APPENDIX 'A' – GEOTECHNICAL REPORT

GEOTECHNICAL REPORT FOR:

I. Weatherdon Avenue from Stafford Street to Arbuthnot Street
II. Overton Street from Blenheim Avenue to Harrowby Avenue
III. Dunraven Avenue from St. Mary's Road to Overton Street
IV. Blenheim Avenue from St. Anne's Road to Des Meurons Street

PAVEMENT CORES FOR:

I. Sadler Avenue from St. Anne's Road to East End

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 21, 2024

Project/File: 123316853

Richard Weibel
City of Winnipeg
106, 1155 Pacific Avenue
Winnipeg, MB R3E 3P1

Good day Richard,

Reference: 2024 Local Street Renewals Program (Contract 4)

Stantec Consulting Ltd. (Stantec) was retained to undertake a factual geotechnical investigation for the 2024 Local Street Renewals Program (Contract 4) in Winnipeg, Manitoba. Use of this report is subject to the Statement of General Conditions provided in **Appendix A**.

The subsurface coring and drilling sampling program was conducted from December 1, 2023, to January 24, 2024. Pavement coring was performed by our geotechnical field personnel, and drilling services were provided by Paddock Drilling under the supervision of our personnel. The borehole locations are shown on the attached Borehole Location Plan provided in **Appendix B**. When subsurface drilling was required, the pavement cores were sampled with a 150 mm bit and boreholes were drilled with 125 mm solid stem augers. Geotechnical drilling boreholes were terminated at depths of 2.0 m below the pavement, which resulted in borehole depths ranging from 2.1 m to 2.2 m below the surface. 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. Upon completion of drilling, the testholes were examined for evidence of sloughing and groundwater seepage. The borehole records are provided in **Appendix C**. 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).* Core photographs are provided in **Appendix D**.

Reference: 2024 Local Street Renewals Program (Contract 4)

EXISTING PAVEMENT THICKNESS

The existing pavement thickness is provided in the following table:

Table 1 – Existing Pavement Thickness

Street	Core ID	Asphalt Thickness (mm)	Concrete Thickness (mm)	Total Pavement Thickness (mm)
Dunraven Ave	63	0	165	165
Dunraven Ave	64	0	140	140
Dunraven Ave	65	0	150	150
Overton St	66	0	150	150
Overton St	67	0	140	140
Overton St	68	0	150	150
Blenheim Ave	69	95	160	255
Blenheim Ave	70	55	150	205
Blenheim Ave	71	45	155	200
Blenheim Ave	72	30	170	200
Weatherdon Ave	73	60	165	225
Weatherdon Ave	74	140	85	225
Weatherdon Ave	75	70	180	250
Weatherdon Ave	76	120	0	120
Weatherdon Ave	77	140	0	140

LABORATORY TESTING

The following laboratory tests were conducted on select soil samples:

- ASTM D2216 - *Laboratory Determination of Water (Moisture) Content of Soil by Mass*
- 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 at 95% maximum dry density under soaked conditions. Prior to testing the concrete core samples for compressive strength, the cores were conditioned in water at room temperature for 48 hours. The moisture content results are shown on the borehole records, and the laboratory test reports are provided in **Appendix E**.

Reference: **2024 Local Street Renewals Program (Contract 4)**

CLOSURE

We appreciate the opportunity to assist you on this project. Please contact the undersigned if you have any questions regarding this report.

Regards,

STANTEC CONSULTING LTD.

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Jason Thompson C.E.T.
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Mobile: 204-981-8445
jason.thompson@stantec.com

Attachment: Appendix A – Statement of General Conditions
Appendix B – Borehole Location Plan
Appendix C – Borehole Records
Appendix D – Core Photographs
Appendix E – Laboratory Test Reports

- Atterberg Limits Test Reports
- Particle-Size Analysis Reports
- Standard Proctor Test Reports
- CBR Test Reports
- Concrete Core Compressive Strength Test Results

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.

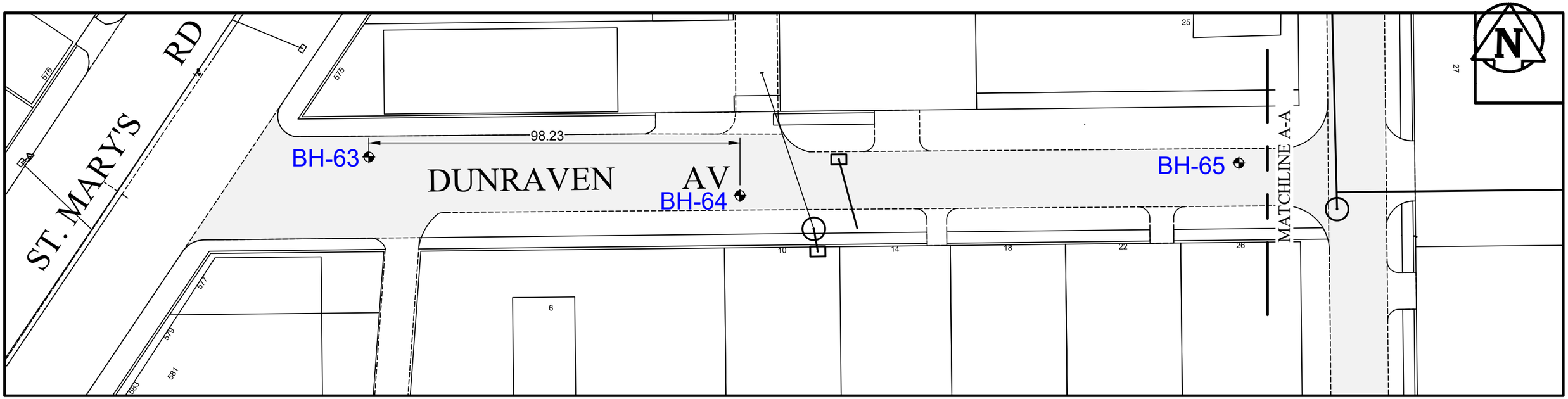
INTERPRETATION OF SITE CONDITIONS: Soil, rock, or other material descriptions, and statements regarding their condition, made in this report are based on site conditions encountered by Stantec at the time of the work and at the specific testing and/or sampling locations. Classifications and statements 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.

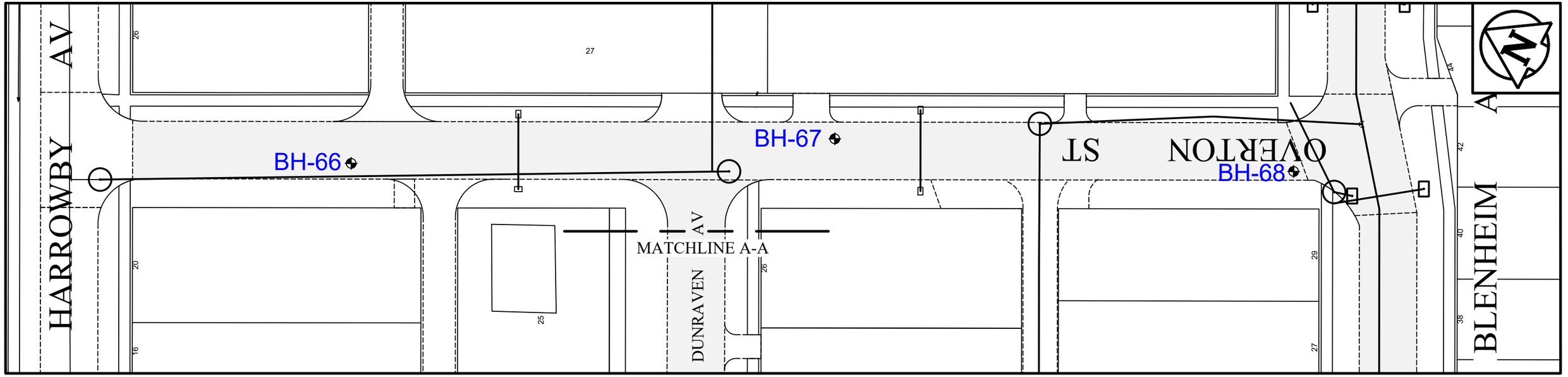
VARYING OR UNEXPECTED CONDITIONS: Should any site or subsurface conditions be encountered that are different from those described in this report or encountered at the test locations, Stantec must be notified immediately to assess if the varying or unexpected conditions are substantial and if reassessments 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





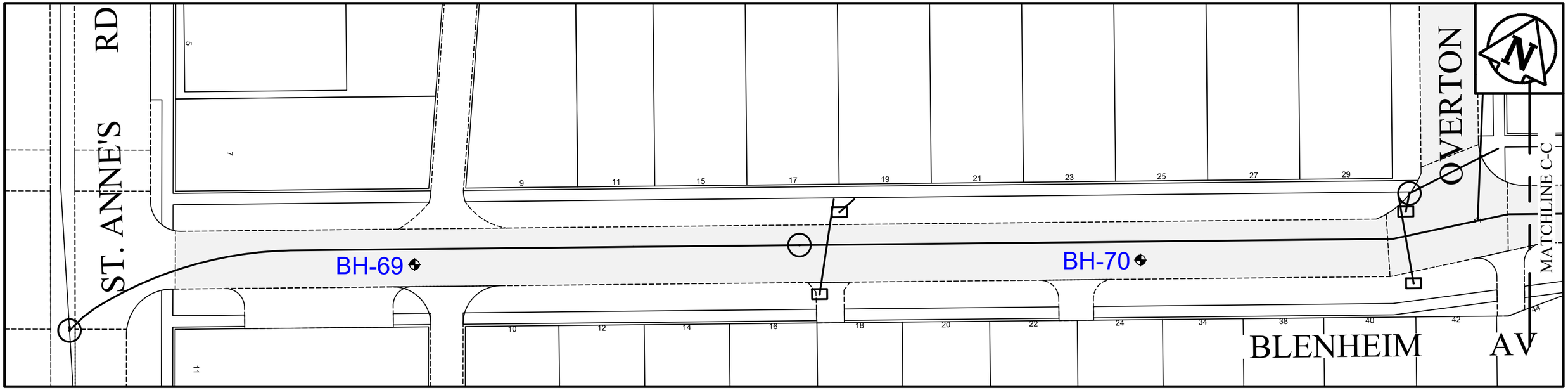
NOTE:
- ALL FULL DEPTH GEOTECHNICAL CORES (2.0m). FOLLOW F.3.4

TESTHOLE

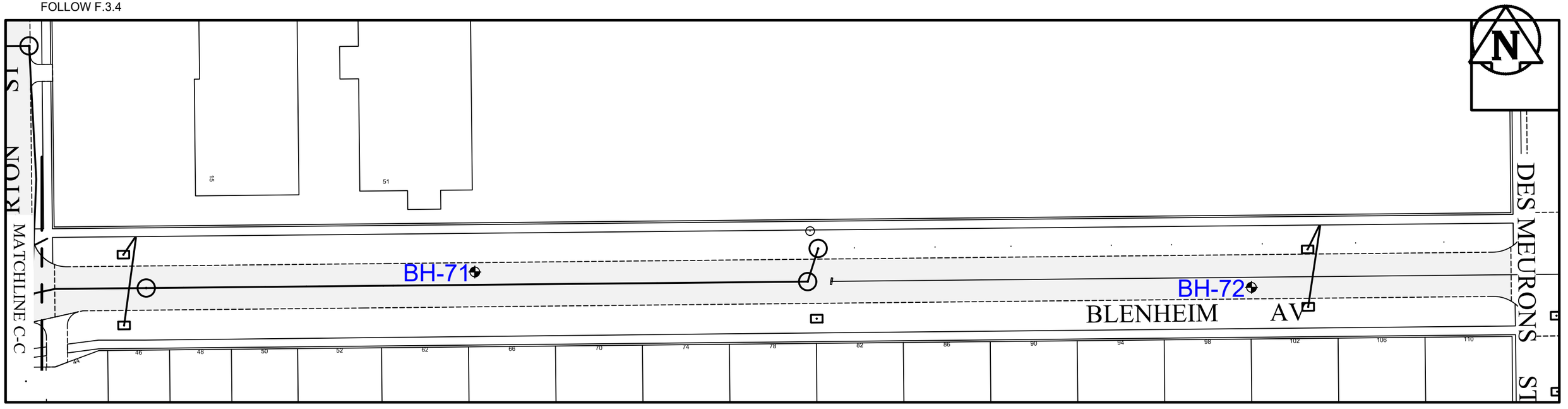
DATE:	DRAWING NO.:	DRAWN BY:	SCALE:	
10/03/2023	1 of 4	D.PEN.	1:500	EXACT LOCATIONS OF TEST HOLES TO BE MARKED IN FIELD BY CONTRACT ADMINISTRATOR.

2024 LOCAL STREET RENEWAL PROGRAM CORING DRAWING - **CONTRACT 4**

DUNRAVEN AV FROM ST.MARY'S TO OVERTON ST - RECONSTRUCTION
OVERTON ST FROM HARROWBY AV TO BLENHEIM AV - RECONSTRUCTION



NOTE:
- ALL FULL DEPTH GEOTECHNICAL CORES (2.0m). FOLLOW F.3.4

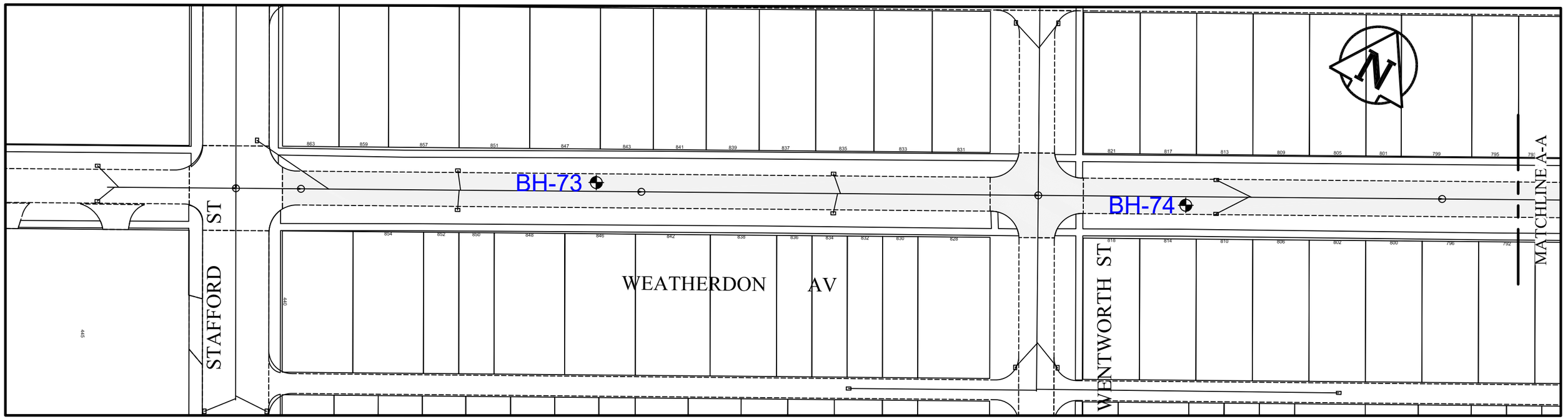


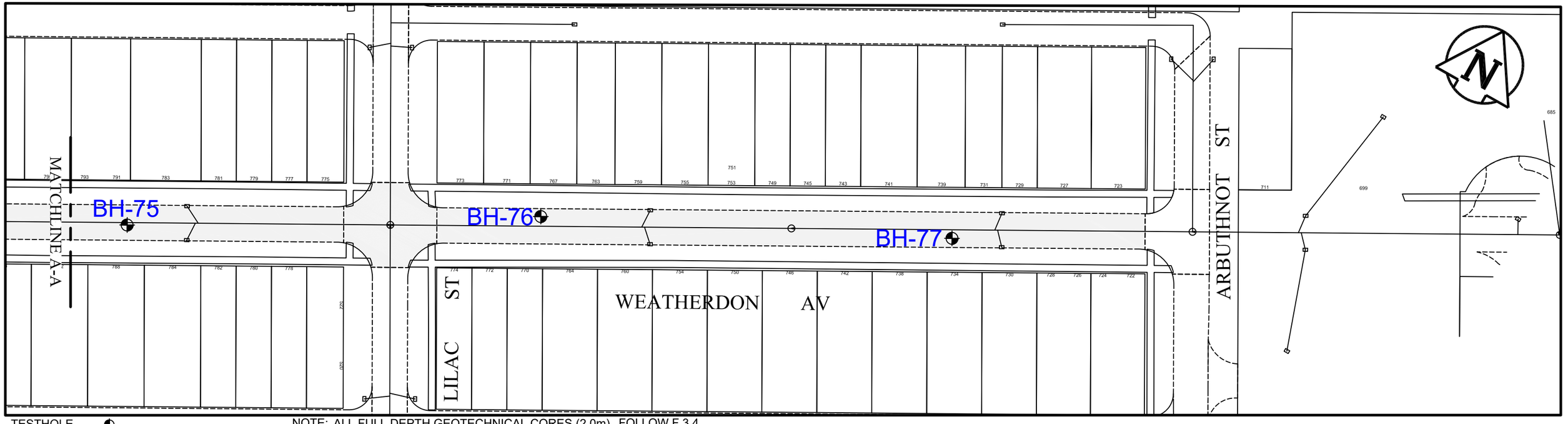
TESTHOLE

DATE:	DRAWING NO.:	DRAWN BY:	SCALE:	
10/03/2023	2 of 4	D.PEN.	N.T.S.	EXACT LOCATIONS OF TEST HOLES TO BE MARKED IN FIELD BY CONTRACT ADMINISTRATOR.

2024 LOCAL STREET RENEWAL PROGRAM CORING DRAWING - **CONTRACT 4**

BLENHEIM AV FROM ST.ANNES RD TO DES MEURONS ST - RECONSTRUCTION





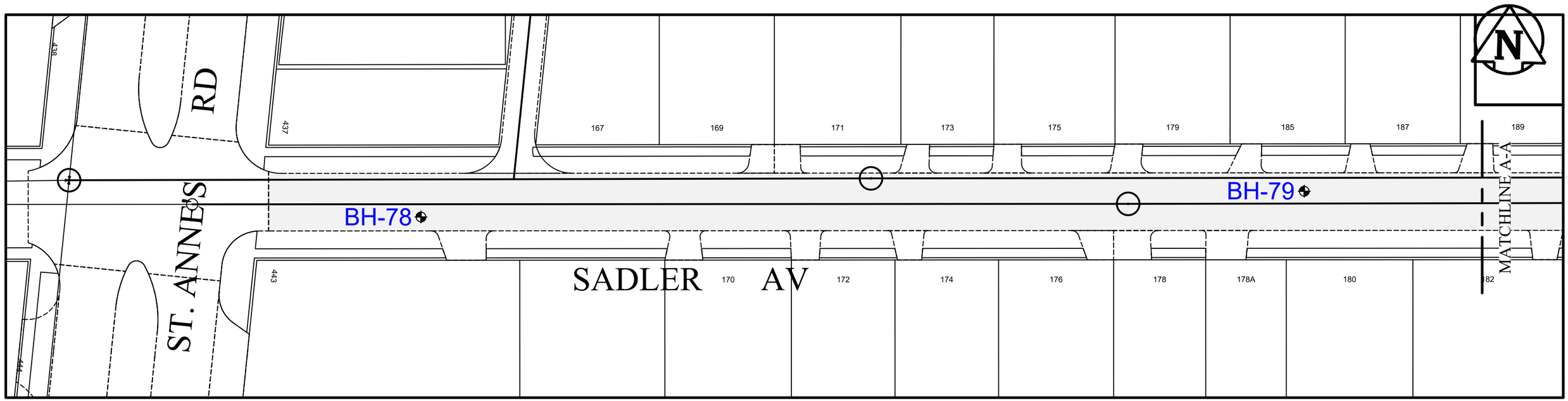
TESTHOLE

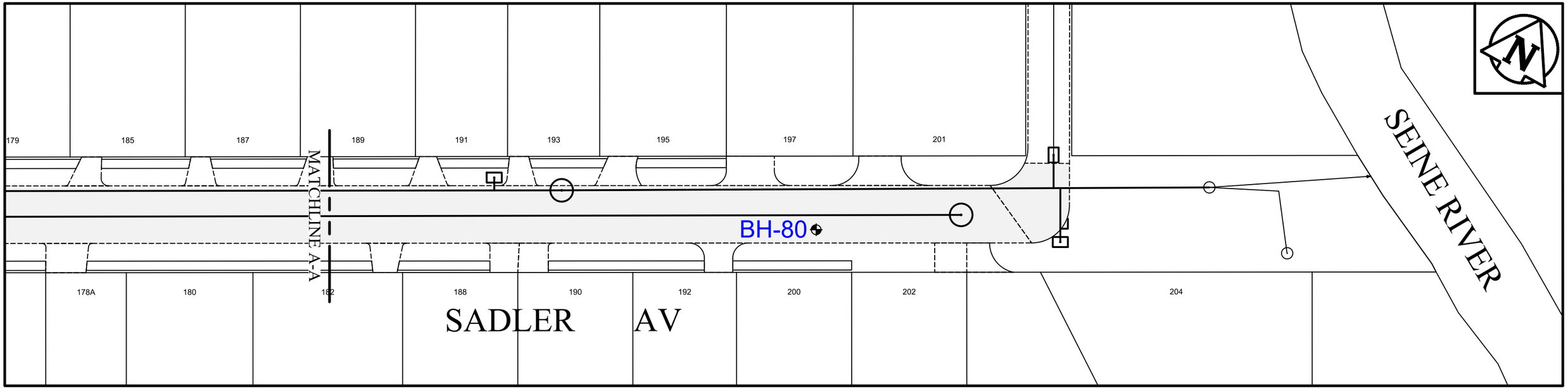
NOTE: ALL FULL DEPTH GEOTECHNICAL CORES (2.0m). FOLLOW F.3.4

DATE:	DRAWING NO.:	DRAWN BY:	SCALE:	
10/12/2023	4 OF 4	G.K..	N.T.S.	EXACT LOCATIONS OF TEST HOLES TO BE MARKED IN FIELD BY CONTRACT ADMINISTRATOR.

2024 LOCAL STREET RENEWAL PROGRAM CORING DRAWING - **CONTRACT 4**

WEATHRDON AVE FROM STAFFORD ST. TO ARBUTHNOT ST.





NOTE:
- DRILL PAVEMENT CORE ONLY EACH TEST HOLE LOCATION. FOLLOW F.3.5

TESTHOLE

DATE:	DRAWING NO.:	DRAWN BY:	SCALE:	
10/05/2023	3 of 4	D.PEN.	1:500	EXACT LOCATIONS OF TEST HOLES TO BE MARKED IN FIELD BY CONTRACT ADMINISTRATOR.

2024 LOCAL STREET RENEWAL PROGRAM CORING DRAWING - **CONTRACT 4**

SADLER AV FROM ST.ANNES RD TO EAST END - MAJOR REHAB

APPENDIX C

Borehole Records

SYMBOLS AND TERMS USED ON BOREHOLE AND TEST PIT RECORDS

SOIL DESCRIPTION

Terminology describing common soil genesis:

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

Terminology describing soil structure:

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

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

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

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

Terminology describing compactness of cohesionless soils:
The standard terminology to describe cohesionless soils includes compactness (formerly "relative density"), as determined by the Standard Penetration Test (SPT) N-Value - also known as N-Index. The SPT N-Value is described further on page 3. A relationship between compactness condition and N-Value is shown in the following table.

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

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

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

STRATA PLOT

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

Boulders Cobbles Gravel | Sand | Silt | Clay | Organics | Asphalt | Concrete | Fill | Igneous Bedrock | Meta-morphic Bedrock | Sedi-mentary Bedrock

SAMPLE TYPE

SS	Split spoon sample (obtained by performing the Standard Penetration Test)
ST	Shelby tube or thin wall tube
DP	Direct-Push sample (small diameter tube sampler hydraulically advanced)
PS	Piston sample
BS	Bulk sample
HQ, NQ, BQ, etc.	Rock core samples obtained with the use of standard size diamond coring bits.

WATER LEVEL MEASUREMENT

measured in standpipe, piezometer, or well

inferred

RECOVERY

For soil samples, the recovery is recorded as the length of the soil sample recovered. For rock core, recovery is defined as the total cumulative length of all core recovered in the core barrel divided by the length drilled and is recorded as a percentage on a per run basis.

N-VALUE

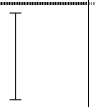
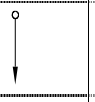
Numbers in this column are the field results of the Standard Penetration Test: the number of blows of a 140 pound (63.5 kg) hammer falling 30 inches (760 mm), required to drive a 2 inch (50.8 mm) O.D. split spoon sampler one foot (300 mm) into the soil. In accordance with ASTM D1586, the N-Value equals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

DYNAMIC CONE PENETRATION TEST (DCPT)

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

OTHER TESTS

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

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

Stantec

BOREHOLE RECORD

BH-63

CLIENT: **City of Winnipeg** PROJECT NO.: **123316853**

PROJECT: **2024 Local Street Renewals** BH ELEVATION: **N/A**

LOCATION: **Dunraven Avenue** DATUM: **N/A**

DATE BORED: **January 09 2024** WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**CONCRETE**						
		Stiff black fat **CLAY (CH)**		AS				Sieve/Hydro at 0.8 m G S M C 0% 1% 53% 46%
1		Soft tan lean **CLAY (CL)** - sandy		AS				
				AS				
				AS				
2		Firm brown fat **CLAY (CH)**		AS				
		End of Borehole • Borehole terminated at a depth of 2.400 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled with auger cuttings and bentonite chips. • Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.						
3								
4								

UNDRAINED SHEAR STRENGTH, Cu (kPa)

▲ LABORATORY TEST ◆ FIELD VANE TEST

★ POCKET PENETROMETER □ POCKET SHEAR VANE

50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

✖ SPT (N-value) BLOWS/0.3m

Water Content (%) and Blow Count

10 20 30 40 50 60 70 80

BACKFILL

ELEVATION (m)

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

Drilling Contractor: Paddock Drilling Ltd. Logged By: GP

Drilling Method: 125 mm SSA Reviewed By: GB

Completion Depth: 2.4 m Page 1 of 1

BOREHOLE RECORD

BH-64

CLIENT: **City of Winnipeg**
PROJECT: **2024 Local Street Renewals**
LOCATION: **Dunraven Avenue**
DATE BORED: **January 16 2024**

PROJECT NO.: **123316853**
BH ELEVATION: **N/A**
DATUM: **N/A**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**CONCRETE**						
		Firm black fat **CLAY (CH)** - brown below 0.25 m		AS				
1		Soft tan lean **CLAY (CL)** - sandy		AS AS				Sieve/Hydro at 0.7 m G S M C 0% 2% 33% 65%
		Firm brown fat **CLAY (CH)**		AS				
2				AS				
3								
4								

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

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

BACKFILL

End of Borehole
- Borehole terminated at a depth of 2.140 m.
- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Borehole backfilled with auger cuttings and bentonite chips.
- Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.

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

Drilling Contractor: Paddock Drilling Ltd.
Drilling Method: 125 mm SSA
Completion Depth: 2.14 m

Logged By: RB
Reviewed By: GB
Page 1 of 1

Printed Feb 8 2024 17:14:45 SOIL 123316853-2024_LOCAL_STREET_RENEWALS.GPJ NEW TEMPLATE TEST PROJECT.GPJ 2/8/24

Stantec

BOREHOLE RECORD

BH-65

CLIENT: **City of Winnipeg** PROJECT NO.: **123316853**

PROJECT: **2024 Local Street Renewals** BH ELEVATION: **N/A**

LOCATION: **Dunraven Avenue** DATUM: **N/A**

DATE BORED: **January 09 2024** WATER LEVEL: **N/A**

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

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

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS	BACKFILL	ELEVATION (m)
0		**CONCRETE**								
		Firm black fat **CLAY (CH)**		AS				Sieve/Hydro at 0.8 m G S M C 0% 1% 33% 67%		
1				AS						
				AS						
		Soft tan lean **CLAY (CL)** - sandy		AS						
		Firm brown fat **CLAY (CH)**		AS						
2										
3										
4										

End of Borehole
- Borehole terminated at a depth of 2.400 m.
- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Borehole backfilled with auger cuttings and bentonite chips.
- Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.

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

Drilling Contractor: Paddock Drilling Ltd. | Logged By: GP
Drilling Method: 125 mm SSA | Reviewed By: GB
Completion Depth: 2.4 m | Page 1 of 1

Stantec

BOREHOLE RECORD

BH-66

CLIENT: **City of Winnipeg** PROJECT NO.: **123316853**

PROJECT: **2024 Local Street Renewals** BH ELEVATION: **N/A**

LOCATION: **Overton Street** DATUM: **N/A**

DATE BORED: **January 16 2024** WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**CONCRETE**						
		Firm black fat **CLAY (CH)**		AS				Sieve/Hydro at 0.8 m G S M C 0% 2% 37% C 61%
1		- brown below 0.9 m		AS				
				AS				
				AS				
2				AS				
3								
4								

UNDRAINED SHEAR STRENGTH, Cu (kPa)

▲ LABORATORY TEST ◆ FIELD VANE TEST

★ POCKET PENETROMETER □ POCKET SHEAR VANE

50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

✖ SPT (N-value) BLOWS/0.3m

Water Content (%) and Blow Count

10 20 30 40 50 60 70 80

BACKFILL

ELEVATION (m)

End of Borehole

- Borehole terminated at a depth of 2.150 m.
- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Borehole backfilled with auger cuttings and bentonite chips.
- Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.

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

Drilling Contractor: Paddock Drilling Ltd. Logged By: RB

Drilling Method: 125 mm SSA Reviewed By: GB

Completion Depth: 2.15 m Page 1 of 1

BOREHOLE RECORD

BH-67

CLIENT: **City of Winnipeg**
PROJECT: **2024 Local Street Renewals**
LOCATION: **Overton Street**
DATE BORED: **January 09 2024**

PROJECT NO.: **123316853**
BH ELEVATION: **N/A**
DATUM: **N/A**
WATER LEVEL: **N/A**

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

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS	BACKFILL	ELEVATION (m)
0		**CONCRETE**								
		Firm black fat **CLAY (CH)**		AS				Sieve/Hydro at 0.7 m G S M C 0% 4% 62% 34%		
1		Soft tan lean **CLAY (CL)** - sandy		AS						
		Firm brown fat **CLAY (CH)**		AS						
		Soft tan lean **CLAY (CL)**		AS						
2		Firm brown fat **CLAY (CH)**		AS						
3		**End of Borehole** • Borehole terminated at a depth of 2.400 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled with auger cuttings and bentonite chips. • Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.								
4										

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

Drilling Contractor: Paddock Drilling Ltd.
Drilling Method: 125 mm SSA
Completion Depth: 2.4 m

Logged By: GP
Reviewed By: GB
Page 1 of 1

BOREHOLE RECORD

BH-68

CLIENT: **City of Winnipeg**
PROJECT: **2024 Local Street Renewals**
LOCATION: **Overton Street**
DATE BORED: **January 09 2024**

PROJECT NO.: **123316853**
BH ELEVATION: **N/A**
DATUM: **N/A**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**CONCRETE**						
		Stiff black fat **CLAY (CH)**		AS				Sieve/Hydro at 0.8 m G 0% S 1% M 62% C 37%
1		Soft tan lean **CLAY (CL)** - sandy		AS				
		Firm brown fat **CLAY (CH)**		AS				
		Soft tan lean **CLAY (CL)**		AS				
2		Firm brown fat **CLAY (CH)**		AS				
3								
4								

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

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

BACKFILL

End of Borehole
- Borehole terminated at a depth of 2.400 m.
- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Borehole backfilled with auger cuttings and bentonite chips.
- Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.

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

Drilling Contractor: Paddock Drilling Ltd.
Drilling Method: 125 mm SSA
Completion Depth: 2.4 m

Logged By: GP
Reviewed By: GB
Page 1 of 1

Stantec

BOREHOLE RECORD

BH-69

CLIENT: **City of Winnipeg** PROJECT NO.: **123316853**

PROJECT: **2024 Local Street Renewals** BH ELEVATION: **N/A**

LOCATION: **Blenheim Avenue** DATUM: **N/A**

DATE BORED: **January 09 2024** WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		CONCRETE						
		Firm black fat **CLAY (CH)**		AS				
		- brown below 0.6 m		AS				Sieve/Hydro at 0.9 m G S M C 0% 1% 41% 58%
1				AS				
		Soft tan lean **CLAY (CL)** - sandy		AS				
2		Firm brown fat **CLAY (CH)**		AS				
3								
4								

UNDRAINED SHEAR STRENGTH, Cu (kPa)

▲ LABORATORY TEST ◆ FIELD VANE TEST

★ POCKET PENETROMETER □ POCKET SHEAR VANE

50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

✖ SPT (N-value) BLOWS/0.3m

Water Content (%) and Blow Count

10 20 30 40 50 60 70 80

BACKFILL

ELEVATION (m)

End of Borehole

- Borehole terminated at a depth of 2.400 m.
- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Borehole backfilled with auger cuttings and bentonite chips.
- Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.

BACKFILL SYMBOL ASPHALT GROUT CONCRETE

BENTONITE DRILL CUTTINGS SAND SLOUGH

Drilling Contractor: Paddock Drilling Ltd. Logged By: GP

Drilling Method: 125 mm SSA Reviewed By: GB

Completion Depth: 2.4 m Page 1 of 1

Stantec

BOREHOLE RECORD

BH-70

CLIENT: **City of Winnipeg** PROJECT NO.: **123316853**

PROJECT: **2024 Local Street Renewals** BH ELEVATION: **N/A**

LOCATION: **Blenheim Avenue** DATUM: **N/A**

DATE BORED: **January 16 2024** WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		CONCRETE						
		Firm black fat **CLAY (CH)**		AS				
1				AS				Sieve/Hydro at 0.8 m G S M C 0% 7% 32% 61%
		Soft tan lean **CLAY (CL)** - sandy		AS				
				AS				
2		Firm brown fat **CLAY (CH)**		AS				
3								
4								

UNDRAINED SHEAR STRENGTH, Cu (kPa)

▲ LABORATORY TEST ◆ FIELD VANE TEST

★ POCKET PENETROMETER □ POCKET SHEAR VANE

50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

✖ SPT (N-value) BLOWS/0.3m

Water Content (%) and Blow Count

10 20 30 40 50 60 70 80

BACKFILL

End of Borehole

- Borehole terminated at a depth of 2.400 m.
- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Borehole backfilled with auger cuttings and bentonite chips.
- Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.

BACKFILL SYMBOL ASPHALT GROUT CONCRETE

BENTONITE DRILL CUTTINGS SAND SLOUGH

Drilling Contractor: Paddock Drilling Ltd.	Logged By: RB
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 2.4 m	Page 1 of 1

Stantec

BOREHOLE RECORD

BH-71

CLIENT: **City of Winnipeg**
PROJECT: **2024 Local Street Renewals**
LOCATION: **Blenheim Avenue**
DATE BORED: **January 16 2024**

PROJECT NO.: **123316853**
BH ELEVATION: **N/A**
DATUM: **N/A**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		CONCRETE						
		Firm black fat **CLAY (CH)**						
		Soft tan lean **CLAY (CL)** - sandy		AS				Sieve/Hydro at 0.8 m G 0% S 2% M 43% C 55%
1				AS				
		Firm brown fat **CLAY (CH)**		AS				
				AS				
2				AS				
		End of Borehole						
		• Borehole terminated at a depth of 2.400 m.						
		• No groundwater seepage or soil sloughing was observed during or upon completion of drilling.						
		• Borehole backfilled with auger cuttings and bentonite chips.						
		• Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.						
3								
4								

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

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

BACKFILL

ELEVATION (m)

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

Drilling Contractor: Paddock Drilling Ltd.	Logged By: RB
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 2.4 m	Page 1 of 1

BOREHOLE RECORD

BH-72

CLIENT: **City of Winnipeg**
PROJECT: **2024 Local Street Renewals**
LOCATION: **Blenheim Avenue**
DATE BORED: **January 16 2024**

PROJECT NO.: **123316853**
BH ELEVATION: **N/A**
DATUM: **N/A**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		CONCRETE						
		Firm black fat **CLAY (CH)**						
		- brown below 0.6 m		AS				
								Sieve/Hydro at 0.8 m G 0% S 2% M 23% C 75%
1		Soft tan lean **CLAY (CL)** - sandy		AS				
				AS				
		Firm brown fat **CLAY (CH)**		AS				
2				AS				
3								
4								

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

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

BACKFILL

End of Borehole
- Borehole terminated at a depth of 2.200 m.
- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Borehole backfilled with auger cuttings and bentonite chips.
- Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.

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

Drilling Contractor: Paddock Drilling Ltd.
Drilling Method: 125 mm SSA
Completion Depth: 2.2 m

Logged By: RB
Reviewed By: GB
Page 1 of 1

Printed Feb 8 2024 17:14:52 SOIL 123316853-2024_LOCAL_STREET_RENEWALS.GPJ NEW TEMPLATE TEST PROJECT.GPJ 2/8/24

Stantec

BOREHOLE RECORD

BH-73

CLIENT: **City of Winnipeg**
PROJECT: **2024 Local Street Renewals**
LOCATION: **Weatherdon Avenue**
DATE BORED: **January 09 2024**

PROJECT NO.: **123316853**
BH ELEVATION: **N/A**
DATUM: **N/A**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		CONCRETE						
		Soft tan lean **CLAY (CL)** - some sand		AS				Sieve/Hydro at 0.8 m G 0% S 10% M 74% C 16%
1				AS				
				AS				
		Firm brown fat **CLAY (CH)**		AS				
2				AS				
3		**End of Borehole** • Borehole terminated at a depth of 2.400 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled with auger cuttings and bentonite chips. • Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.						
4								

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

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

BACKFILL

ELEVATION (m)

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

Drilling Contractor: Paddock Drilling Ltd.
Drilling Method: 125 mm SSA
Completion Depth: 2.4 m

Logged By: GP
Reviewed By: GB
Page 1 of 1

Stantec

BOREHOLE RECORD

BH-74

CLIENT: **City of Winnipeg** PROJECT NO.: **123316853**

PROJECT: **2024 Local Street Renewals** BH ELEVATION: **N/A**

LOCATION: **Weatherdon Avenue** DATUM: **N/A**

DATE BORED: **January 09 2024** WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		CONCRETE						
		Stiff black fat **CLAY (CH)**		AS				Sieve/Hydro at 0.8 m G 0% S 6% M 53% C 41%
1				AS				
				AS				
2		- brown below 2.1 m		AS				
3								
4								

UNDRAINED SHEAR STRENGTH, Cu (kPa)

▲ LABORATORY TEST ◆ FIELD VANE TEST

★ POCKET PENETROMETER □ POCKET SHEAR VANE

50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

✖ SPT (N-value) BLOWS/0.3m

Water Content (%) and Blow Count

10 20 30 40 50 60 70 80

BACKFILL

ELEVATION (m)

End of Borehole

- Borehole terminated at a depth of 2.400 m.
- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Borehole backfilled with auger cuttings and bentonite chips.
- Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.

BACKFILL SYMBOL ASPHALT GROUT CONCRETE

BENTONITE DRILL CUTTINGS SAND SLOUGH

Drilling Contractor: Paddock Drilling Ltd. Logged By: GP

Drilling Method: 125 mm SSA Reviewed By: GB

Completion Depth: 2.4 m Page 1 of 1

Stantec

BOREHOLE RECORD

BH-75

CLIENT: **City of Winnipeg** PROJECT NO.: **123316853**

PROJECT: **2024 Local Street Renewals** BH ELEVATION: **N/A**

LOCATION: **Weatherdon Avenue** DATUM: **N/A**

DATE BORED: **January 09 2024** WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		CONCRETE						
		Stiff black fat **CLAY (CH)**						
		- brown below 0.6 m		AS				Sieve/Hydro at 0.9 m G 0% S 3% M 37% C 60%
1				AS				
				AS				
2				AS				
				AS				
3								
4								

UNDRAINED SHEAR STRENGTH, Cu (kPa)

▲ LABORATORY TEST ◆ FIELD VANE TEST

★ POCKET PENETROMETER □ POCKET SHEAR VANE

50 kPa 100 kPa 150 kPa 200 kPa

WATER CONTENT & ATTERBERG LIMITS W_P W W_L

✖ SPT (N-value) BLOWS/0.3m

Water Content (%) and Blow Count

10 20 30 40 50 60 70 80

BACKFILL

ELEVATION (m)

End of Borehole

- Borehole terminated at a depth of 2.400 m.
- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Borehole backfilled with auger cuttings and bentonite chips.
- Borehole surface backfilled as per City of Winnipeg Street Cuts Manual.

BACKFILL SYMBOL ASPHALT GROUT CONCRETE

BENTONITE DRILL CUTTINGS SAND SLOUGH

Drilling Contractor: Paddock Drilling Ltd. Logged By: GP

Drilling Method: 125 mm SSA Reviewed By: GB

Completion Depth: 2.4 m Page 1 of 1

Stantec

BOREHOLE RECORD

BH-76

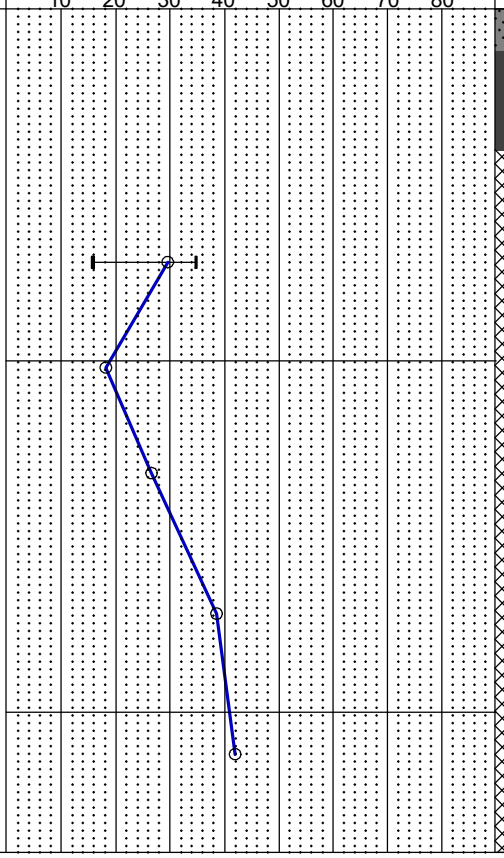
CLIENT: **City of Winnipeg**
PROJECT: **2024 Local Street Renewals**
LOCATION: **Weatherdon Avenue**
DATE BORED: **January 09 2024**

PROJECT NO.: **123316853**
BH ELEVATION: **N/A**
DATUM: **N/A**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		Stiff black fat **CLAY (CH)**						
1		Soft tan lean **CLAY (CL)**		AS				Sieve/Hydro at 0.7 m G S M C 0% 6% 66% 28%
				AS				
				AS				
2		Firm brown fat **CLAY (CH)**		AS				
3								
4								

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

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



BACKFILL

End of Borehole
- Borehole terminated at a depth of 2.400 m.
- No groundwater seepage or soil sloughing was observed during or upon completion of drilling.
- Borehole backfilled with auger cuttings and bentonite chips.
- Borehole surface pa

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

Drilling Contractor: Paddock Drilling Ltd.
Drilling Method: 125 mm SSA
Completion Depth: 2.4 m

Logged By: GP
Reviewed By: GB
Page 1 of 1

Printed Feb 8 2024 17:14:56 SOIL 123316853-2024_LOCAL_STREET_RENEWALS.GPJ NEW TEMPLATE TEST PROJECT.GPJ 2/8/24

Stantec

BOREHOLE RECORD

BH-77

CLIENT: **City of Winnipeg**
PROJECT: **2024 Local Street Renewals**
LOCATION: **Weatherdon Avenue**
DATE BORED: **January 09 2024**

PROJECT NO.: **123316853**
BH ELEVATION: **N/A**
DATUM: **N/A**
WATER LEVEL: **N/A**

DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (MUSCS)	STRATA PLOT	SAMPLES TYPE	SAMPLES NUMBER	SAMPLES RECOVERY (mm) or TCR %	SAMPLES N-VALUE or RQD %	OTHER TESTS / REMARKS
0		**ASPHALT**						
		Stiff black fat **CLAY (CH)**		AS				Sieve/Hydro at 0.7 m G 0% S 2% M 19% C 80%
1				AS				
				AS				
2				AS				
				AS				
3		**End of Borehole** • Borehole terminated at a depth of 2.400 m. • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Borehole backfilled with auger cuttings and bentonite chips. • Borehole surface pa						
4								

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

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

BACKFILL

ELEVATION (m)

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

Drilling Contractor: Paddock Drilling Ltd.
Drilling Method: 125 mm SSA
Completion Depth: 2.4 m

Logged By: GP
Reviewed By: GB
Page 1 of 1

APPENDIX D

Core Photographs

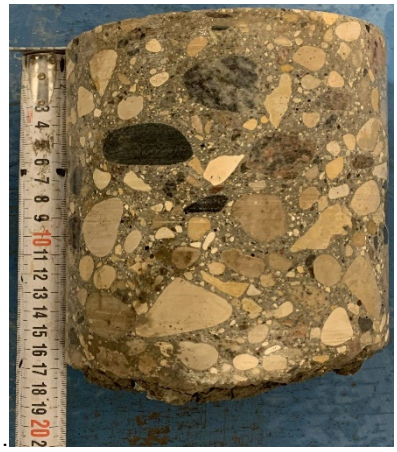


Figure 1 – Core No. 63 (Dunraven Ave)

Figure 2 – Core No. 64 (Dunraven Ave)

Figure 3 – Core No. 65 (Dunraven Ave)

Figure 4 – Core No. 66 (Overton St)

Figure 5 – Core No. 67 (Overton St)

Figure 6 – Core No. 68 (Overton St)

Figure 7 – Core No. 69 (Blenheim Ave)

Figure 8 – Core No. 70 (Blenheim Ave)

Figure 9 – Core No. 71 (Blenheim Ave)

Figure 10 – Core No. 72 (Blenheim Ave)

Figure 11 – Core No. 73 (Weatherdon Ave)

Figure 12 – Core No. 74 (Weatherdon Ave)

Figure 13 – Core No. 75 (Weatherdon Ave)

Figure 14 – Core No. 76 (Weatherdon Ave)

Figure 15 – Core No. 77 (Weatherdon Ave)

Figure 16 – Core No. 78 (Sadler Ave)

Figure 17 – Core No. 79 (Sadler Ave)

Figure 18 – Core No. 80 (Sadler Ave)

APPENDIX E

Laboratory Test Reports

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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 1

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.19
TESTED BY: Carson Cockwell

MATERIAL IDENTIFICATION

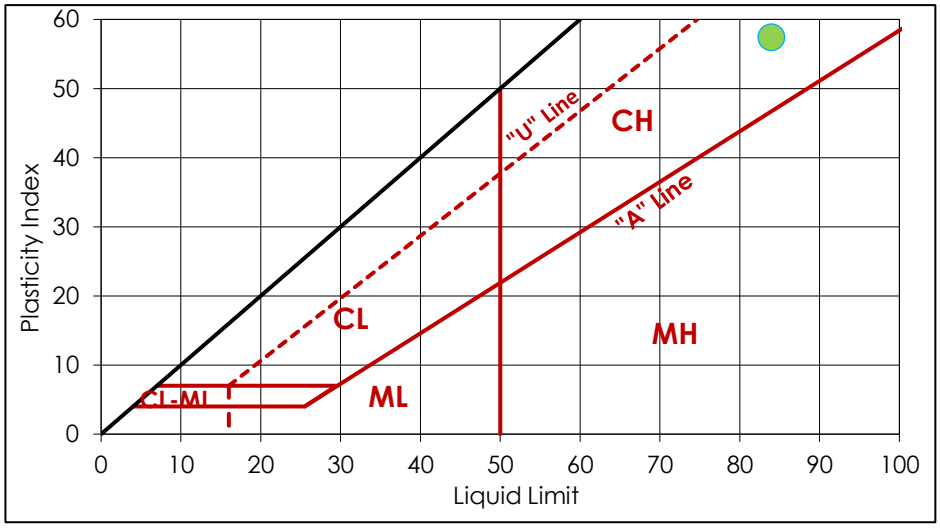
CLIENT FIELD ID BH-63, 765 mm

STANTEC SAMPLE NO. 2946

LIQUID LIMIT		
TRIAL	1	2
BLOWS	26	28
MC (%)	81	85

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	26	27

LIQUID LIMIT, LL	84
PLASTIC LIMIT, PL	27
PLASTICITY INDEX, PI	57
AS REC'D MC (%)	38.40



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 2

DATE SAMPLED: 2024.Jan.16
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.31
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

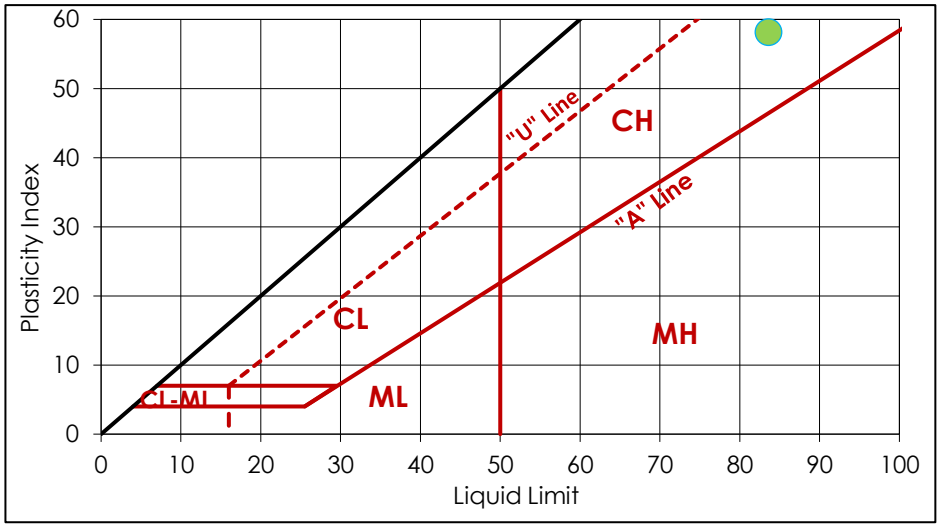
CLIENT FIELD ID BH-64, 740 mm

STANTEC SAMPLE NO. 2989

LIQUID LIMIT		
TRIAL	1	2
BLOWS	26	25
MC (%)	88	79

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	26	25

LIQUID LIMIT, LL	84
PLASTIC LIMIT, PL	25
PLASTICITY INDEX, PI	58
AS REC'D MC (%)	37.40



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 3

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.19
TESTED BY: Carson Cockwell

MATERIAL IDENTIFICATION

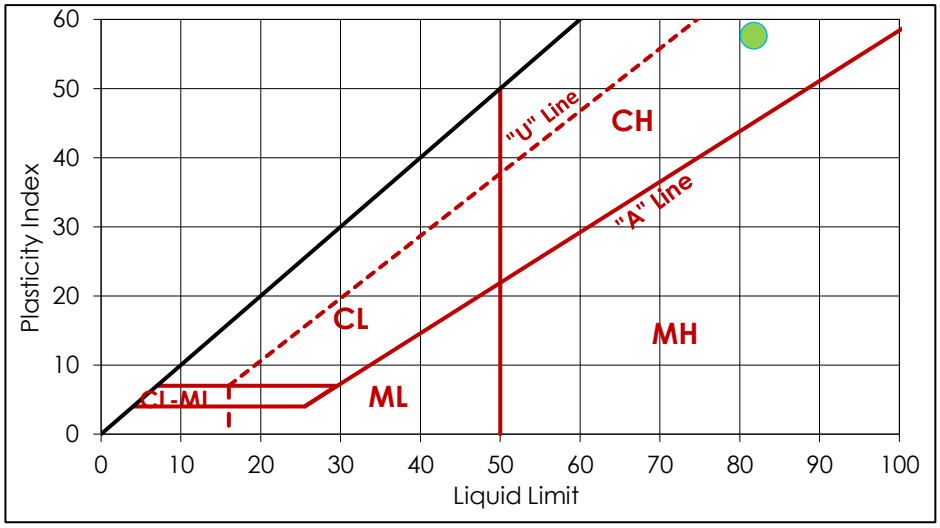
CLIENT FIELD ID BH-65, 750 mm

STANTEC SAMPLE NO. 2947

LIQUID LIMIT		
TRIAL	1	2
BLOWS	28	26
MC (%)	81	81

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	23	25

LIQUID LIMIT, LL	82
PLASTIC LIMIT, PL	24
PLASTICITY INDEX, PI	58
AS REC'D MC (%)	32.60



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 4

DATE SAMPLED: 2024.Jan.16
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.30
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

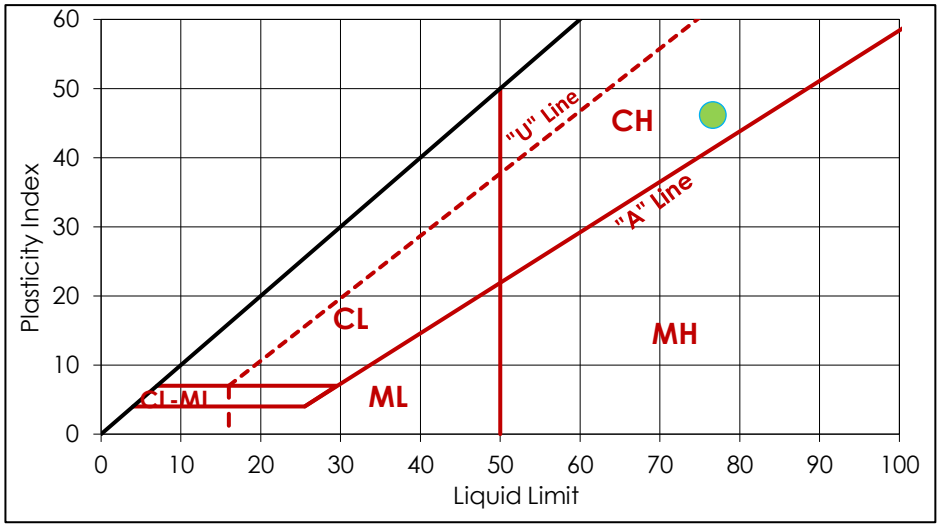
CLIENT FIELD ID BH-66, 750 mm

STANTEC SAMPLE NO. 2990

LIQUID LIMIT		
TRIAL	1	2
BLOWS	22	21
MC (%)	78	78

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	30	31

LIQUID LIMIT, LL	77
PLASTIC LIMIT, PL	31
PLASTICITY INDEX, PI	46
AS REC'D MC (%)	38.10



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 5

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.19
TESTED BY: Carson Cockwell

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-67, 740 mm

STANTEC SAMPLE NO. 2948

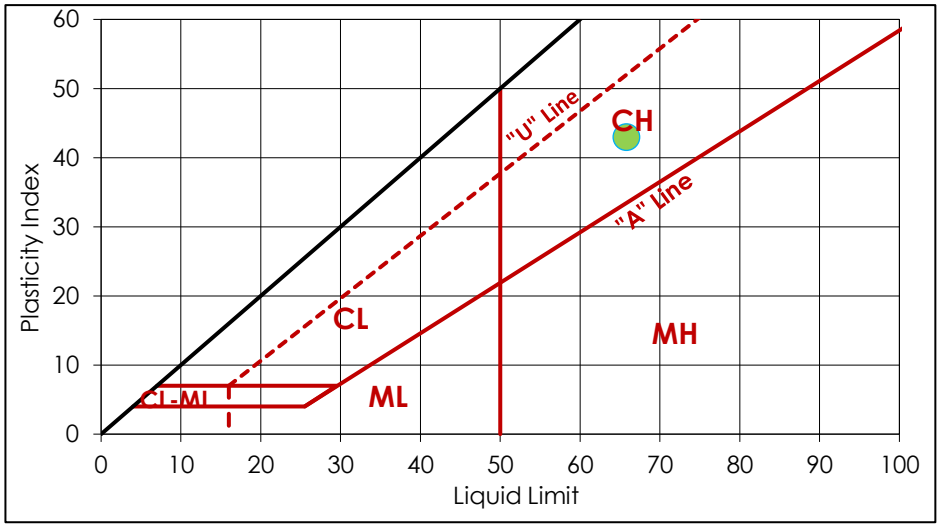
LIQUID LIMIT

TRIAL	1	2
BLOWS	20	20
MC (%)	68	67

PLASTIC LIMIT

TRIAL	1	2
MC (%)	22	23

LIQUID LIMIT, LL	66
PLASTIC LIMIT, PL	23
PLASTICITY INDEX, PI	43
AS REC'D MC (%)	30.90



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 6

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.22
TESTED BY: Carson Cockwell

MATERIAL IDENTIFICATION

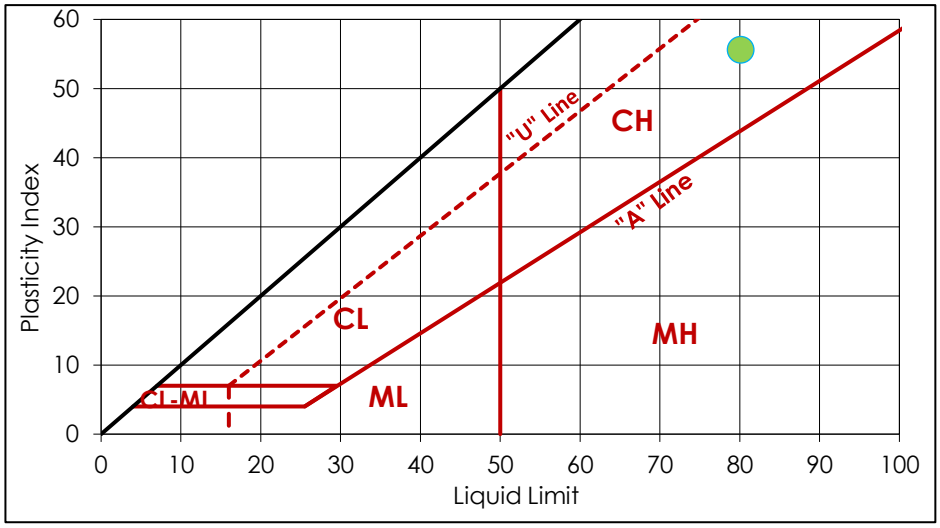
CLIENT FIELD ID BH-68, 750 mm

STANTEC SAMPLE NO. 2949

LIQUID LIMIT		
TRIAL	1	2
BLOWS	24	26
MC (%)	80	80

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	24	25

LIQUID LIMIT, LL	80
PLASTIC LIMIT, PL	25
PLASTICITY INDEX, PI	56
AS REC'D MC (%)	36.90



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 7

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.22
TESTED BY: Carson Cockwell

MATERIAL IDENTIFICATION

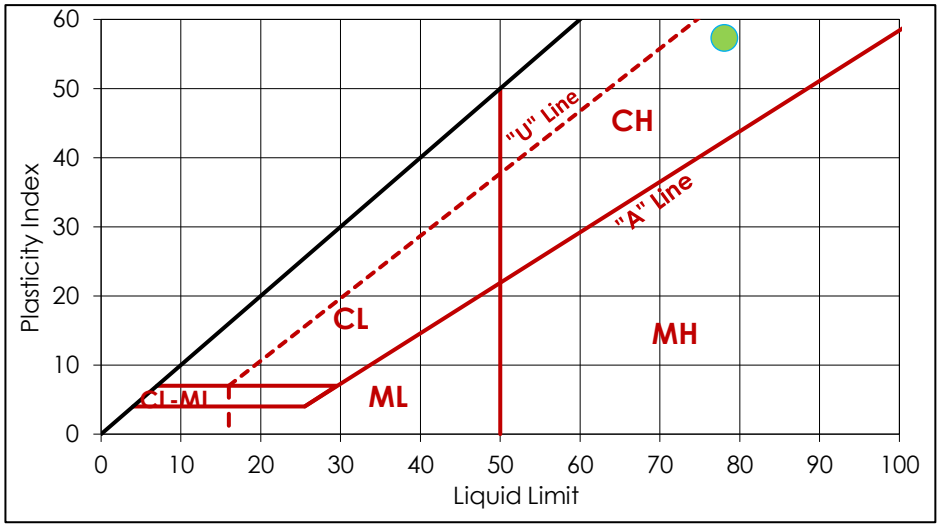
CLIENT FIELD ID BH-69, 855 mm

STANTEC SAMPLE NO. 2950

LIQUID LIMIT		
TRIAL	1	2
BLOWS	21	23
MC (%)	80	79

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	20	22

LIQUID LIMIT, LL	78
PLASTIC LIMIT, PL	21
PLASTICITY INDEX, PI	57
AS REC'D MC (%)	33.50



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 8

DATE SAMPLED: 2024.Jan.16
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.30
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

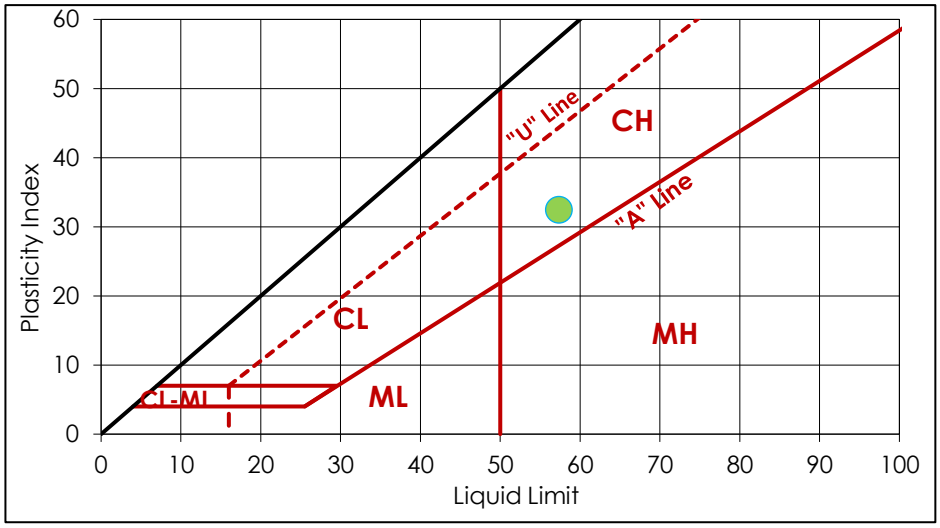
CLIENT FIELD ID BH-70, 805 mm

STANTEC SAMPLE NO. 2991

LIQUID LIMIT		
TRIAL	1	2
BLOWS	24	24
MC (%)	66	49

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	25	25

LIQUID LIMIT, LL	57
PLASTIC LIMIT, PL	25
PLASTICITY INDEX, PI	32
AS REC'D MC (%)	32.10



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 9

DATE SAMPLED: 2024.Jan.16
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.30
TESTED BY: Madison Murphy

MATERIAL IDENTIFICATION

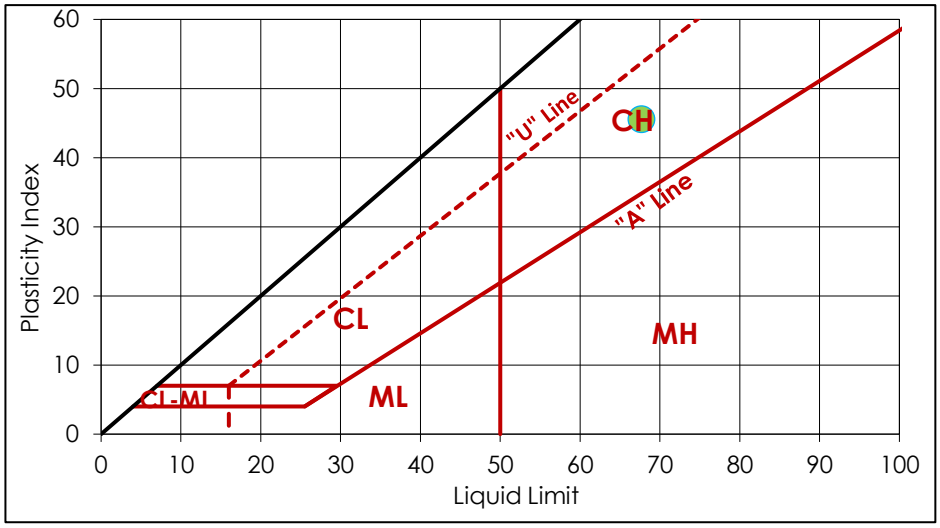
CLIENT FIELD ID BH-71, 800 mm

STANTEC SAMPLE NO. 2992

LIQUID LIMIT		
TRIAL	1	2
BLOWS	27	28
MC (%)	67	67

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	22	22

LIQUID LIMIT, LL	68
PLASTIC LIMIT, PL	22
PLASTICITY INDEX, PI	46
AS REC'D MC (%)	32.20



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 10

DATE SAMPLED: 2024.Jan.16
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.30
TESTED BY: Madison Murphy

MATERIAL IDENTIFICATION

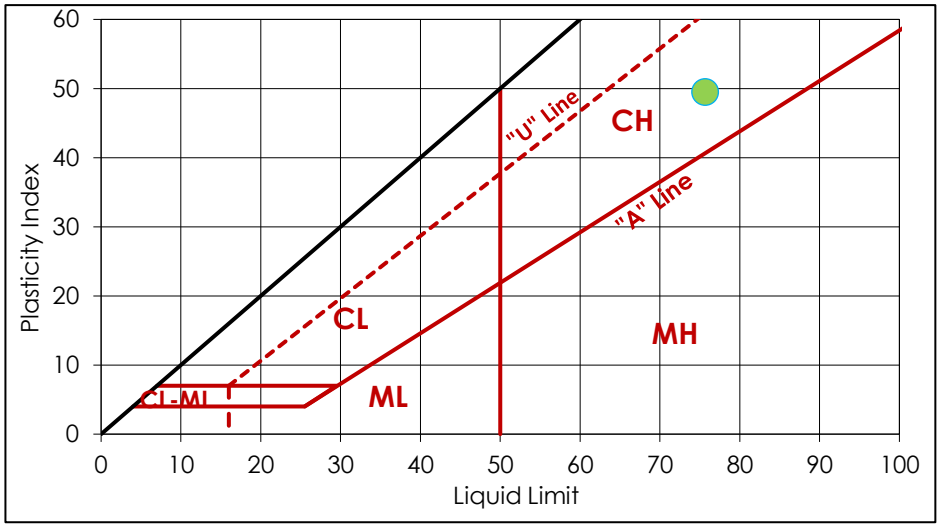
CLIENT FIELD ID BH-72, 800 mm

STANTEC SAMPLE NO. 2993

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

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	26	26

LIQUID LIMIT, LL	76
PLASTIC LIMIT, PL	26
PLASTICITY INDEX, PI	49
AS REC'D MC (%)	33.30



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 11

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.22
TESTED BY: Carson Cockwell

MATERIAL IDENTIFICATION

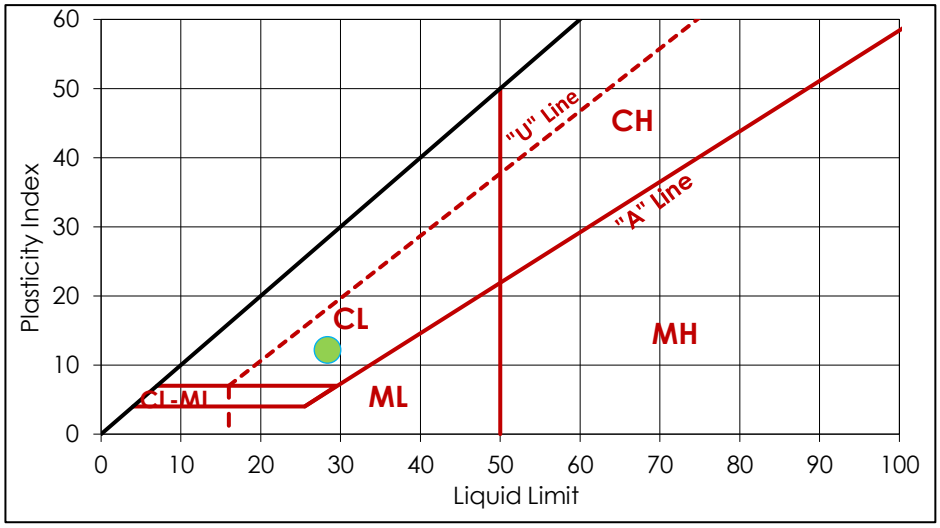
CLIENT FIELD ID BH-73, 825 mm

STANTEC SAMPLE NO. 2951

LIQUID LIMIT		
TRIAL	1	2
BLOWS	21	21
MC (%)	29	29

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	16	16

LIQUID LIMIT, LL	28
PLASTIC LIMIT, PL	16
PLASTICITY INDEX, PI	12
AS REC'D MC (%)	20.30



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 12

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.22
TESTED BY: Carson Cockwell

MATERIAL IDENTIFICATION

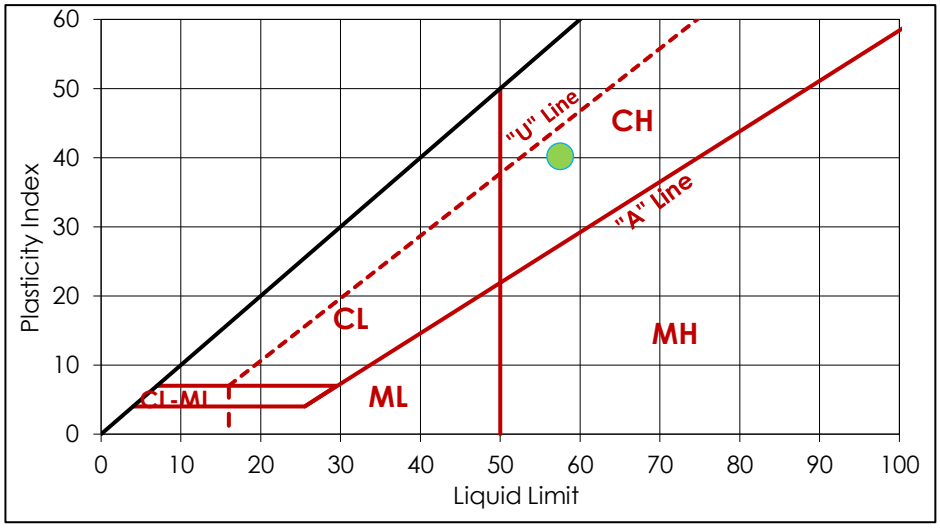
CLIENT FIELD ID BH-74, 825 mm

STANTEC SAMPLE NO. 2952

LIQUID LIMIT		
TRIAL	1	2
BLOWS	21	20
MC (%)	59	59

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	18	17

LIQUID LIMIT, LL	58
PLASTIC LIMIT, PL	17
PLASTICITY INDEX, PI	40
AS REC'D MC (%)	28.70



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 13

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.22
TESTED BY: Carson Cockwell

MATERIAL IDENTIFICATION

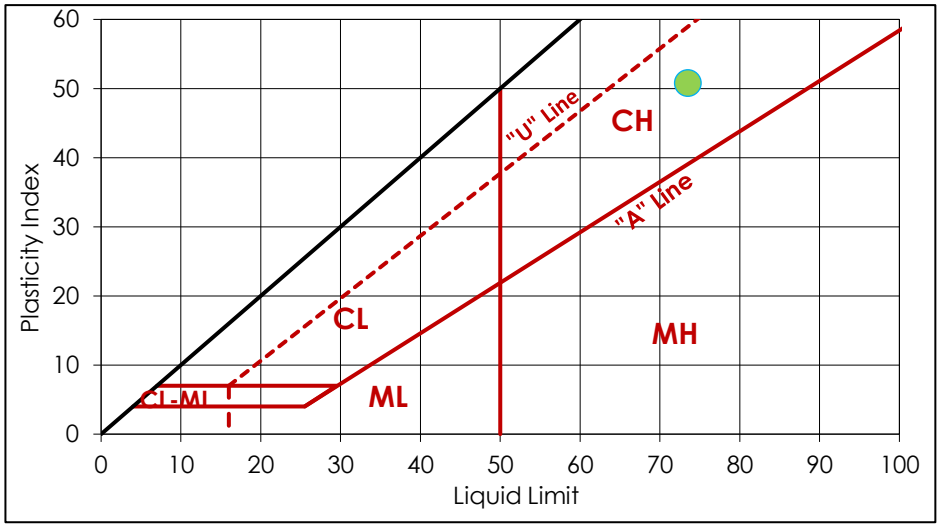
CLIENT FIELD ID BH-75, 850 mm

STANTEC SAMPLE NO. 2953

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

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	22	23

LIQUID LIMIT, LL	74
PLASTIC LIMIT, PL	23
PLASTICITY INDEX, PI	51
AS REC'D MC (%)	36.80



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 14

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.22
TESTED BY: Carson Cockwell

MATERIAL IDENTIFICATION

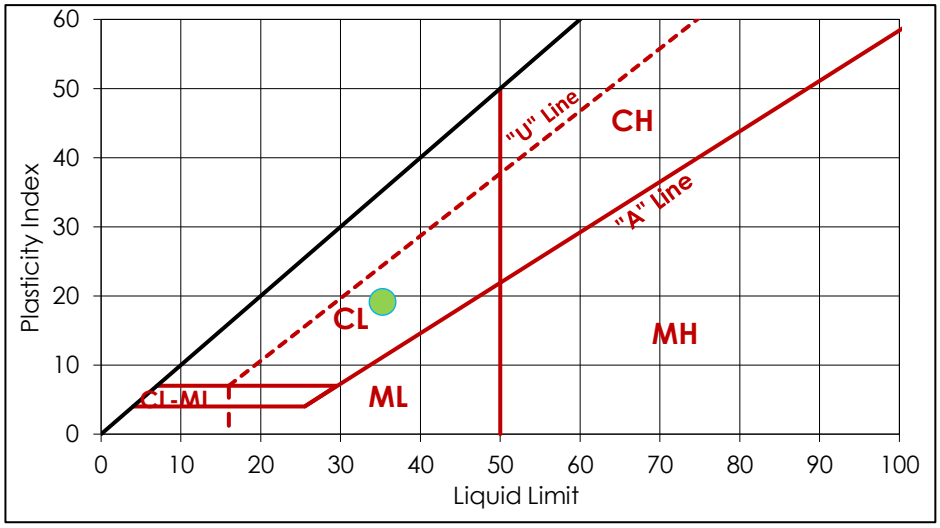
CLIENT FIELD ID BH-76, 720 mm

STANTEC SAMPLE NO. 2954

LIQUID LIMIT		
TRIAL	1	2
BLOWS	29	28
MC (%)	35	34

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	16	16

LIQUID LIMIT, LL	35
PLASTIC LIMIT, PL	16
PLASTICITY INDEX, PI	19
AS REC'D MC (%)	30.10



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 15

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.19
TESTED BY: Carson Cockwell

MATERIAL IDENTIFICATION

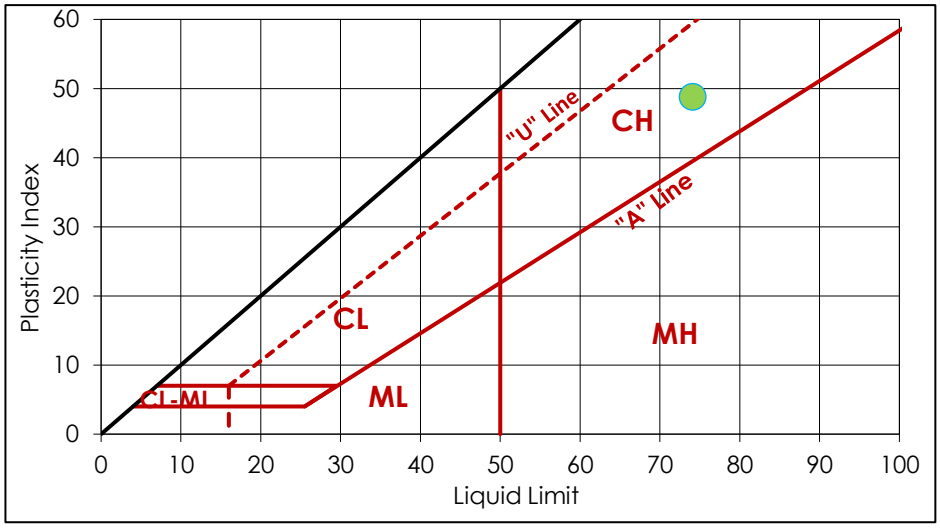
CLIENT FIELD ID BH-77, 740 mm

STANTEC SAMPLE NO. 2955

LIQUID LIMIT		
TRIAL	1	2
BLOWS	29	27
MC (%)	73	73

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	25	25

LIQUID LIMIT, LL	74
PLASTIC LIMIT, PL	25
PLASTICITY INDEX, PI	49
AS REC'D MC (%)	33.10



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 3P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 1

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

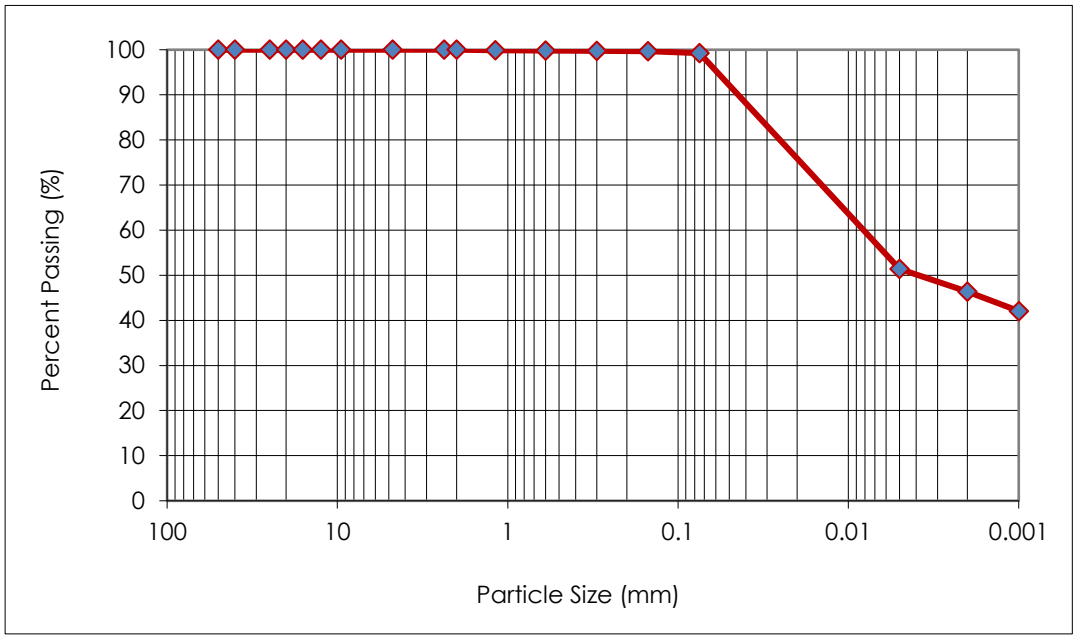
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.15
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-63, 765 mm

STANTEC SAMPLE NO. 2946



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	99.8
0.300	99.8
0.150	99.7
0.075	99.2
0.005	51.4
0.002	46.3
0.001	42.1

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.2	0.6	52.9	46.3	42.1

COMMENTS
No comments.

REPORT DATE 2024.Jan.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 D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

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

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 2

DATE SAMPLED: 2024.Jan.16
SAMPLED BY: Stantec Consulting Ltd.

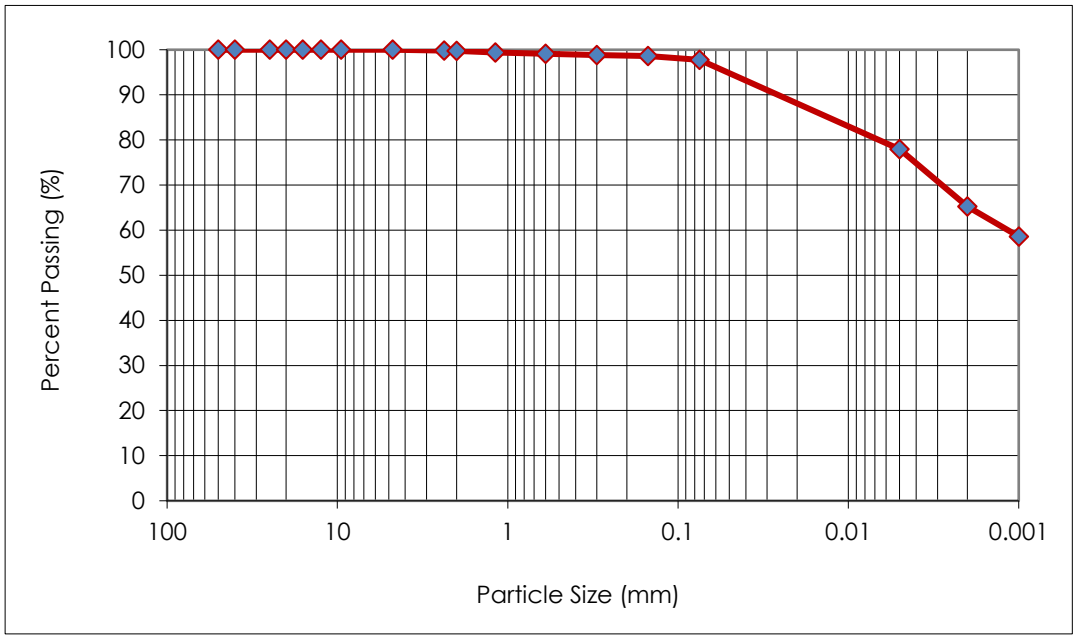
DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.19
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-64, 740 mm

STANTEC SAMPLE NO. 2989



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	99.4
0.600	99.1
0.300	98.8
0.150	98.6
0.075	97.8
0.005	77.9
0.002	65.2
0.001	58.6

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.3	0.8	1.1	32.6	65.2	58.6

COMMENTS
No comments.

REPORT DATE 2024.Jan.22

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

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

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

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

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 3

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

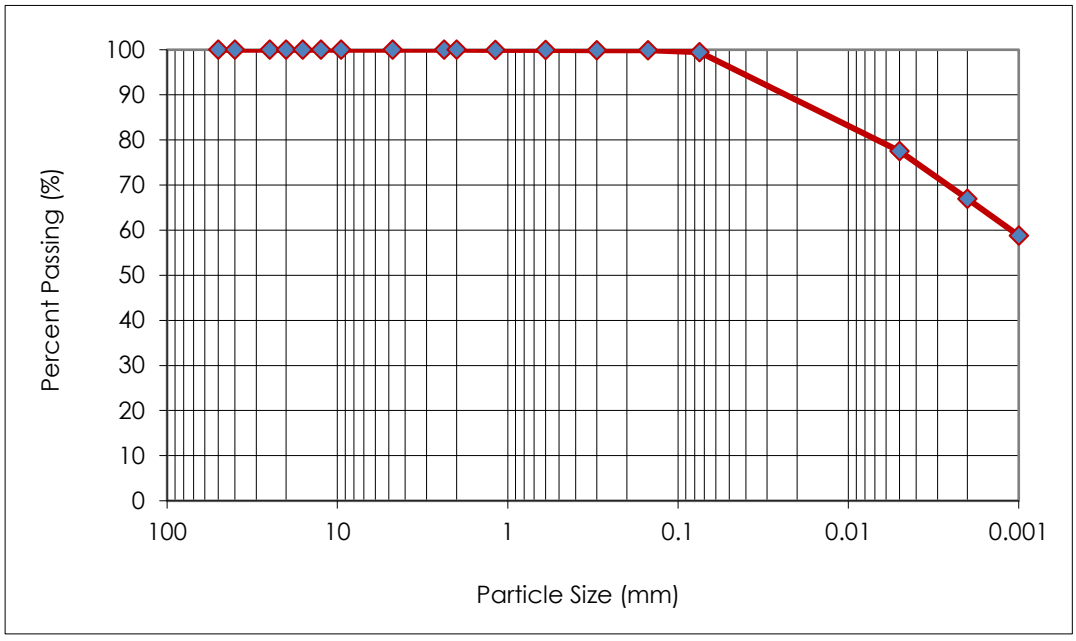
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.15
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-65, 750 mm

STANTEC SAMPLE NO. 2947



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	99.9
0.150	99.9
0.075	99.5
0.005	77.5
0.002	67.0
0.001	58.8

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.1	0.4	32.5	67.0	58.8

COMMENTS
No comments.

REPORT DATE 2024.Jan.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 D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

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

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 4

DATE SAMPLED: 2024.Jan.16
SAMPLED BY: Stantec Consulting Ltd.

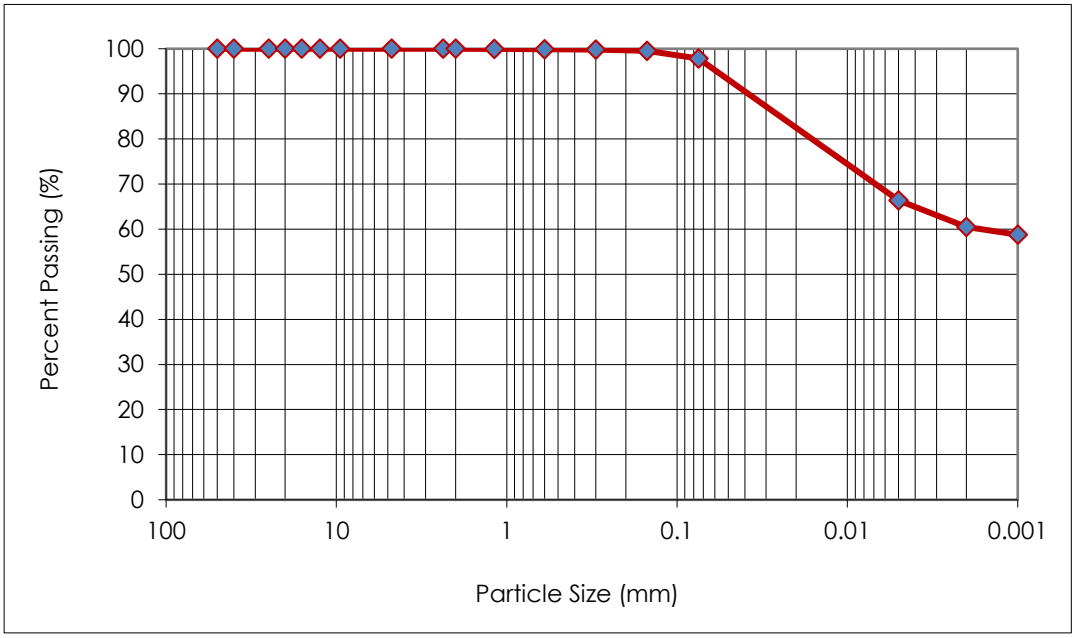
DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.19
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-66, 750 mm

STANTEC SAMPLE NO. 2990



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	99.5
0.075	97.8
0.005	66.4
0.002	60.5
0.001	58.8

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.1	2.1	37.3	60.5	58.8

COMMENTS
No comments.

REPORT DATE 2024.Jan.22

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

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

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

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

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 5

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

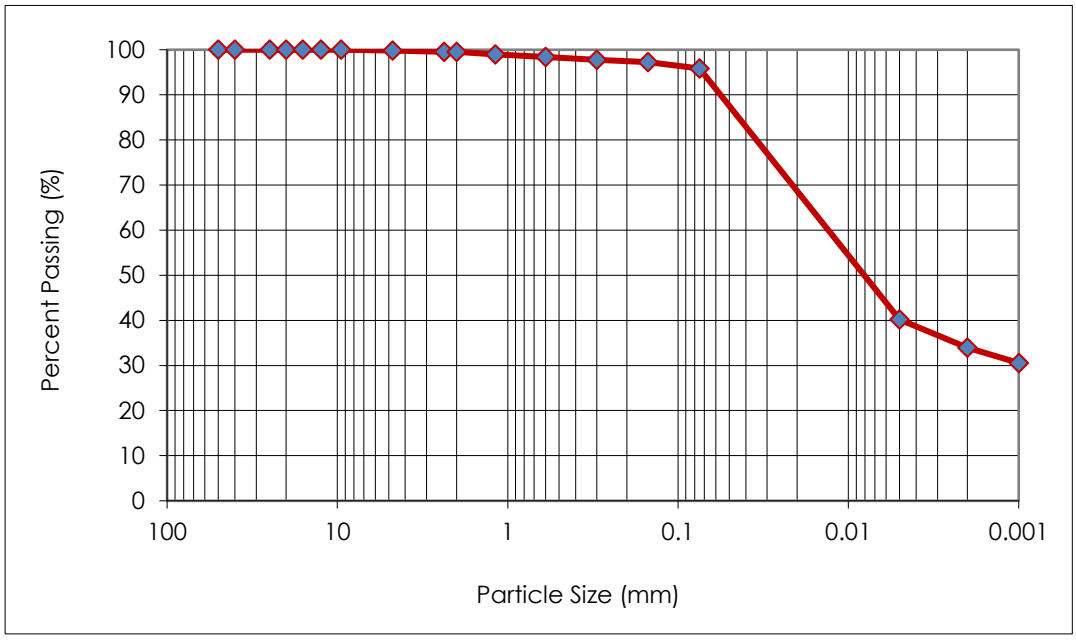
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.15
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-67, 740 mm

STANTEC SAMPLE NO. 2948



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	99.8
2.36	99.5
2.00	99.5
1.18	99.0
0.600	98.4
0.300	97.8
0.150	97.3
0.075	95.9
0.005	40.2
0.002	33.9
0.001	30.6

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.2	0.3	1.5	2.1	62.0	33.9	30.6

COMMENTS
No comments.

REPORT DATE 2024.Jan.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 D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

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

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 6

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

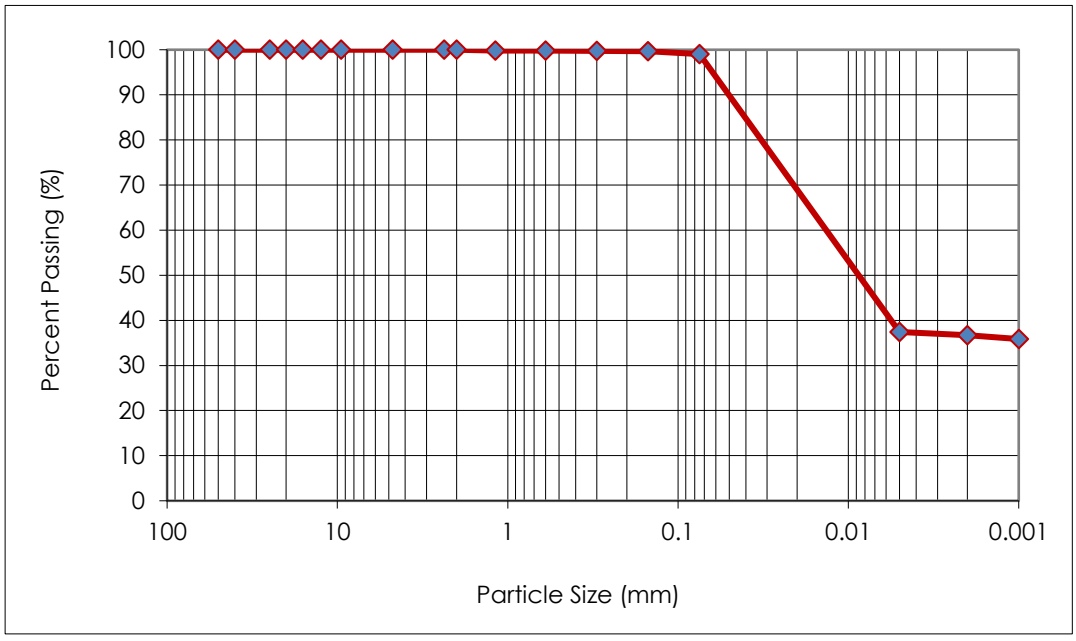
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.15
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-68, 750 mm

STANTEC SAMPLE NO. 2949



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	99.8
0.600	99.8
0.300	99.8
0.150	99.7
0.075	99.1
0.005	37.4
0.002	36.7
0.001	35.9

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.2	0.7	62.4	36.7	35.9

COMMENTS
No comments.

REPORT DATE 2024.Jan.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 D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

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

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 7

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

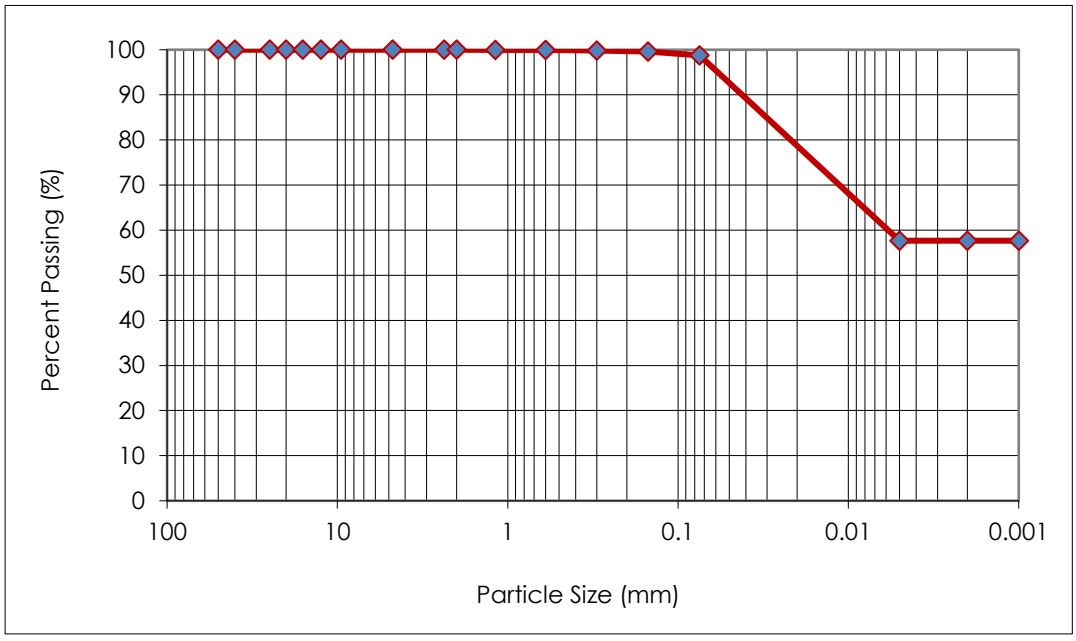
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.15
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-69, 855 mm

STANTEC SAMPLE NO. 2950



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	99.6
0.075	98.8
0.005	57.7
0.002	57.7
0.001	57.7

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.1	1.1	41.1	57.7	57.7

COMMENTS
No comments.

REPORT DATE 2024.Jan.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 D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

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

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 8

DATE SAMPLED: 2024.Jan.16
SAMPLED BY: Stantec Consulting Ltd.

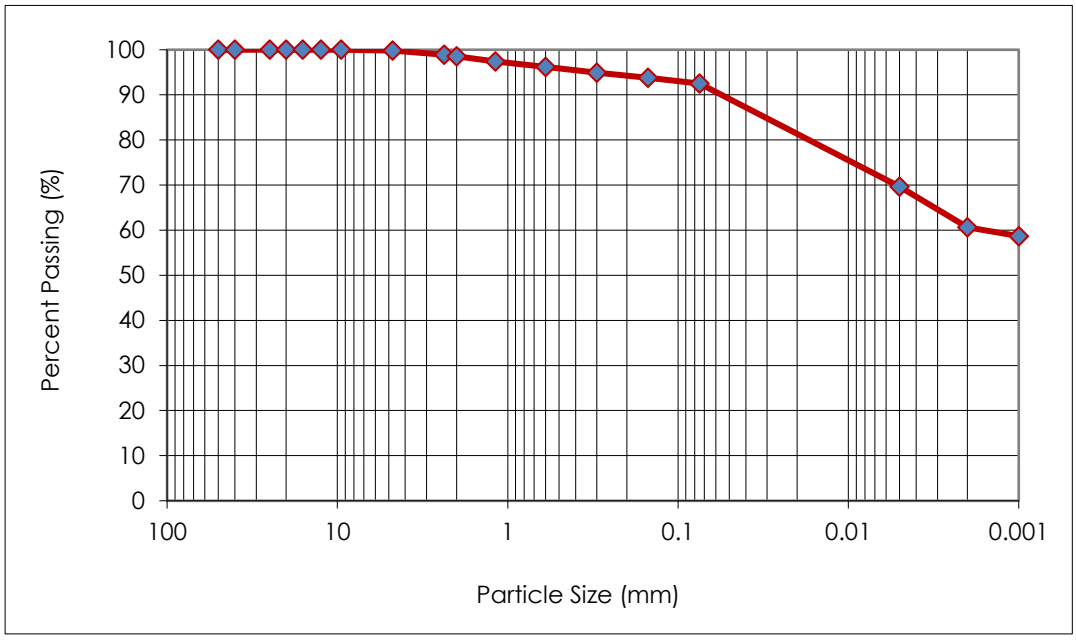
DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.19
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-70, 805 mm

STANTEC SAMPLE NO. 2991



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	99.8
2.36	98.9
2.00	98.5
1.18	97.4
0.600	96.2
0.300	94.9
0.150	93.8
0.075	92.5
0.005	69.6
0.002	60.6
0.001	58.7

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.2	1.3	3.0	3.0	31.9	60.6	58.7

COMMENTS
No comments.

REPORT DATE 2024.Jan.22

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

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

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

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

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 9

DATE SAMPLED: 2024.Jan.16
SAMPLED BY: Stantec Consulting Ltd.

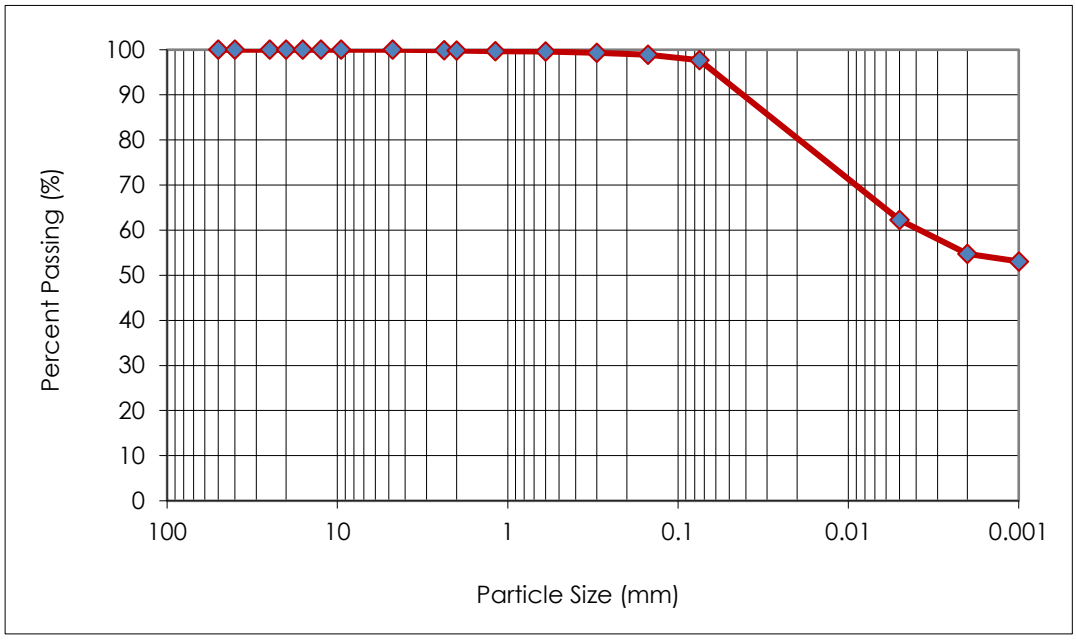
DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.19
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-71, 800 mm

STANTEC SAMPLE NO. 2992



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	99.9
2.00	99.8
1.18	99.7
0.600	99.6
0.300	99.3
0.150	98.9
0.075	97.7
0.005	62.3
0.002	54.8
0.001	53.1

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.2	0.4	1.7	42.9	54.8	53.1

COMMENTS
No comments.

REPORT DATE 2024.Jan.22

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

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

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

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

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 10

DATE SAMPLED: 2024.Jan.16
SAMPLED BY: Stantec Consulting Ltd.

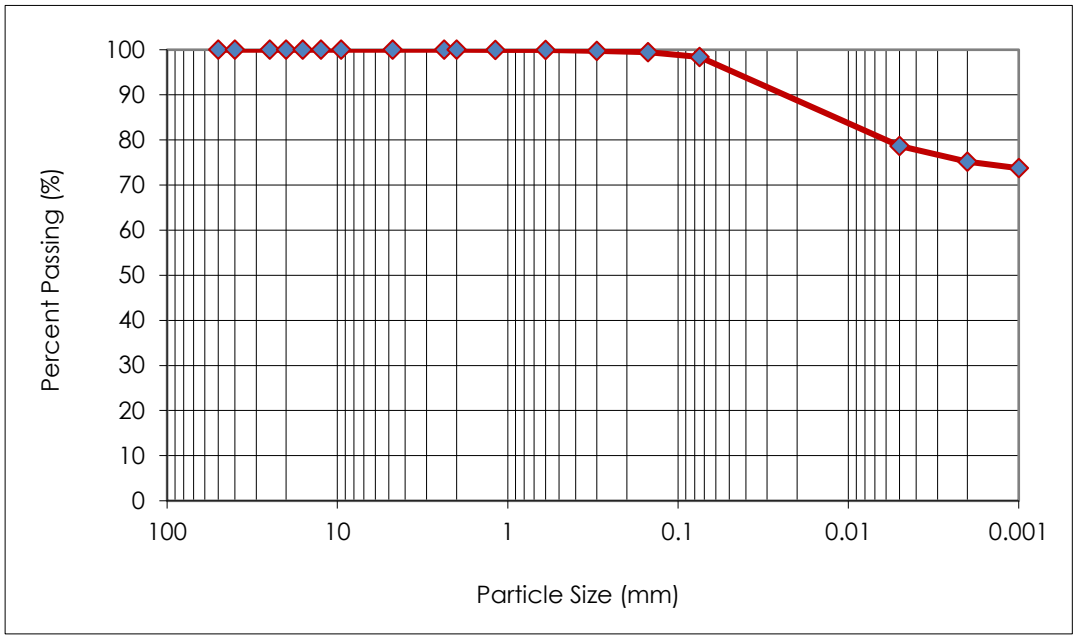
DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.19
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-72, 800 mm

STANTEC SAMPLE NO. 2993



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	100.0
0.600	99.9
0.300	99.7
0.150	99.5
0.075	98.4
0.005	78.7
0.002	75.2
0.001	73.7

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.2	1.4	23.2	75.2	73.7

COMMENTS
No comments.

REPORT DATE 2024.Jan.22

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

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

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

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

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 11

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

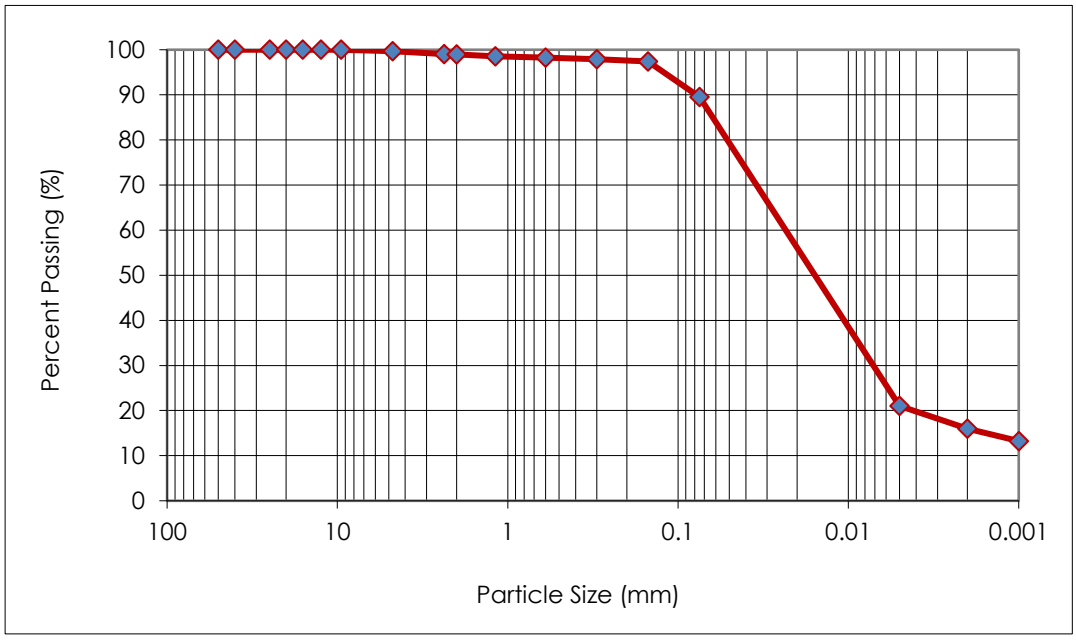
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.15
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-73, 825 mm

STANTEC SAMPLE NO. 2951



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	99.7
2.36	99.1
2.00	99.0
1.18	98.6
0.600	98.2
0.300	97.9
0.150	97.4
0.075	89.5
0.005	21.0
0.002	16.0
0.001	13.2

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.3	0.7	1.0	8.5	73.5	16.0	13.2

COMMENTS
No comments.

REPORT DATE 2024.Jan.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 D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

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

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 12

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

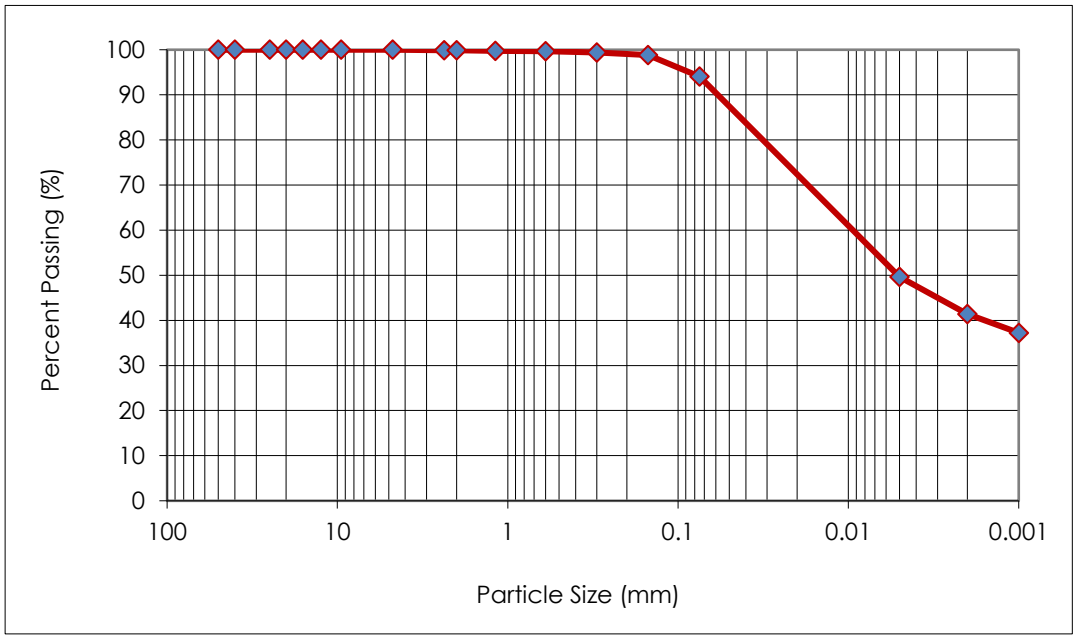
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.15
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-74, 825 mm

STANTEC SAMPLE NO. 2952



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	99.9
2.00	99.9
1.18	99.8
0.600	99.7
0.300	99.4
0.150	98.8
0.075	94.1
0.005	49.6
0.002	41.4
0.001	37.2

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.1	0.4	5.4	52.7	41.4	37.2

COMMENTS
No comments.

REPORT DATE 2024.Jan.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 D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

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

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 13

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

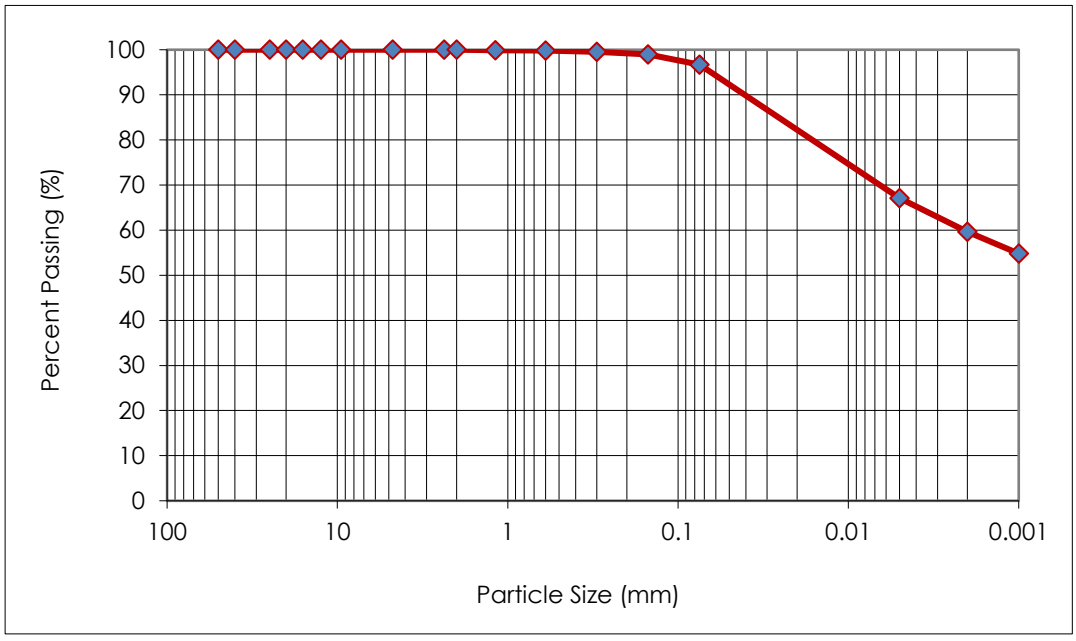
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.15
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-75, 850 mm

STANTEC SAMPLE NO. 2953



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	99.8
0.300	99.5
0.150	99.0
0.075	96.7
0.005	67.1
0.002	59.6
0.001	54.8

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.4	2.9	37.1	59.6	54.8

COMMENTS
No comments.

REPORT DATE 2024.Jan.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 D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

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

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 14

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

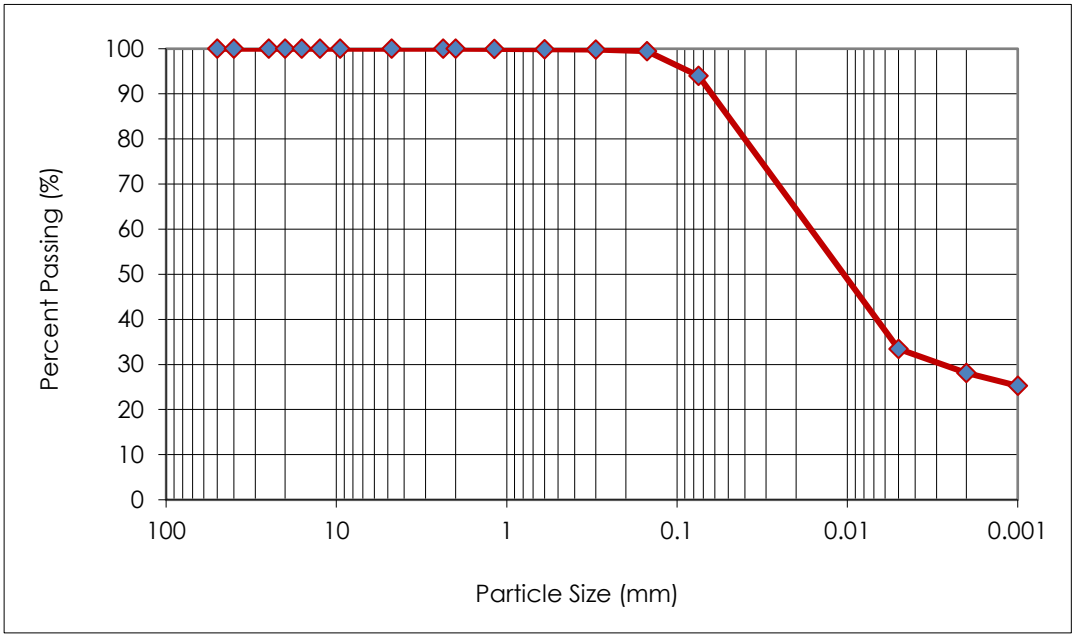
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.15
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-76, 720 mm

STANTEC SAMPLE NO. 2954



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	99.5
0.075	94.0
0.005	33.5
0.002	28.1
0.001	25.3

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.1	5.9	65.9	28.1	25.3

COMMENTS
No comments.

REPORT DATE 2024.Jan.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 D7928 - PARTICLE-SIZE DISTRIBUTION OF FINE-GRAINED SOILS USING THE SEDIMENTATION ANALYSIS

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

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853

REPORT NO. 15

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Stantec Consulting Ltd.

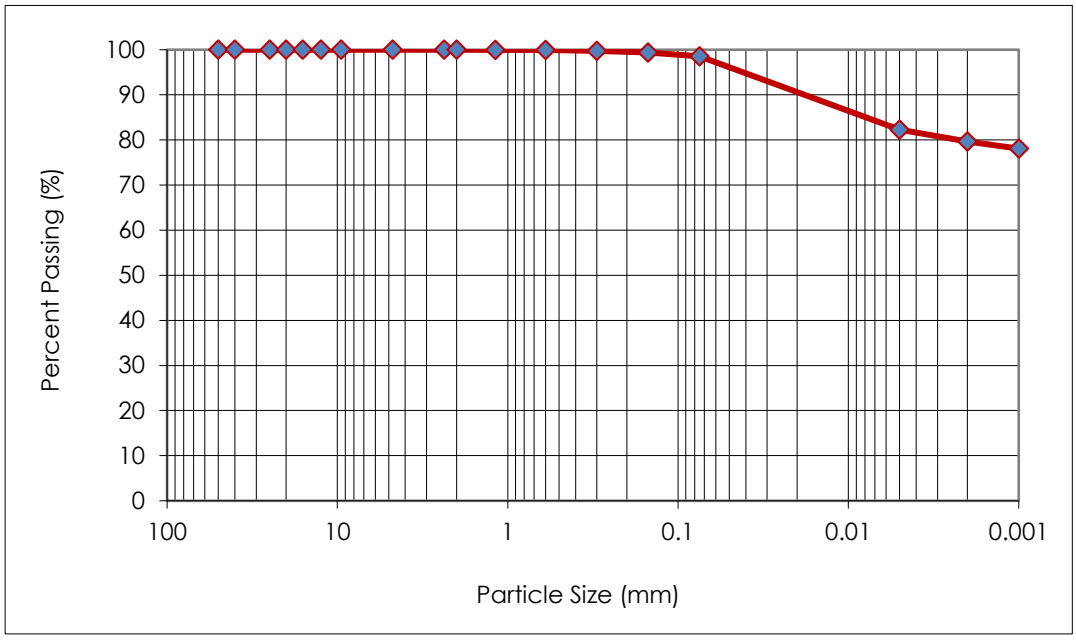
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.15
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-77, 740 mm

STANTEC SAMPLE NO. 2955



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	99.7
0.150	99.4
0.075	98.5
0.005	82.3
0.002	79.6
0.001	78.1

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.2	1.3	18.9	79.6	78.1

COMMENTS
No comments.

REPORT DATE 2024.Jan.18

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

Stantec
199 Henlow Bay
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CERTIFIED BY CCIL

PROCTOR TEST REPORT

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

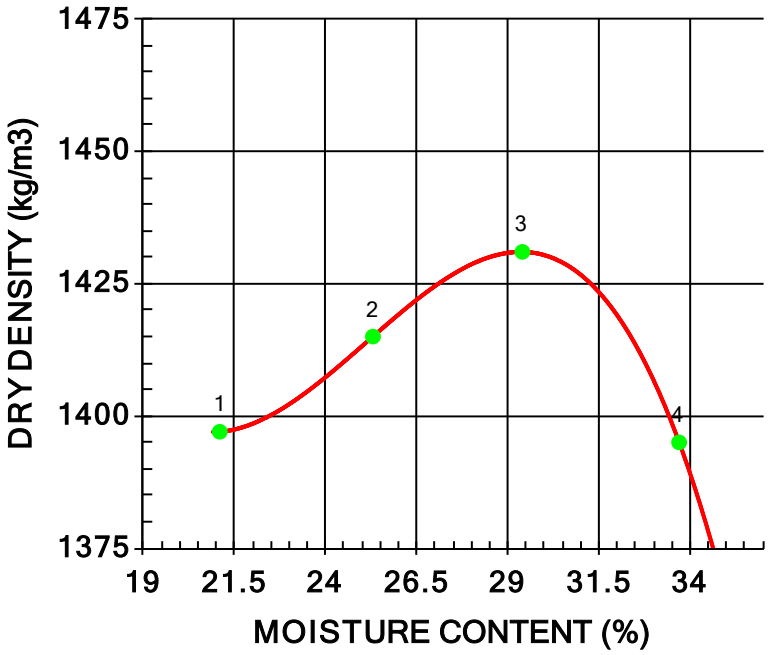
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-4 - Contract 4
PROCTOR NO. 1 DATE SAMPLED 2024.Jan.09 DATE RECEIVED 2024.Jan.09 DATE TESTED 2024.Jan.12

INSITU MOISTURE	28.9 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Madison Murphy		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Backfill		
SIZE	Clay	RAMMER TYPE	Automatic
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Dunraven Ave - BH-63, 0.77 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1692	1397	21.1
2	1773	1415	25.3
3	1852	1431	29.4
4	1865	1395	33.7

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1430	29.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2946.

 2024.Jan.15 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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PROCTOR TEST REPORT

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

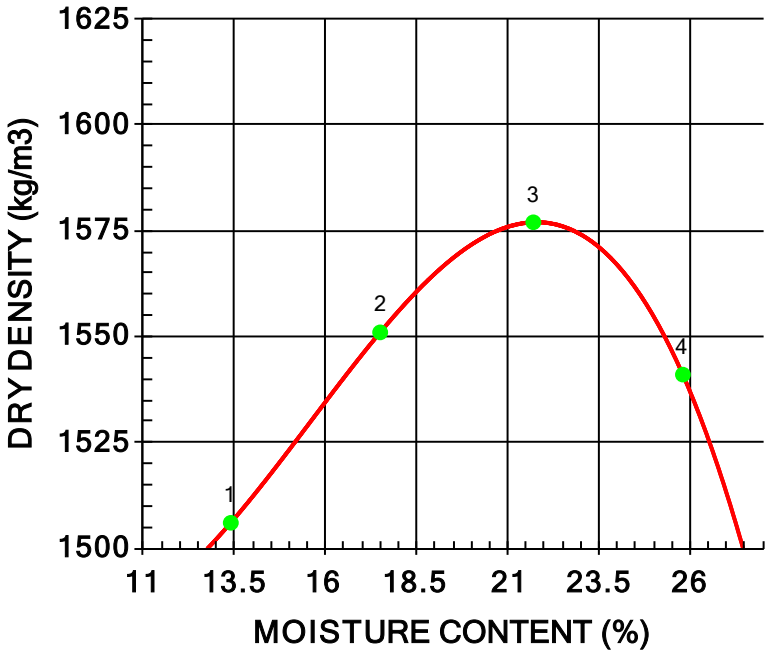
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-4 - Contract 4
PROCTOR NO. 2 DATE SAMPLED 2024.Jan.16 DATE RECEIVED 2024.Jan.16 DATE TESTED 2024.Jan.30

INSITU MOISTURE	31.7 %	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	Clay	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Dunraven Ave - BH-64, 0.74 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1708	1506	13.4
2	1822	1551	17.5
3	1919	1577	21.7
4	1939	1541	25.8

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1580	22.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2989.

 2024.Jan.31 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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CERTIFIED BY CCIL

PROCTOR TEST REPORT

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

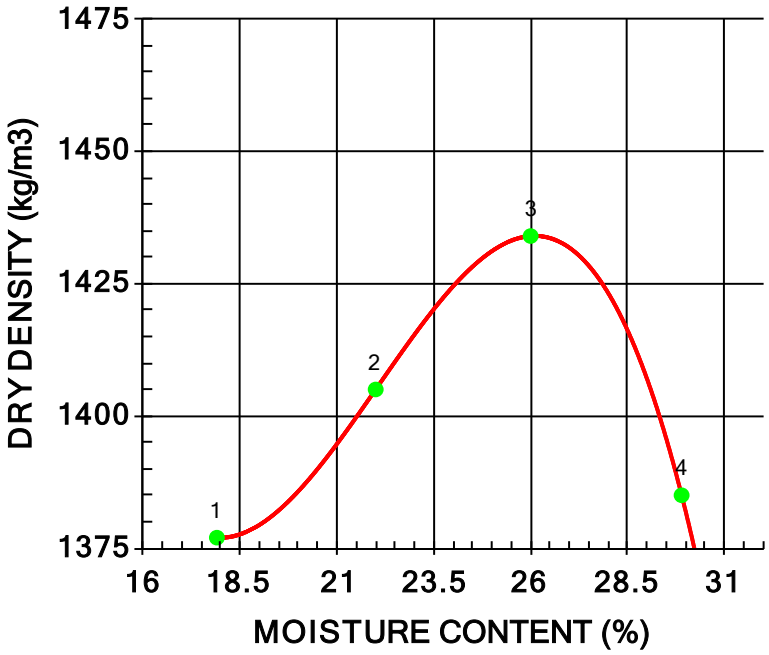
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-4 - Contract 4
PROCTOR NO. 3 DATE SAMPLED 2024.Jan.09 DATE RECEIVED 2024.Jan.09 DATE TESTED 2024.Jan.15

INSITU MOISTURE	34.8 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Backfill		
SIZE	Clay	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Dunraven Ave - BH-65, 0.75 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1623	1377	17.9
2	1714	1405	22.0
3	1807	1434	26.0
4	1799	1385	29.9

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1430	26.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2947.

 2024.Jan.16 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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CERTIFIED BY CCIL

PROCTOR TEST REPORT

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

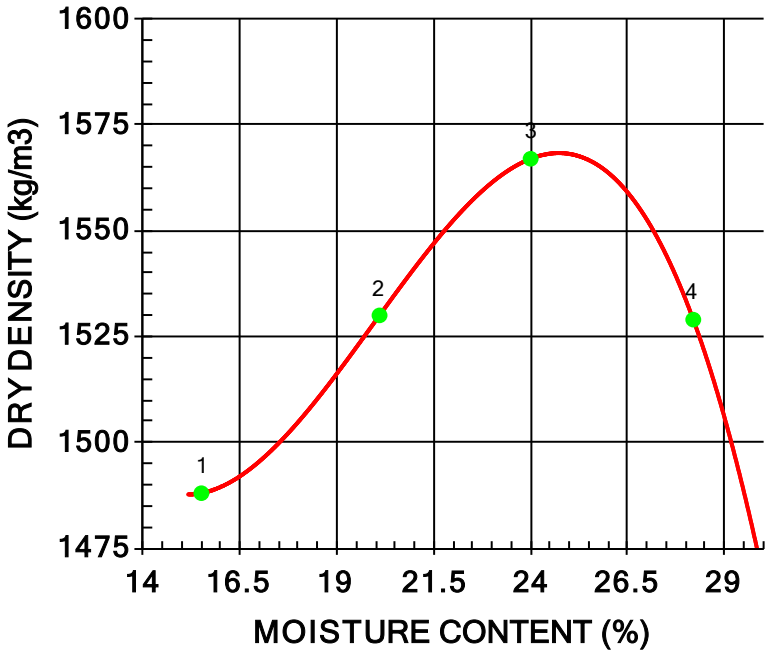
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-4 - Contract 4
PROCTOR NO. 4 DATE SAMPLED 2024.Jan.16 DATE RECEIVED 2024.Jan.16 DATE TESTED 2024.Jan.30

INSITU MOISTURE	38.4 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Pervez Safdar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Clay	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Overton St - BH-66. 0.75 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1719	1488	15.5
2	1837	1530	20.1
3	1943	1567	24.0
4	1960	1529	28.2

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1570	24.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2990.

Page 1 of 1 2024.Jan.31 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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PROCTOR TEST REPORT

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

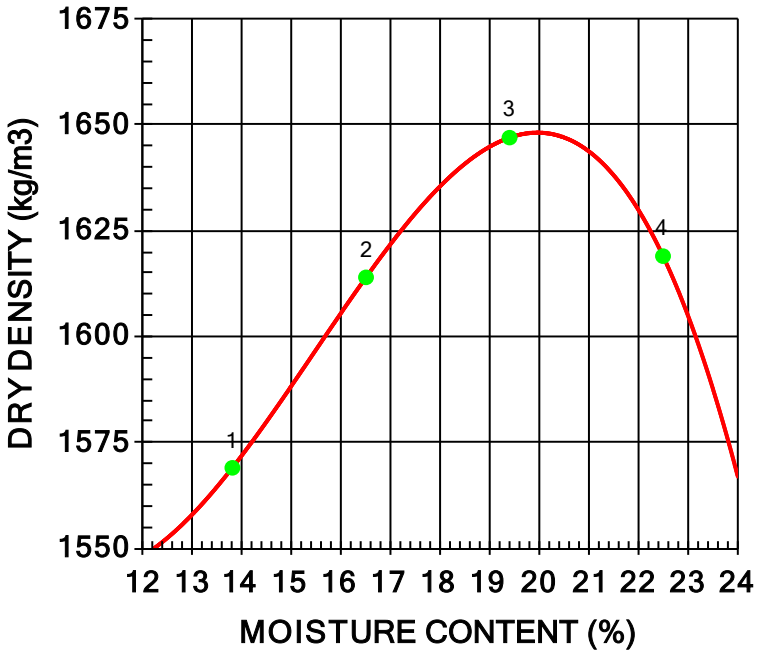
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-4 - Contract 4
PROCTOR NO. 5 DATE SAMPLED 2024.Jan.09 DATE RECEIVED 2024.Jan.09 DATE TESTED 2024.Jan.15

INSITU MOISTURE	24.9 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Backfill		
SIZE	Clay	RAMMER TYPE	Automatic
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Overton St - BH-67, 0.74 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1785	1569	13.8
2	1880	1614	16.5
3	1967	1647	19.4
4	1983	1619	22.5

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1650	20.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2948.

 2024.Jan.16 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

Stantec
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CERTIFIED BY CCIL

PROCTOR TEST REPORT

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

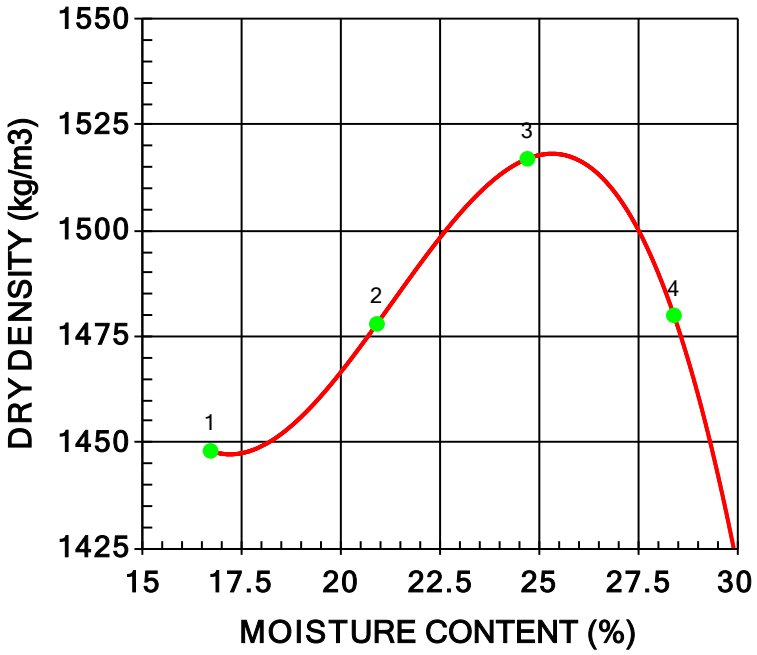
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-4 - Contract 4
PROCTOR NO. 6 DATE SAMPLED 2024.Jan.09 DATE RECEIVED 2024.Jan.09 DATE TESTED 2024.Jan.15

INSITU MOISTURE	32.1 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Backfill		
SIZE	Clay	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Overton St - BH-68, 0.75 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1690	1448	16.7
2	1787	1478	20.9
3	1892	1517	24.7
4	1900	1480	28.4

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1520	25.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2949.

 2024.Jan.16 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

Stantec
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CERTIFIED BY CCIL

PROCTOR TEST REPORT

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

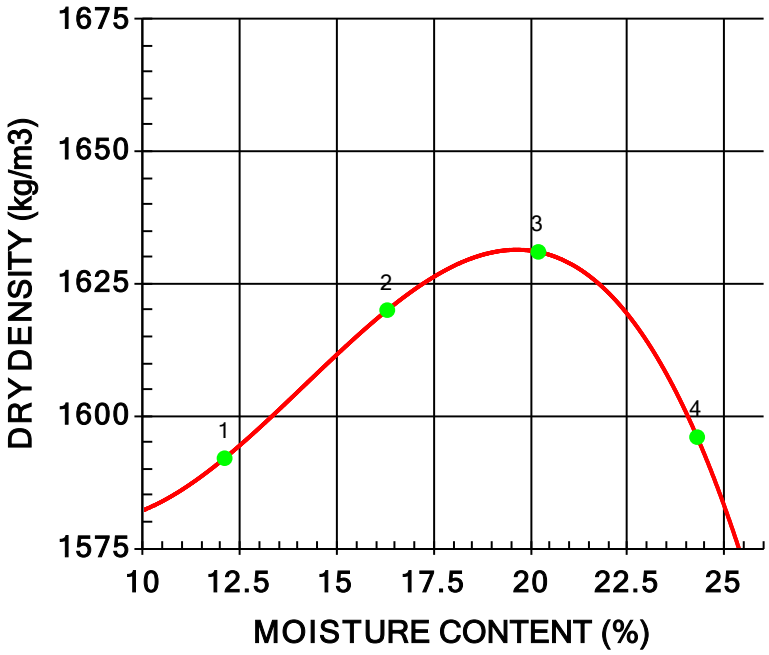
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-4 - Contract 4
PROCTOR NO. 7 DATE SAMPLED 2024.Jan.09 DATE RECEIVED 2024.Jan.09 DATE TESTED 2024.Jan.16

INSITU MOISTURE	24.2 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Backfill		
SIZE	Clay	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Blenheim Ave - BH-69, 0.86 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1785	1592	12.1
2	1884	1620	16.3
3	1961	1631	20.2
4	1984	1596	24.3

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1630	19.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2950.

 2024.Jan.18 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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CERTIFIED BY CCIL

PROCTOR TEST REPORT

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

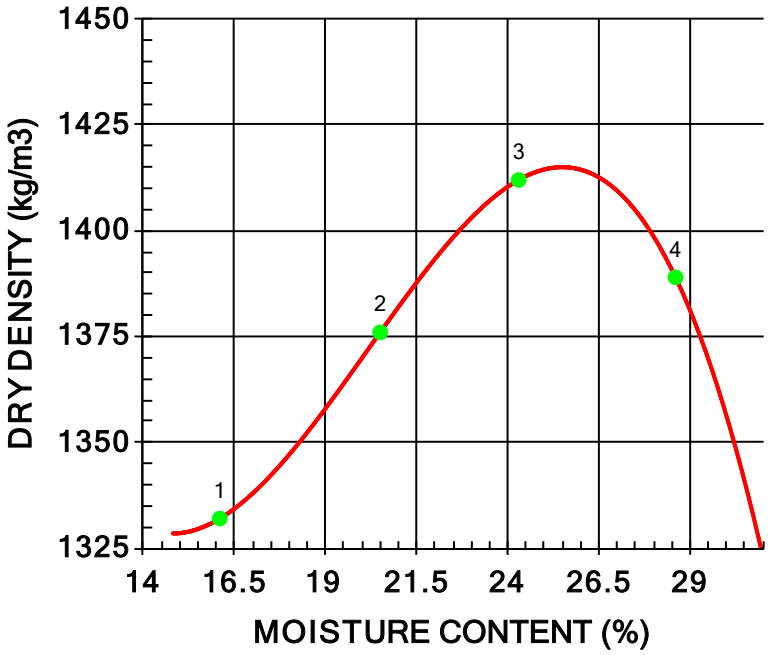
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-4 - Contract 4
PROCTOR NO. 8 DATE SAMPLED 2024.Jan.16 DATE RECEIVED 2024.Jan.16 DATE TESTED 2024.Jan.31

INSITU MOISTURE	29.5 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Clay	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Blenheim Ave - BH-70, 0.81 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1547	1332	16.1
2	1658	1376	20.5
3	1755	1412	24.3
4	1786	1389	28.6

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1420	25.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2991.

 2024.Feb.01 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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199 Henlow Bay
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CERTIFIED BY CCIL

PROCTOR TEST REPORT

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

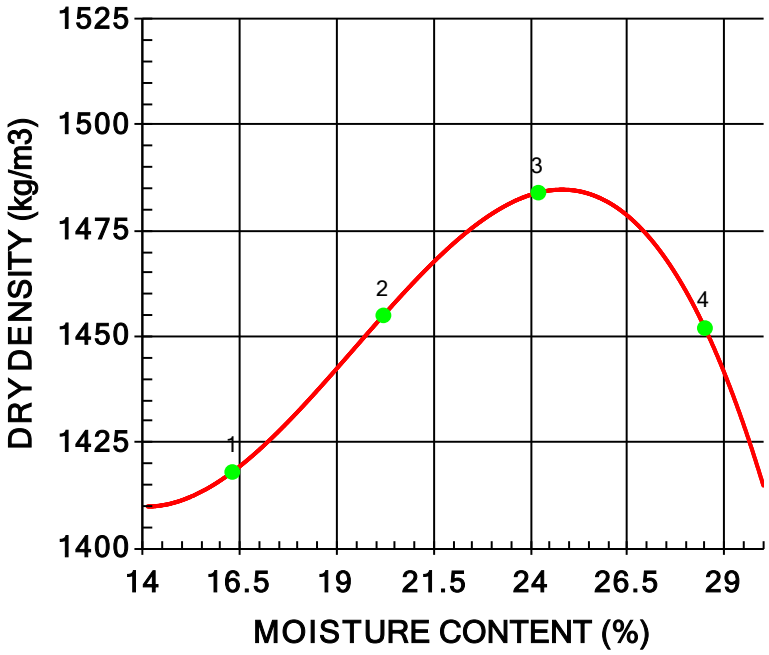
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-4 - Contract 4
PROCTOR NO. 9 DATE SAMPLED 2024.Jan.16 DATE RECEIVED 2024.Jan.16 DATE TESTED 2024.Jan.31

INSITU MOISTURE	29.3 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Pervez Safdar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Clay	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Blenheim Ave - BH-71, 0.80 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1649	1418	16.3
2	1749	1455	20.2
3	1843	1484	24.2
4	1866	1452	28.5

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1480	25.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2993.

Page 1 of 1 2024.Feb.01 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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CERTIFIED BY CCIL

PROCTOR TEST REPORT

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

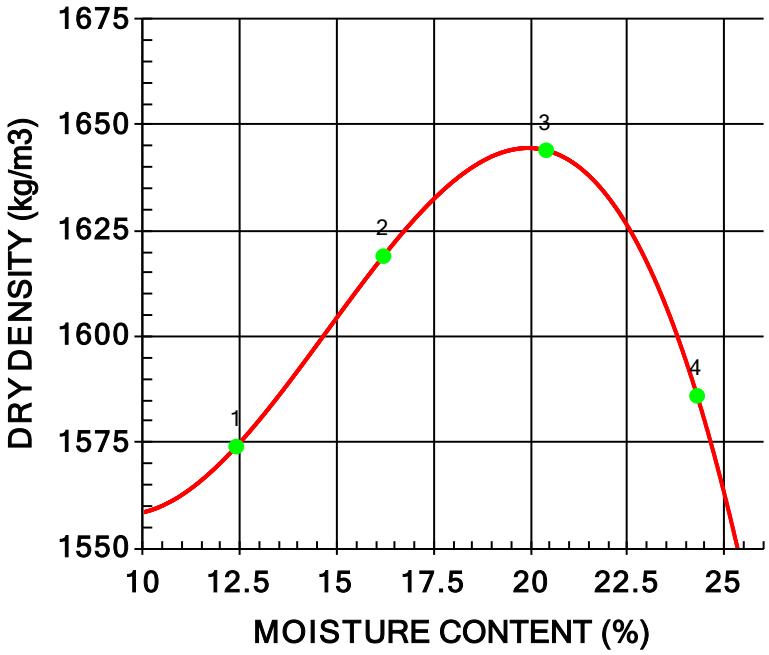
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-4 - Contract 4
PROCTOR NO. 10 DATE SAMPLED 2024.Jan.16 DATE RECEIVED 2024.Jan.16 DATE TESTED 2024.Jan.31

INSITU MOISTURE	38.3 %	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	Clay	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Blemheim Ave - BH-72, 0.80 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1769	1574	12.4
2	1881	1619	16.2
3	1979	1644	20.4
4	1971	1586	24.3

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1640	20.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2992.

Page 1 of 1 2024.Feb.01 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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CERTIFIED BY CCIL

PROCTOR TEST REPORT

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

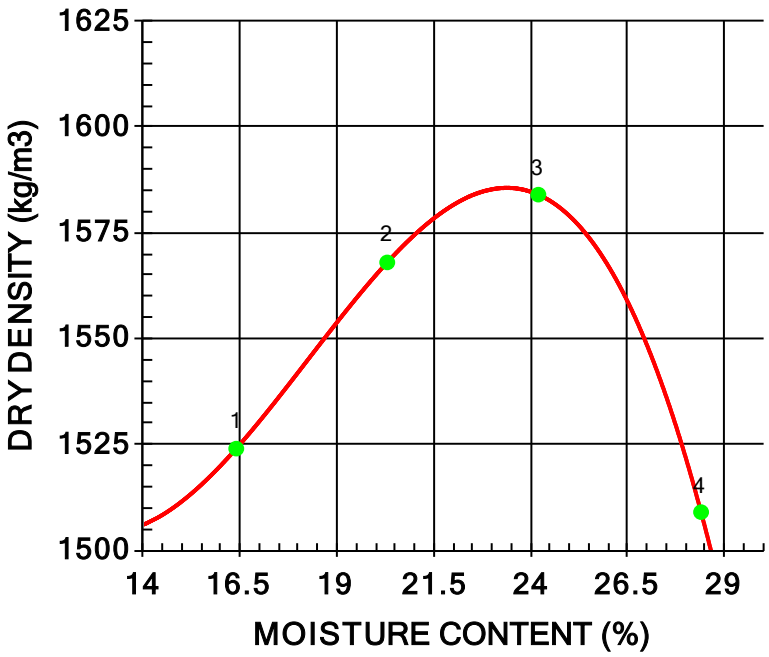
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-4 - Contract 4
PROCTOR NO. 11 DATE SAMPLED 2024.Jan.09 DATE RECEIVED 2024.Jan.09 DATE TESTED 2024.Jan.16

INSITU MOISTURE	31.1 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Backfill		
SIZE	Clay	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Weatherdon Ave - BH-73, 0.83 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1774	1524	16.4
2	1886	1568	20.3
3	1967	1584	24.2
4	1937	1509	28.4

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1590	23.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2951.

 2024.Jan.18 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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CERTIFIED BY CCIL

PROCTOR TEST REPORT

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

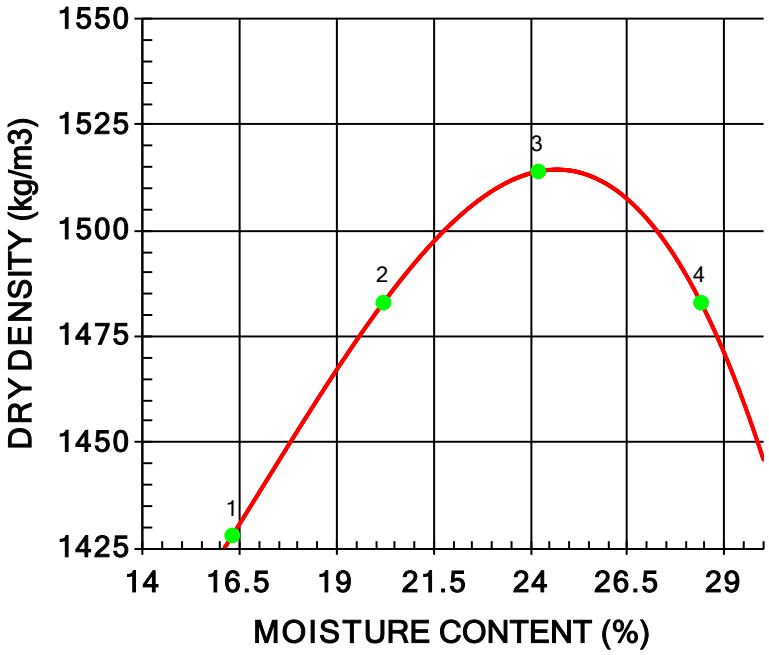
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-4 - Contract 4
PROCTOR NO. 12 DATE SAMPLED 2024.Jan.09 DATE RECEIVED 2024.Jan.09 DATE TESTED 2024.Jan.16

INSITU MOISTURE	27.2 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Backfill		
SIZE	Clay	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Weatherdon Ave - BH-74, 0.83 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1661	1428	16.3
2	1782	1483	20.2
3	1880	1514	24.2
4	1904	1483	28.4

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1510	24.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2952.

Page 1 of 1 2024.Jan.18 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

PROCTOR TEST REPORT

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

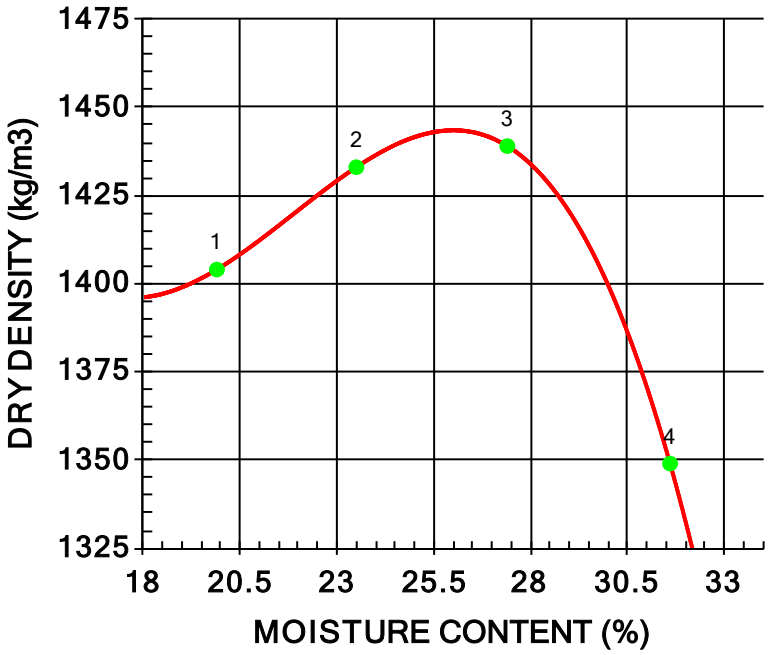
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-4 - Contract 4
PROCTOR NO. 13 DATE SAMPLED 2024.Jan.09 DATE RECEIVED 2024.Jan.09 DATE TESTED 2024.Jan.16

INSITU MOISTURE	35.5 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Backfill		
SIZE	Clay	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Weatherdon Ave - BH-75, 0.85 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1683	1404	19.9
2	1770	1433	23.5
3	1833	1439	27.4
4	1775	1349	31.6

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1440	26.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2953.

 2024.Jan.18 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

PROCTOR TEST REPORT

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

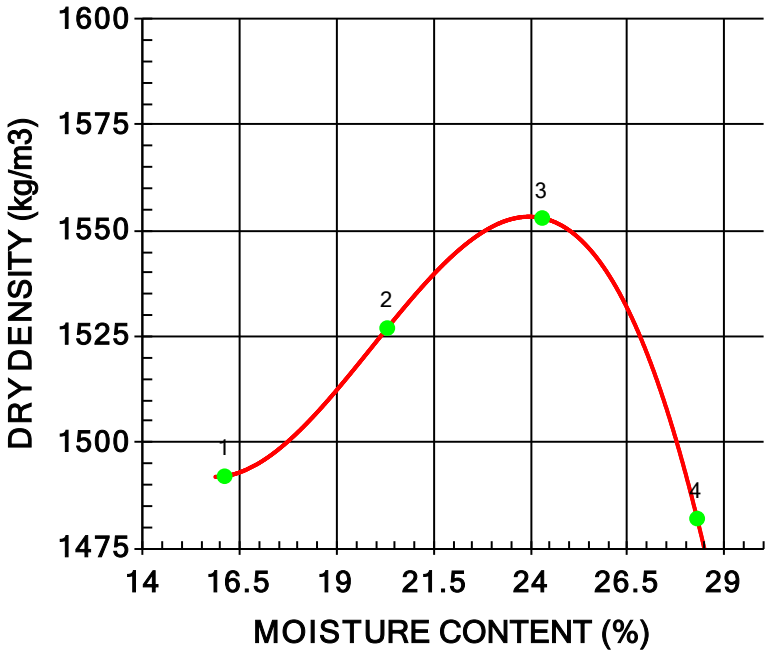
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-4 - Contract 4
PROCTOR NO. 14 DATE SAMPLED 2024.Jan.09 DATE RECEIVED 2024.Jan.09 DATE TESTED 2024.Jan.17

INSITU MOISTURE	30.1 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Backfill		
SIZE	Clay	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Weatherdon Ave - BH-76, 0.72 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1732	1492	16.1
2	1837	1527	20.3
3	1930	1553	24.3
4	1902	1482	28.3

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1550	24.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2954.

Page 1 of 1 2024.Jan.18 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

PROCTOR TEST REPORT

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

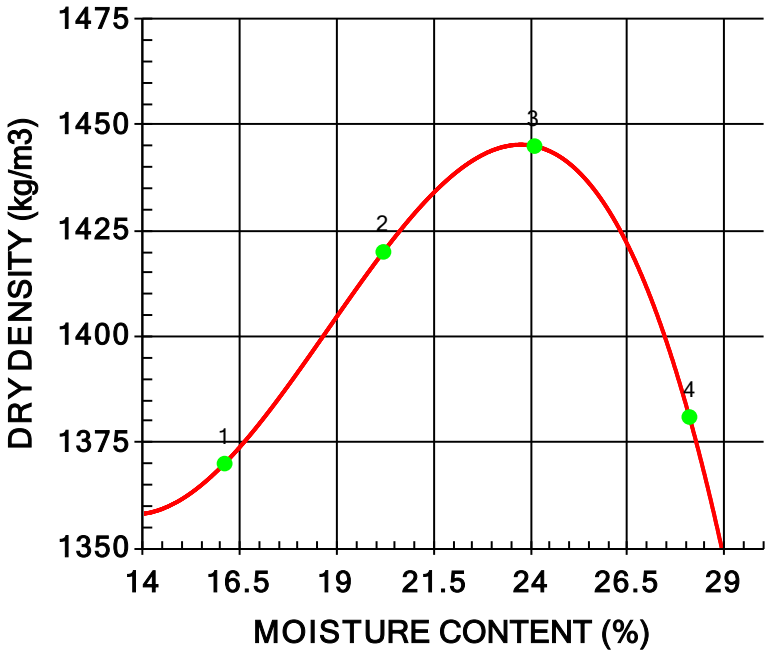
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-4 - Contract 4
PROCTOR NO. 15 DATE SAMPLED 2024.Jan.09 DATE RECEIVED 2024.Jan.09 DATE TESTED 2024.Jan.17

INSITU MOISTURE	37.4 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Backfill		
SIZE	Clay	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Watherdon Ave - BH-77, 0.74 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1591	1370	16.1
2	1707	1420	20.2
3	1793	1445	24.1
4	1769	1381	28.1

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1440	23.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2955.

Page 1 of 1 2024.Jan.18 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
104-1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program - Contract 4

PROJECT NO. 123316853

REPORT NO. 1

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Graeme Patrick

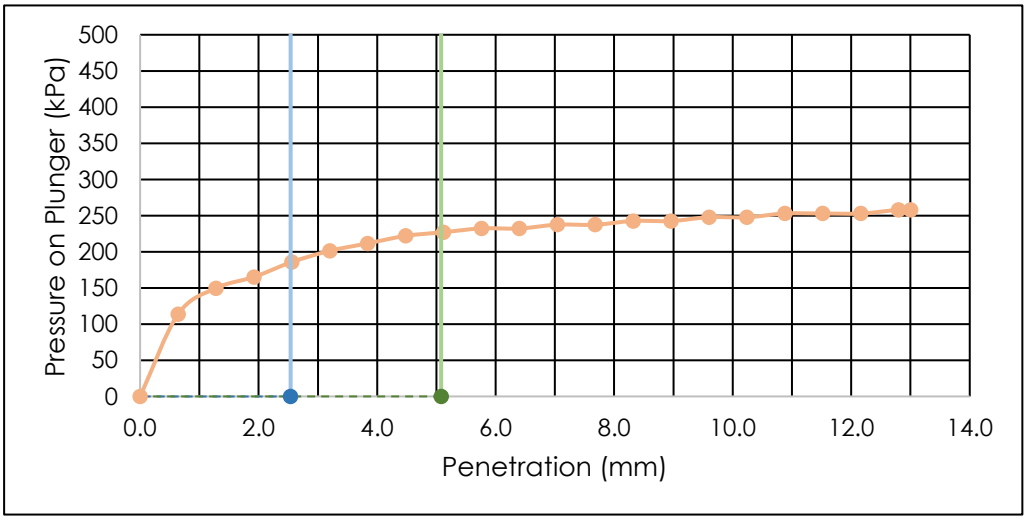
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.16
TESTED BY: Madison Murphy

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Clay	SAMPLE LOCATION	BH-63, 0.765 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2946

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1430 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	29.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1360 kg/m^3
SWELL OF SAMPLE	0.02 %	AS-COMPACTED MOISTURE	29.4 %
POST-TEST MOISTURE	33.8 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.7

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.

REPORT DATE 2024.Jan.22

REVIEWED BY Jason Thompson, C.E.T.
Principal - Manager of 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 Department
104 - 1155 Pacific Avenue
Winnipeg, Manitoba
R3E 2P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program - Contract 4

PROJECT NO. 123316853

REPORT NO. 2

DATE SAMPLED: 2024.Jan.16
SAMPLED BY: Stantec Consulting Ltd.

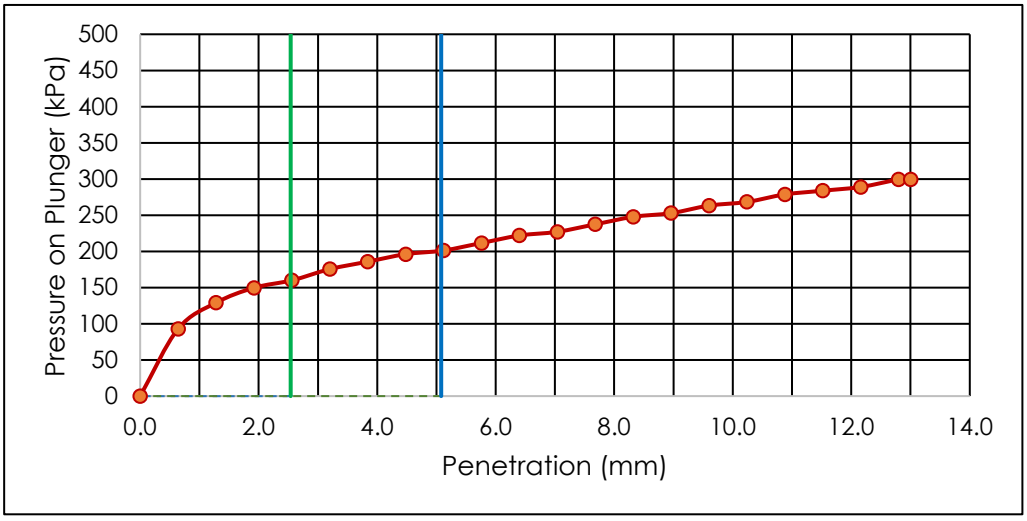
DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Feb.06
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Silty Clay	SAMPLE LOCATION	BH-64, 0.740 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2989

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1580 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	1500 kg/m^3
SWELL OF SAMPLE	3.77 %	AS-COMPACTED MOISTURE	22.1 %
POST-TEST MOISTURE	31.5 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.3

CBR VALUE AT 5.08 mm PENETRATION
2.0

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

REPORT DATE 2024.Feb.12

REVIEWED BY Jason Thompson, C.E.T.
Principal - Manager of 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
104-1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program - Contract 4

PROJECT NO. 123316853

REPORT NO. 3

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Graeme Patrick

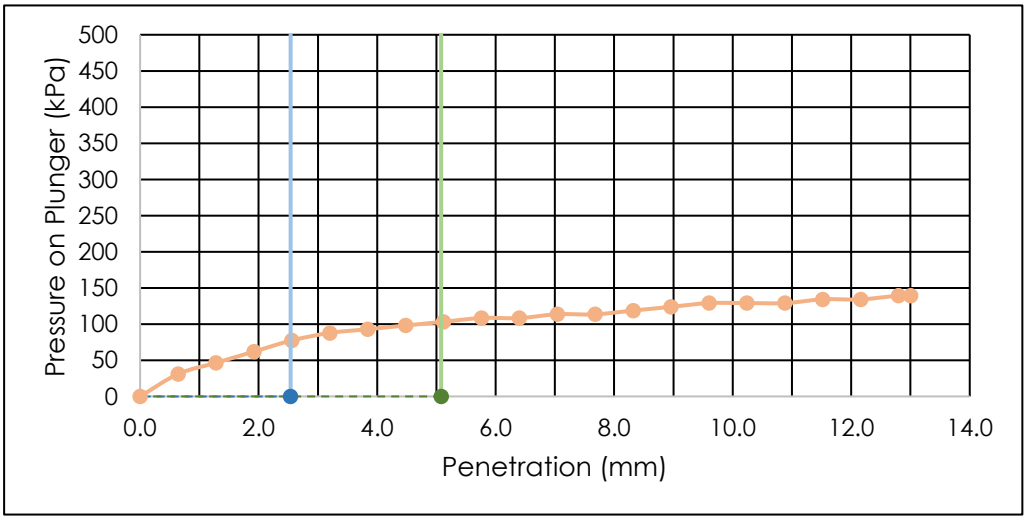
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.17
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Clay	SAMPLE LOCATION	BH-65, 0.750 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2947

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1430 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	26.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1358 kg/m^3
SWELL OF SAMPLE	0.07 %	AS-COMPACTED MOISTURE	26.0 %
POST-TEST MOISTURE	48.6 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
1.1

CBR VALUE AT 5.08 mm PENETRATION
1.0

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

REPORT DATE 2024.Jan.22

REVIEWED BY Jason Thompson, C.E.T.
Principal - Manager of 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 Department
104 - 1155 Pacific Avenue
Winnipeg, MB
R3E 2P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program - Contract 4

PROJECT NO. 123316853

REPORT NO. 4

DATE SAMPLED: 2024.Jan.16
SAMPLED BY: Stantec Consulting Ltd.

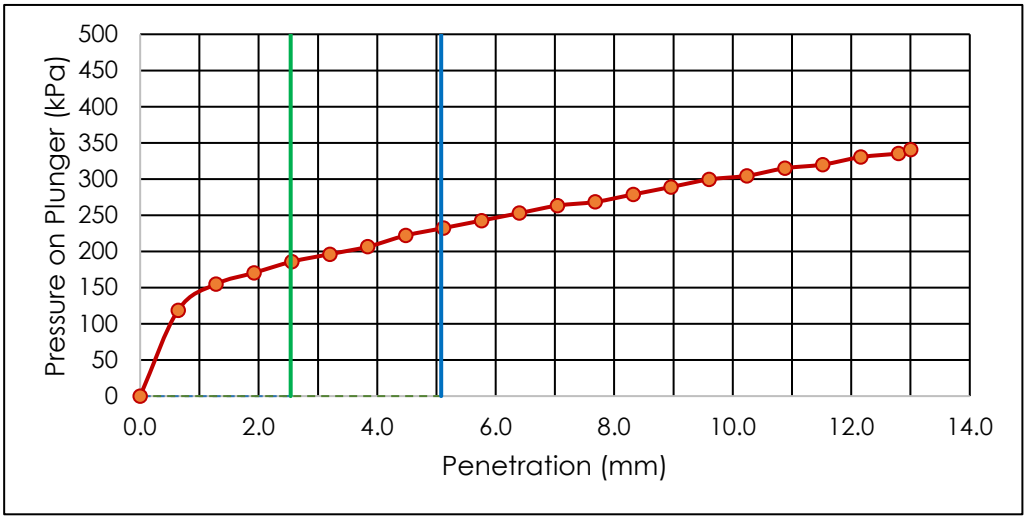
DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Feb.06
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Clay and silt	SAMPLE LOCATION	BH-66, 0.750 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2990

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1570 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	24.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1491 kg/m^3
SWELL OF SAMPLE	4.32 %	AS-COMPACTED MOISTURE	24.6 %
POST-TEST MOISTURE	33.6 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.7

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.

REPORT DATE 2024.Feb.12

REVIEWED BY Jason Thompson, C.E.T.
Principal - Manager of 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
104-1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program - Contract 4

PROJECT NO. 123316853

REPORT NO. 5

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Graeme Patrick

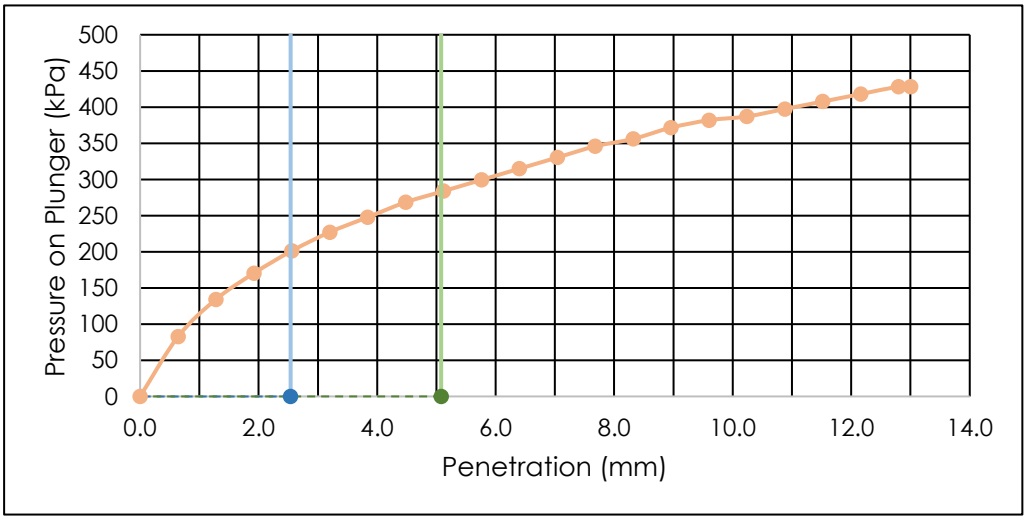
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.17
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Clay	SAMPLE LOCATION	BH-67, 0.740 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2948

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1650 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	20.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1570 kg/m^3
SWELL OF SAMPLE	0.03 %	AS-COMPACTED MOISTURE	20.0 %
POST-TEST MOISTURE	31.1 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.9

CBR VALUE AT 5.08 mm PENETRATION
2.8

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

REPORT DATE 2024.Jan.22

REVIEWED BY Jason Thompson, C.E.T.
Principal - Manager of 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
104-1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program - Contract 4

PROJECT NO. 123316853

REPORT NO. 6

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Graeme Patrick

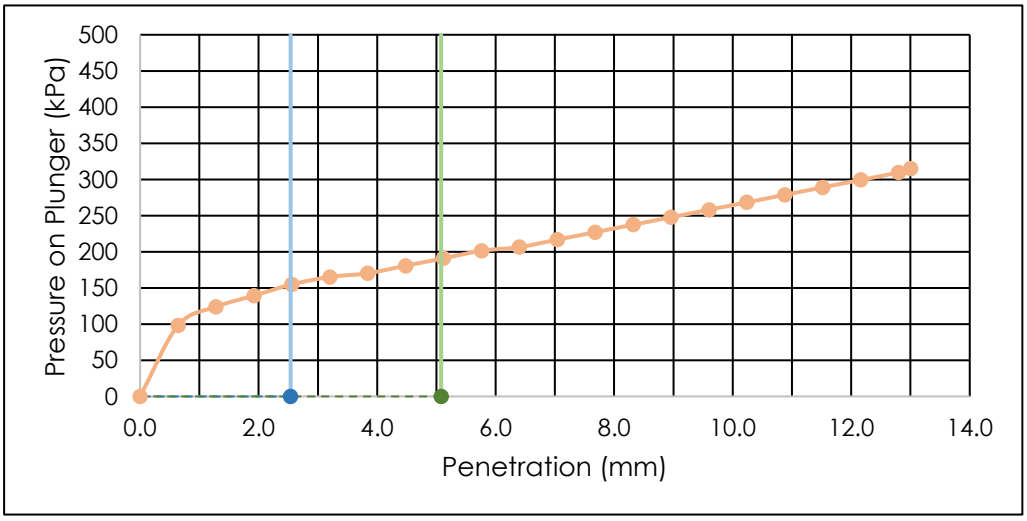
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.20
TESTED BY: Madison Murphy

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Clay	SAMPLE LOCATION	BH-68, 0.750 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2949

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1520 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	25.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1446 kg/m^3
SWELL OF SAMPLE	0.03 %	AS-COMPACTED MOISTURE	25.4 %
POST-TEST MOISTURE	33.7 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.2

CBR VALUE AT 5.08 mm PENETRATION
1.9

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

REPORT DATE 2024.Jan.25

REVIEWED BY Jason Thompson, C.E.T.
Principal - Manager of 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
104-1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program - Contract 4

PROJECT NO. 123316853

REPORT NO. 7

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Graeme Patrick

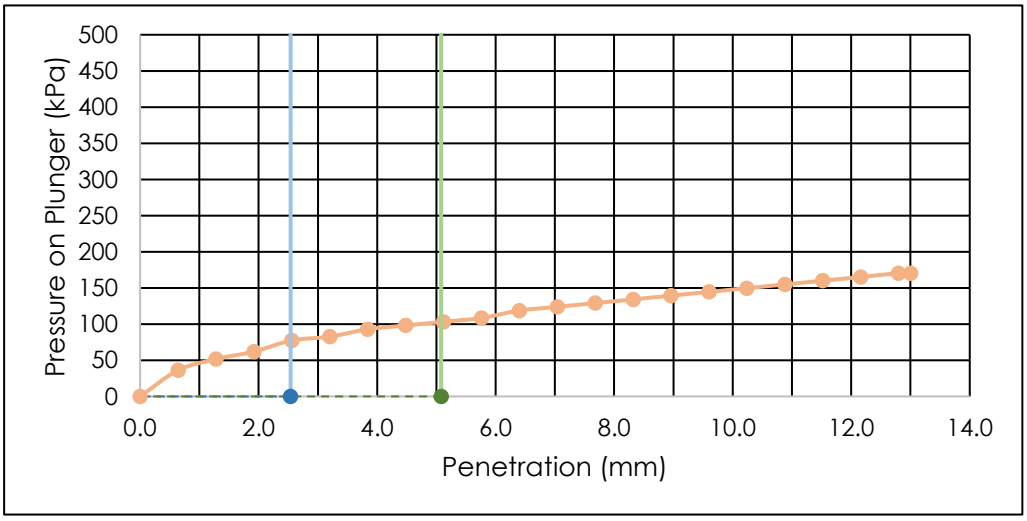
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.20
TESTED BY: Madison Murphy

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Clay	SAMPLE LOCATION	BH-69, 0.855 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2950

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1630 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	1552 kg/m^3
SWELL OF SAMPLE	0.05 %	AS-COMPACTED MOISTURE	19.2 %
POST-TEST MOISTURE	33.2 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
1.1

CBR VALUE AT 5.08 mm PENETRATION
1.0

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

REPORT DATE 2024.Jan.25

REVIEWED BY Jason Thompson, C.E.T.
Principal - Manager of 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 Department
104 - 1155 Pacific Avenue
Winnipeg, MB
R3E 2P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program - Contract 4

PROJECT NO. 123316853

REPORT NO. 8

DATE SAMPLED: 2024.Jan.16
SAMPLED BY: Stantec Consulting Ltd.

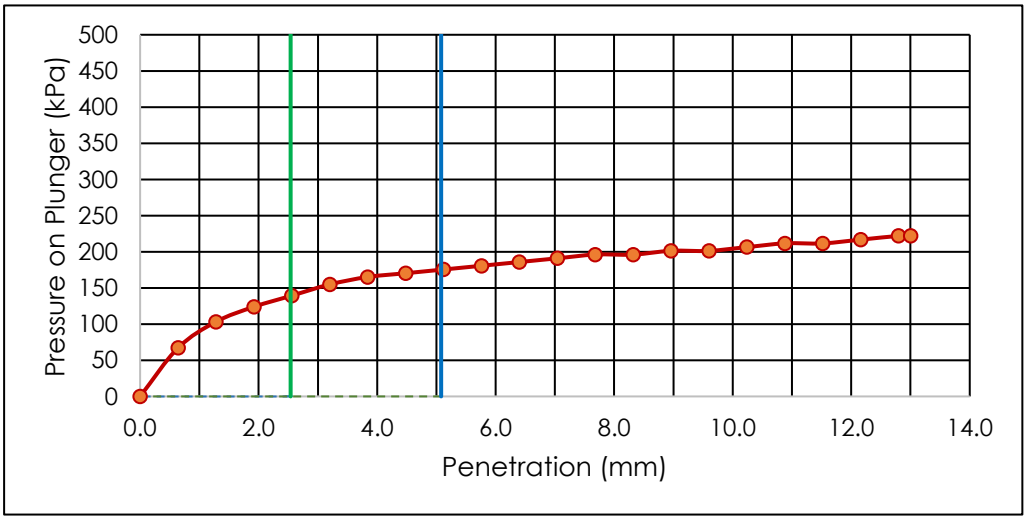
DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Feb.12
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Clay and silt	SAMPLE LOCATION	BH-70, 0.805 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2991

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1420 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	25.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1347 kg/m^3
SWELL OF SAMPLE	3.43 %	AS-COMPACTED MOISTURE	25.6 %
POST-TEST MOISTURE	36.6 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.0

CBR VALUE AT 5.08 mm PENETRATION
1.8

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

REPORT DATE 2024.Feb.20

REVIEWED BY Jason Thompson, C.E.T.
Principal - Manager of 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 Department
104 - 1155 Pacific Avenue
Winnipeg, MB
R3E 2P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program - Contract 4

PROJECT NO. 123316853

REPORT NO. 9

DATE SAMPLED: 2024.Jan.16
SAMPLED BY: Stantec Consulting Ltd.

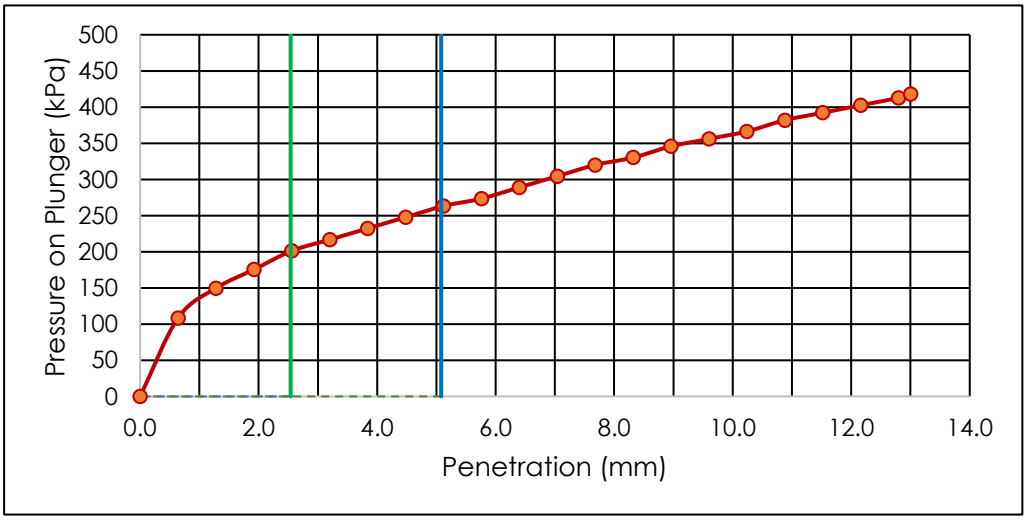
DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Feb.12
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Clay and silt	SAMPLE LOCATION	BH-71, 0.800 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2992

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1640 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	20.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1557 kg/m^3
SWELL OF SAMPLE	2.18 %	AS-COMPACTED MOISTURE	20.0 %
POST-TEST MOISTURE	29.9 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.9

CBR VALUE AT 5.08 mm PENETRATION
2.6

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

REPORT DATE 2024.Feb.20

REVIEWED BY Jason Thompson, C.E.T.
Principal - Manager of 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 Department
104 - 1155 Pacific Avenue
Winnipeg, MB
R3E 2P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program - Contract 4

PROJECT NO. 123316853

REPORT NO. 10

DATE SAMPLED: 2024.Jan.16
SAMPLED BY: Stantec Consulting Ltd.

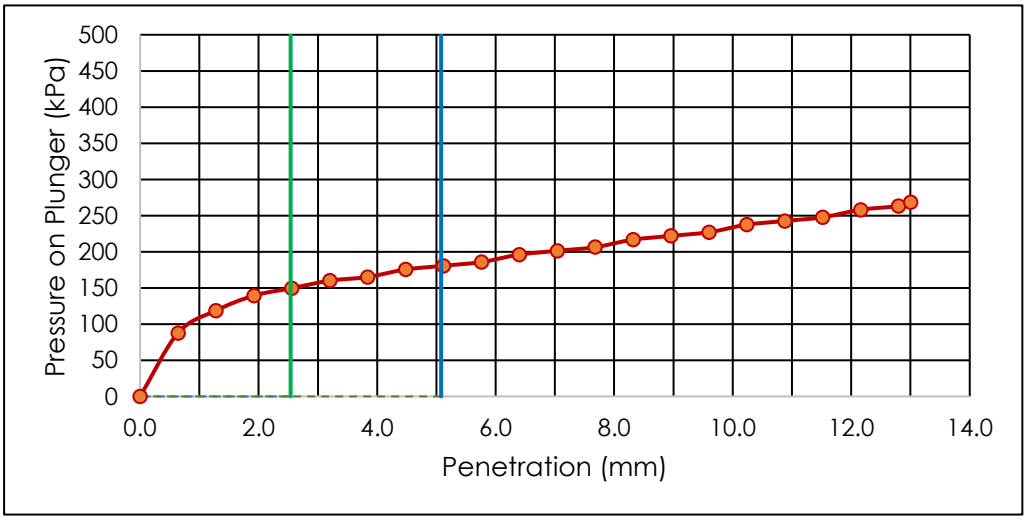
DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Feb.12
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Clay	SAMPLE LOCATION	BH-72, 0.800 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2993

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1480 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	25.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1407 kg/m^3
SWELL OF SAMPLE	4.09 %	AS-COMPACTED MOISTURE	24.9 %
POST-TEST MOISTURE	38.6 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.2

CBR VALUE AT 5.08 mm PENETRATION
1.8

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

REPORT DATE 2024.Feb.20

REVIEWED BY Jason Thompson, C.E.T.
Principal - Manager of 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
104-1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program - Contract 4

PROJECT NO. 123316853

REPORT NO. 11

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Graeme Patrick

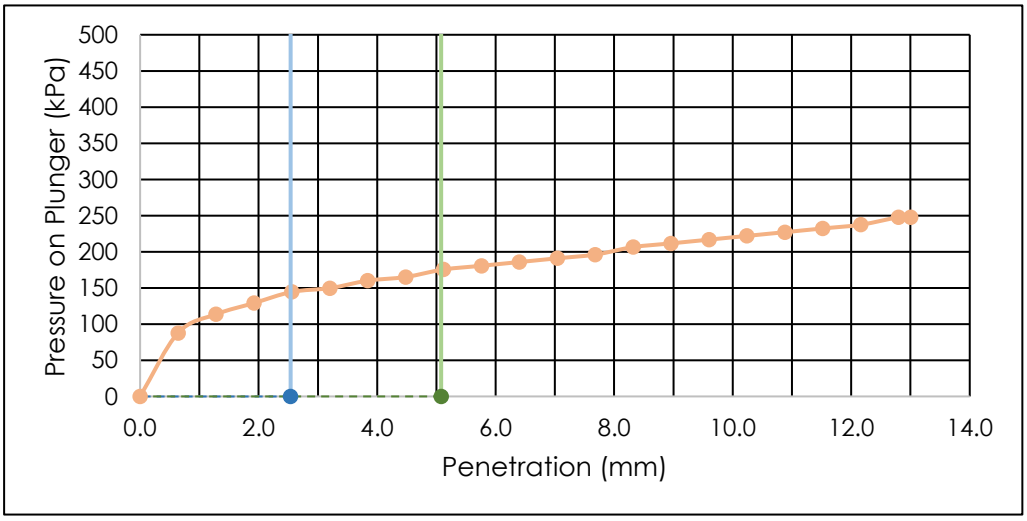
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.20
TESTED BY: Madison Murphy

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Clay	SAMPLE LOCATION	BH-73, 0.825 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2951

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1590 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	23.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1509 kg/m^3
SWELL OF SAMPLE	0.03 %	AS-COMPACTED MOISTURE	23.6 %
POST-TEST MOISTURE	31.9 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.1

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 2024.Jan.25

REVIEWED BY Jason Thompson, C.E.T.
Principal - Manager of 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
104-1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program - Contract 4

PROJECT NO. 123316853

REPORT NO. 12

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Graeme Patrick

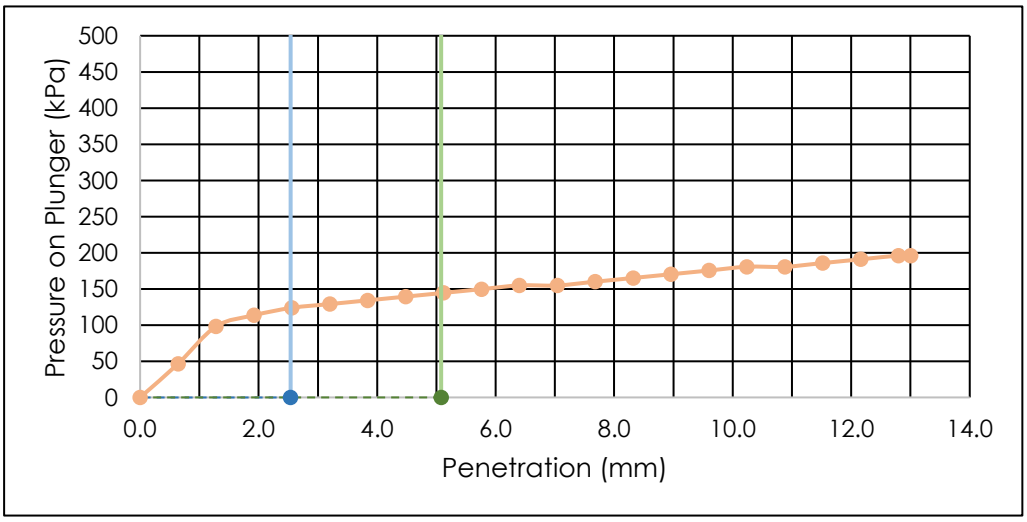
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.20
TESTED BY: Madison Murphy

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Clay	SAMPLE LOCATION	BH-74, 0.825 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2952

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1510 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	24.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1436 kg/m^3
SWELL OF SAMPLE	0.03 %	AS-COMPACTED MOISTURE	24.4 %
POST-TEST MOISTURE	34.3 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
1.8

CBR VALUE AT 5.08 mm PENETRATION
1.4

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

REPORT DATE 2024.Jan.26

REVIEWED BY Jason Thompson, C.E.T.
Principal - Manager of 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
104-1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program - Contract 4

PROJECT NO. 123316853

REPORT NO. 13

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Graeme Patrick

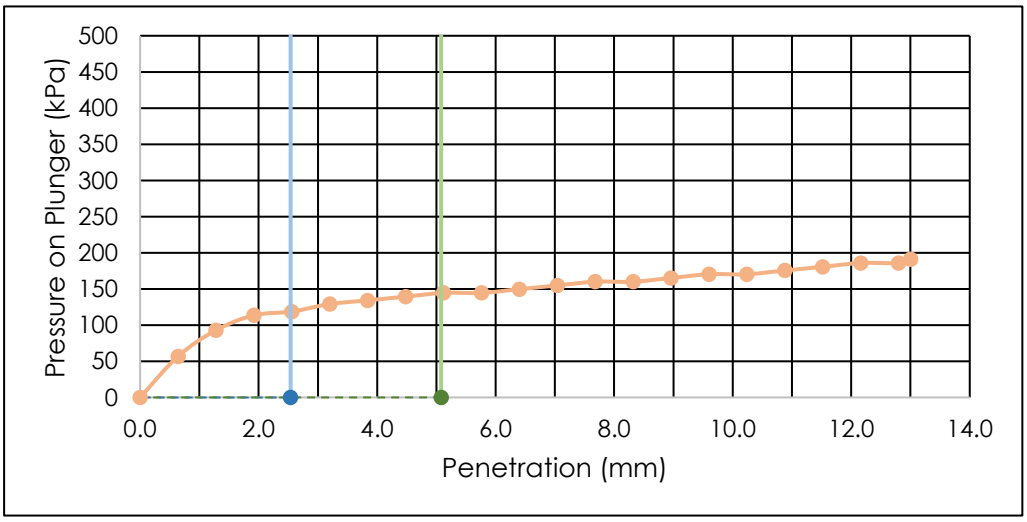
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.21
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Clay	SAMPLE LOCATION	BH-75, 0.850 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2953

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1440 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	26.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1369 kg/m^3
SWELL OF SAMPLE	0.05 %	AS-COMPACTED MOISTURE	25.9 %
POST-TEST MOISTURE	43.1 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
1.7

CBR VALUE AT 5.08 mm PENETRATION
1.4

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

REPORT DATE 2024.Jan.26

REVIEWED BY Jason Thompson, C.E.T.
Principal - Manager of 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
104-1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program - Contract 4

PROJECT NO. 123316853

REPORT NO. 14

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Graeme Patrick

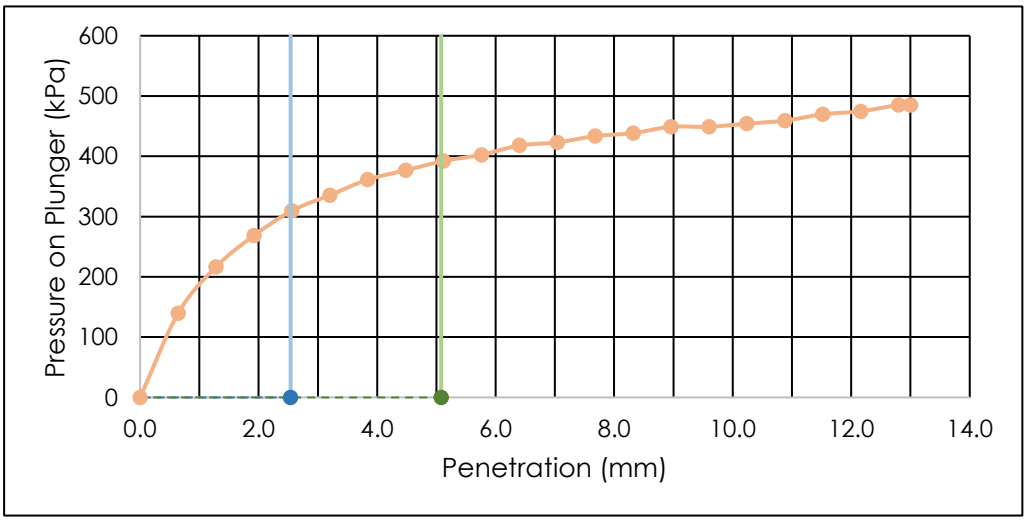
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.21
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Clay	SAMPLE LOCATION	BH-76, 0.720 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2954

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1550 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	24.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1472 kg/m^3
SWELL OF SAMPLE	0.02 %	AS-COMPACTED MOISTURE	24.1 %
POST-TEST MOISTURE	28.7 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
4.5

CBR VALUE AT 5.08 mm PENETRATION
3.9

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

REPORT DATE 2024.Jan.26

REVIEWED BY Jason Thompson, C.E.T.
Principal - Manager of 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
104-1155 Pacific Ave.
Winnipeg, MB
R3E 2P1

ATTN Richard Weibel

PROJECT 2024 Local Street Renewals Program - Contract 4

PROJECT NO. 123316853

REPORT NO. 15

DATE SAMPLED: 2024.Jan.09
SAMPLED BY: Graeme Patrick

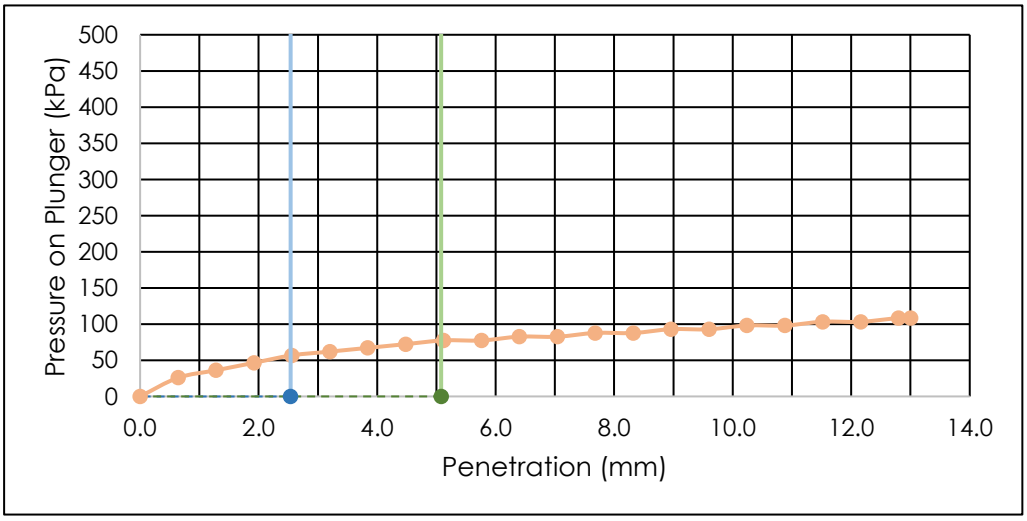
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.21
TESTED BY: Madison Murphy

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Clay	SAMPLE LOCATION	BH-77, 0.740 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2955

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1440 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	23.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1367 kg/m^3
SWELL OF SAMPLE	0.02 %	AS-COMPACTED MOISTURE	23.6 %
POST-TEST MOISTURE	46.9 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
0.8

CBR VALUE AT 5.08 mm PENETRATION
0.8

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

REPORT DATE 2024.Jan.29

REVIEWED BY Jason Thompson, C.E.T.
Principal - Manager of Materials Testing Services

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

Table 2 - Compressive Strength Test Data

Street	Core ID	Diameter (mm)	Length (mm)	L/D Ratio	Correction Factor	Peak Load (kN)	Compressive Strength (MPa)	
							Measured	Corrected
Sadler Ave	BH-78	76.77	141.54	1.844	0.9875	253.27	54.72	54.03
Sadler Ave	BH-80	76.54	168.75	2.205	1.0000	163.83	35.61	35.61

TABLE - California Bearing Ratio (CBR) for Asphalt Pavement Reconstructions

Reference Standard Construction Specifications:

(a) CW 3130, Clause 3.5 Supply and Installation of Geotextile Fabrics

(b) CW 3135, Clause 3.3 Supply and Installation of Geogrid

Asphalt Pavement Reconstructions	**CBR***
Dunraven Avenue from St. Mary's Road to Overton Street	2.0
Overton Street from Blenheim Avenue to Harrowby Avenue	2.6
Blenheim Avenue from St. Anne's Road to Des Meurons Street	2.1
Weatherdon Avenue from Stafford Street to Arbuthnot Street	1.9

* CBR for calculating overlap of Geotextile rolls and Geogrid rolls.