APPENDIX 'A' - GEOTECHNICAL REPORT

GEOTECHNICAL REPORTS FOR:

Riverton Avenue from Stadacona Street to Allan Street – Asphalt Pavement Reconstruction
Simpson Avenue from London Street to Louelda Street – Asphalt Pavement Reconstruction

PAVEMENT CORES FOR:

Allan Street from Thames Avenue to Nairn Avenue – Concrete Pavement Rehabilitation
Dunrobin Avenue from Henderson Highway to Roch Street – Concrete Pavement Rehabilitation
Hershey Street from Kimberly Avenue to End– Concrete Pavement Rehabilitation

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

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

February 25, 2025

Project/File: 123317463-4

Geoff Kerr
City of Winnipeg
1155 Pacific Avenue
Winnipeg, Manitoba R3E 3P1

Good day Geoff,

Reference: 2025 Local Street Renewal Program (Contract 4) - Geotechnical Investigation

Stantec Consulting Ltd. (Stantec) was retained to undertake a factual geotechnical investigation for the 2025 Local Street Renewal Program (Contract 4) in Winnipeg, Manitoba. Use of this report is subject to the Statement of General Conditions provided in Appendix A.

The coring and drilling program was conducted from January 7 to January 29, 2025. A total of 18 locations were investigated with pavement coring and/or subsurface geotechnical drilling. Pavement coring was performed by Stantec's geotechnical field technologist, and drilling services were provided by Maple Leaf Drilling Ltd. under the supervision of Stantec's technologist. A Borehole Location Plan is provided in Appendix B.

1. Pavement Coring

A total of 18 pavement core samples were recovered to determine the in-place pavement thickness. In addition, 9 concrete core samples were tested to assess the in-place compressive strength of the concrete. One (1) concrete compressive strength test was cancelled due to the core sample being inadequate for testing (crumbly/fractured condition). The existing pavement thicknesses are summarized in Table 1 below, and the core photographs are provided in Appendix C.

2. Geotechnical Drilling

A total of 8 boreholes were investigated by geotechnical drilling. The boreholes were terminated at a depth of 2.0 m below the pavement, which resulted in borehole depths ranging from 2.0 to 2.2 m. Soil samples were obtained directly from the auger flights at depths of 0.6 m, 0.9 m, 1.2 m, 1.6 m, and 2.0 m from the bottom of the existing pavement. The testholes were examined for evidence of sloughing and groundwater seepage upon completion of drilling.

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

3. Existing Pavement Thicknesses

The existing pavement thicknesses are provided in the following table:

Table 1 – Existing Pavement Thicknesses

Borehole No.	Street	Asphalt Thickness (mm)	Concrete Thickness (mm)	Total Pavement Thickness (mm)
234	Riverton Ave	30	0	30
235	Riverton Ave	85	0	85
236	Riverton Ave	30	0	30
237	Simpson Ave	30	200	230
238	Simpson Ave	30	145	175
239	Simpson Ave	30	140	170
240	Simpson Ave	25	135	160
241	Simpson Ave	30	170	200
242	Allan St	0	190	190
243	Allan St	0	150	150
244	Allan St	0	225	225
245	Allan St	0	150	150
246	Dunrobin Ave	0	160	160
247	Dunrobin Ave	0	150	150
248	Dunrobin Ave	0	165	165
249	Dunrobin Ave	0	150	150
250	Hershey St	0	135	135
251	Hershey St	0	150	150

4. Laboratory Testing

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

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

- ASTM D4318 - *Liquid Limit, Plastic Limit, and Plasticity Index of Soils*
- ASTM D7928 - *Particle-Size Distribution of Fine-Grained Soils Using The Sedimentation Analysis*
- ASTM D698 - *Laboratory Compaction Characteristics of Soil Using Standard Effort*
- ASTM D1883 - *California Bearing Ratio (CBR) of Laboratory-Compacted Soils*
- CSA A23.2-14C – *Obtaining and testing drilled cores for compressive strength testing*

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

Prior to compressive strength testing, the concrete core samples were conditioned in water at room temperature for 48 hours.

The laboratory test reports are provided in Appendix E.

5. Closure

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

Regards,

Stantec Consulting Ltd.

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jason.thompson@stantec.com

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

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Appendix A

Statement of General Conditions

STATEMENT OF GENERAL CONDITIONS

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

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

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

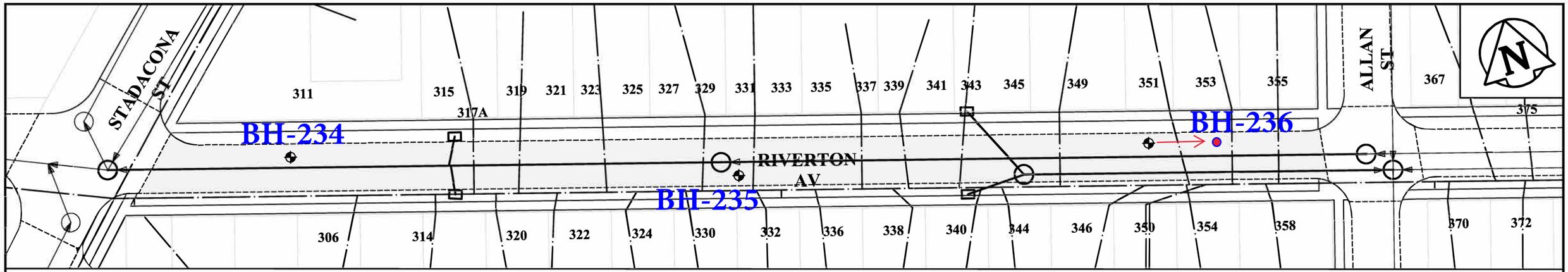
INTERPRETATION OF SITE CONDITIONS: Soil, rock, or other material descriptions, and statements regarding their condition, made in this report are based on site conditions encountered by Stantec at the time of the work and at the specific testing and/or sampling locations. Classifications and statements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

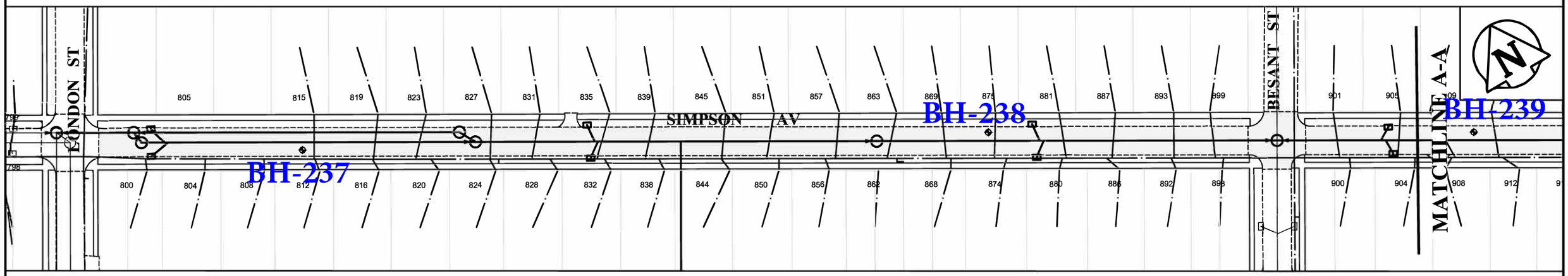
VARYING OR UNEXPECTED CONDITIONS: Should any site or subsurface conditions be encountered that are different from those described in this report or encountered at the test locations, Stantec must be notified immediately to assess if the varying or unexpected conditions are substantial and if reassessments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

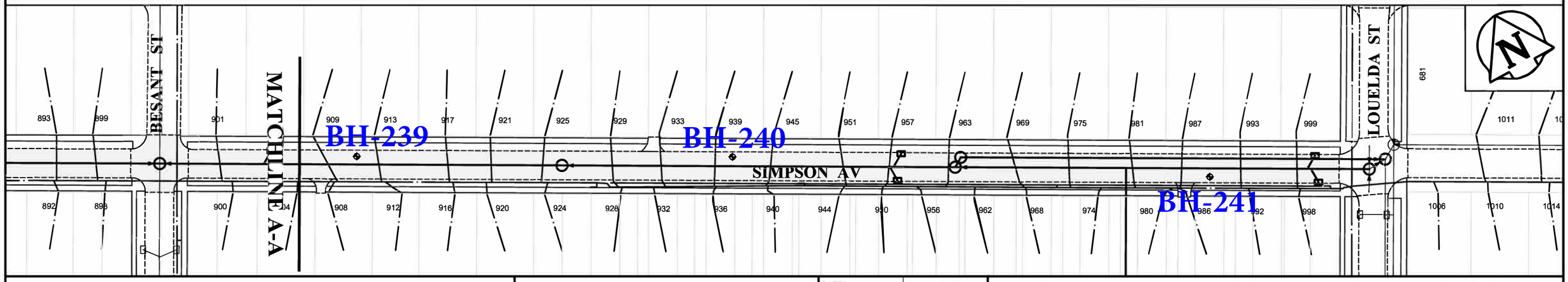
PLANNING, DESIGN, OR CONSTRUCTION: Development or design plans and specifications should be reviewed by Stantec, sufficiently ahead of initiating the next project stage (property acquisition, tender, construction, etc.), to confirm that this report completely addresses the elaborated project specifics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

Appendix B

Borehole Location Plan







SEWER —— BORE HOLE ◆ WATER MAIN/ WATERLINE ——·——

MANHOLE ○ CATCH BASIN □

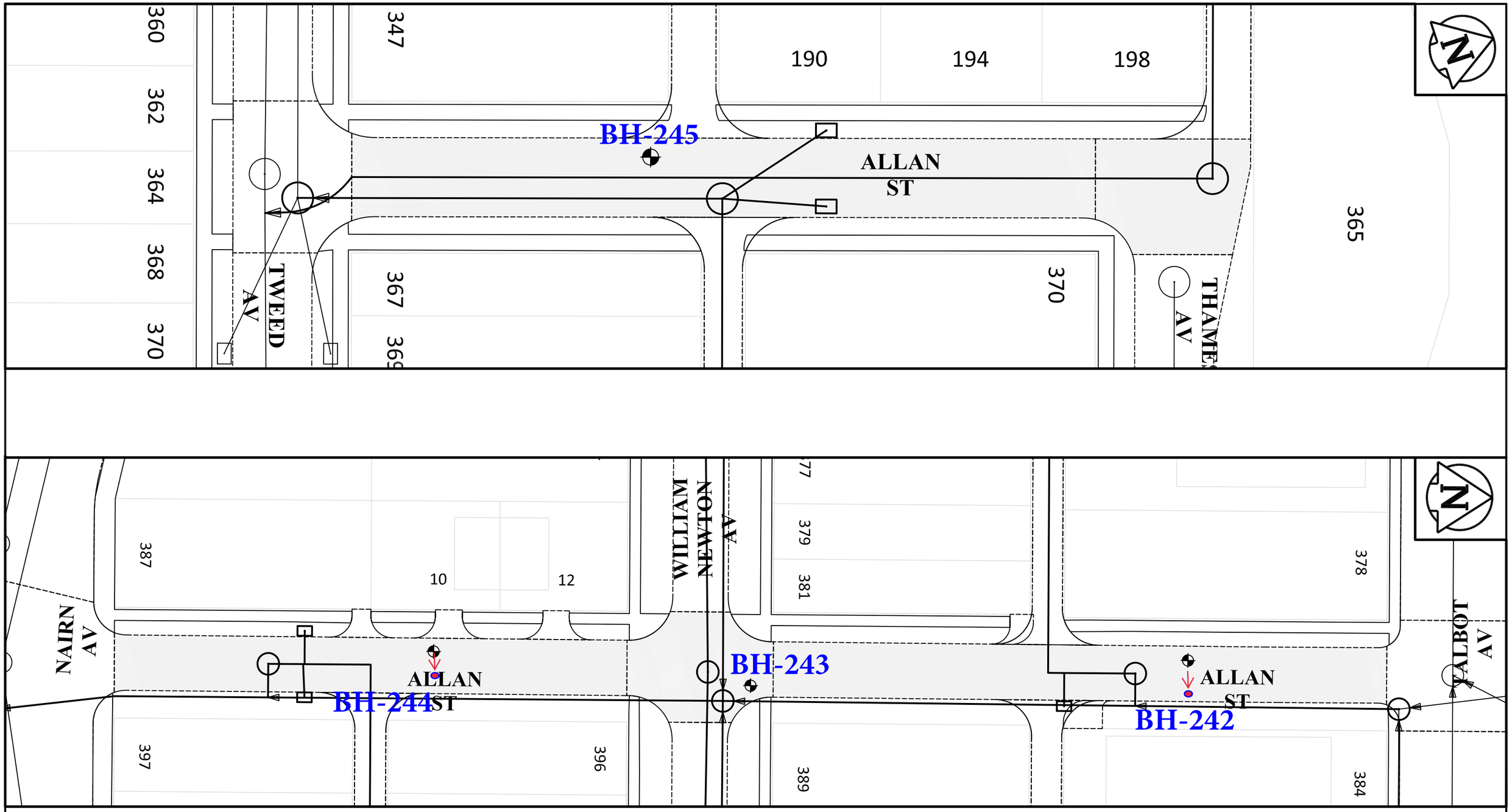
NOTE: DRILL 2.0m BOREHOLE AS PER SITE INVESTIGATION SPECIFICATION F3.4

DATE:	DRAWING NO.:
11/14/2024	1 of 3
DRAWN BY:	SCALE:
J.W.	NTS

2025 LOCAL STREET RENEWAL PROGRAM CORING DRAWING - **CONTRACT** 4

RIVERTON AV FROM ALLEN ST TO STADACONA ST - RECONSTRUCTION

SIMPSON AV FROM LONDON ST TO LOUELDA ST - RECONSTRUCTION



SEWER —— PAVEMENT CORES ⊕

MANHOLE ○ CATCH BASIN □

NOTE:DRILL PAVEMENT CORES AS PER SITE INVESTIGATION SPECIFICATION F3.5

DATE:	DRAWING NO.:
11/13/2024	2 of 3
DRAWN BY:	SCALE:
J.W.	NTS

2025 LOCAL STREET RENEWAL PROGRAM CORING DRAWING - **CONTRACT** 4

ALLAN ST FROM THAMES AV TO TWEED AV - MINOR REHABILITATION

RIVERTON AV FROM STADACONA ST TO ALLAN ST - RECONSTRUCTION

SEWER —— PAVEMENT CORES ⊕

MANHOLE ○ CATCH BASIN □

NOTE:DRILL PAVEMENT CORES AS PER SITE INVESTIGATION SPECIFICATION F3.5

DATE:	DRAWING NO.:
11/13/2024	3 of 3
DRAWN BY:	SCALE:
J.W.	NTS

2025 LOCAL STREET RENEWAL PROGRAM CORING DRAWING - **CONTRACT** 4

HERSEY ST FROM KIMBERLY AV TO END - REHABILITATION

DUNROBIN AV FROM HENDERSON HWY TO ROCH ST - REHABILITATION

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Appendix C

Core Photographs

Figure 1 – Core Sample No. 234 – Riverton Ave

Figure 2 – Core Sample No. 235 – Riverton Ave

Figure 3 – Core Sample No. 236 - Riverton Ave

Figure 4 – Core Sample No. 237 – Simpson Ave

Figure 5 – Core Sample No. 238 – Simpson Ave

Figure 6 – Core Sample No. 239 – Simpson Ave

Figure 7 – Core Sample No. 240 – Simpson Ave

Figure 8 – Core Sample No. 241 – Simpson Ave

Figure 9 – Core Sample No. 242 – Allan St

Figure 10 – Core Sample No. 243 – Allan St

Figure 11 – Core Sample No. 244 – Allan St

Core Photograph Not Available

Figure 12 – Core Sample No. 245 – Allan St

Figure 43 – Core Sample No. 246 – Dunrobin Ave

Figure 14 – Core Sample No. 247 – Dunrobin Ave

Figure 15 – Core Sample No. 248 – Dunrobin Ave

Figure 16 – Core Sample No. 249 – Dunrobin Ave

Figure 17 – Core Sample No. 250 – Hershey St

Figure 18 – Core Sample No. 251 – Hershey St

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Appendix D

Borehole Records

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BOREHOLE RECORD

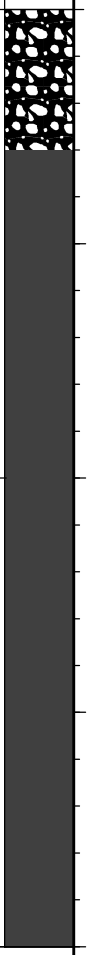
BH-234

CLIENT: **City of Winnipeg**
PROJECT NO.: **123317463-4**
PROJECT: **2025 Local Street Renewal Program (Contract 4)**
BH ELEVATION: **N/A**
LOCATION: **Riverton Ave**
DATUM: **N/A**
DATE BORED: **January 09 2025**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		Firm black **FAT CLAY (CH)** - some silt						
		- black to brown and some silt below 0.5 m		BS				Sieve/Hydro at 0.6 m G 0% S 2% M 17% C 82%
				AS				
1				AS				
		Soft tan **SILT (ML)** - some sand, trace clay		AS				
				AS				
2				AS				
		End of Borehole • Borehole terminated at a depth of 2.0 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.						
3								

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

BACKFILL



ELEVATION (m)

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

Drilling Contractor: Maple Leaf Drilling Ltd.	Logged By: RB
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 2 m	Page 1 of 1

Printed Feb 24 2025 09:18:56 SOIL 123317463-4.GPJ 2/24/25

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BOREHOLE RECORD

BH-235

CLIENT: **City of Winnipeg**

PROJECT NO.: **123317463-4**

PROJECT: **2025 Local Street Renewal Program (Contract 4)**

BH ELEVATION: **N/A**

LOCATION: **Riverton Ave**

DATUM: **N/A**

DATE BORED: **January 09 2025**

WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		Firm brown **FAT CLAY (CH)**						
		Soft tan **FAT CLAY (CH)**		BS				Sieve/Hydro at 0.7 m G S M C 0% 1% 35% 63%
				AS				
1		Soft tan **SILT (ML)** - some sand		AS				
				AS				
				AS				
		Firm brown **FAT CLAY (CH)** - some silt, trace sand		AS				
2		**End of Borehole** • Borehole terminated at a depth of 2.1 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.						
3								

UNDRAINED SHEAR STRENGTH, Cu (kPa)

▲ LABORATORY TEST ◆ FIELD VANE TEST

★ POCKET PENETROMETER □ POCKET SHEAR VANE

50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

✖ SPT (N-value) BLOWS/0.3m

Water Content (%) and Blow Count

10 20 30 40 50 60 70 80

BACKFILL

ELEVATION (m)

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

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

Printed Feb 24 2025 09:18:57 SOIL 123317463-4.GPJ 2/24/25

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BOREHOLE RECORD

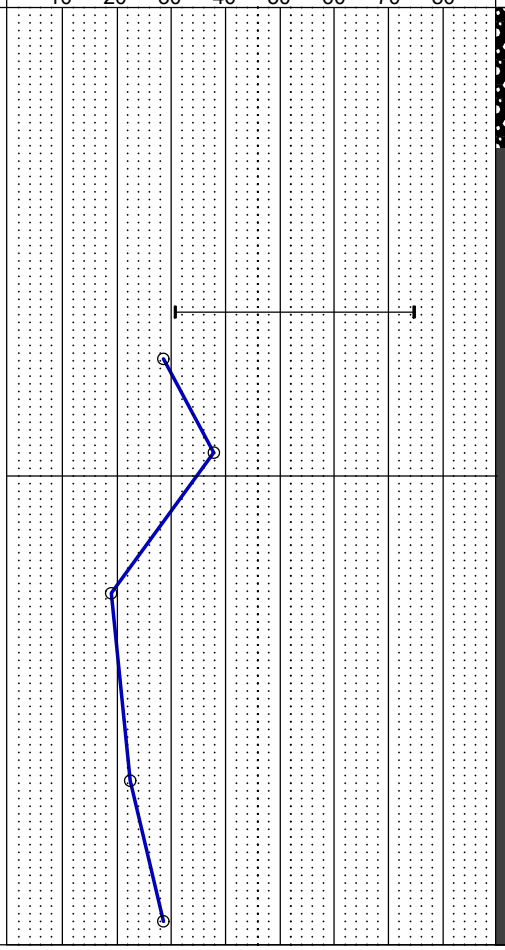
BH-236

CLIENT: **City of Winnipeg**
PROJECT NO.: **123317463-4**
PROJECT: **2025 Local Street Renewal Program (Contract 4)**
BH ELEVATION: **N/A**
LOCATION: **Riverton Ave**
DATUM: **N/A**
DATE BORED: **January 09 2025**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		FILL: granular base						
		Firm black to grey **FAT CLAY (CH)**		BS				Sieve/Hydro at 0.6 m G 0% S 2% M 35% C 63%
				AS				
1				AS				
		Soft tan **SILT (ML)** - some sand		AS				
				AS				
2		**End of Borehole** • Borehole terminated at a depth of 2.0 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.		AS				
3								

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

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



BACKFILL

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

Drilling Contractor: Maple Leaf Drilling Ltd.	Logged By: RB
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 2 m	Page 1 of 1

Printed Feb 24 2025 09:18:58 SOIL 123317463-4.GPJ 2/24/25

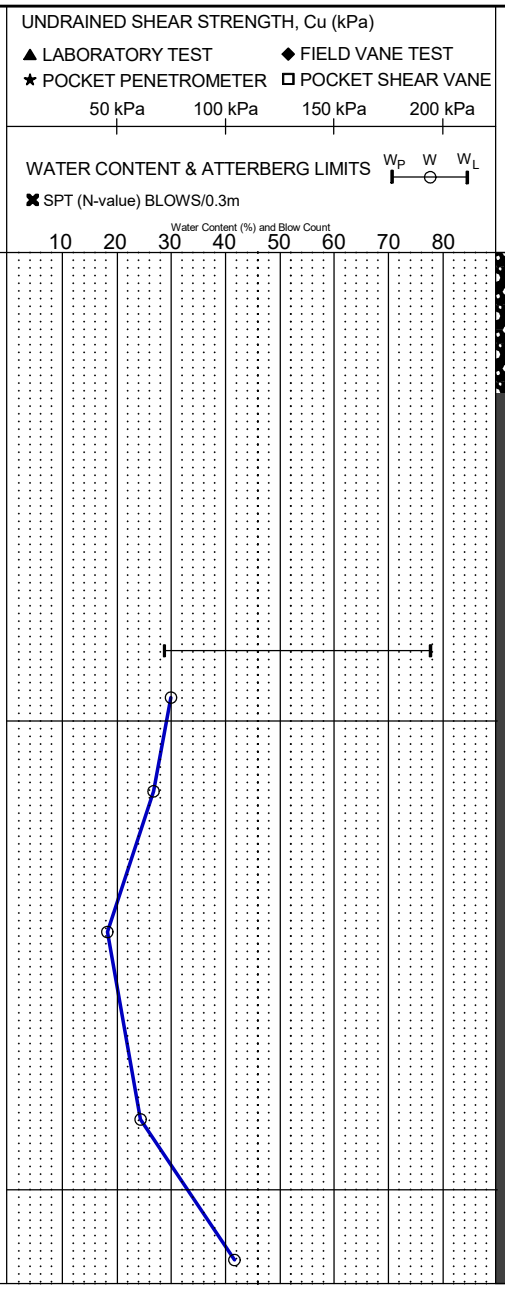
Stantec

BOREHOLE RECORD

BH-237

CLIENT: **City of Winnipeg**
PROJECT NO.: **123317463-4**
PROJECT: **2025 Local Street Renewal Program (Contract 4)**
BH ELEVATION: **N/A**
LOCATION: **Simpson Ave**
DATUM: **N/A**
DATE BORED: **January 09 2025**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		FILL: granular base						
		CONCRETE						
		FILL: granular base, 19 mm						
		Firm brown **FAT CLAY (CH)**						
				BS				Sieve/Hydro at 0.8 m G 0% S 0% M 27% C 73%
				AS				
1				AS				
		Soft tan **LEAN CLAY (CL)**		AS				
				AS				
2		Firm brown **FAT CLAY (CH)** - some silt, trace sand		AS				
3		**End of Borehole** • Borehole terminated at a depth of 2.2 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.						



BACKFILL

ELEVATION (m)

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

Drilling Contractor: Maple Leaf Drilling Ltd.	Logged By: RB
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 2.2 m	Page 1 of 1

Printed Feb 24 2025 09:18:59 SOIL 123317463-4.GPJ 2/24/25

Stantec

BOREHOLE RECORD

BH-238

CLIENT: **City of Winnipeg**
PROJECT NO.: **123317463-4**
PROJECT: **2025 Local Street Renewal Program (Contract 4)**
BH ELEVATION: **N/A**
LOCATION: **Simpson Ave**
DATUM: **N/A**
DATE BORED: **January 09 2025**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		CONCRETE						
		FILL: granular base, 19 mm						
		Firm brown **FAT CLAY (CH)** - trace silt						
		Soft tan **LEAN CLAY (CL)**		BS				Sieve/Hydro at 0.8 m G 0% S 2% M 69% C 30%
1				AS				
				AS				
		Firm brown **FAT CLAY (CH)** - some silt, trace sand		AS				
2				AS				
				AS				
3		**End of Borehole** • Borehole terminated at a depth of 2.2 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.						

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

BACKFILL

ELEVATION (m)

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

Drilling Contractor: Maple Leaf Drilling Ltd. | Logged By: RB
Drilling Method: 125 mm SSA | Reviewed By: GB
Completion Depth: 2.2 m | Page 1 of 1

Printed Feb 24 2025 09:19:00 SOIL 123317463-4.GPJ 2/24/25

BOREHOLE RECORD

BH-239

CLIENT: **City of Winnipeg**
PROJECT NO.: **123317463-4**
PROJECT: **2025 Local Street Renewal Program (Contract 4)**
BH ELEVATION: **N/A**
LOCATION: **Simpson Ave**
DATUM: **N/A**
DATE BORED: **January 09 2025**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		CONCRETE						
		FILL: granular base, 19 mm						
		Soft tan **LEAN CLAY (CL)**		BS				Sieve/Hydro at 0.8 m G 0% S 6% M 79% C 16%
				AS				
1		Firm brown **FAT CLAY (CH)** - trace silt		AS				
				AS				
				AS				
2				AS				
		End of Borehole • Borehole terminated at a depth of 2.2 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.						
3								

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

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

BACKFILL

ELEVATION (m)

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

Drilling Contractor: Maple Leaf Drilling Ltd.		Logged By: RB
Drilling Method: 125 mm SSA		Reviewed By: GB
Completion Depth: 2.2 m		Page 1 of 1

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BOREHOLE RECORD

BH-240

CLIENT: **City of Winnipeg**

PROJECT NO.: **123317463-4**

PROJECT: **2025 Local Street Renewal Program (Contract 4)**

BH ELEVATION: **N/A**

LOCATION: **Simpson Ave**

DATUM: **N/A**

DATE BORED: **January 09 2025**

WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		CONCRETE						
		FILL: granular base, 19 mm						
		Firm brown **FAT CLAY (CH)** some silt, trace sand						
		Soft tan **LEAN CLAY (CL)**		BS				Sieve/Hydro at 0.8 m G 0% S 4% M 59% C 37%
				AS				
1				AS				
				AS				
				AS				
		Firm black to grey **FAT CLAY (CH)** - trace silt		AS				
2								
3		**End of Borehole** • Borehole terminated at a depth of 2.2 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.						

UNDRAINED SHEAR STRENGTH, Cu (kPa)

▲ LABORATORY TEST ◆ FIELD VANE TEST

★ POCKET PENETROMETER □ POCKET SHEAR VANE

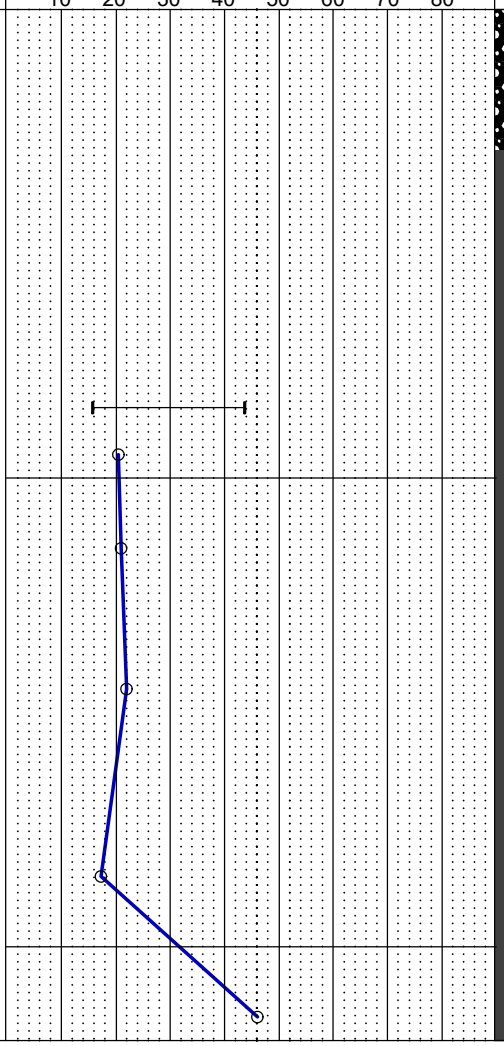
50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

✖ SPT (N-value) BLOWS/0.3m

Water Content (%) and Blow Count

10 20 30 40 50 60 70 80



BACKFILL

ELEVATION (m)

BACKFILL SYMBOL: ASPHALT GROUT CONCRETE BENTONITE DRILL CUTTINGS SAND SLOUGH

Drilling Contractor: Maple Leaf Drilling Ltd.	Logged By: RB
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 2.2 m	Page 1 of 1

Printed Feb 24 2025 09:19:02 SOIL 123317463-4.GPJ 2/24/25

Stantec

BOREHOLE RECORD

BH-241

CLIENT: **City of Winnipeg**
PROJECT NO.: **123317463-4**
PROJECT: **2025 Local Street Renewal Program (Contract 4)**
BH ELEVATION: **N/A**
LOCATION: **Simpson Ave**
DATUM: **N/A**
DATE BORED: **January 09 2025**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		CONCRETE						
		FILL: granular base, 19 mm						
		Firm grey **FAT CLAY (CH)** - some silt		BS				Sieve/Hydro at 0.8 m G 0% S 1% M 18% C 81%
				AS				
1				AS				
		Soft tan **LEAN CLAY (CL)**		AS				
				AS				
2		Firm grey **FAT CLAY (CH)** - trace silt		AS				
		End of Borehole • Borehole terminated at a depth of 2.2 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled in accordance with the City of Winnipeg Street Cuts Manual.						
3								

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

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

BACKFILL

ELEVATION (m)

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

Drilling Contractor: Maple Leaf Drilling Ltd.		Logged By: RB
Drilling Method: 125 mm SSA		Reviewed By: GB
Completion Depth: 2.2 m		Page 1 of 1

Printed Feb 24 2025 09:19:03 SOIL 123317463-4.GPJ 2/24/25

Stantec

Appendix E

Laboratory Testing Reports

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewal Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 1

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2025.Feb.03
TESTED BY: Rimanshi Gorasiya

MATERIAL IDENTIFICATION

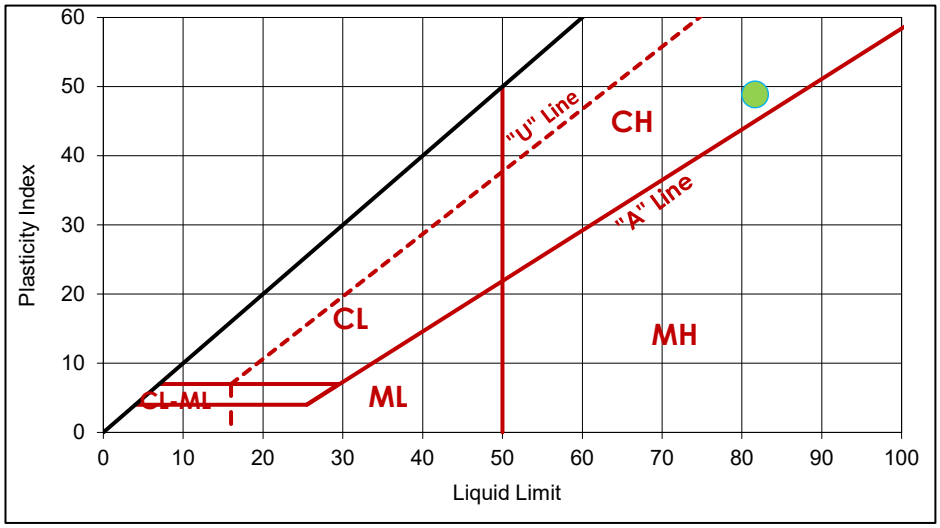
CLIENT FIELD ID BH-234, 0.6 m, Riverton Ave.

STANTEC SAMPLE NO. 5625

LIQUID LIMIT		
TRIAL	1	2
BLOWS	26	25
MC (%)	81	82

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	33	33

LIQUID LIMIT, LL	82
PLASTIC LIMIT, PL	33
PLASTICITY INDEX, PI	49
AS REC'D MC (%)	38.7



COMMENTS
No comments.

REPORT DATE 2025.Feb.06

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewal Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 2

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2025.Feb.03
TESTED BY: Rimanshi Gorasiya

MATERIAL IDENTIFICATION

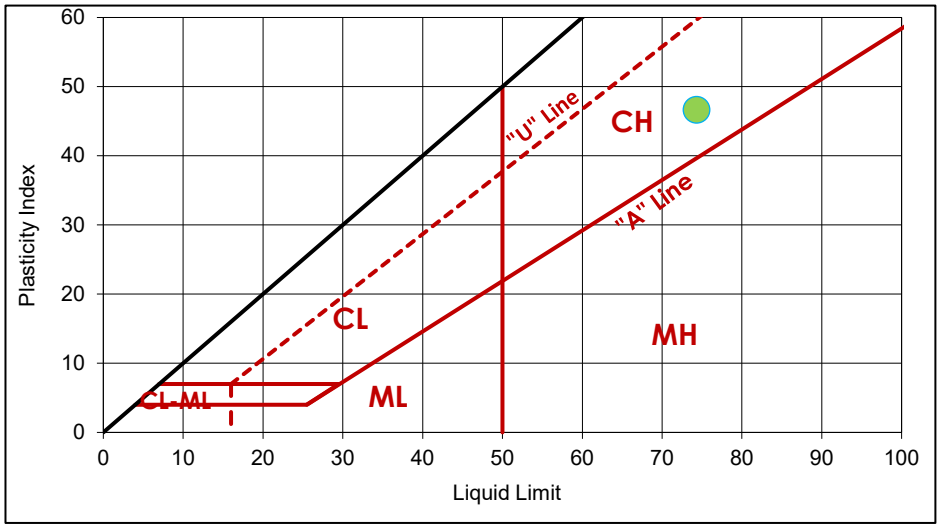
CLIENT FIELD ID BH-235, 0.7 m, Riverton Ave.

STANTEC SAMPLE NO. 5626

LIQUID LIMIT		
TRIAL	1	2
BLOWS	28	29
MC (%)	73	73

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	28	28

LIQUID LIMIT, LL	74
PLASTIC LIMIT, PL	28
PLASTICITY INDEX, PI	47
AS REC'D MC (%)	38.8



COMMENTS
No comments.

REPORT DATE 2025.Feb.06

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewal Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 3

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2025.Feb.04
TESTED BY: Rimanshi Gorasiya

MATERIAL IDENTIFICATION

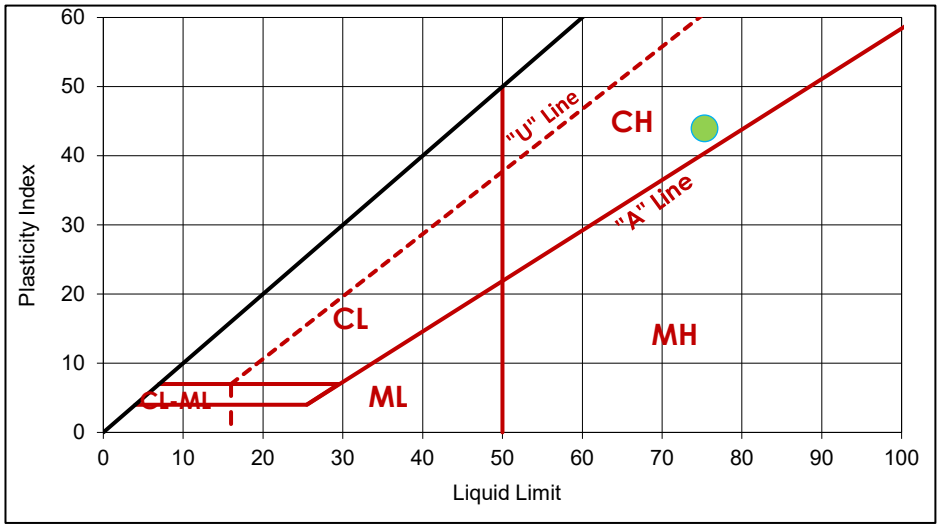
CLIENT FIELD ID BH-236, 0.6 m, Riverton Ave.

STANTEC SAMPLE NO. 5627

LIQUID LIMIT		
TRIAL	1	2
BLOWS	25	24
MC (%)	75	76

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	32	31

LIQUID LIMIT, LL	75
PLASTIC LIMIT, PL	31
PLASTICITY INDEX, PI	44
AS REC'D MC (%)	29.1



COMMENTS
No comments.

REPORT DATE 2025.Feb.06

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewal Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 4

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2025.Feb.04
TESTED BY: Rimanshi Gorasiya

MATERIAL IDENTIFICATION

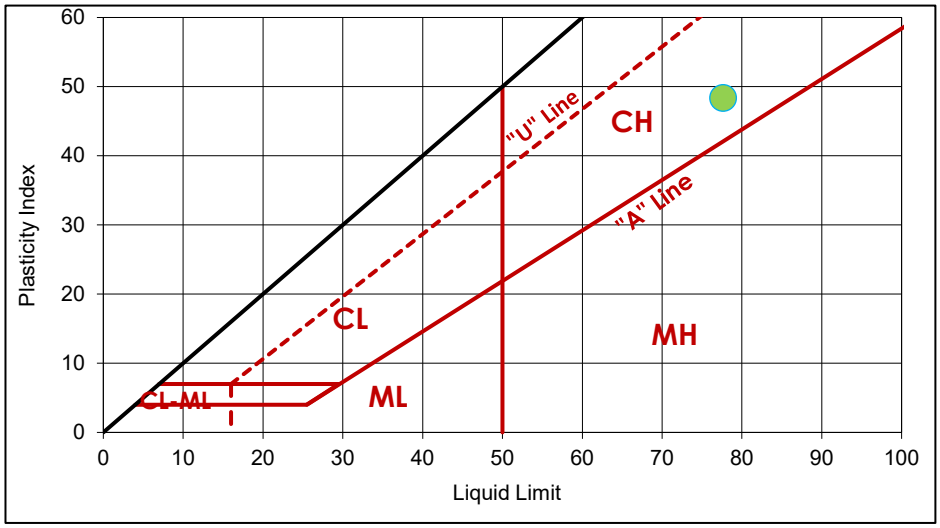
CLIENT FIELD ID BH-237, 0.8 m, Simpson Ave.

STANTEC SAMPLE NO. 5628

LIQUID LIMIT		
TRIAL	1	2
BLOWS	28	26
MC (%)	77	77

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	29	29

LIQUID LIMIT, LL	78
PLASTIC LIMIT, PL	29
PLASTICITY INDEX, PI	48
AS REC'D MC (%)	30.5



COMMENTS
No comments.

REPORT DATE 2025.Feb.06

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewal Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 5

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2025.Feb.05
TESTED BY: Rimanshi Gorasiya

MATERIAL IDENTIFICATION

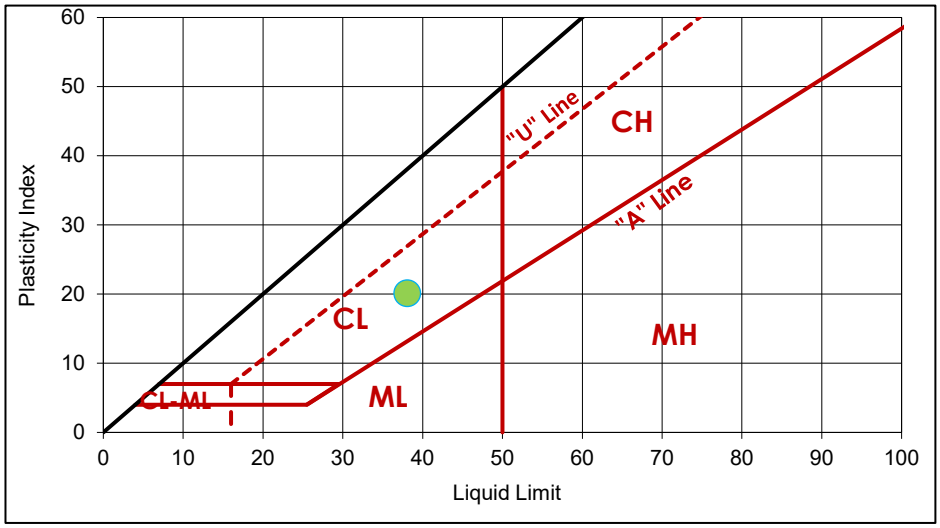
CLIENT FIELD ID BH-238, 0.8 m, Simpson Ave.

STANTEC SAMPLE NO. 5629

LIQUID LIMIT		
TRIAL	1	2
BLOWS	24	25
MC (%)	38	38

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	18	18

LIQUID LIMIT, LL	38
PLASTIC LIMIT, PL	18
PLASTICITY INDEX, PI	20
AS REC'D MC (%)	21.8



COMMENTS
No comments.

REPORT DATE 2025.Feb.06

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewal Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 6

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2025.Feb.05
TESTED BY: Rimanshi Gorasiya

MATERIAL IDENTIFICATION

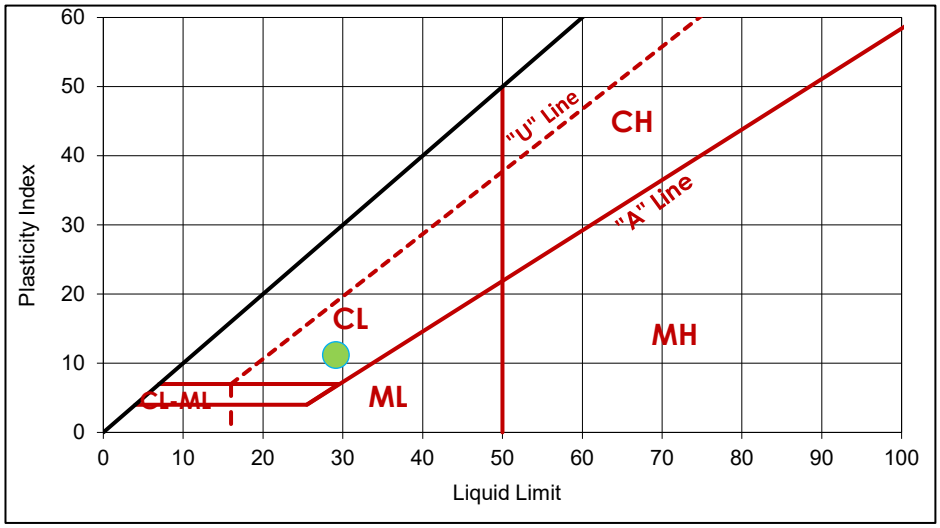
CLIENT FIELD ID BH-239, 0.8 m, Simpson Ave.

STANTEC SAMPLE NO. 5630

LIQUID LIMIT		
TRIAL	1	2
BLOWS	22	23
MC (%)	30	29

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	18	18

LIQUID LIMIT, LL	29
PLASTIC LIMIT, PL	18
PLASTICITY INDEX, PI	11
AS REC'D MC (%)	20.2



COMMENTS
No comments.

REPORT DATE 2025.Feb.06

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewal Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 7

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2025.Feb.04
TESTED BY: Kailash Vaghjiyani

MATERIAL IDENTIFICATION

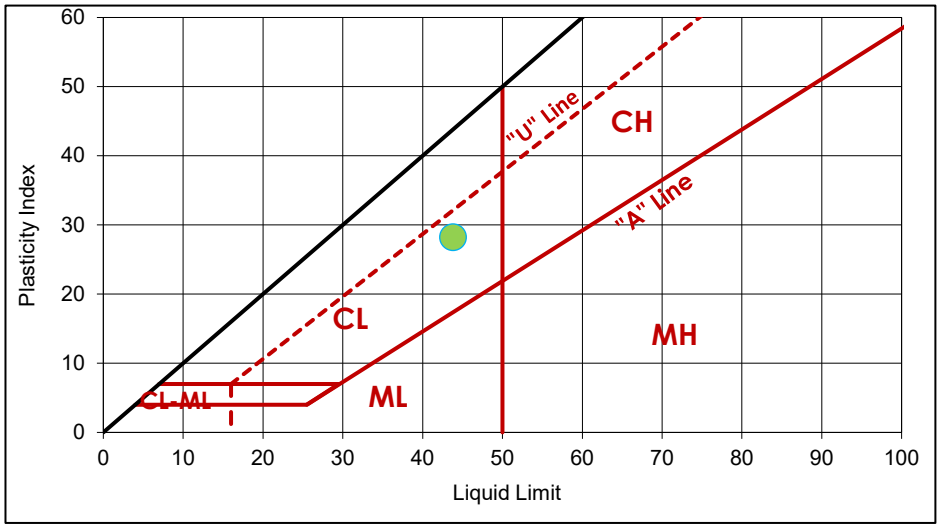
CLIENT FIELD ID BH-240, 0.8 m, Simpson Ave.

STANTEC SAMPLE NO. 5631

LIQUID LIMIT		
TRIAL	1	2
BLOWS	27	26
MC (%)	44	43

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	16	16

LIQUID LIMIT, LL	44
PLASTIC LIMIT, PL	16
PLASTICITY INDEX, PI	28
AS REC'D MC (%)	21.0



COMMENTS
No comments.

REPORT DATE 2025.Feb.06

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewal Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 8

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2025.Feb.04
TESTED BY: Kailash Vaghjiyani

MATERIAL IDENTIFICATION

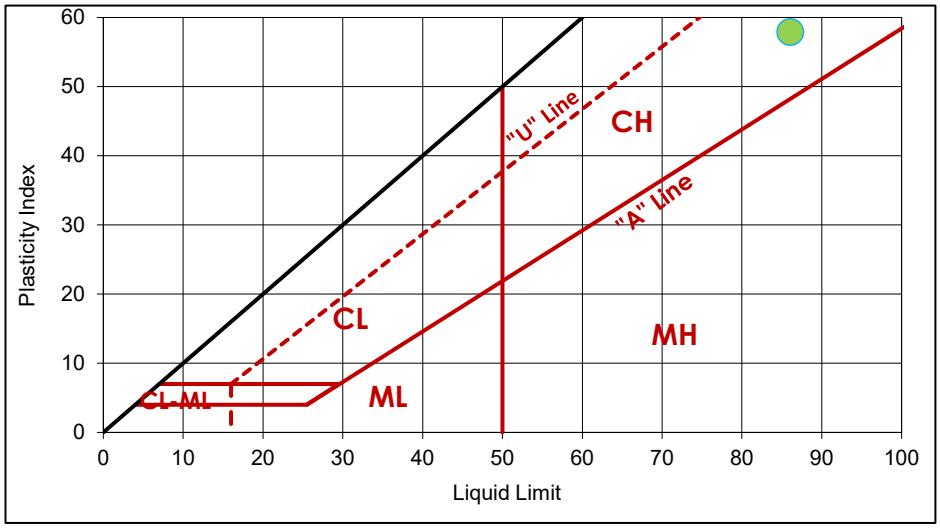
CLIENT FIELD ID BH-241, 0.8 m, Simpson Ave.

STANTEC SAMPLE NO. 5632

LIQUID LIMIT		
TRIAL	1	2
BLOWS	26	25
MC (%)	86	86

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	28	28

LIQUID LIMIT, LL	86
PLASTIC LIMIT, PL	28
PLASTICITY INDEX, PI	58
AS REC'D MC (%)	29.7



COMMENTS
No comments.

REPORT DATE 2025.Feb.06

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewal Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 1

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

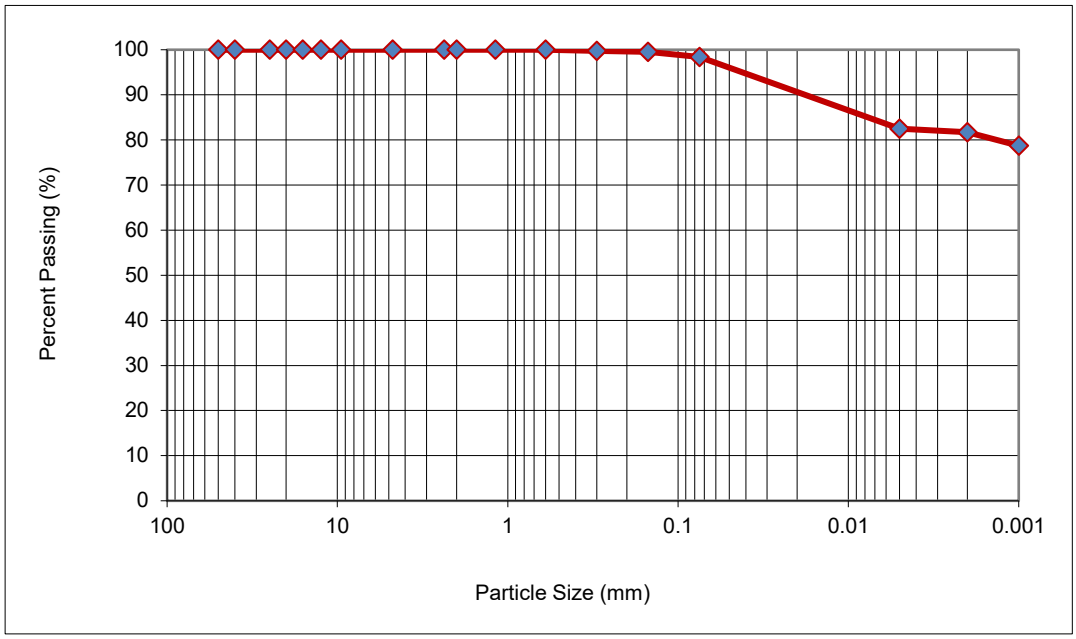
DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2025.Jan.27
TESTED BY: Rimanshi Gorasiya

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-234. 0.6 m, Riverton Ave.

STANTEC SAMPLE NO. 5625



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	100.0
0.600	100.0
0.300	99.8
0.150	99.5
0.075	98.4
0.005	82.5
0.002	81.7
0.001	78.7

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.1	1.5	16.7	81.7	78.7

COMMENTS
No comments.

REPORT DATE 2025.Feb.06

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewal Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 2

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

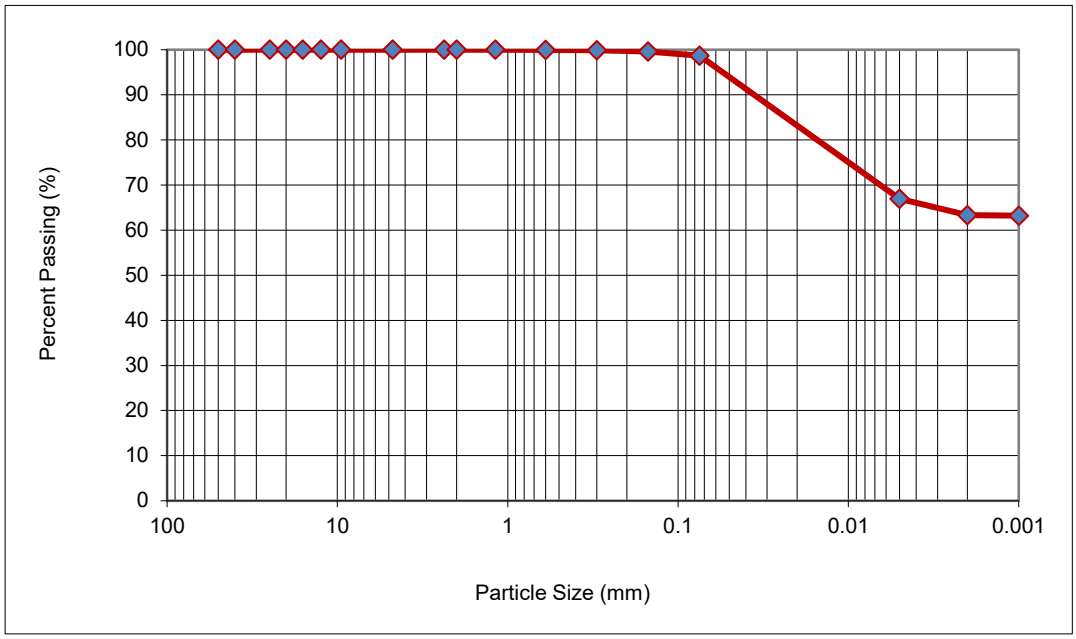
DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2025.Jan.27
TESTED BY: Rimanshi Gorasiya

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-235. 0.7 m, Riverton Ave.

STANTEC SAMPLE NO. 5626



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	100.0
0.600	100.0
0.300	99.9
0.150	99.6
0.075	98.7
0.005	67.0
0.002	63.3
0.001	63.2

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.1	1.2	35.4	63.3	63.2

COMMENTS
No comments.

REPORT DATE 2025.Feb.06

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewal Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 3

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

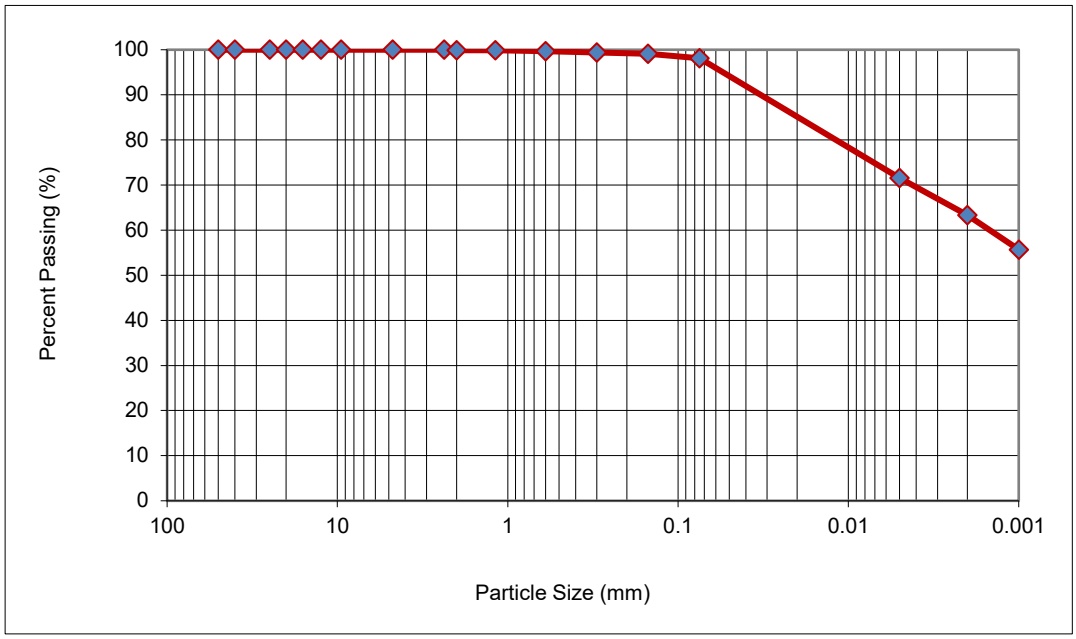
DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2025.Jan.24
TESTED BY: Rimanshi Gorasiya

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-236. 0.6 m, Riverton Ave.

STANTEC SAMPLE NO. 5627



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	99.9
1.18	99.9
0.600	99.7
0.300	99.4
0.150	99.1
0.075	98.1
0.005	71.6
0.002	63.3
0.001	55.7

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.1	0.4	1.4	34.8	63.3	55.7

COMMENTS
No comments.

REPORT DATE 2025.Feb.06

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewal Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 4

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

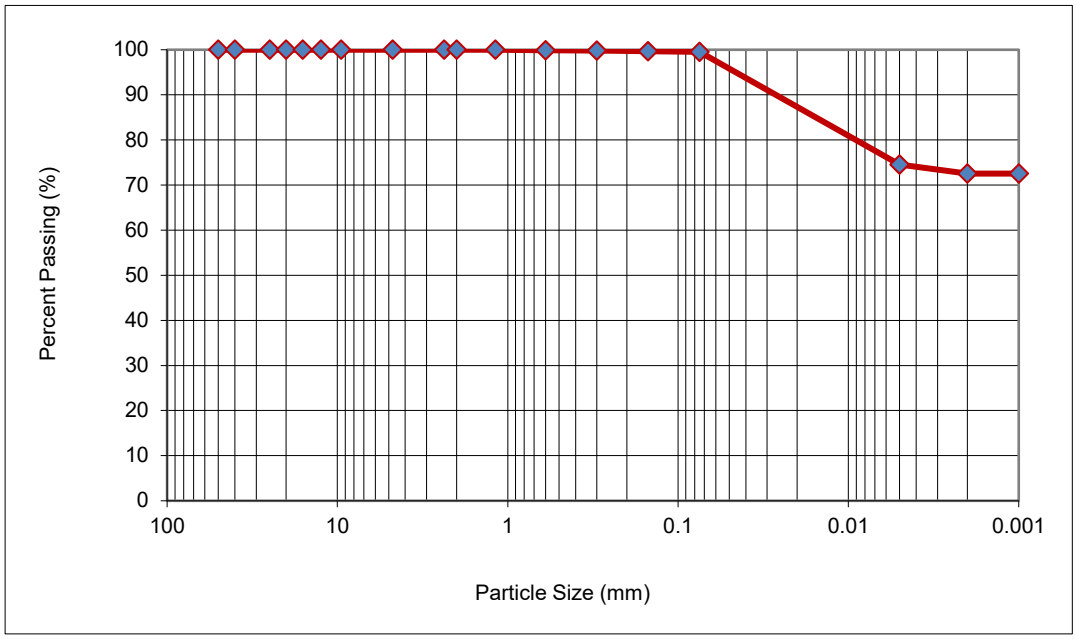
DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2025.Jan.27
TESTED BY: Rimanshi Gorasiya

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-237. 0.8 m, Simpson Ave.

STANTEC SAMPLE NO. 5628



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	100.0
0.600	99.9
0.300	99.8
0.150	99.7
0.075	99.6
0.005	74.5
0.002	72.5
0.001	72.5

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.2	0.2	27.1	72.5	72.5

COMMENTS
No comments.

REPORT DATE 2025.Feb.06

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewal Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 5

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

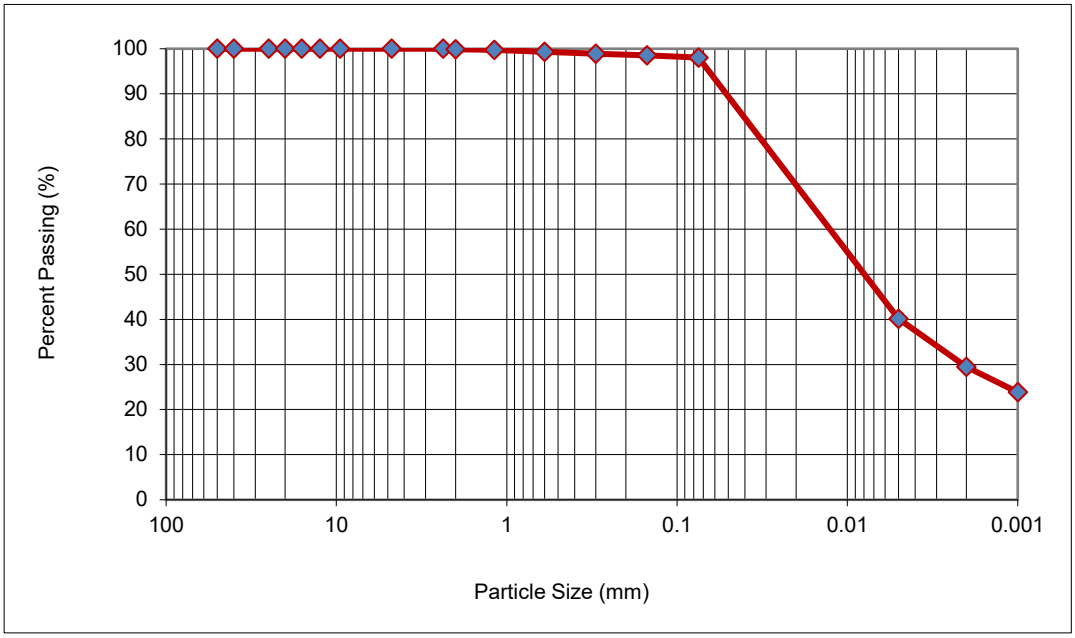
DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2025.Jan.27
TESTED BY: Rimanshi Gorasiya

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-238. 0.8 m, Simpson Ave.

STANTEC SAMPLE NO. 5629



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	99.9
1.18	99.7
0.600	99.3
0.300	98.9
0.150	98.6
0.075	98.0
0.005	40.1
0.002	29.5
0.001	23.9

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.1	0.8	1.1	68.5	29.5	23.9

COMMENTS
No comments.

REPORT DATE 2025.Feb.06

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewal Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 6

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

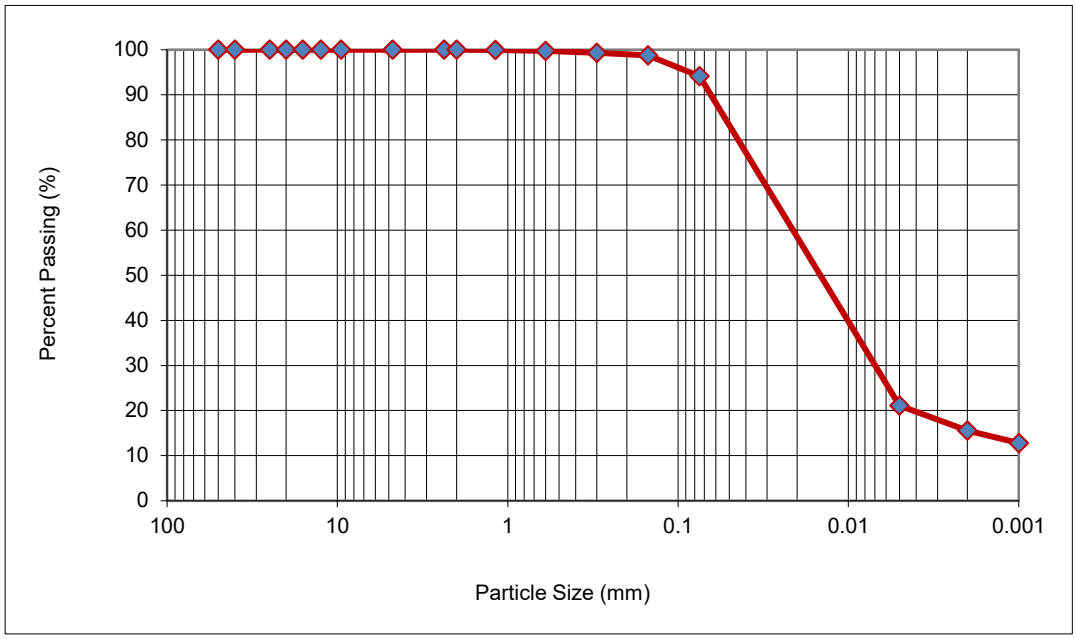
DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2025.Jan.24
TESTED BY: Rimanshi Gorasiya

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-239. 0.8 m, Simpson Ave.

STANTEC SAMPLE NO. 5630



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	99.9
0.600	99.7
0.300	99.3
0.150	98.7
0.075	94.1
0.005	21.1
0.002	15.6
0.001	12.8

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.5	5.4	78.5	15.6	12.8

COMMENTS
No comments.

REPORT DATE 2025.Feb.06

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewal Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 7

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

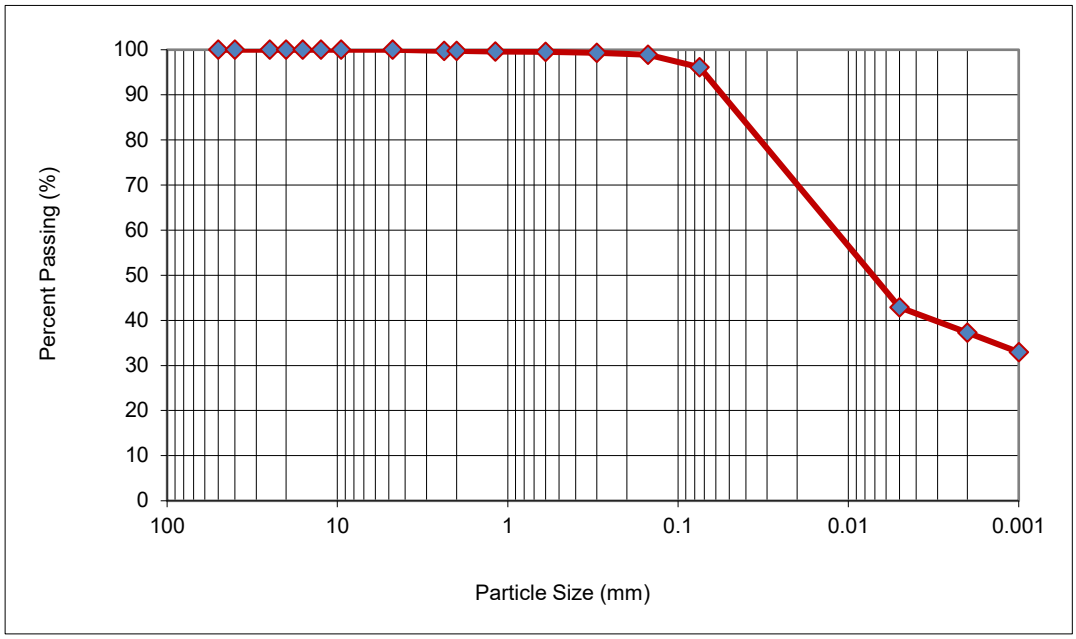
DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2025.Jan.27
TESTED BY: Rimanshi Gorasiya

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-240. 0.8 m, Simpson Ave.

STANTEC SAMPLE NO. 5631



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	99.8
2.00	99.7
1.18	99.6
0.600	99.5
0.300	99.3
0.150	98.9
0.075	96.1
0.005	42.9
0.002	37.3
0.001	33.0

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.3	0.3	3.3	58.8	37.3	33.0

COMMENTS
No comments.

REPORT DATE 2025.Feb.06

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewal Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 8

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

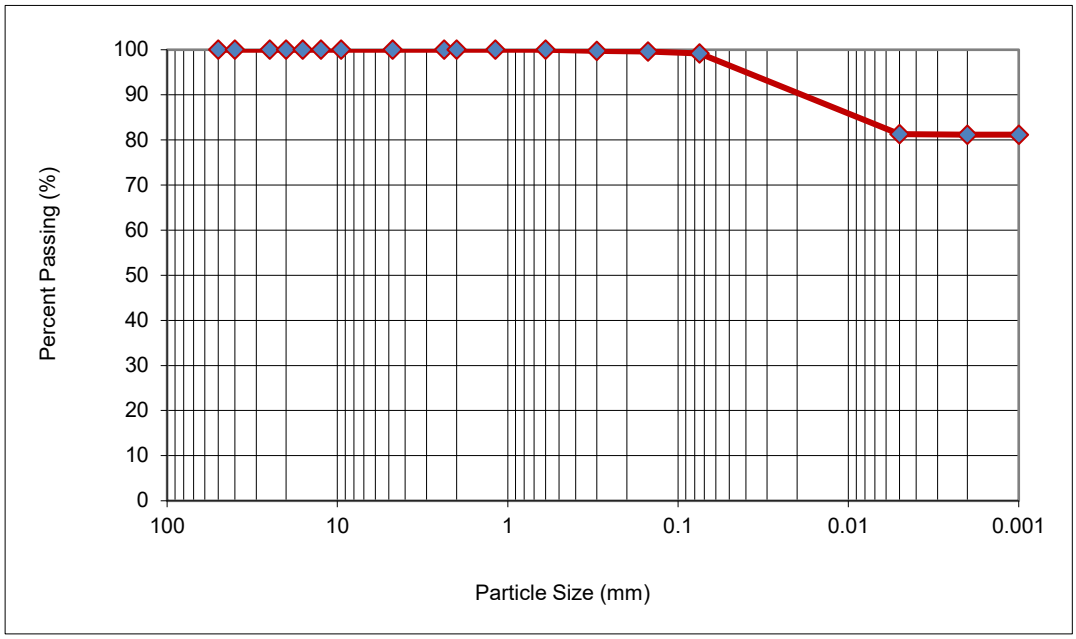
DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2025.Jan.27
TESTED BY: Rimanshi Gorasiya

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-241. 0.8 m, Simpson Ave.

STANTEC SAMPLE NO. 5632



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	100.0
0.600	100.0
0.300	99.8
0.150	99.6
0.075	99.2
0.005	81.3
0.002	81.2
0.001	81.2

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.1	0.7	18.0	81.2	81.2

COMMENTS
No comments.

REPORT DATE 2025.Feb.06

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

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

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

PROCTOR TEST REPORT

TO City of Winnipeg
104 - 1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

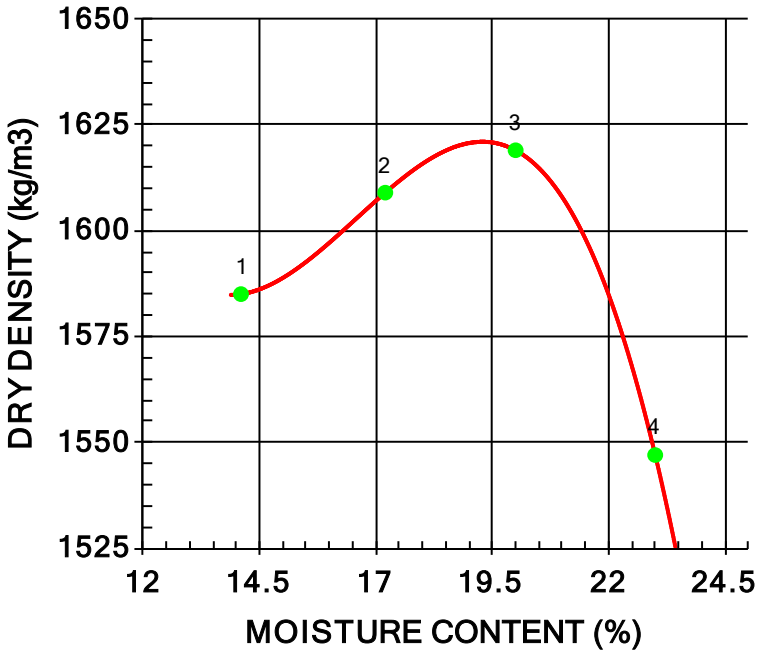
CLIENT City of Winnipeg
C.C.

ATTN: Geoff Kerr

PROJECT 2025 Local Street Renewal Program

PROJECT NO. 123317463-4 - Contract 4
PROCTOR NO. 1 DATE SAMPLED 2025.Jan.07 DATE RECEIVED 2025.Jan.07 DATE TESTED 2025.Jan.31

INSITU MOISTURE	17.9 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Fat Clay (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-234, 0.6 m (Riverton Ave)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1808	1585	14.1
2	1886	1609	17.2
3	1943	1619	20.0
4	1903	1547	23.0

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1620	19.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5625

 2025.Feb.06 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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

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

PROCTOR TEST REPORT

TO City of Winnipeg
104 - 1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

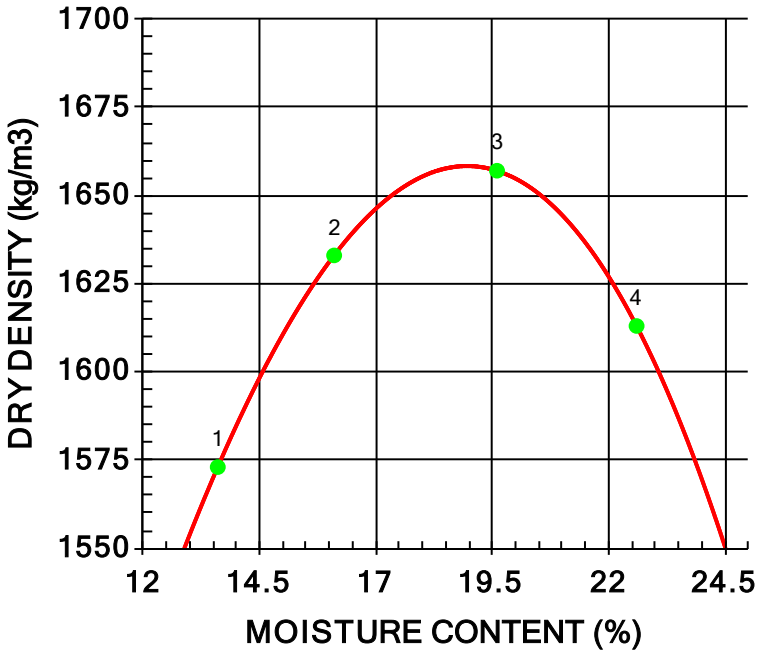
CLIENT City of Winnipeg
C.C.

ATTN: Geoff Kerr

PROJECT 2025 Local Street Renewal Program

PROJECT NO. 123317463-4 - Contract 4
PROCTOR NO. 2 DATE SAMPLED 2025.Jan.07 DATE RECEIVED 2025.Jan.07 DATE TESTED 2025.Jan.31

INSITU MOISTURE	16.9 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Fat Clay (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-235, 0.7 m (Riverton Ave)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1787	1573	13.6
2	1896	1633	16.1
3	1982	1657	19.6
4	1977	1613	22.6

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1660	19.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5626.

 2025.Feb.06 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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

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

PROCTOR TEST REPORT

TO City of Winnipeg
104 - 1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

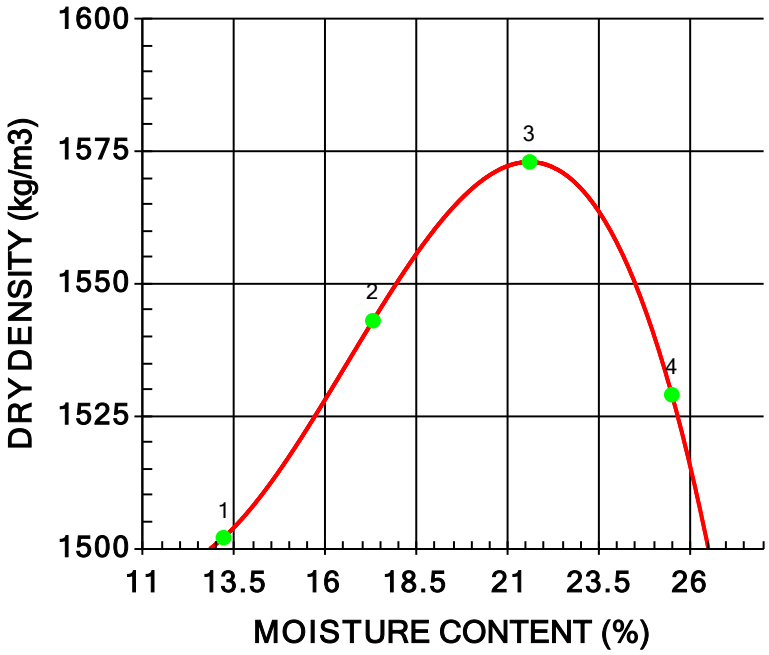
CLIENT City of Winnipeg
C.C.

ATTN: Geoff Kerr

PROJECT 2025 Local Street Renewal Program

PROJECT NO. 123317463-4 - Contract 4
PROCTOR NO. 3 DATE SAMPLED 2025.Jan.07 DATE RECEIVED 2025.Jan.07 DATE TESTED 2025.Jan.31

INSITU MOISTURE	15.0 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Fat Clay (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-236, 0.6 m (Riverton Ave)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1700	1502	13.2
2	1810	1543	17.3
3	1913	1573	21.6
4	1919	1529	25.5

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1570	21.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5627.

 2025.Feb.06 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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

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

PROCTOR TEST REPORT

TO City of Winnipeg
104 - 1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

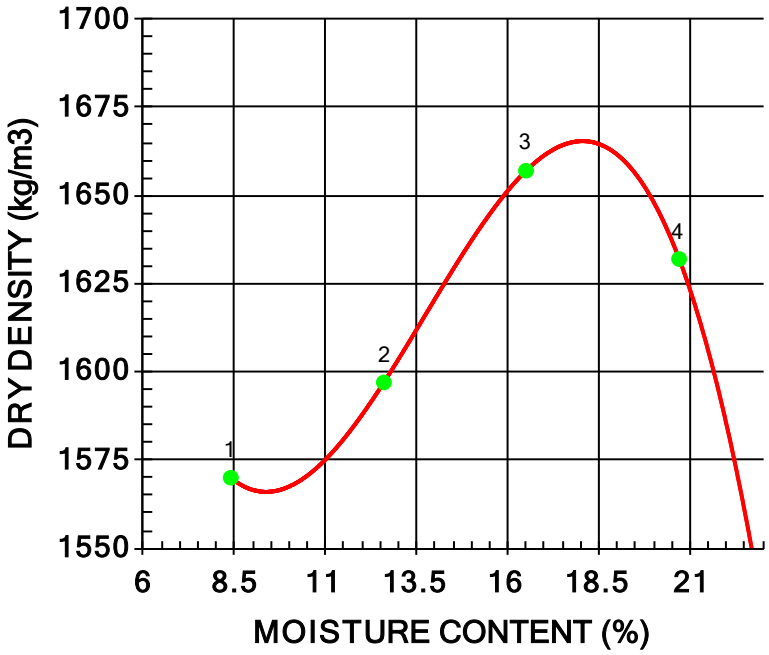
CLIENT City of Winnipeg
C.C.

ATTN: Geoff Kerr

PROJECT 2025 Local Street Renewal Program

PROJECT NO. 123317463-4 - Contract 4
PROCTOR NO. 4 DATE SAMPLED 2025.Jan.07 DATE RECEIVED 2025.Jan.07 DATE TESTED 2025.Jan.31

INSITU MOISTURE	20.5 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Doanld Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Fat Clay (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-237, 0.8 m (Simpson Ave)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1702	1570	8.4
2	1798	1597	12.6
3	1930	1657	16.5
4	1970	1632	20.7

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1660	18.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5628.

 2025.Feb.06 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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

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

PROCTOR TEST REPORT

TO City of Winnipeg
104 - 1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

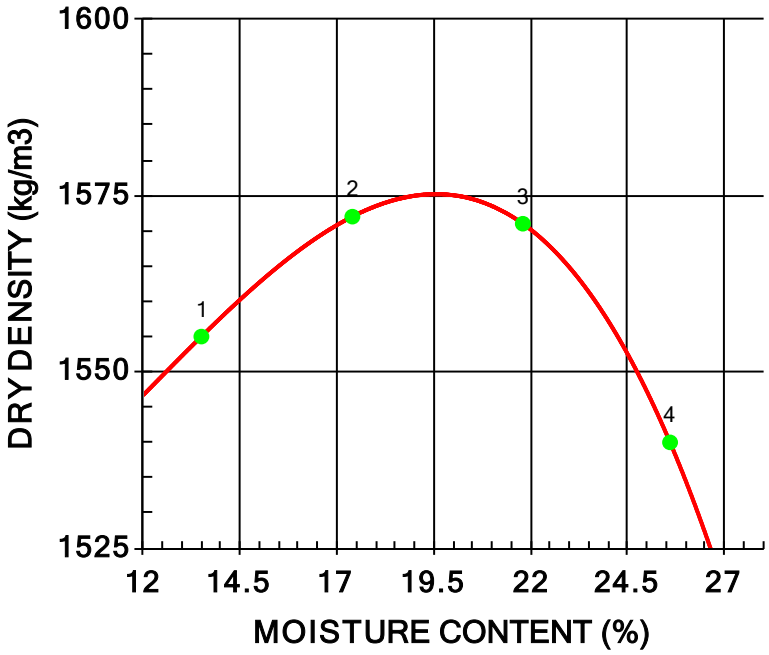
CLIENT City of Winnipeg
C.C.

ATTN: Geoff Kerr

PROJECT 2025 Local Street Renewal Program

PROJECT NO. 123317463-4 - Contract 4
PROCTOR NO. 5 DATE SAMPLED 2024.Jan.09 DATE RECEIVED 2024.Jan.09 DATE TESTED 2024.Feb.05

INSITU MOISTURE	23.7 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Lean Clay (CL)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-238, 0.8 m (Simpson Ave)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1765	1555	13.5
2	1845	1572	17.4
3	1913	1571	21.8
4	1934	1540	25.6

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1580	19.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5629.

Page 1 of 1 2025.Feb.06 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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

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

PROCTOR TEST REPORT

TO City of Winnipeg
104 - 1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

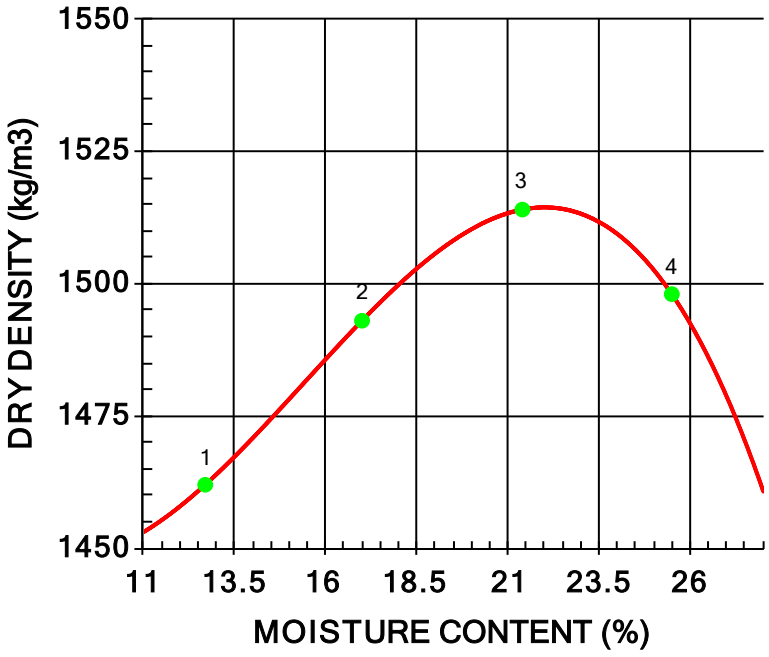
CLIENT City of Winnipeg
C.C.

ATTN: Geoff Kerr

PROJECT 2025 Local Street Renewal Program

PROJECT NO. 123317463-4 - Contract 4
PROCTOR NO. 6 DATE SAMPLED 2025.Jan.09 DATE RECEIVED 2025.Jan.09 DATE TESTED 2025.Feb.05

INSITU MOISTURE	20.4 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Lean Clay (CL)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-239, 0.8 m (Simpson Ave)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1648	1462	12.7
2	1747	1493	17.0
3	1838	1514	21.4
4	1880	1498	25.5

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

COMMENTS

Stantec Sample No. 5630.

 2025.Feb.06 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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

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

PROCTOR TEST REPORT

TO City of Winnipeg
104 - 1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

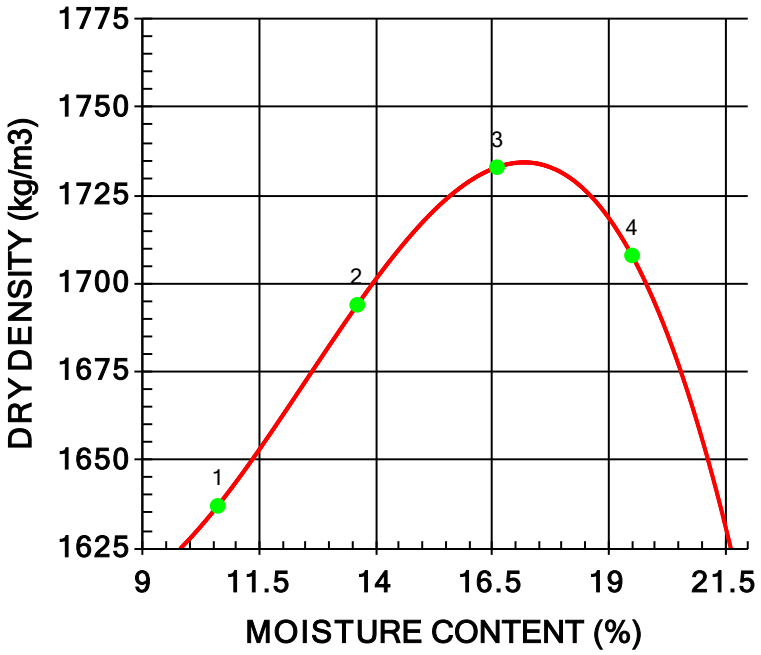
CLIENT City of Winnipeg
C.C.

ATTN: Geoff Kerr

PROJECT 2025 Local Street Renewal Program

PROJECT NO. 123317463-4 - Contract 4
PROCTOR NO. 7 DATE SAMPLED 2025.Jan.09 DATE RECEIVED 2025.Jan.09 DATE TESTED 2025.Feb.05

INSITU MOISTURE	18.6 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Lean Clay (CL)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-240, 0.8 m (Simpson Ave)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1810	1637	10.6
2	1924	1694	13.6
3	2021	1733	16.6
4	2041	1708	19.5

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1730	17.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5631.

 2025.Feb.06 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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

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

PROCTOR TEST REPORT

TO City of Winnipeg
104 - 1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

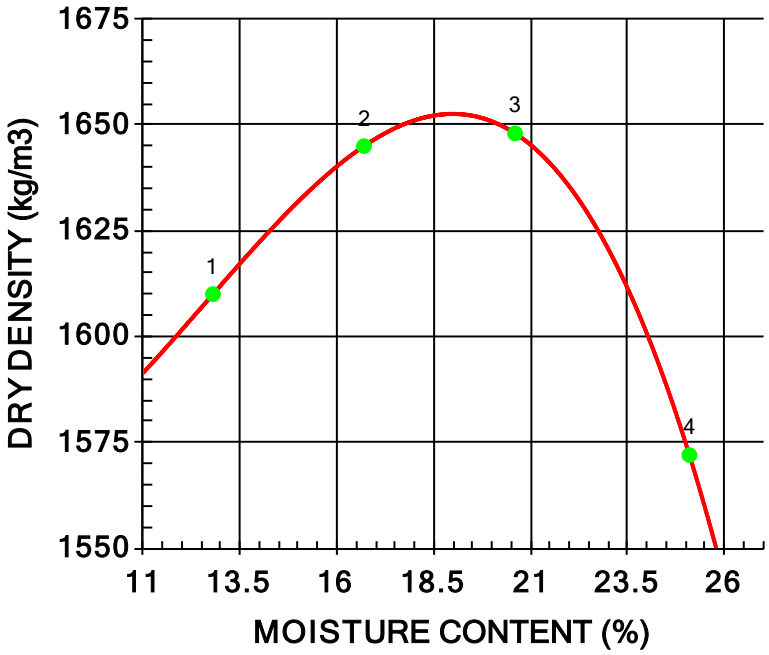
CLIENT City of Winnipeg
C.C.

ATTN: Geoff Kerr

PROJECT 2025 Local Street Renewal Program

PROJECT NO. 123317463-4 - Contract 4
PROCTOR NO. 8 DATE SAMPLED 2025.Jan.09 DATE RECEIVED 2025.Jan.09 DATE TESTED 2025.Feb.07

INSITU MOISTURE	14.7 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Fat Clay (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	BH-241, 0.8 m (Simpson Ave)	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1816	1610	12.8
2	1920	1645	16.7
3	1988	1648	20.6
4	1967	1572	25.1

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1650	19.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 5632.

 2025.Feb.07 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewals Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 1

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Larry Presado

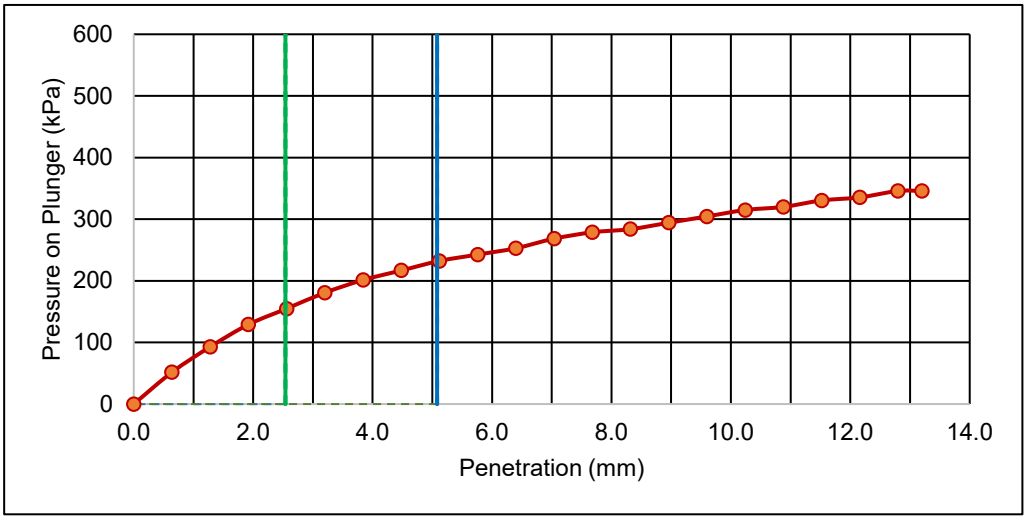
DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Feb.04
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Fat Clay (CH)	SAMPLE LOCATION	BH-234, 0.6 m - Riverton Ave.
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5625

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1620 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	19.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1541 kg/m^3
SWELL OF SAMPLE	3.87 %	AS-COMPACTED MOISTURE	19.4 %
POST-TEST MOISTURE	28.9 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.2

CBR VALUE AT 5.08 mm PENETRATION
2.3

COMMENTS
Sample prepared to 95% of the maximum dry density at the optimum moisture content as determined from ASTM D698.
As per ASTM D1883 10.2, the sample should be re-run to confirm the higher CBR value at 5.08 mm.

REPORT DATE 2025.Feb.10

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewals Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 2

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Larry Presado

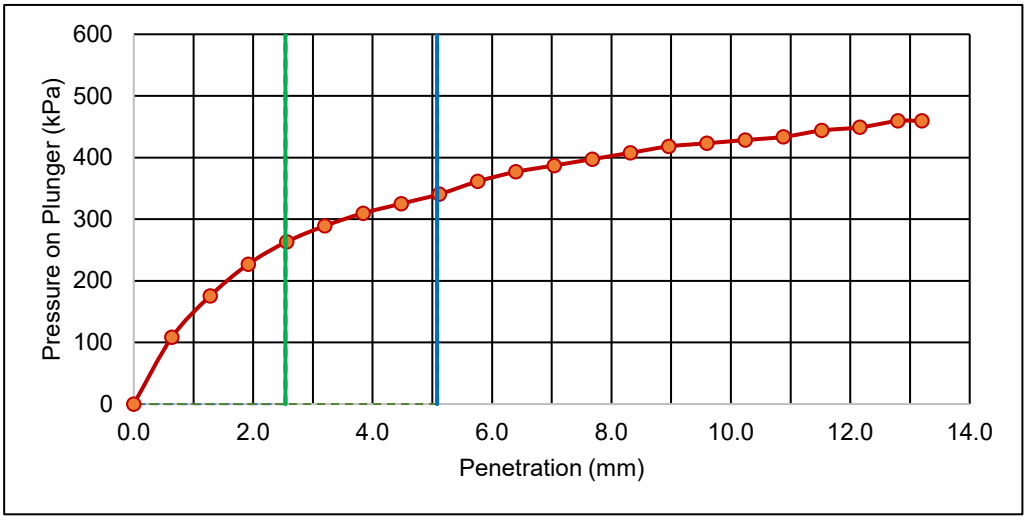
DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Feb.04
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Fat Clay (CH)	SAMPLE LOCATION	BH-235, 0.7 m - Riverton Ave.
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5626

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1660 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	19.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1577 kg/m^3
SWELL OF SAMPLE	2.86 %	AS-COMPACTED MOISTURE	19.0 %
POST-TEST MOISTURE	24.1 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
3.8

CBR VALUE AT 5.08 mm PENETRATION
3.4

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

REPORT DATE 2025.Feb.10

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewals Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 3

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Larry Presado

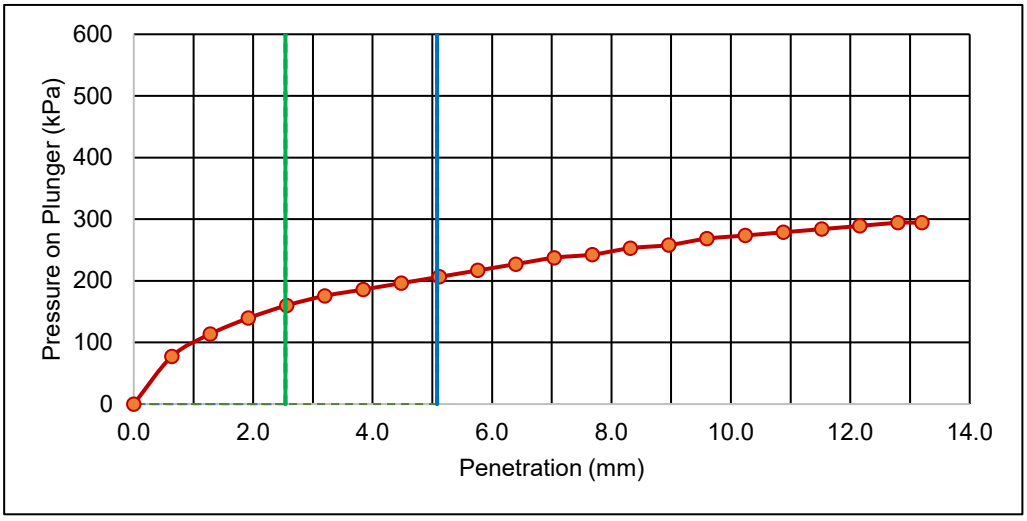
DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Feb.04
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Fat Clay (CH)	SAMPLE LOCATION	BH-236, 0.6 m - Riverton Ave.
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5627

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1570 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	21.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1490 kg/m^3
SWELL OF SAMPLE	4.40 %	AS-COMPACTED MOISTURE	21.6 %
POST-TEST MOISTURE	30.8 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.3

CBR VALUE AT 5.08 mm PENETRATION
2.1

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

REPORT DATE 2025.Feb.10

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewals Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 4

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Larry Presado

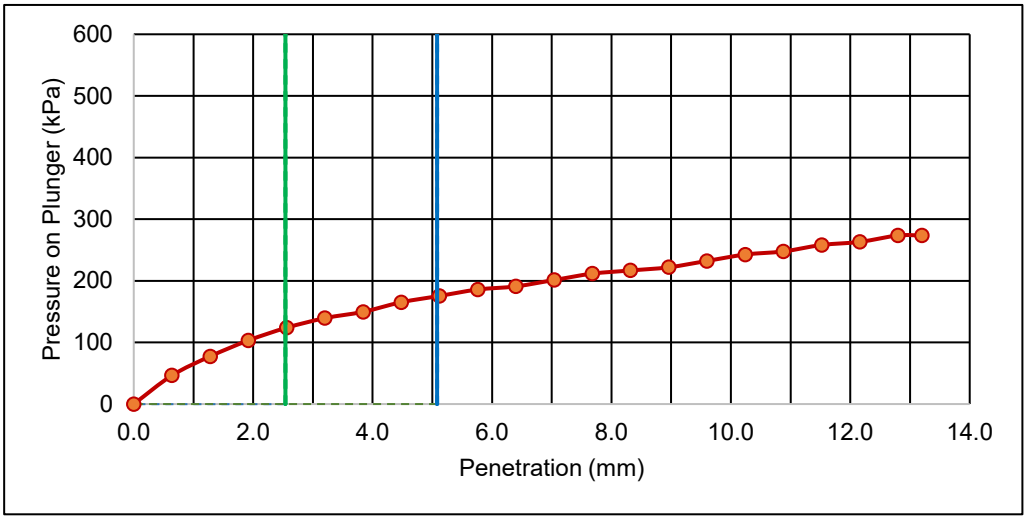
DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Feb.11
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Fat Clay (CH)	SAMPLE LOCATION	BH-237, 0.8 m - Simpson Ave.
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5628

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1660 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	18.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1575 kg/m^3
SWELL OF SAMPLE	3.83 %	AS-COMPACTED MOISTURE	18.1 %
POST-TEST MOISTURE	25.1 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
1.8

CBR VALUE AT 5.08 mm PENETRATION
1.7

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

REPORT DATE 2025.Feb.18

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewals Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 5

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Larry Presado

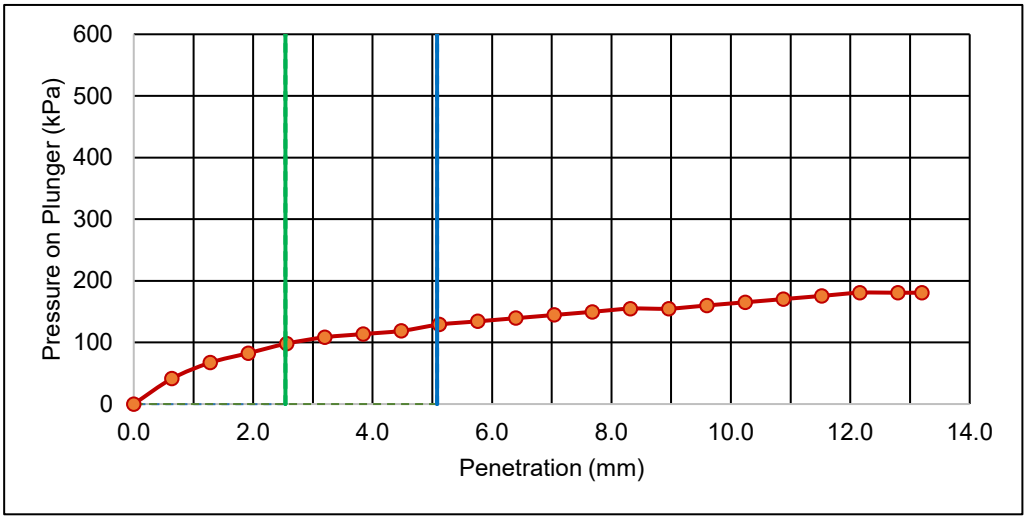
DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Feb.11
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Lean Clay (CL)	SAMPLE LOCATION	BH-238, 0.8 m - Simpson Ave.
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5629

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1580 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	19.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1502 kg/m^3
SWELL OF SAMPLE	7.09 %	AS-COMPACTED MOISTURE	19.4 %
POST-TEST MOISTURE	34.4 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
1.4

CBR VALUE AT 5.08 mm PENETRATION
1.3

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

REPORT DATE 2025.Feb.18

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewals Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 6

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Larry Presado

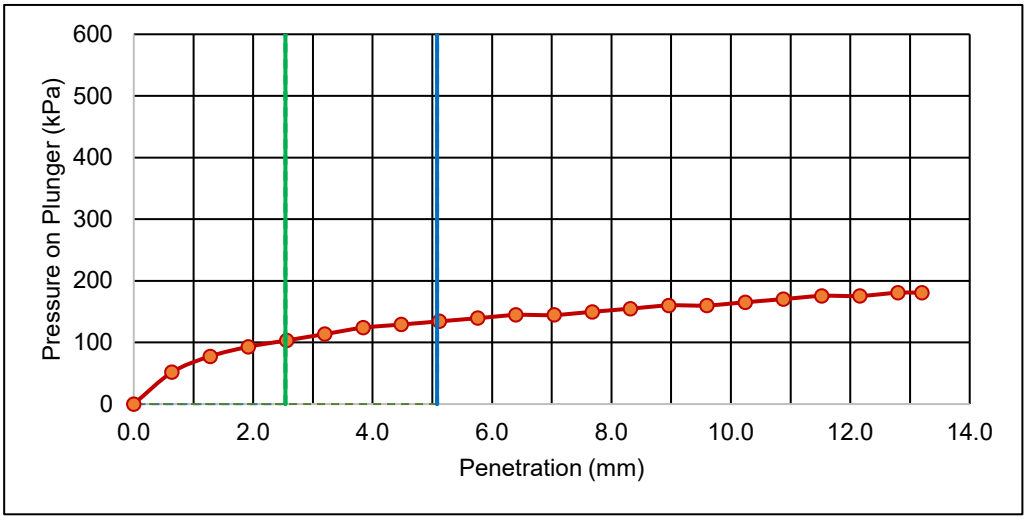
DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Feb.11
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Lean Clay (CL)	SAMPLE LOCATION	BH-239, 0.8 m - Simpson Ave.
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5630

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1510 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	22.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1434 kg/m^3
SWELL OF SAMPLE	6.40 %	AS-COMPACTED MOISTURE	22.1 %
POST-TEST MOISTURE	37.2 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
1.5

CBR VALUE AT 5.08 mm PENETRATION
1.3

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

REPORT DATE 2025.Feb.18

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewals Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 7

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Larry Presado

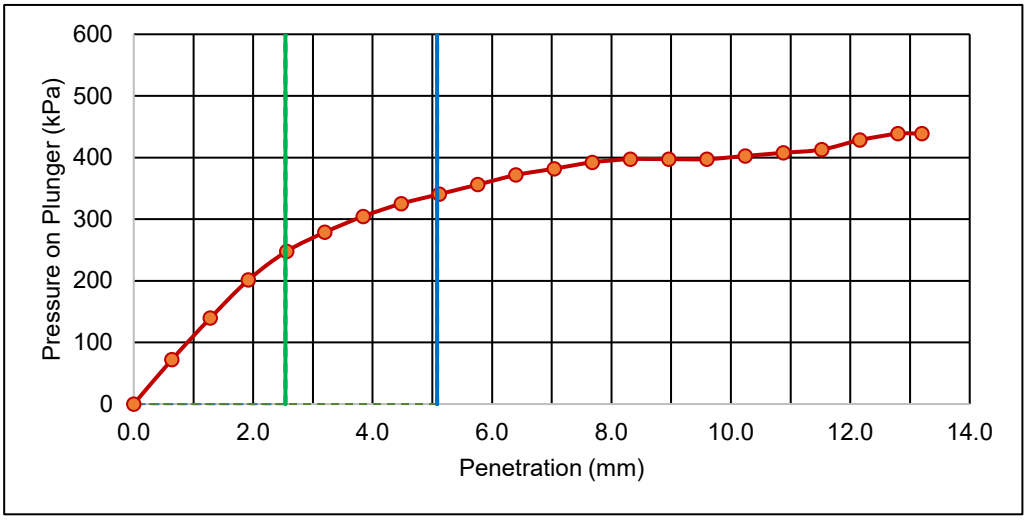
DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Feb.11
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Lean Clay (CL)	SAMPLE LOCATION	BH-240, 0.8 m - Simpson Ave.
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5631

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1730 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	17.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1645 kg/m^3
SWELL OF SAMPLE	2.32 %	AS-COMPACTED MOISTURE	16.9 %
POST-TEST MOISTURE	23.4 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
3.6

CBR VALUE AT 5.08 mm PENETRATION
3.4

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

REPORT DATE 2025.Feb.18

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

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

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

TO City of Winnipeg, Public Works Dept.
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Geoff Kerr

PROJECT 2025 Local Street Renewals Program
Contract 4

PROJECT NO. 123317463-4

REPORT NO. 8

DATE SAMPLED: 2025.Jan.09
SAMPLED BY: Larry Presado

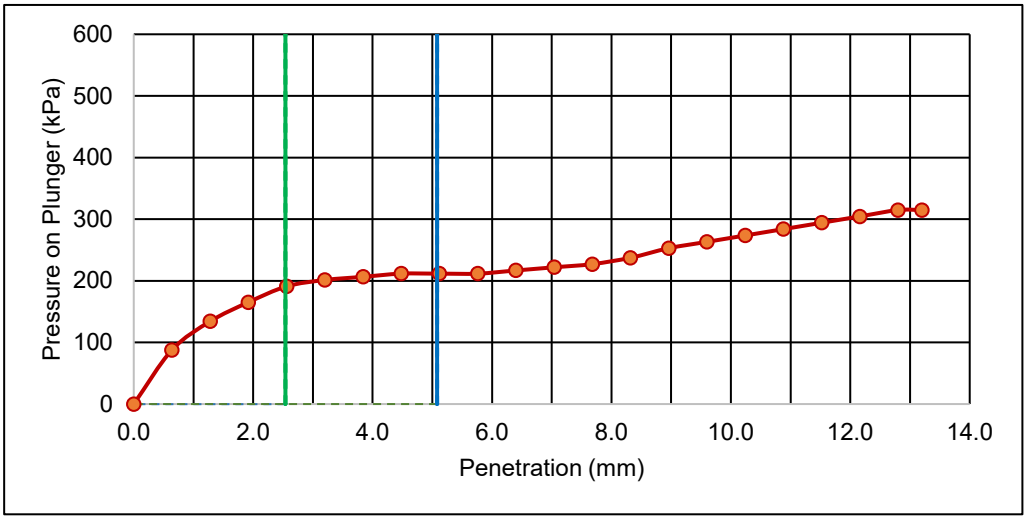
DATE RECEIVED: 2025.Jan.09
SUBMITTED BY: Larry Presado

DATE TESTED: 2025.Feb.11
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	< 4.75 mm	SOURCE	In Situ
MATERIAL TYPE	Fat Clay (CH)	SAMPLE LOCATION	BH-241, 0.8 m - Simpson Ave.
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	5632

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1650 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	19.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1565 kg/m^3
SWELL OF SAMPLE	1.31 %	AS-COMPACTED MOISTURE	19.2 %
POST-TEST MOISTURE	25.2 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.8

CBR VALUE AT 5.08 mm PENETRATION
2.1

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

REPORT DATE 2025.Feb.18

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

Stantec

Core No.	Street	Diameter (mm)	Length (mm)	L/D Ratio	Correction Factor	Peak Load (kN)	Compressive Strength (MPa)	
							Measured	Corrected
242	Allan St	75.75	175.34	2.315	1.0000	150.56	33.41	33.41
243	Allan St	75.76	117.76	1.554	0.9643	287.47	63.77	61.49
244	Allan St	75.75	174.83	2.308	1.0000	204.03	45.27	45.27
245	Allan St	75.80	150.48	1.985	0.9988	222.13	49.22	49.17
246	Dunrobin Ave	75.75	151.97	2.006	1.0000	238.37	52.89	52.89
247	Dunrobin Ave	75.73	146.12	1.929	0.9943	146.38	32.50	32.31
248	Dunrobin Ave	*Crumbly/fractured core; test cancelled*						
249	Dunrobin Ave	75.73	148.47	1.961	0.9969	183.26	40.69	40.56
250	Hershey St	75.71	131.83	1.741	0.9793	266.97	59.30	58.07
251	Hershey St	75.77	89.11	1.176	0.9122	219.95	48.78	44.50