frozen, silty, and trace to with sand.

Two (2) Atterberg limits tests were completed on the lean clay with results indicating liquid limits of 31 to 35, plastic limits of 17, and plasticity indices of 14 to 18, classifying the material as low plasticity. Two (2) particle size analysis tests were completed and indicated 0 to 1% gravel, 3 to 6% sand, 74 to 78% silt, and 18 to 20% clay. Moisture contents within the clay ranged from 20 to 30%.

Fat Clay (CH) – Fat clay was encountered below the lean clay in all test holes and to the depth of exploration. The fat clay was generally brown, frozen, trace to with silt, trace fine to medium sand, and moist below frozen material.

Undrained shear strengths of the clay were estimated during drilling using a handheld Torvane and ranged from 40 kPa to 60 kPa, classifying the clay as firm to stiff in consistency. Moisture contents within the clay ranged from 22 to 55%.

Additional Laboratory Testing – One (1) moisture density relationship test (standard Proctor) and one (1) CBR test were completed on a composite sample consisting of clay collected from approximately 0.3 m to 0.9 m (1 ft to 3 ft) BGS in all test holes. Results indicated a maximum dry density of 1630 kg/m³, an optimum moisture content of 22.0%, and a CBR of 4.6 remolded to 95% of the SPDD at optimum moisture content. All laboratory test reports can be found attached in Appendix C.

SITE 06: ALEXANDER AVENUE

A core investigation was conducted along Alexander Avenue, involving the extraction of five (5) cores: four (4) from mid-slab locations and one (1) from a joint location. Locations of joints were difficult to find due to thick snow and ice cover during the time of the investigation. The pavement surface was composed of concrete with thicknesses ranging from 205 to 235 mm. Granular base was observed below the pavement structure at all core locations with thicknesses varying between 24 and 74 mm. Dense, frozen conditions of the gravel base prevented observation of the underlying subgrade. Detailed core locations are illustrated in Figure 4.

SITE 07: PRINCE EDWARD STREET

A core investigation was conducted along Prince Edward Street, involving the extraction of three (3) cores from mid-slab locations. Additional soil investigations were conducted at each of the test hole locations; two (2) advanced to a depth of 3.0 m (10 ft) below pavement surface, and one (1) advanced to a depth of 2.0 m (6.5 ft) below pavement surface. The general stratigraphy encountered within the test holes consisted of asphalt pavement overlying concrete, overlying gravel fill, overlying fat clay. A further description of each layer is provided below, with test hole logs provided in Appendix B and test hole locations shown in Figure 5.

Asphalt – The pavement surface consisted of asphalt with varying thicknesses of 45 to 60 mm.



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Concrete – Concrete was encountered underlying the asphalt with varying thicknesses of 155 to 205 mm.

Gravel Fill – Gravel fill was encountered directly below the concrete in all the test hole and had a varying thickness of 25 to 50 mm. The fill was frozen, fine grained, and with fine to coarse sand.

Fat Clay (CH) – Fat clay was encountered below the gravel fill and extended to the depth of exploration. The clay was grey to brown, frozen, trace to some sand, trace to some silt, and moist below frozen material.

Undrained shear strengths of the clay were estimated during drilling using a handheld Torvane. The readings ranged from 65 kPa to 95 kPa, classifying the clay as stiff in consistency. Two (2) Atterberg limits tests were completed on the clay with results indicating liquid limits of 80 to 81, plastic limits of 29 to 34, and plasticity indices between 46 to 52, classifying the material as of high plasticity. Two (2) particle size analysis tests were completed and indicated 0% gravel, 1% sand, 40 to 45% silt, and 54 to 59% clay. Moisture contents within the clay ranged from 30 to 40%.

Additional Laboratory Testing – One (1) moisture density relationship test (standard Proctor) and one (1) CBR test were completed on a composite sample consisting of clay collected from approximately 0.3 m to 0.9 m (1 ft to 3 ft) BGS in all test holes. Results indicated a maximum dry density of 1380 kg/m³, an optimum moisture content of 25.5%, and a CBR of 2.0 remolded to 95% of the SPDD at optimum moisture content. All laboratory test reports can be found attached in Appendix C.

SITE 08: MCFARLANE STREET N

A core investigation was conducted along McFarlane Street N, involving the extraction of three (3) cores from mid-slab locations. Additional soil investigations were conducted at each of the test hole locations and were advanced to a depth of 2.0 m (6.5 ft) below pavement surface. The general stratigraphy encountered within the test holes consisted of asphalt pavement overlying concrete, overlying gravel fill, overlying fat clay. A further description of each layer is provided below, with test hole logs provided in Appendix B and test hole locations shown in Figure 6.

Asphalt – The pavement surface consisted of asphalt with varying thicknesses of 25 to 50 mm.

Concrete – Concrete was encountered underlying the asphalt with varying thicknesses of 155 to 205 mm.

Gravel Fill – Gravel fill was encountered directly below the concrete in only one test hole, TH25-13 with thickness of 140 mm. The fill was frozen, fine grained, and with fine to coarse sand.

Fat Clay (CH) – Fat clay was encountered below the concrete and gravel fill in all the test holes and extended to the depth of exploration. The clay was generally grey to brown, frozen, trace fine sand, trace to with silt, and moist below frozen material.

Undrained shear strengths of the clay were estimated during drilling using a handheld Torvane. The readings ranged from 30 kPa to 88 kPa, classifying the clay as firm to stiff in consistency. Two (2) Atterberg limits tests were completed on the clay with results indicating liquid limits of 70 to 75, plastic limits of 27 to 29, and plasticity indices between 43 to 46, classifying the material as of high plasticity. Two (2) particle size analysis tests were completed and indicated 0% gravel, 0 to 1% sand, 45 to 52% silt, and 47 to 55% clay. Moisture contents within the clay ranged from 25 to 33%.



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Additional Laboratory Testing – One (1) moisture density relationship test (standard Proctor) and one (1) CBR test were completed on a composite sample consisting of clay collected from approximately 0.3 m to 0.9 m (1 ft to 3 ft) BGS in all test holes. Results indicated a maximum dry density of 1440 kg/m³, an optimum moisture content of 25.0%, and a CBR of 3.4 remolded to 95% of the SPDD at optimum moisture content. All laboratory test reports can be found attached in Appendix C.

3.0 CLOSURE

Should you have any questions regarding the enclosed information or require additional information, please contact the undersigned.

STATEMENT OF LIMITATIONS AND CONDITIONS

Limitations

This report has been prepared for KGS Group in accordance with the agreement between KGS Group's Geotechnical and Transportation departments (the "Agreement"). This report represents KGS Group's professional judgment and exercising due care consistent with the preparation of similar reports. The information, data, recommendations and conclusions in this report are subject to the constraints and limitations in the Agreement and the qualifications in this report. This report must be read as a whole, and sections or parts should not be read out of context.

This report is based on information made available to KGS Group by KGS Group. Unless stated otherwise, KGS Group has not verified the accuracy, completeness or validity of such information, makes no representation regarding its accuracy and hereby disclaims any liability in connection therewith. KGS Group shall not be responsible for conditions/issues it was not authorized or able to investigate or which were beyond the scope of its work. The information and conclusions provided in this report apply only as they existed at the time of KGS Group's work.

Third Party Use of Report

Any use a third party makes of this report or any reliance on or decisions made based on it, are the responsibility of such third parties. KGS Group accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions undertaken based on this report.

Geotechnical Investigation Statement of Limitations

The geotechnical investigation findings and recommendations of this report were prepared in accordance with generally accepted professional engineering principles and practice. The findings and recommendations are based on the results of field and laboratory investigations, combined with an interpolation of soil and



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groundwater conditions found at and within the depth of the test holes drilled by KGS Group at the site at the time of drilling. If conditions encountered during construction appear to be different from those shown by the test holes drilled by KGS Group or if the assumptions stated herein are not in keeping with the design, KGS Group should be notified in order that the recommendations can be reviewed and modified if necessary.

Prepared By:

RA/cs Attached

Raina Alcantara, E.I.T. Geotechnical Engineer in Training

Approved By:

David Anderson, M.Sc., P.Eng. Geotechnical Engineer



FIGURES

Test Hole Location Plans



FIGURE 1: PAVEMENT CORE LOCATIONS ON IRYSH AVENUE (SITE 01) & BURY STREET (SITE 02)





FIGURE 2: TEST HOLE LOCATIONS ON WHYTE AVENUE (SITE 03)





FIGURE 3: TEST HOLE LOCATIONS ON ELGIN AVENUE (SITE 04) & KATE STREET (SITE 05)





FIGURE 4: PAVEMENT CORE LOCATIONS ON ALEXANDER AVENUE (SITE 06)





FIGURE 5: TEST HOLE LOCATIONS ON PRINCE EDWARD STREET (SITE 07)





FIGURE 6: TEST HOLE LOCATIONS ON MCFARLANE STREET N (SITE 08)





TABLES

Location Descriptions and Coordinates Summary of Core Results



TABLE 1: PAVEMENT CORE & TEST HOLE LOCATIONS

Site	Street Name	Test Hole ID	Location Description	Northing [m]	Easting [m]
		C25-01	Eastbound lane approximately 38 m east of Blake St. intersection	5531434	630233
01	Irysh Avenue	C25-02	Eastbound lane approximately 107 m east of Blake St. intersection	5531410	630297
		C25-03	Eastbound lane approximately 23 m west of Burt St. intersection	5531386	630359
		C25-04	Northbound lane approximately 14 m south of Irysh Ave. intersection	5531363	630386
02	Bury Street	C25-05	Northbound lane approximately 63 m north of Whyte Ave. intersection	5531295	630389
		C25-06	Northbound lane approximately 25 m north of Whyte Ave. intersection	5531257	630390
		TH25-07	Westbound lane near backside of 2205 Gallagher Ave.	5531215	630426
03	Whyte Avenue	TH25-08	Westbound lane near backside of 2179 Gallagher Ave.	5531176	630507
		TH25-09	Westbound lane near backside of 2147 Gallagher Ave.	5531136	630594
		TH25-03	Eastbound lane near 632 Elgin Ave.	5529674	632542
	Elgin Avenue	TH25-04	Eastbound lane near 590 Elgin Ave.	5529619	632662
04		TH25-05	Eastbound lane near west end of Roosevelt Playground	5529560	632785
		TH25-06	Eastbound lane near east end of Roosevelt Playground	5529521	632868
OF	Koto Chroat	TH25-01	Northbound lane near west edge of Roosevelt Playground	5529544	632744
05	Kate street	TH25-02	Northbound lane near west face of Best Way Food Market	5529507	632726
		C25-07	Eastbound lane, near intersection with Gwendoline St.	5529890	632671
		C25-08	Eastbound lane, near 602 Alexander Ave.	5529859	632737
06	Alexander Avenue	C25-09	Eastbound lane, near 584 Alexander Ave.	5529836	632788
		C25-10	Eastbound lane, near 542 Alexander Ave.	5529782	632900
		C25-11	Eastbound lane, near 516 Alexander Ave.	5529748	632973
		TH25-10	Northwestern lane near backside of 90 Grove St.	5530076	634540
07	Prince Edward Street	TH25-11	Northwestern lane near backside of 66 Grove St.	5530115	634584
		TH25-12	Northwestern lane near 53 Prince Edward St.	5530153	634628
		TH25-13	Northbound lane near 175 McFarlane Street N	5529857	635007
08	McFarlane Street N	TH25-14	Northbound lane near 149 McFarlane Street N	5529770	634989
		TH25-15	Northbound lane near 143 McFarlane Street N	5529732	634980



Site	Street Name	Test Hole ID	Pavement Type	Location	Core Thickness [mm]	Base Material	Base Thickness [mm]	Depth to Sub-Grade [mm]	Subgrade Material
		C25-01	Concrete	Mid-slab	175	Granular	117	292	Not investigated
01	Irysh Avenue	C25-02	Concrete	Mid-slab	168	Granular	86	254	Not investigated
		C25-03	Concrete	Mid-slab	150	Granular	117	267	Not investigated
		C25-04	Concrete	Mid-slab	175	Granular	28	203	Not investigated
02	Bury Street	C25-05	Concrete	Mid-slab	155	Granular	36	191	Not investigated
		C25-06	Concrete	Joint	160	Granular	43	203	Not investigated
		TH25-071	Asphalt / Concrete	Mid-slab	140 / 135	Clay mixed with granular	182	453	Lean clay & fat clay
03	Whyte Avenue	TH25-08 ²	Asphalt / Concrete	Mid-slab	110 / 75	Clay mixed with granular	172	357	Lean clay & fat clay
		TH25-09 ²	Asphalt / Concrete	Mid-slab	60 / 75	Granular	94	229	Fat clay
04		TH25-03 ³	Asphalt	N/A	125	Granular	128	253	Lean clay & fat clay
	Elgin Avenue	TH25-04 ³	Asphalt	N/A	80	Granular	85	165	Lean clay & fat clay
01		TH25-05	Asphalt	N/A	105	Granular	276	381	Fat clay
		TH25-06	Asphalt	N/A	58	Granular	247	305	Lean clay & fat clay
		TH25-01	Asphalt / Concrete	Mid-slab	40 / 70	Granular	170	280	Lean clay & fat clay
05	Kate Street	TH25-02	Asphalt	N/A	170	Granular	71	241	Lean clay & fat clay
		C25-07	Concrete	Mid-slab	230	Granular	24	254	Not investigated
		C25-08	Concrete	Joint	205	Granular	74	279	Not investigated
06	Alexander Avenue	C25-09	Concrete	Mid-slab	230	Granular	24	254	Not investigated
		C25-10	Concrete	Mid-slab	230	Granular	49	279	Not investigated
		C25-11	Concrete	Mid-slab	235	Granular	44	279	Not investigated
		TH25-10 ³	Asphalt / Concrete	Mid-slab	48 / 205	Granular	52	305	Fat clay
07	Prince Edward Street	TH25-11	Asphalt / Concrete	Mid-slab	60 / 170	Granular	11	241	Fat clay
		TH25-12	Asphalt / Concrete	Mid-slab	45 / 155	Granular	29	229	Fat clay

TABLE 02: PAVEMENT CORE & TEST HOLE RESULTS



Site	Street Name	Test Hole ID	Pavement Type	Location	Core Thickness [mm]	Base Material	Base Thickness [mm]	Depth to Sub-Grade [mm]	Subgrade Material
		TH25-13	Asphalt / Concrete	Mid-slab	25 / 165	Granular	140	330	Fat Clay
08	McFarlane Street N	TH25-14 ¹	Asphalt / Concrete	Mid-slab	40 / 203	None observed	N/A	243	Fat Clay
		TH25-15 ¹	Asphalt / Concrete	Mid-slab	50 / 155	None observed	N/A	205	Fat Clay

1- Asphalt portion of core not recoverable; thickness measured down-hole during investigation

2- Concrete portion of core not recoverable; thickness measured down-hole during investigation

3- Core not recoverable; pavement thicknesses measured down-hole during investigation



APPENDIX A

Core Photo Log





Photo 1: Irysh Avenue, C25-01



Photo 2: Irysh Avenue, C25-02





Photo 3: Irysh Avenue, C25-03



Photo 4: Bury Street, C25-04





Photo 5: Bury Street, C25-05



Photo 6: Bury Street, C25-06





Photo 7: Whyte Avenue, TH25-07



Photo 8: Whyte Avenue, TH25-08





Photo 9: Whyte Avenue, TH25-09







Photo 10: Elgin Avenue, TH25-04



Photo 11: Elgin Avenue, TH25-05





Photo 12: Elgin Avenue, TH25-06



Photo 13: Kate Street, TH25-01





Photo 14: Kate Street, TH25-02



Photo 15: Alexander Avenue, C25-07





Photo 16: Alexander Avenue, C25-08



Photo 17: Alexander Avenue, C25-09





Photo 18: Alexander Avenue, C25-10



Photo 19: Alexander Avenue, C25-11







Photo 20: Prince Edward Street, TH25-11





Photo 21: Prince Edward Street, TH25-12



Photo 22: McFarlane Street N, TH25-13





Photo 23: McFarlane Street N, TH25-14



Photo 24: McFarlane Street N, TH25-15



APPENDIX B

Test Hole Logs



GR	G	TEST HOLE LOG	HOLE NO. TH25-01			SHEET 1 of 1
CLIENT PROJEC LOCATIO DESCRIF DRILL R METHO	T ON PTION IG / HA PD(S)	KGS GROUP City of Winnipeg 2025 Local Street Program 25-R-05 Winnipeg, Manitoba Kate Street, northbound lane near west edge of Rooseve MMER Acker MP8 with Auto-Hammer 0.0 m to 0.1 m: 175 mm Core 0.1 m to 3.0 m: 150 mm Ø SSA	PROJECT NO. START DATE UTM (m) elt Playground		25-0 2-26 N 5,5 E 632	535-001 -2025 529,544 2,744 Zone 14
HLLAGO (m) (ft)	GRAPHICS	DESCRIPTION AND CLASSIFICATION		WATER LEVEL	NIIMBER	PL MC LL Cu TORVANE (kPa) \blacklozenge qu POCKET PEN (kPa) \star SPT (N) BLOWS/0.30 m \blacktriangle 20 40 60 80
		ASPHALT - 40 mm. CONCRETE - 70 mm.	/			
_		<u>GRAVEL FILL</u> - 170 mm, frozen, fine, with fine to coarse sand.]			
		CLAY FILL - 125 mm, Black, frozen, high plasticity, trace fine to medium s	and.			
		LEAN CLAY (CL) - Light brown, frozen, low plasticity, silty, trace fine sand		$\left\{ \right\}$		
-						
		- LL=31, PL=17, PI=14 at 0.8 m.		ĮĮ	<u>ک</u> آ	
1.0		- PSA: 1% gravel, 3% sand, 78% silt, 18% clay at 0.8 m.		ļΙ	י ז	
	<i>\////</i>	FAT CLAY (CH) - Brown, frozen, high plasticity, with silt, trace fine to mee	lium sand.			
				{	₹ s	
	V////			ļΪ	1	
_	<i>\////</i>					
5		mattled grow/brown maint stiff high plasticity trace searce cand trace	a silt trace gungum heleur 1 F	}	1 s:	3
-	<i>\////</i>	 mottled grey/brown, moist, stiff, high plasticity, trace coarse sand, trace m. 	e silt, trace gypsum below 1.5			
	<i>\////</i>				_	
	<i>\////</i>	- firm below 1.8 m		ĮĮ	{ s₄	4
	<i>\////</i>				2	
2.0	<i>\////</i>					
	<i>\////</i>			₹	1	
	<i>\////</i>			1	1 5	
	<i>\////</i>					
	<i>\////</i>					▲
	<i>\////</i>					
-	<i>\////</i>					
3.0	<i>¥////</i>	Natas				
		1. End of test hole at 3.0 m.				
1		2. Test hole caved to 2.7 m upon completion of drilling/digging.				
		5. Test note backfilled with auger cuttings with cold mix asphalt patch.				
	 ∇	ng Drilling/Digging None Encountered	CONTRACTOR			
LEVELS			Paddock Drilling			R. ALCANTARA
I			APPROVED			DATE
			D. ANDERSON			4-7-2025

GR	G S	TEST HOLE LOG	HOLE NO. TH25-02			SHEET 1 of 1
CLIENT PROJECT LOCATIC DESCRIP DRILL RI METHOI	T ON PTION IG / HA D(S)	KGS GROUP City of Winnipeg 2025 Local Street Program 25-R-05 Winnipeg, Manitoba Kate Street, northbound lane near west face of Best Wa MMER Acker MP8 with Auto-Hammer 0.0 m to 0.2 m: 175 mm Core 0.2 m to 3.0 m: 150 mm Ø SSA	PROJECT NO. START DATE UTM (m) y Food Market	2. 2 N E	5-053 -26-2 5,52 632,7	35-001 025 9,507 726 Zone 14
HLLD (m) (ft)	GRAPHICS	DESCRIPTION AND CLASSIFICATION		WATER LEVEL SAMPLE TYPE	NUMBER	PL MC LL Cu TORVANE (kPa) ◆ qu POCKET PEN (kPa) ★ SPT (N) BLOWS/0.30 m ▲ 20 40 60 80
		ASPHALI - 170 mm. <u>GRAVEL FILL</u> - 71 mm, frozen, fine, with fine to coarse sand. <u>LEAN CLAY (CL)</u> - Light brown, frozen, low plasticity, silty, trace fine sand				
 1.0		 decreasing silt content below 0.6 m. LL=35, PL=17, PI=18 at 0.8 m. PSA: 0% gravel, 6% sand, 74% silt, 20% clay at 0.8 m. 			51	I —1●
		FAT CLAY (CH) - Brown, frozen, high plasticity, trace fine sand, trace silt. - moist, stiff, trace gypsum, no sand below 1.5 m.			52 53 53 54	•
		- firm below 2.4 m.			5 55	◆
 3.010 10		Notes: 1. End of test hole at 3.0 m. 2. Test hole caved to 2.7 m upon completion of drilling/digging.				
		3. Test hole backfilled with auger cuttings with cold mix asphalt patch.				
WATER I LEVELS	I ⊈ Duri	ng Drilling/Digging None Encountered	CONTRACTOR Paddock Drilling APPROVED		IN D	I ISPECTOR R. ALCANTARA ATE
			D. ANDERSON			4-7-2025

		5	TEST HOLE LOG	HOLE NO. TH25-03			SHEET 1 of	
CLIENT PROJECT LOCATIO DESCRIP DRILL RIG METHOD	N FION 5 / HA 9(S)	KGS GROUP PROJECT NO. City of Winnipeg 2025 Local Street Program 25-R-05 START DATE Winnipeg, Manitoba UTM (m) Elgin Avenue, eastbound lane near 632 Elgin Avenue UTM (m) AMMER Acker MP8 with Auto-Hammer 0.0 m to 0.1 m: 175 mm Core 0.1 m to 2.0 m: 150 mm Ø SSA		KGS GKOOP PROJECT NO. City of Winnipeg 2025 Local Street Program 25-R-05 START DATE Winnipeg, Manitoba UTM (m) Elgin Avenue, eastbound lane near 632 Elgin Avenue UTM (m) MMER Acker MP8 with Auto-Hammer 0.0 m to 0.1 m: 175 mm Core 0.1 m to 2.0 m: 150 mm Ø SSA			25-0 2-20 N 5,! E 63	535-001 -2025 529,674 2,542 Zone 14
a) DEPTH (1) (1)	GRAPHICS		DESCRIPTION AND CLASSIFICATION		WATER LEVEL	SAMPLE TYPE	PL MC LL Cu TORVANE (kPa) ◆ qu POCKET PEN (kPa) 7 SPT (N) BLOWS/0.30 m 20 40 60 80	
		CLAY FIL CLAY FIL LEAN CLA - LL=30, - PSA: 05 - decrea FAT CLAY - soft, sil Notes: 1. End o 2. Test h 3. Test h	ritt - 128 mm, frozen, fine, with fine to coarse sand. L - 229 mm, Dark grey, frozen, high plasticity. AY (CL) - Brown, frozen, low plasticity, silty, some to with fine to c PL=16, PI=14 at 0.9 m. % gravel, 4% sand, 78% silt, 18% clay at 0.9 m. asing silt content below 1.2 m. Y (CH) - Brown, moist, stiff, high plasticity, some silt, trace fine sar Ity below 1.9 m. of test hole at 2.0 m. nole caved to 1.5 m upon completion of drilling/digging. nole backfilled with auger cuttings with cold mix asphalt patch.	oarse grained sand.				
AB WATER ⊻ LEVELS	2 Durii	ng Drilling	g/Digging None Encountered	CONTRACTOR Paddock Drilling			INSPECTOR R. ALCANTARA DATE	

K		TEST HOLE LOG	HOLE NO. TH25-04			SHEET 1 of 1
CLIENT PROJEC LOCATI DESCRI DRILL R METHC	CT ION IPTION RIG / HA DD(S)	KGS GROUP City of Winnipeg 2025 Local Street Program 25-R-05 Winnipeg, Manitoba Elgin Avenue, eastbound lane near 590 Elgin Avenue MMER Acker MP8 with Auto-Hammer 0.0 m to 0.1 m: 175 mm Core 0.1 m to 2.0 m: 150 mm ø SSA	PROJECT NO. START DATE UTM (m)	25-0535-001 2-20-2025 N 5,529,619 E 632,662 Zone 14		
(m) (ft)	GRAPHICS	DESCRIPTION AND CLASSIFICATION		WATER LEVEL SAMPLE TYPE	NUMBER	PL MC LL Cu TORVANE (kPa) ◆ qu POCKET PEN (kPa) ★ SPT (N) BLOWS/0.30 m ▲ 20 40 60 80
		ASPHALT - 80 mm. GRAVEL FILL - 85 mm, frozen, fine, with fine to coarse sand. CLAY FILL - 292 mm, Mottled grey/brown, frozen, high plasticity, intermi LEAN CLAY (CL) - Light brown, frozen, low plasticity, silty, trace medium :	xed with granular, some silt.	27 11	51	•
 1.0					52 52 53	•
		 soft, moist below 1.4 m. <u>FAT CLAY (CH)</u> - Grey, moist, stiff, high plasticity, some to with silt, trace 	fine sand.		54	•
		 trace to some silt below 1.8 m. Notes: End of test hole at 2.0 m. Test hole remained open to 2.0 m upon completion of drilling/digging Test hole backfilled with auger cuttings with cold mix asphalt patch. 	,.	F773	55	•
3.0						
WATER LEVELS	 ⊈ Duri	ng Drilling/Digging None Encountered	CONTRACTOR Paddock Drilling		IN	ISPECTOR R. ALCANTARA
			APPROVED D. ANDERSON		D.	ATE 4-7-2025

GR		TEST HOLE LOG	HOLE NO. TH25-05			SHEET 1 of 1
CLIENT PROJECT LOCATIC DESCRIF DRILL RI METHO	T ON PTION IG / HA D(S)	KGS GROUP City of Winnipeg 2025 Local Street Program 25-R-05 Winnipeg, Manitoba Elgin Avenue, eastbound lane near west end of Rooseve MMER Acker MP8 with Auto-Hammer 0.0 m to 0.1 m: 175 mm Core 0.1 m to 3.0 m: 150 mm Ø SSA	PROJECT NO. START DATE UTM (m) It Playground	25 2- N E	5-053 20-20 5,522 632,7	15-001 025 9,560 785 Zone 14
(m) (ft)	GRAPHICS	DESCRIPTION AND CLASSIFICATION		WATER LEVEL SAMPLE TYPE	NUMBER	PL MC LL Cu TORVANE (kPa) ◆ qu POCKET PEN (kPa) ★ SPT (N) BLOWS/0.30 m ▲ 20 40 60 80
		<u>ASPHALT</u> - 105 mm. <u>GRAVEL FILL</u> - 276 mm, frozen, fine, with fine to coarse sand.				
		- brown below 0.8 m	ace slit.		51	•
 1.0— 		- LL=80, PL=25, PI=55 at 0.9 m. - PSA: 0% gravel, 2% sand, 26% silt, 72% clay at 0.9 m.			S2	
 5 		- moist, stiff below 1.3 m.			S3 S4	•
 2.0		- mottled light brown/brown, increased silt content below 1.8 m.				•
 3.010		- firm below 2.1 m.			S5	* • •
		Notes: 1. End of test hole at 3.0 m. 2. Test hole caved to 2.4 m upon completion of drilling/digging. 3. Test hole backfilled with auger cuttings with cold mix asphalt patch.				
WATER LEVELS	<u>I</u> ⊈ Duri	ng Drilling/Digging None Encountered	CONTRACTOR Paddock Drilling	<u> </u>	IN	ISPECTOR R. ALCANTARA
			APPROVED D. ANDERSON		D	ATE 4-7-2025

GR		TEST HOLE LOG	HOLE NO. TH25-06			SHEET 1 of 1
CLIENT PROJECT LOCATIO DESCRIF DRILL RI METHO	T DN PTION IG / HA D(S)	KGS GROUP City of Winnipeg 2025 Local Street Program 25-R-05 Winnipeg, Manitoba Elgin Avenue, eastbound lane near east end of Rooseve MMER Acker MP8 with Auto-Hammer 0.0 m to 0.1 m: 175 mm Core 0.1 m to 3.0 m: 150 mm Ø SSA	PROJECT NO. START DATE UTM (m) It Playground	25-0535-001 2-20-2025 N 5,529,521 E 632,868 Zone 14		
(m) (ft)	GRAPHICS	DESCRIPTION AND CLASSIFICATION		WATER LEVEL SAMPLE TYPE	NUMBER	PL MC LL Cu TORVANE (kPa) ◆ qu POCKET PEN (kPa) ★ SPT (N) BLOWS/0.30 m ▲ 20 40 60 80
		<u>ASPHALT</u> - 58 mm. <u>GRAVEL FILL</u> - 247 mm, frozen, fine, with fine to coarse sand.		1		
		CLAY FILL - 305 mm, Brown, frozen, high plasticity, some to with silt, trad	ce fine sand.		_	
		ITAN CLAY (CI) Light brown from a low plasticity city transfire and			S1	•
		LEAN CLAY (CL) - Light brown, hozen, low plasticity, sity, trace the same	l.	4		
		- PSA: 0% gravel, 4% sand, 75% silt, 21% clay at 0.8 m.			S2	ŀ⊕I
1.0				R	-	
					S3	•
		- moist, soft below 1.3 m.				•
5						
		FAT CLAY (CH) - Brown, moist, stiff, high plasticity, with silt, trace mediu	m to coarse sand.	-	-	•
		- some silt below 1.8 m.		±	S4	•
2.0						
				स		
				Ľ	55	
						•
3.0		Notes:		$\left\{ \right\}$		→ → → →
		 End of test noise at 3.0 m. Test hole caved to 2.9 m upon completion of drilling/digging. Test hole backfilled with augus suttings with sold min applet with 				
		3. Test note backnifed with auger cuttings with cold mix asphalt patch.				
	<mark>∣</mark> ⊈ Duri	ng Drilling/Digging None Encountered	CONTRACTOR			ISPECTOR
LEVELS						R. ALCANTARA
			D. ANDERSON			4-7-2025

		TEST HOLE LOG	HOLE NO. TH25-07			SHEET 1 of
CLIENT PROJECT LOCATIO DESCRIPT DRILL RIC METHOD	IT KGS GROUP PROJECT NO. ECT City of Winnipeg 2025 Local Street Program 25-R-05 START DATE TION Winnipeg, Manitoba UTM (m) RIPTION Whyte Avenue, westbound lane near backside of 2205 Gallagher Avenue . RIG / HAMMER Acker MP8 with Auto-Hammer HOD(S) 0.0 m to 0.3 m: 175 mm Core 0.3 m to 3.0 m: 150 mm Ø SSA		KGS GROUPPROJECT NO.City of Winnipeg 2025 Local Street Program 25-R-05START DATEWinnipeg, ManitobaUTM (m)Whyte Avenue, westbound lane near backside of 2205 Gallagher AvenueIMERAcker MP8 with Auto-Hammer0.0 m to 0.3 m: 175 mm Core0.3 m to 3.0 m: 150 mm Ø SSA		25-053 2-20-2 N 5,53 E 630,	35-001 025 11,215 426 Zone 14
(m) (ft)	GRAPHICS	DESCRIPTION AND CLASSIFICATION		WATER LEVEL		PL MC LL ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ← ←
-		ASPHALT - 140 mm.				
		CLAY FILL - 182 mm. Dark grey, frozen, high plasticity, intermixed with gra	nular.		5 1	•
		LEAN CLAY (CL) - Light brown, frozen, low plasticity, silty, trace fine sand.		ł	5 2	•
 		- LL=28, PL=17, PI=11 at 0.9 m. - PSA: 0% gravel, 9% sand, 75% silt, 16% clay at 0.9 m.		ł	5 3	1
- - - -5 - -		FAT CLAY (CH) - Brown, moist, stiff, high plasticity, trace fine sand, trace si - firm below 1.8 m.	lt.		54	•
				₹ ₹	\$5	•
		- stiff below 2.7 m.				•
	/////	 Notes: End of test hole at 3.0 m. Test hole remained open to 3.0 m upon completion of drilling/digging. Test hole backfilled with auger cuttings with cold mix asphalt patch. 				
ŲATER ⊻ EVELS	Duri	ng Drilling/Digging None Encountered	CONTRACTOR		1	
			APPROVED D. ANDERSON		D	ATE 4-7-2025

K	G	TEST HOLE LOG	HOLE NO. TH25-08			SHEET 1 of 1
CLIENT PROJE LOCAT DESCR DRILL METHO	CT TION IPTION RIG / H OD(S)	 KGS GROUP City of Winnipeg 2025 Local Street Program 25-R-05 Winnipeg, Manitoba Whyte Avenue, westbound lane near backside of 2179 Ga AMMER Acker MP8 with Auto-Hammer 0.0 m to 0.2 m: 175 mm Core 0.2 m to 2.0 m: 150 mm ø SSA 	PROJECT NO. START DATE UTM (m) llagher Avenue	25-0535-001 2-20-2025 N 5,531,176 E 630,507 Zone 14		
HL DEbLH (m) (ft	(;) GRAPHICS	DESCRIPTION AND CLASSIFICATION		WATER LEVEL	NUMBER	PL MC LL Cu TORVANE (kPa) ◆ qu POCKET PEN (kPa) ★ SPT (N) BLOWS/0.30 m ▲ 20 40 60 80
		ASPHALT - 110 mm. <u>CONCRETE</u> - 75 mm.				
		<u>CLAY FILL</u> - 172 mm, Dark grey, frozen, intermediate plasticity, intermixed v <u>LEAN CLAY (CL)</u> - Light brown, frozen, low plasticity, silty, trace fine sand.	with fine to coarse sand.		S 1	•
 1.0					5 2	•
		FAT CLAY (CH) - Brown, frozen, high plasticity, some to with silt, trace coars	se sand.		₹ 53	•
5 		- moist, stiff below 1.7 m.			₹ \$4	•
		- trace silt below 1.8 m.			1 55	• •
	0	 End of test hole at 2.0 m. Test hole remained open to 2.0 m upon completion of drilling/digging. Test hole backfilled with auger cuttings with cold mix asphalt patch. 				
WATER LEVELS	VATER					
			APPROVED D. ANDERSON		[DATE

K			TEST HOLE LOG	HOLE NO. TH25-09			SHEET 1 of 1
CLII PRO LOO DES DRI ME	ENT OJECT CATIO SCRIP ILL RIG THOE	TION G / H <i>P</i> D(S)	KGS GROUP City of Winnipeg 2025 Local Street Program 25-R-05 Winnipeg, Manitoba Whyte Avenue, westbound lane near backside of 2147 (MMER Acker MP8 with Auto-Hammer 0.0 m to 0.1 m: 175 mm Core 0.1 m to 2.0 m: 150 mm Ø SSA	PROJECT NO. START DATE UTM (m) Gallagher Avenue	2 2 F E	25-05 2-21-2 N 5,53 E 630,	35-001 2025 31,136 594 Zone 14
(m) DFPTH	(ft)	GRAPHICS	DESCRIPTION AND CLASSIFICATION		WATER LEVEL SAMDIE TYDE	NUMBER	PL MC LL Cu TORVANE (kPa) ◆ qu POCKET PEN (kPa) ★ SPT (N) BLOWS/0.30 m ▲ 20 40 60 80
_		PAA	<u>Азунаці</u> - 60 mm. CONCRETE - 75 mm.		-1		
-		\bigotimes	<u>GRAVEL FILL</u> - 94 mm, frozen, fine, with fine to coarse sand.				
-	+		<u>CLAY FILL</u> - 152 mm, Dark grey, frozen, high plasticity, trace medium to c	oarse sand, trace silt.			
		V////	FAT CLAY (CH) - Light brown, frozen, high plasticity, some silt, trace fine	sand.			
						_	
		<i>\////</i>	- LL=67, PL=24, PI=43 at 0.6 m. - PSA: 1% gravel, 7% sand. 74% silt. 18% clav at 0.6 m.		{	k S1	
_	-				Ιμ	۶	
-	-		- maist soft below 0.9 m		Ţ	F	
1.0-					ł	S 2	•
-							
_	-				ł	5	
					ΙĽ	<u>د</u> ا	
_	_						
_			- brown, stiff, trace to some silt below 1.5 m.		Į	₹ \$4	• •
-					1 1	ž	
-	L					2	
-					Į	S 5	
2.0			Notes:		\neg		
			 End of test hole at 2.0 m. Test hole caved to 1.5 m upon completion of drilling/digging. Test hole backfilled with auger cuttings with cold mix asphalt patch. 				
-							
	-						
3.0-							
	10						
-							
-							
	1						
	$\left - \right $						
_							
-							
WAT LEVE	ER ELS	I Z Duri	ng Drilling/Digging None Encountered	CONTRACTOR Paddock Drilling	<u> </u>	I	I NSPECTOR R. ALCANTARA
				APPROVED		C	ATE
				D. ANDERSON			4-7-2025

K GR	G	5	TEST HOLE LOG	HOLE NO. TH25-10				SH	EET 1 o
CLIENT PROJEC LOCATIO DESCRIF DRILL RI METHO	T DN PTION IG / HA D(S)	K Ci W Pi AMMER A 0. 0.	GS GROUP ity of Winnipeg 2025 Local Street Program 25-R-05 /innipeg, Manitoba rince Edward Street, northwestern lane near backside of cker MP8 with Auto-Hammer .0 m to 0.3 m: 175 mm Core .3 m to 3.0 m: 150 mm Ø SSA	PROJECT NO. START DATE UTM (m) 90 Grove Street		25-0 2-27 N 5,5 E 634	535-001 -2025 -30,076 1,540	Zone 14	
HL DEbLH (m) (ft)	GRAPHICS		DESCRIPTION AND CLASSIFICATION		WATER LEVEL	SAMPLE I YPE NI IMBER	Cu qu F SPT (20		LL (kPa) ✦ N (kPa) ☆ /0.30 m 0 80
_	A 4 4 8	ASPHALT - CONCRETE	- 48 mm. E - 205 mm.		-/				
_	4 4 4 4 4 8								
+		GRAVEL FI	LLL - 52 mm, frozen, fine, with fine to coarse sand.	:!#	-7				
-		FAT CLAY	י סופאואו אוסטאון, ווסצפח, חוצה plasticity, trace fine sand, trace נחסיי - סופאואו אוסטאון, ווסצפח, חוצה plasticity, trace fine sand, trace	= Siit.					
1									
1		- brown b	elow 0.6 m.						
		1							
		- LL=80, P	L=34, PI=46 at 0.9 m.		4	7.			
0		- PSA: 0%	gravel, 1% sand, 40% silt, 59% clay at 0.9 m.			1 S:			
_									
					┨	र्रु ,	,		
_					ļļ	1 "	-	•	
_						7			
5		- moist, st	iff, trace to some silt below 1.5 m.		1	₹ »		•	
-		ŕ				7			
					}	s s	L	•	
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-									
		1							
		1							
_									
0-									
-		Notes:	test hole at 3.0 m						
-		2. Test ho	le caved to 2.7 m upon completion of drilling/digging.						
-		3. Test ho	le backfilled with auger cuttings with cold mix asphalt patch.						
_									
_									
o ⊢ /ATER \`	I Z Duri	l ing Drilling/	/Digging None Encountered	CONTRACTOR			INSPECT	OR	
VELS		J		Paddock Drilling			R. AL	CANTARA	
				APPROVED			DATE		
				D. ANDERSON			4-7-2	025	

		TEST HOLE LOG	HOLE NO. TH25-11			SHEET 1 of				
CLIENT PROJECT LOCATIC DESCRIP DRILL RI METHOI	DN TION G / HA D(S)	KGS GROUP City of Winnipeg 2025 Local Street Program 25-R-05 Winnipeg, Manitoba Prince Edward Street, northwestern lane near backside o MMER Acker MP8 with Auto-Hammer 0.0 m to 0.2 m: 175 mm Core 0.2 m to 3.0 m: 150 mm ø SSA	KGS GROUPPROJECT NO.City of Winnipeg 2025 Local Street Program 25-R-05START DATEWinnipeg, ManitobaUTM (m)Prince Edward Street, northwestern lane near backside of 66 Grove StreetAcker MP8 with Auto-Hammer0.0 m to 0.2 m: 175 mm Core0.2 m to 3.0 m: 150 mm Ø SSA							
DEPTH (m) (tt)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	WATER LEVEL	SAMPLE TYPE NUMBER	PL MC LL ← Cu TORVANE (kPa) ← qu POCKET PEN (kPa) → SPT (N) BLOWS/0.30 m 20 40 60 80					
_	000	ASPHALT - 60 mm. CONCRETE - 170 mm		~						
-										
+		GRAVEL FILL - 25 mm, frozen, fine, with fine to coarse sand.		-/						
-			-							
_		- brown below 0.6 m.								
-										
+					{ 51					
-		- some silt helow 1.0 m								
-		- Some sitt below 1.0 m.			দ					
1					5 2					
_										
					<u>7</u> 53					
_		- moist, stiff below 1.5 m.								
-										
1					} 54					
_										
-					1 55					
-				P						
-										
_										
_										
		Notaei								
		1. End of test hole at 3.0 m.								
		 Test hole remained open to 3.0 m upon completion of drilling/digging. Test hole backfilled with auger cuttings with cold mix asphalt patch 								
_										
_										
-										
,1										
ATER I	Z Duri	ng Drilling/Digging None Encountered	CONTRACTOR	_	Ī	INSPECTOR				
						K. ALCANTAKA				
			D. ANDERSON			4-7-2025				

GR	G	TEST HOLE LOG	HOLE NO. TH25-12			SHEET 1 of 1
CLIENT PROJECT LOCATIC DESCRIP DRILL RI METHOI	T ON PTION IG / HA D(S)	KGS GROUP City of Winnipeg 2025 Local Street Program 25-R-05 Winnipeg, Manitoba Prince Edward Street, northwestern lane near 53 Prince MMER Acker MP8 with Auto-Hammer 0.0 m to 0.2 m: 175 mm Core 0.2 m to 2.0 m: 150 mm Ø SSA	PROJECT NO. START DATE UTM (m) Edward Street		25-053 2-27-2 N 5,53 E 634,	35-001 2025 30,153 628 Zone 14
HLL DEbLH (m) (ft)	GRAPHICS	DESCRIPTION AND CLASSIFICATION		WATER LEVEL	NUMBER	PL MC LL Cu TORVANE (kPa) ◆ qu POCKET PEN (kPa) ★ SPT (N) BLOWS/0.30 m ▲ 20 40 60 80
		ASPHALI - 45 mm. CONCRETE - 155 mm. GRAVEL FILL - 29 mm, frozen, fine, with fine to coarse sand. FAT CLAY (CH) - Greyish brown, frozen, high plasticity, trace fine sand, tr - moist, stiff below 0.8 m. - LL=81, PL=29, PI=52 at 0.8 m. - PSA: 0% gravel, 1% sand, 45% silt, 54% clay at 0.8 m. - trace to some silt below 1.1 m. - trace to some silt below 1.1 m. - trace silt below 1.5 m. Notes: 1. End of test hole at 2.0 m. 2. Test hole remained open to 2.0 m upon completion of drilling/digging 3. Test hole backfilled with auger cuttings with cold mix asphalt patch.	ace silt.		51 52 53 54 55 55	
WATER LEVELS	<u>I</u> ⊈ Duri	ng Drilling/Digging None Encountered	CONTRACTOR Paddock Drilling APPROVED			I NSPECTOR R. ALCANTARA

			TEST HOLE LOG	HOLE NO. TH25-13				SHEET 1 of 1
CLIEN PROJ LOCA DESC DRILI METI	NT JECT ATIO CRIP L RIC HOD	N TION G / HA D(S)	KGS GROUP City of Winnipeg 2025 Local Street Program 25-R-05 Winnipeg, Manitoba McFarlane Street N, northbound lane near 175 McFarla MMER Acker MP8 with Auto-Hammer 0.0 m to 0.2 m: 175 mm Core 0.2 m to 2.0 m: 150 mm ø SSA	PROJECT NO. START DATE UTM (m) ne Street N		25 2- N E (5-053 21-2 5,52 635,0	35-001 025 9,857 007 Zone 14
B DEPTH	(ft)	GRAPHICS	DESCRIPTION AND CLASSIFICATION		WATER LEVEL	SAMPLE TYPE	NUMBER	PL MC LL Cu TORVANE (kPa) ◆ qu POCKET PEN (kPa) ★ SPT (N) BLOWS/0.30 m ▲ 20 40 60 80
_		2 4 4 4 7 4 4 4	<u>ASPHALI</u> - 25 mm. <u>CONCRETE</u> - 165 mm.		1			
			<u>GRAVEL FILL</u> - 140 mm, frozen, fine, with fine to coarse sand.					
			FAT CLAY (CH) - Dark grey, frozen, high plasticity, trace fine gravel, some	medium to coarse sand.				
			- greyish brown, trace silt, no gravel below 0.6 m.			1	S1	
	_		- LL=75, PL=29, Pl=46 at 0.8 m. - PSA: 0% gravel, 0% sand, 45% silt, 55% clay at 0.8 m.			ł	S2	
1.0								
						ł	S3	•
			- moist, firm below 1.2 m.					
_	_							•
_	-5		- stiff, some to with silt below 1.5 m.			ł	S4	
	-		- firm below 1.8 m.			{	S5	
2.0			Notes: 1. End of test hole at 2.0 m.					
	-		 Test hole caved to 1.8 m upon completion of drilling/digging. Test hole backfilled with auger cuttings with cold mix asphalt patch. 					
	-							
3.0	-10							
-								
	-		- Drilling (Disting	I				
	sκ⊻ S	Duri	ng Drilling/Digging None Encountered	CONTRACTOR Paddock Drilling			IN	ISPECTOR R. ALCANTARA
				APPROVED			D	ATE 4-7-2025

		TEST HOLE LOG	HOLE NO. TH25-14			SHEET 1 of 1
CLIENT PROJECT LOCATIC DESCRIP DRILL RIC METHOD	TION G / H <i>P</i> D(S)	KGS GROUP City of Winnipeg 2025 Local Street Program 25-R-05 Winnipeg, Manitoba McFarlane Street N, northbound lane near 149 McFarlan MMER Acker MP8 with Auto-Hammer 0.0 m to 0.2 m: 175 mm Core 0.2 m to 2.0 m: 150 mm ø SSA	PROJECT NO. START DATE UTM (m) e Street N	2 2 N E	5-053 -21-2 1 5,52 634,9	35-001 025 9,770 989 Zone 14
HL DEbLH (m) (ft)	GRAPHICS	DESCRIPTION AND CLASSIFICATION		WATER LEVEL SAMPLE TYPE	NUMBER	PL MC LL ← ● ● ● Cu TORVANE (kPa) ◆ qu POCKET PEN (kPa) ★ SPT (N) BLOWS/0.30 m ▲ 20 40 60 80
		CONCRETE - 203 mm. FAT CLAY (CH) - Greyish brown, frozen, high plasticity, trace fine sand, tra - moist, stiff below 1.4 m. Notes: 1. End of test hole at 2.0 m. 2. Test hole remained open to 2.0 m upon completion of drilling/digging. 3. Test hole backfilled with auger cuttings with cold mix asphalt patch.	ce silt.		51 52 53 53 54 55 55	
	 Z Duri	ng Drilling/Digging None Encountered	CONTRACTOR Paddock Drilling APPROVED D. ANDERSON		IN D	ISPECTOR R. ALCANTARA ATE 4-7-2025

GR		TEST HOLE LOG	HOLE NO. TH25-15			SHEET 1 of 1
CLIENT PROJECT LOCATIC DESCRIF DRILL RI METHO	T DN PTION IG / HA D(S)	KGS GROUP City of Winnipeg 2025 Local Street Program 25-R-05 Winnipeg, Manitoba McFarlane Street N, northbound lane near 143 McFarla MMER Acker MP8 with Auto-Hammer 0.0 m to 0.2 m: 175 mm Core 0.2 m to 2.0 m: 150 mm Ø SSA	PROJECT NO. START DATE UTM (m) ine Street N		25-05 2-21- N 5,5 E 634	535-001 2025 29,732 4,980 Zone 14
HLLA DEbLH (m) (ft)	GRAPHICS		WATER LEVEL	SAMPLE I YPE NUMBER	PL MC LL Cu TORVANE (kPa) ◆ qu POCKET PEN (kPa) ★ SPT (N) BLOWS/0.30 m ▲ 20 40 60 80	
_	P 6 4	<u>ASPHALT</u> - 50 mm. CONCRETE - 155 mm				
	71911	EAT CLAY (CL) Crowich brown fracan high statistic same for and	omo silt			
		- LL=70, PL=27, PI=43 at 0.6 m. - PSA: 0% gravel, 1% sand, 52% silt, 47% clay at 0.6 m.			51 51 52	₽
		- moist, stiff below 1.3 m. - trace coarse sand, trace gypsum pockets below 1.5 m.			53 54 54	•
 2.0		Notes: 1. End of test hole at 2.0 m. 2. Test hole caved to 1.8 m upon completion of drilling/digging.		{	55	•
		3. Test hole backfilled with auger cuttings with cold mix asphalt patch.				
	⊈ Duri	ng Drilling/Digging None Encountered	CONTRACTOR	_ 1 1	I	INSPECTOR
LEVELS			Paddock Drilling			R. ALCANTARA
			D. ANDERSON			4-7-202 <u>5</u>

KEY TO SYMBOLS LITHOLOGIC SYMBOLS SAMPLER SYMBOLS Asphalt Image: Grab Clay (CH, high plasticity) Image: High plasticity)

Clay (CL, low plasticity)

Concrete

Fill

WELL CONSTRUCTION SYMBOLS

ABBREVIATIONS - Liquid Limit LL PN - Pneumatic Piezometer VW - Vibrating Wire Piezometer ΡL - Plastic Limit ΡI - Plastic Index PID - Photoionization Detector MC - Moisture Content ppm - Parts Per Million DD - Dry Density Water Level During $\overline{\Delta}$ NP - Non-Plastic Drilling -200 - Percent Passing No. 200 Sieve Water Level Upon Ţ Completion of Drilling TV - Torvane (kPa) PP - Pocket Penetrometer (kPa) Water Level Ţ PSA - Particle Size Analysis Remeasured/Static TOC - Top Of Casing CLIENT **KGS GROUP** PROJECT NO. 25-0535-001 PROJECT NAME City of Winnipeg 2025 Local Street Program 25-R-05 LOCATION Winnipeg, Manitoba GROUP

APPENDIX C

Laboratory Testing



						SUN	MM	AR	Y	OF	IN	DE	Χ ΤΙ	EST	S					Sheet	: 1 of	2
Test Hole ID	Smpl No.	Depth From (m)	Depth To (m)	Class- ification	Gravel (%)	Sand (%)	Silt/ Clay (%)	LL	PL	PI	MC (%)	Dry Dens (kN /m3)	Spec Gvty	Satur- ation (%)	Proctor Max DD (kg/m3)	Proct Opt MC (%)	CBR Initial DD (kg/m3)	CBR Initial MC (%)	CBR % of Max DD	CBR % of Opt MC	CBR @2.54 mm	CBR % Swell
1. Kate St.	Comb.	0.3	0.9	CH/CL							30				1630	22.0	1548	22.1	95.0	0.1	4.6	1.4
2. Elign Ave.	Comb.	0.3	0.9	CH/CL							29				1660	21.0	1578	21.0	95.1	0.0	3.7	2.3
3. Whyte Ave.	Comb.	0.3	0.9	CH/CL							29				1650	20.5	1566	20.6	94.9	0.1	5.3	1.2
4. Price Ed. St.	Comb.	0.3	0.9	СН							33				1380	25.5	1310	25.6	94.9	0.1	2	5.4
5. McFarlane St.	Comb.	0.3	0.9	СН							29				1440	25.0	1367	25.1	94.9	0.1	3.4	3.3
TH25-01	S1	0.8	1.0	CL	1	3	96	31	17	14	24											
TH25-01	S2	1.1	1.3								25											
TH25-01	S3	1.4	1.5								23											
TH25-01	S4	1.8	1.9								47											
TH25-01	S5	2.1	2.3								51											
TH25-02	S1	0.8	1.0	CL	0	5	95	35	17	18	39											
TH25-02	S2	1.1	1.3								38											ļ
TH25-02	S3	1.4	1.5								31											
TH25-02	S4	1.7	1.9								48											
TH25-02	S5	2.0	2.1								53											
TH25-03	S1	0.6	0.8								25											
TH25-03	S2	0.9	1.1	CL	0	4	96	30	16	14	26											
TH25-03	S3	1.2	1.4								23											
TH25-03	S4	1.7	1.8								35											
TH25-03	S5	1.9	2.0								22											
TH25-04	51	0.3	0.5								32											
TH25-04	52	0.0	0.8								27											
TH25-04	53 54	1.5	1.1								12											
TH25-04	S5	1.5	2.0								45											
TH25-05	S1	0.6	0.8								32											
TH25-05	S2	0.9	1.1	СН	0	2	98	80	25	55	32											
TH25-05	S3	1.2	1.4		-						48											
TH25-05	S4	1.5	1.7								52											
TH25-05	S5	2.1	2.3								54											
TH25-06	S1	0.5	0.6								36											
TH25-06	S2	0.8	0.9	CL	0	4	96	33	17	16	27											
TH25-06	S3	1.1	1.2								22											
TH25-06	S4	1.7	1.8								41											
TH25-06	S5	2.1	2.3								44											
TH25-07	S1	0.3	0.5								23											
TH25-07	S2	0.6	0.8								19											
TH25-07	S3	0.9	1.1	CL	0	9	91	28	17	11	20											
TH25-07	S4	1.5	1.7								41											
TH25-07	S5	2.1	2.3								54											<u> </u>
TH25-08	S1	0.4	0.6								21											<u> </u>
TH25-08	S2	0.8	0.9								22											<u> </u>
TH25-08	S3	1.2	1.4								26											<u> </u>
TH25-08	S4	1.5	1.7								31											
* Moisture ** Assumed	condit specif	ioned ic grav	and re ity.	molded s	ample.																	
		CLIEN	т	KG	S GROL	JP									PROJ	ECT N	0. 25-	0535-0	001			

GROUP CLIENT PROJECT TESTED B

CLIENT	KGS GROUP	PROJECT NO.	25-0535-001
PROJECT NAME	City of Winnipeg 2025 Local Street Program 25-R-05	LOCATION	Winnipeg, Manitoba
TESTED BY	Stantec	DATE TESTED	03-28-2025

						SUN	٨N	AR	Y	OF	IN	DE	ΧΤΙ	EST	S					Sheet	2 of	2
Test Hole ID	Smpl No.	Depth From (m)	Depth To (m)	Class- ification	Gravel (%)	Sand (%)	Silt/ Clay (%)	LL	PL	PI	MC (%)	Dry Dens (kN /m3)	Spec Gvty	Satur- ation (%)	Proctor Max DD (kg/m3)	Proct Opt MC (%)	CBR Initial DD (kg/m3)	CBR Initial MC (%)	CBR % of Max DD	CBR % of Opt MC	CBR @2.54 mm	CBR % Swell
TH25-08	S5	1.8	2.0								40											
TH25-09	S1	0.6	0.8	СН	1	7	92	67	24	43	40											
TH25-09	S2	0.9	1.1								33											
TH25-09	S3	1.2	1.4								30											
TH25-09	S4	1.5	1.7								41											
TH25-09	S5	1.8	2.0								47											
TH25-10	S1	0.9	1.0	СН	0	1	99	80	34	46	36											
TH25-10	S2	1.2	1.3								35											
TH25-10	S3	1.4	1.5								30											
TH25-10	S4	1.7	1.8								30											
TH25-10	S5	2.0	2.1								30											
TH25-11	S1	0.8	1.0								38											
TH25-11	S2	1.1	1.3								34											
TH25-11	S3	1.4	1.5								34											
TH25-11	S4	1.8	1.9								32											
TH25-11	S5	2.1	2.3								32											
TH25-12	S1	0.8	1.0	СН	0	1	99	81	29	52	39											
TH25-12	S2	1.1	1.3								37											
TH25-12	S3	1.4	1.5								32											
TH25-12	S4	1.5	1.7								30											
TH25-12	S5	1.8	2.0								35											
TH25-13	S1	0.5	0.6								32											
TH25-13	S2	0.8	0.9	СН	0	1	99	75	29	46	33											
TH25-13	S3	1.1	1.2								30											
TH25-13	S4	1.5	1.7								29											
TH25-13	S5	1.8	2.0								25											
TH25-14	S1	0.6	0.8								30											
TH25-14	S2	0.9	1.1								31											
TH25-14	S3	1.2	1.4								29											
TH25-14	S4	1.5	1.7								28											
TH25-14	S5	1.8	2.0								31											
TH25-15	S1	0.6	0.8	СН	0	1	99	70	27	43	35											
TH25-15	S2	0.9	1.1								36											
TH25-15	S3	1.2	1.4								32											
TH25-15	S4	1.5	1.7								30											
TH25-15	S5	1.8	2.0								33											

* Moisture conditioned and remolded sample. ** Assumed specific gravity.



KGS GROUP PROJECT NAME City of Winnipeg 2025 Local Street Program 25-R-05 **PROJECT NO.** 25-0535-001 LOCATION Winnipeg, Manitoba DATE TESTED 03-28-2025



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TH25-12

TH25-13

TH25-15

0.8

0.8

0.6

S1

S2

S1

81

75

70

29

29

27

52

46

43

1

1

1

45

45

52

54

55

47

PROJECT NO. LOCATION

99

99

99

39

33

35

СН

СН

СН





PROJECT NO.25-0535-001LOCATIONWinnipeg, Manitoba



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

TO KGS Group Inc. 3rd Floor - 865 Waverley St. Winnipeg. MB		PROJECT	2025 Local Street Pr City of Winnipeg	ogram - 25-R-05
R3T 5P4		PROJECT NO.	123317566	
ATTN David Anderson		REPORT NO.	1	
DATE SAMPLED: Not Provided SAMPLED BY: KGS Group Inc.	DATE RECEIVED: SUBMITTED BY:	2025.Mar.12 KGS Group Inc.	DATE TEST	TESTED: 2025.Apr.03 ED BY: Donald Eliazar
MATERIAL IDENTIFICATION MATERIAL USE Subgrade MAX. NOMINAL SIZE < 4.75 mm MATERIAL TYPE Clay SPECIFICATION ID Not Applicable IMMERSION PERIOD 96 ± 2 hr		SUPPLIER SOURCE SAMPLE LOCAT STANTEC SAMI TARGET MAX I	Existing Mate Kate Street TION TH25-01/02, PLE NO. 5458	1'-3' 1630 ka/m ³
CONDITION OF SAMPLE Soaked SURCHARGE MASS 4.54 kg +19 mm OVERSIZE SWELL OF SAMPLE POST-TEST MOISTURE	0 % 1.41 % 28.0 %	AS-COMPACTE AS-COMPACTE AS-COMPACTE	D DRY DENSITY D MOISTURE D MOISTURE D % COMPACTION	22.0 % 1548 kg/m ³ 22.1 % 95 %
1000 900 800 700 600 500 400 300 200 100 0.0 2.0 4.0	6.0 8.0 Penetration (mm)	10.0 12.0	14.0	CBR VALUE AT 2.54 mm PENETRATION 4.6 CBR VALUE AT 5.08 mm PENETRATION 3.9
COMMENTS Sample prepared to 95% of the maximum dry of REPORT DATE 2025.Apr.08	density at the optimum mois	sture content as dete	ED BY Guillaume Be Geotechnical	98. WWW eauce, P.Eng. Engineer - Materials Testing Services
Reporting of these test results constitutes a testing service onl above. Stantec is not responsible, nor can be held liable, for the	 Engineering interpretation or evaluation or evaluation or evaluation of this report by any other particular the particular term of term	uation of the test results is ty, with or without the know	provided on written request. The ledge of Stantec.	a data presented is for sole use of client stipulated



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



PROCTOR TEST REPORT

Ю	KGS Group Inc.
	3rd Floor - 865 Waverley St.
	Winnipeg, MB
	R3T 5P4

CLIENT KGS Group Inc. C.C. KGS Group Inc.

ATTN: Raina Alcantara

PROJECT 2025 Local Street Program - 25-R-05 City of Winnipeg

PROJECT NO. PROCTOR NO.	123317566 1	5 DATE SAMPLED	2025.Mar.12	DATE RECEIVED	2025.Mar.12	DATE TESTED	2025.Mar.30
INSITU MOISTURE TESTED BY	29.7 % Donal	d Eliazar		COMPACTION STANDAR	2D	Standard Proctor, / D698	ASTM
MATERIAL IDENTIFIC	CATION			COMPACTION PROCED	URE	A: 101.6mm Mold,	
MAJOR COMPON	VENT	Subgrade				Passing 4.75mm	
SIZE		Clay		RAMMER TYPE		Manual	
DESCRIPTION				PREPARATION		Moist	
SUPPLIER		Existing Materials		OVERSIZE CORRECTION	METHOD	None	
SOURCE		TH 25 01 - 1 & 2 (K	ate St)	RETAINED 4.75mm SCREE	EN	N/A %	



2025.Mar.31

TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1806	1556	16.1
2	1921	1613	19.1
3	1993	1634	22.0
4	2009	1607	25.0

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1630	22.0
OVERSIZE CORRECTED		

Page 1 of 1

Stantec Sample No. 5458.

REVIEWED BY: Stantec Consulting Ltd.

Jason Thompson, C.E.T.

Reporting of these test results constitutes of testing service only. Engineering interpretation or evaluation of the test results is provided on written request. The data presented is for sole use of client stipulated above. Stantec is not responsible, nor con be held liable, for the use of this report by any other party, with or without the knowledge of Stantec.





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

TO KGS Group Inc. 3rd Floor - 865 Waverley St. Winnipeg, MB		PROJECT	2025 Local Street Program - 25-R-05 City of Winnipeg			
R3T 5P4		PROJECT NO.	123317566			
ATTN David Anderson		REPORT NO.	2			
DATE SAMPLED: Not Provided SAMPLED BY: KGS Group Inc.	DATE RECEIVED SUBMITTED BY:	2025.Mar.12 KGS Group Inc.		DATE TESTED: 2025.Apr.03 TESTED BY: Donald Eliazar		
MATERIAL IDENTIFICATION MATERIAL USE Subgrade MAX. NOMINAL SIZE < 4.75 mm MATERIAL TYPE Clay SPECIFICATION ID Not Applicable		SUPPLIER SOURCE SAMPLE LOCA ⁻ STANTEC SAM	Exis Elgi TION TH2 PLE NO. 546	sting Material in Avenue 25-03/04/05/06, 1'-3' 2		
IMMERSION PERIOD96 ± 2 hrCONDITION OF SAMPLESoakedSURCHARGE MASS4.54 kg±19 mm OVERSIZE	0 %	TARGET MAX. I	DRY DENSITY IUM MOISTUR	1660 kg/m ³ E 21.0 %		
SWELL OF SAMPLE POST-TEST MOISTURE	2.30 % 29.7 %	AS-COMPACTE AS-COMPACTE	D MOISTURE	21.0 % TION 95 %		
1000 900 800 100 600 500 400 300 200 100 0				CBR VALUE AT 2.54 mm PENETRATION 3.7 CBR VALUE AT 5.08 mm PENETRATION 3.2		
0.0 2.0 4.0	6.0 8.0 Penetration (mm)	10.0 12.0) 14.0			
Sample prepared to 95% of the maximum dry	density at the optimum moi	sture content as det		STM D698.		
Reporting of these test results constitutes a testing service on above. Stantec is not responsible, nor can be held liable, for the	ly. Engineering interpretation or eval ne use of this report by any other par	Lation of the test results is ty, with or without the know	provided on written wledge of Stantec.	request. The data presented is for sole use of client stipulated		



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



PROCTOR TEST REPORT

Ю	KGS Group Inc.
	3rd Floor - 865 Waverley St.
	Winnipeg, MB
	R3T 5P4

CLIENT KGS Group Inc. C.C. KGS Group Inc.

ATTN: Raina Alcantara

PROJECT 2025 Local Street Program - 25-R-05 City of Winnipeg

PROJECT NO. PROCTOR NO.	123 2	317566	6 Dat	e samp	'LED	202	5.Mc	ar.12		DATE	RECEIVED) 2025.Mai	r.12	date tested	2025.Mar.30
INSITU MOISTURE TESTED BY		29.3 % Donal	s Id Eliaz	zar					СОМ	PACTI	on stane	DARD	Stand D698	dard Proctor, A	STM
MATERIAL IDENTIFIC		1							СОМ	PACTI	ON PROC	EDURE	A: 10	1.6mm Mold,	
MAJOR COMPOI	NENT		Subgi	rade									Passi	ng 4.75mm	
SIZE			Clay						RAMN	AER TY	(PE		Man	ual	
DESCRIPTION									PREPA	RATIO	ЛС		Mois	t	
SUPPLIER			Existin	ng Mat	erials				OVER	SIZE C	ORRECTIO	ON METHOD	None	e	
SOURCE			TH 25	03 - 3	to 6 (Elę	gin Av	/e)		RETAI	NED 4	.75mm SC	CREEN	N/A	%	
1700 (gw/m3) 1675 1650 1625 1625					2		3					TRIAL NUMBER 1 2 3 4	WET DENSITY (kg/m³) 1845 1936 2011 1982	DRY DENSITY (kg/m³) 1592 1632 1654 1592	MOISTURE CONTENT (%) 15.9 18.6 21.6 24.5
□ 1600	+	╡	$ \rightarrow $						4			L	1		

MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
1660	21.0
	MAXIMUM DRY DENSITY (kg/m³) 1660

COMMENTS

Stantec Sample No. 5462.

1575

Page 1 of 1

2025.Mar.31

14 15 16 17 18 19 20 21 22 23 24 25 26 **MOISTURE CONTENT (%)**

Stantec Consulting Ltd.

REVIEWED BY:

Jason Thompson, C.E.T.

Reporting of these test results constitutes of testing service only. Engineering interpretation or evaluation of the test results is provided on written request. The data presented is for sole use of client stipulated above. Stantec is not responsible, nor con be held liable, for the use of this report by any other party, with or without the knowledge of Stantec.





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

TO KGS Group Inc. 3rd Floor - 865 Waverley St. Winnipeg. MB		PROJECT	2025 Local St City of Winnip	Local Street Program - 25-R-05 of Winnipeg		
R3T 5P4		PROJECT NO.	123317566			
ATTN David Anderson		REPORT NO.	3			
DATE SAMPLED: Not Provided SAMPLED BY: KGS Group Inc.	DATE RECEIVED: SUBMITTED BY:	2025.Mar.12 KGS Group Inc.		DATE TESTED: 2025.Apr.03 TESTED BY: Donald Eliazar		
MATERIAL IDENTIFICATION MATERIAL USE Subgrade MAX. NOMINAL SIZE < 4.75 mm MATERIAL TYPE Clay SPECIFICATION ID Not Applicable		SUPPLIER SOURCE SAMPLE LOCA ⁻ STANTEC SAMI	Existi Whytı TION TH25 PLE NO. 5465	ng Material e Avenue -07/09, 1'-3'		
IMMERSION PERIOD 96 ± 2 hr CONDITION OF SAMPLE Soaked SURCHARGE MASS 4.54 kg 10 mm OVERSIZE	0.%	TARGET MAX. I	DRY DENSITY	1650 kg/m ³ 20.5 %		
SWELL OF SAMPLE POST-TEST MOISTURE	1.24 % 25.5 %	AS-COMPACTE AS-COMPACTE AS-COMPACTE	D MOISTURE	20.6 % ON 95 %		
1000 900 GU 800 				CBR VALUE AT 2.54 mm PENETRATION 5.3		
La 700 600 I 400 400			-••	CBR VALUE AT 5.08 mm PENETRATION 4.6		
300 200 100						
0.0 2.0 4.0	6.0 8.0 Penetration (mm)	10.0 12.0	14.0			
COMMENTS Sample prepared to 95% of the maximum dry o	density at the optimum mois	sture content as det	ermined from AS	TM D698. Betuce		
REPORT DATE 2025.Apr.08 Reporting of these test results constitutes a testing service onl above. Stantec is not responsible, nor can be held liable, for th	y. Engineering interpretation or eval e use of this report by any other par	REVIEW uation of the test results is ty, with or without the know	/ED BY Guilla Geote provided on written red wledge of Stantec.	uume Beauce, P.Eng. echnical Engineer - Materials Testing Services quest. The data presented is for sole use of client stipulated		



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



PROCTOR TEST REPORT

ГO	KGS Group Inc.
	3rd Floor - 865 Waverley St.
	Winnipeg, MB
	R3T 5P4

ATTN: Raina Alcantara

CLIENT KGS Group Inc. C.C. KGS Group Inc.

PROJECT 2025 Local Street Program - 25-R-05 City of Winnipeg

PROJECT NO. PROCTOR NO.	123317566 3	6 DATE SAMPLED	2025.Mar.12	DATE RECEIVED	2025.Mar.12	DATE TESTED	2025.Mar.30
INSITU MOISTURE TESTED BY	29.3 % Donal	d Eliazar		COMPACTION STANDAR	RD	Standard Proctor, A D698	ASTM
MATERIAL IDENTIFIC	ATION			COMPACTION PROCED	URE	A: 101.6mm Mold,	
MAJOR COMPON	ENT	Subgrade				Passing 4.75mm	
SIZE		Clay		RAMMER TYPE		Manual	
DESCRIPTION				PREPARATION		Moist	
SUPPLIER		Existing Materials		OVERSIZE CORRECTION	METHOD	None	
SOURCE		BH 25 07 - 7 & 9 (\	Vhyte Ave)	RETAINED 4.75mm SCREI	EN	N/A %	
				Г			



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1845	1593	15.8
2	1941	1639	18.4
3	2000	1647	21.4
4	1979	1592	24.3

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1650	20.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5465.

Page 1 of 1

2025.Mar.31

Stantec Consulting Ltd.

REVIEWED BY:

Jason Thompson, C.E.T.

Reporting of these test results constitutes of testing service only. Engineering interpretation or evaluation of the test results is provided on written request. The data presented is for sole use of client stipulated above. Stantec is not responsible, nor con be held liable, for the use of this report by any other party, with or without the knowledge of Stantec.





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

R3T 5P4 PROJE	CT NO. 123317566
ATTN David Anderson REPOR	T NO. 4
DATE SAMPLED: Not Provided DATE RECEIVED: 2025.Ma SAMPLED BY: KGS Group Inc. SUBMITTED BY: KGS Group Inc.	r.12 DATE TESTED: 2025.Apr.03 pup Inc. TESTED BY: Donald Eliazar
SAMPLED BY: KGS Group Inc. SUBMITTED BY: KGS Group MATERIAL IDENTIFICATION MATERIAL USE Subgrade SUPPL MAX. NOMINAL SIZE < 4.75 mm	nup Inc. TESTED BY: Donald Eliazar LIER Existing Material CE Prince Edward Street LE LOCATION TH25-10/11/12, 1'-3' TEC SAMPLE NO. 5468 ET MAX. DRY DENSITY 1380 kg/m ³ ET MAX. DRY DENSITY 1310 kg/m ³ ET OPTIMUM MOISTURE 25.5 % DMPACTED DRY DENSITY 1310 kg/m ³ DMPACTED MOISTURE 25.6 % MPACTED % COMPACTION 95 % DESCRIPTION 2.0 CBR VALUE AT 2.54 mm 2.0 CBR VALUE AT 5.08 mm PENETRATION 1.8 1.8
0 0 2.0 4.0 6.0 8.0 10.0 Penetration (mm)	
Sample prepared to 95% of the maximum dry density at the optimum moisture conte REPORT DATE 2025.Apr.08 Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of the t above. Stantec is not responsible, nor can be held liable, for the use of this report by any other party, with or with	REVIEWED BY Guillaume Beauce, P.Eng. Geotechnical Engineer - Materials Testing Services est results is provided on written request. The data presented is for sole use of client stipulated hout the knowledge of Stantec.



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



PROCTOR TEST REPORT

ГO	KGS Group Inc.					
	3rd Floor - 865 Waverley St.					
	Winnipeg, MB					
	R3T 5P4					

CLIENT KGS Group Inc. C.C. KGS Group Inc.

OVERSIZE CORRECTED

ATTN: Raina Alcantara

PROJECT 2025 Local Street Program - 25-R-05 City of Winnipeg

PROJECT PROCTO	'NO. R NO.	123 4	317566 [DATE SAM	MPLED	2025	.Mar.12		DATE RECEIV	'ED	2025.Mar	.12	DATE TESTED	2025.Mar.30
INSITU MOISTURE 33.2 %						COMPACTION STANDARD Stan			dard Proctor, ASTM					
MATERIA	L IDENTIFIC	ATION	l Donala E	IIGZGI)1.6mm Mold.			
MAJOR		IENT	Su	bgrade	•			Passi			ing 4.75mm			
SIZE			Cl	ay				RAN	IMER TYPE			Mar	iual	
DESCRI	IPTION							PREF	PARATION			Mois	;†	
SUPPLIE	R		Exi	sting M	aterials			OVE	rsize correc		METHOD	Non	e	
SOURC	E		TH	25 10 -	10 to 12	(See Be	low)	RETA	NED 4.75mm	SCREE	N	N/A	%	
DRY DENSITY (kg/m3)	1425 1400 1375 1350 1325				2		3	4			TRIAL NUMBER 1 2 3 4	WET DENSITY (kg/m³) 1526 1620 1717 1743	DRY DENSITY (kg/m³) 1310 1347 1376 1355	MOISTURE CONTENT (%) 16.5 20.3 24.8 28.6
	1300-												MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
	1	4	16.5 М	19 0IS1	21 TURF	.5 2 E CON	26 ITENT	3.5 2	29	C.	ALCULATED		1380	25.5

COMMENTS

Stantec Sample No. 5468. Material tested was sampled from abovementioned location at Prince Edward Street.

Street.				Thomas
Page 1 of 1	2025.Mar.31	Stantec Consulting Ltd.	REVIEWED BY:	Jason Thompson, C.E.T.

Reporting of these test results constitutes of testing service only. Engineering interpretation or evaluation of the test results is provided on written request. The data presented is for sole use of client stipulated above. Stantec is not responsible, nor con be held liable, for the use of this report by any other party, with or without the knowledge of Stantec.





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

TO KGS Group Inc. 3rd Floor - 865 Waverley St. Winning MB		PROJECT	2025 Local Street Program - 25-R-05 City of Winnipeg			
R3T 5P4		PROJECT NO.	123317566			
ATTN David Anderson		REPORT NO.	5			
DATE SAMPLED: Not Provided SAMPLED BY: KGS Group Inc.	DATE RECEIVED SUBMITTED BY:	: 2025.Mar.12 KGS Group Inc.	DATI TES	E TESTED: 2025.Apr.03 TED BY: Donald Eliazar		
MATERIAL IDENTIFICATION MATERIAL USE Subgrade MAX. NOMINAL SIZE < 4.75 mm MATERIAL TYPE Clay SPECIFICATION ID Not Applicat IMMERSION PERIOD 96 ± 2 1 CONDITION OF SAMPLE Soaked SURCHARGE MASS 4.54 kg +19 mm OVERSIZE	le nr 0 %	SUPPLIER SOURCE SAMPLE LOCA STANTEC SAM TARGET MAX. I TARGET OPTIM AS-COMPACTE	Existing Mat McFarlane S TION TH25-13/14 PLE NO. 5471 DRY DENSITY 1UM MOISTURE D DRY DENSITY	terial Street North /15, 1'-3' 1440 kg/m ³ 25.0 % 1367 kg/m ³		
SWELL OF SAMPLE POST-TEST MOISTURE	3.34 % 40.5 %	AS-COMPACTE AS-COMPACTE	D MOISTURE D % COMPACTION	25.1 % 95 %		
500 450 450 450 450 400 50 300 400 50 250 50 0 0 0 0.0 2.0 4.0	6.0 8.0 Penetration (mm)	10.0 12.0	14.0	CBR VALUE AT 2.54 mm PENETRATION 3.4 CBR VALUE AT 5.08 mm PENETRATION 2.8		
COMMENTS Sample prepared to 95% of the maximum REPORT DATE 2025.Apr.08	dry density at the optimum moi	sture content as det REVIEW	ermined from ASTM D6	98. Mule Beauce, P.Eng.		
Reporting of these test results constitutes a testing servi above. Stantec is not responsible, nor can be held liable	e only. Engineering interpretation or eval for the use of this report by any other pa	luation of the test results is	Geotechnica provided on written request. Th vledge of Stantec.	al Engineer - Materials Testing Services		



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PROCTOR TEST REPORT

ГO	KGS Group Inc.
	3rd Floor - 865 Waverley St.
	Winnipeg, MB
	R3T 5P4

CLIENT KGS Group Inc. C.C. KGS Group Inc.

ATTN: Raina Alcantara

PROJECT 2025 Local Street Program - 25-R-05 City of Winnipeg

MAXIMUM

DRY DENSITY

(kg/m³)

1440

OPTIMUM

MOISTURE

CONTENT (%)

25.0

PROJECT NO. PROCTOR NO.	1233 5	1 7566 Date sa	AMPLED	2025.Mc	ar.12	DAI	E RECEIVED) 2025.Mai	r.12	DATE TESTED	2025.Mar.31	
INSITU MOISTURE 29.0 % TESTED BY Donald Eliazar						COMPACTION STANDARD			Stand D698	Standard Proctor, ASTM D698		
MATERIAL IDENTIFICATION						COMPACTION PROCEDURE			A: 10	A: 101.6mm Mold,		
MAJOR COMPO	NENT	Subgrad	le						Passi	Passing 4.75mm		
SIZE Clay					RAMMER	TYPE		Man	ual			
DESCRIPTION	DESCRIPTION					PREPARA	TION		Mois	t		
SUPPLIER		Existing <i>I</i>	Material			OVERSIZE	CORRECTIO	DN METHOD	None	None		
SOURCE		TH 25 13	-13 to 15 (S	See Below)	RETAINED	4.75mm SC	CREEN	N/A	%		
1475	-							TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)	
<u>ହ</u> ି 1450	<u> </u>				2			1	1619	1391	16.4	
(kg/n	F				3			2	1716	1423	20.6	
≻ L. 1425	Ē		2			4		3	1795	1443	24.4	
								4	1829	1426	28.3	
→	L											
	L	1										

COMMENTS

1375

14

16.5

19

21.5

MOISTURE CONTENT (%)

Stantec Sample No. 5471. Material tested was sampled from abovementioned location at McFarlane Street N.

24

26.5

Street N.				Thangen
Page 1 of 1	2025.Mar.31	Stantec Consulting Ltd.	REVIEWED BY:	Jason Thompson, C.E.T.

29

CALCULATED

OVERSIZE CORRECTED

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