APPENDIX 'A' - GEOTECHNICAL REPORT

GEOTECHNICAL REPORTS FOR:

St. Johns Avenue/Anderson Avenue Alley from Main Street to Fowler Street – Asphalt Pavement Reconstruction
Charles Street from Church Avenue to Machray Avenue – Asphalt Pavement Reconstruction
Church Avenue from Charles Street to Main Street – Asphalt Pavement Reconstruction
Luxton Avenue from St. Cross Street to End – Asphalt Pavement Reconstruction
Machray Avenue from Aikins Street to Main Street – Asphalt Pavement Reconstruction

PAVEMENT CORES FOR:

Cochrane Street from End to Lansdowne Avenue – Concrete Pavement Rehabilitation
Lansdowne Avenue from Main Street to St. Cross Street – Concrete Pavement Rehabilitation
McAdam Avenue from End to Scotia Street – Concrete Pavement Rehabilitation

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

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

February 26, 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 2)

Stantec Consulting Ltd. (Stantec) was retained to undertake a factual geotechnical investigation for the 2024 Local Street Renewals Program (Contract 1) 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, with the exception of boreholes BH-21, BH-22, and BH-23, which were terminated at a depth of 1.5 m due to limitations by underground utilities. 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 2)**

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)
Machray Ave	BH-16	80	0	80
Machray Ave	BH-17	120	0	120
Machray Ave	BH-18	90	0	90
Machray Ave	BH-19	80	0	80
Charles St	BH-20	20	180	200
Charles St	BH-21	20	180	200
Charles St	BH-22	15	180	195
Church Ave	BH-23	90	0	90
Church Ave	BH-24	30	0	30
Lansdowne Ave	BH-25	0	175	175
Lansdowne Ave	BH-26	0	200	200
Lansdowne Ave	BH-27	0	160	160
Lansdowne Ave	BH-28	0	150	150
Cochrane St	BH-29	0	140	140
Cochrane St	BH-30	0	180	180
Cochrane St	BH-31	0	160	160
McAdam Ave	BH-32	0	180	180
McAdam Ave	BH-33	0	165	165
McAdam Ave	BH-34	0	165	165
McAdam Ave	BH-35	0	160	160
Luxton Ave	BH-36	100	125	225
Luxton Ave	BH-37	75	150	225
Luxton Ave	BH-38	50	150	200
Luxton Ave	BH-39	25	*see note below	*see note below
Luxton Ave	BH-40	25	150	175
Backlane	BH-41	70	100	170
Backlane	BH-42	35	0	35
Backlane	BH-43	160	0	160

* Note – The pavement at borehole BH-39 consisted of 25 mm of asphalt, underlain by 50 mm of granular fill, underlain by 125 mm of concrete.

Reference: 2024 Local Street Renewals Program (Contract 2)

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**.

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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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

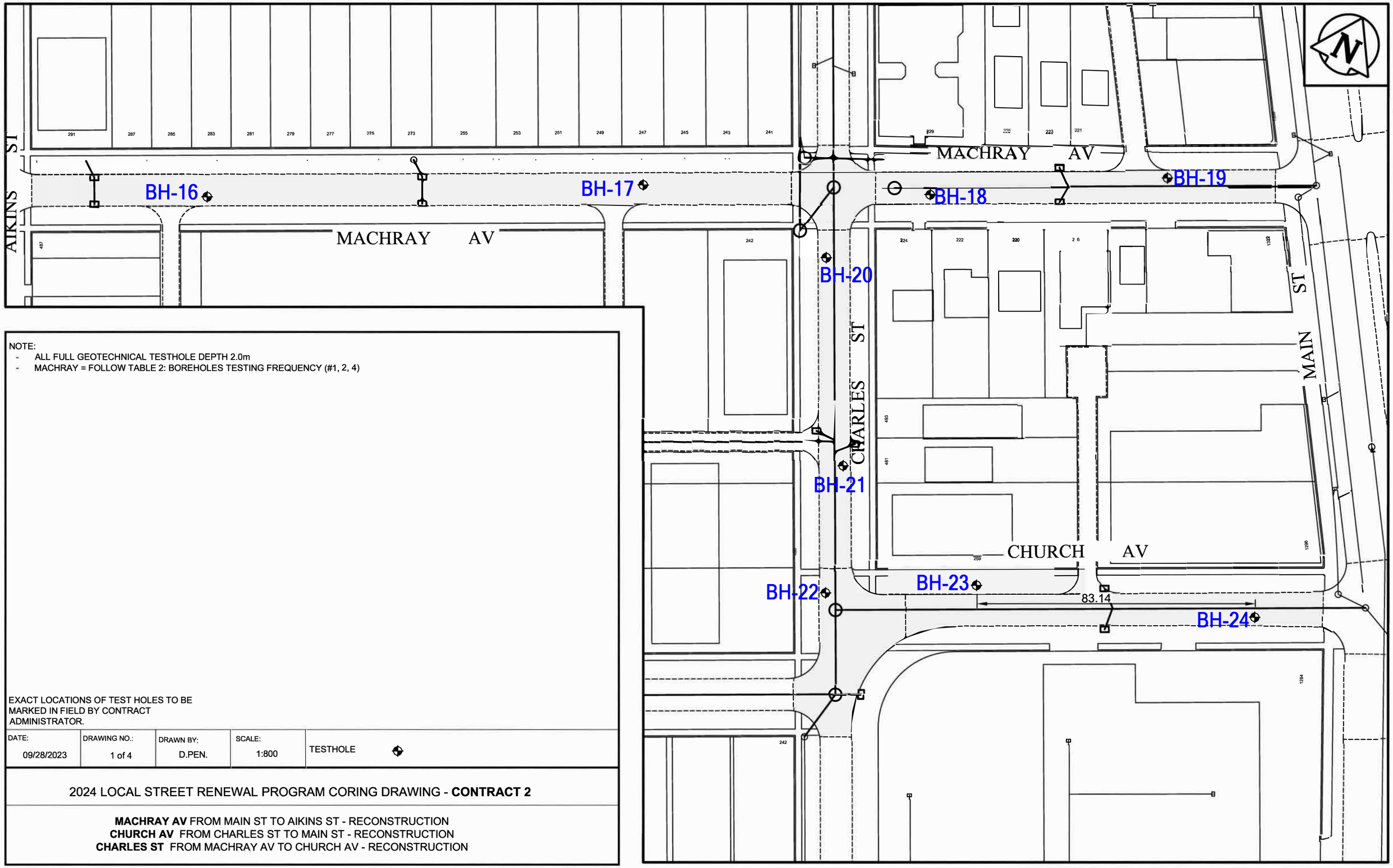
NOTE:
- ALL FULL GEOTECHNICAL TESTHOLE DEPTH 2.0m
- MACHRAY = FOLLOW TABLE 2: BOREHOLES TESTING FREQUENCY (#1, 2, 4)

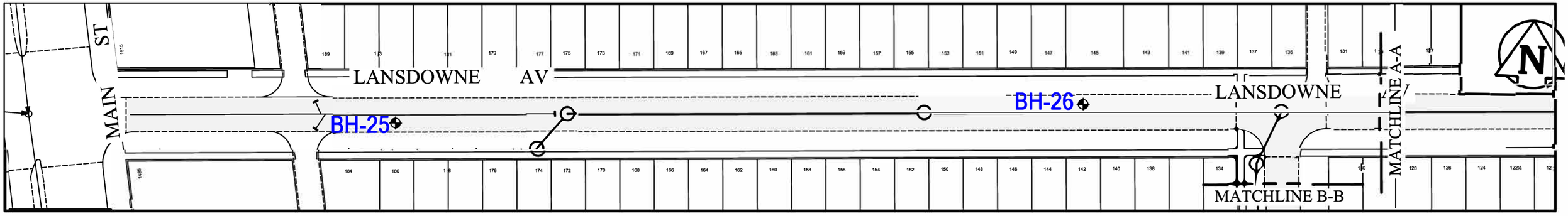
EXACT LOCATIONS OF TEST HOLES TO BE MARKED IN FIELD BY CONTRACT ADMINISTRATOR.

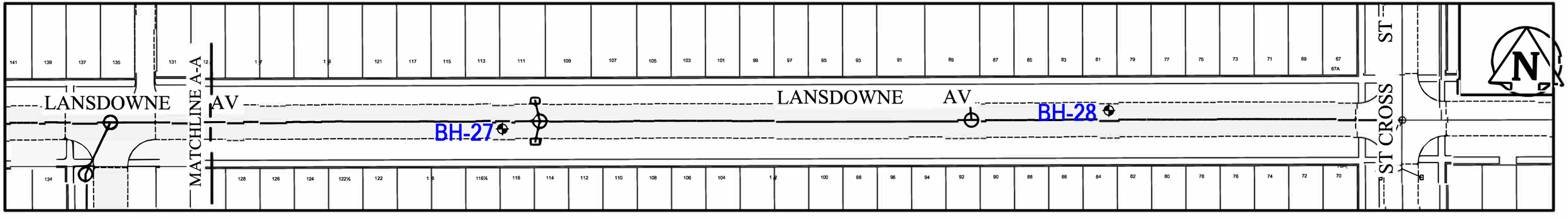
DATE:	DRAWING NO.:	DRAWN BY:	SCALE:	
09/28/2023	1 of 4	D.PEN.	1:800	TESTHOLE

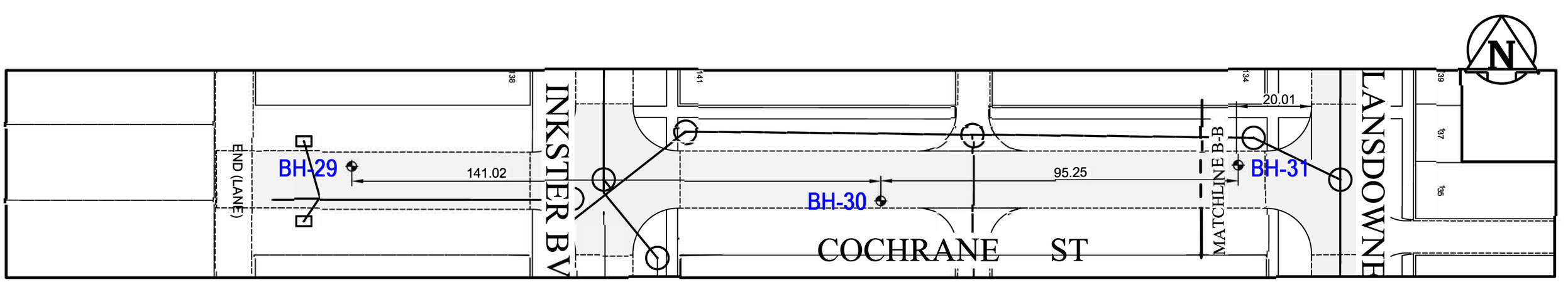
2024 LOCAL STREET RENEWAL PROGRAM CORING DRAWING - **CONTRACT 2**

MACHRAY AV FROM MAIN ST TO AIKINS ST - RECONSTRUCTION
CHURCH AV FROM CHARLES ST TO MAIN ST - RECONSTRUCTION
CHARLES ST FROM MACHRAY AV TO CHURCH AV - RECONSTRUCTION









NOTE:
- LANSDOWNE - 4 PAVEMENT CORES ONLY, MIN 2 MID SLAB
- FOLLOW F.3.5 REHABILITATION PROJECTS FOR LANSDOWNE & COCHRANE ST

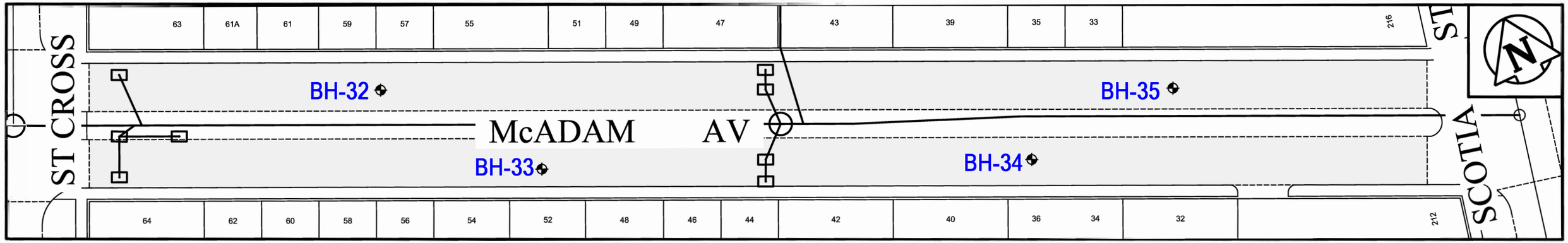
DATE:	DRAWING NO.:	DRAWN BY:	SCALE:
09/28/2023	2 of 4	D.PEN.	N.T.S.

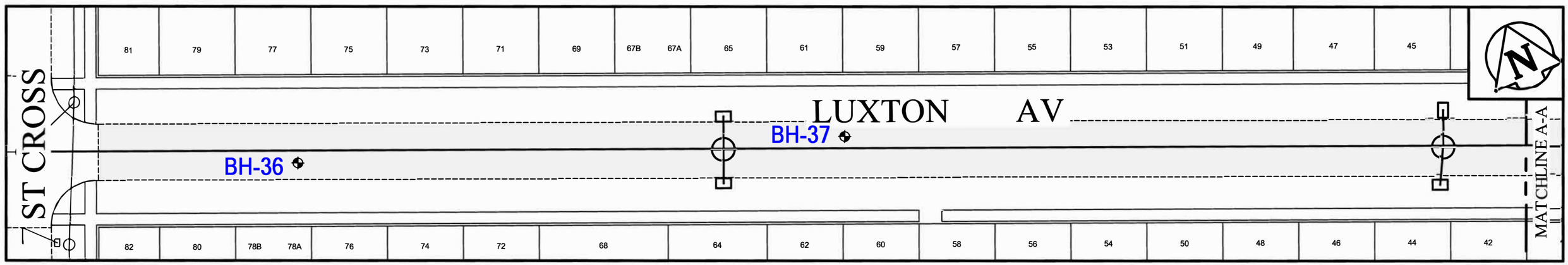
EXACT LOCATIONS OF TEST HOLES TO BE MARKED IN FIELD BY CONTRACT ADMINISTRATOR.

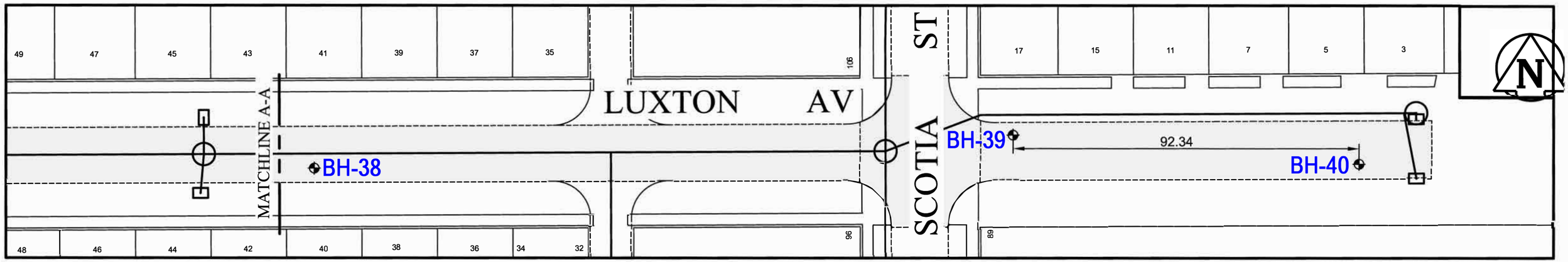
TESTHOLE

2024 LOCAL STREET RENEWAL PROGRAM CORING DRAWING - **CONTRACT 2**

LANSDOWNE AV FROM MAIN ST TO ST CROSS ST - MINOR REHAB
COCHRANE ST FROM LANSDOWNE AV TO SOUTH END - MAJOR REHAB







NOTE:
- McADAM AV = PAVEMENT CORES ONLY (FOLLOW F.3.5)
- LUXTON AV = FULL DEPTH CORES (FOLLOW F.3.4)

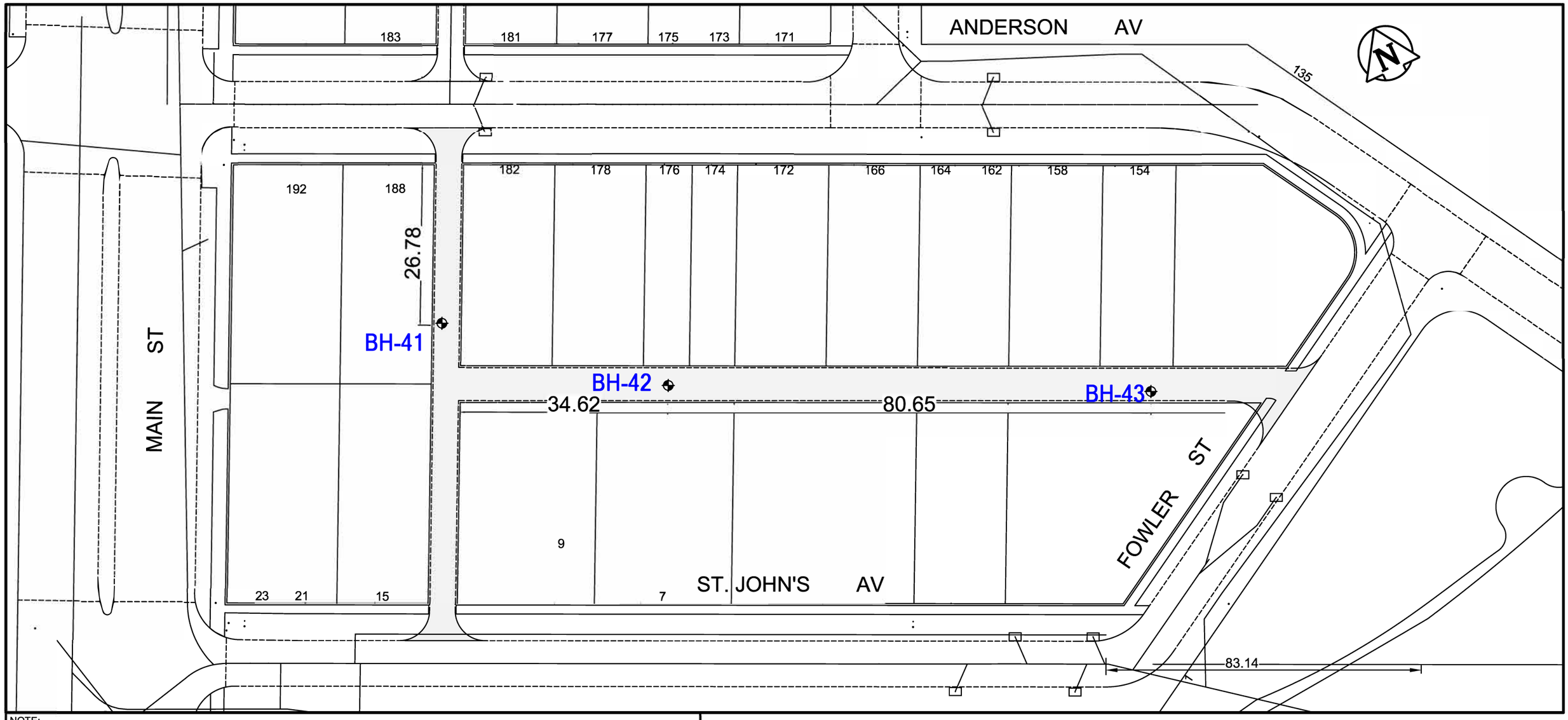
DATE:	DRAWING NO.:	DRAWN BY:	SCALE:
09/28/2023	3 of 4	D.PEN.	1:500

EXACT LOCATIONS OF TEST HOLES TO BE MARKED IN FIELD BY CONTRACT ADMINISTRATOR.

TESTHOLE

2024 LOCAL STREET RENEWAL PROGRAM CORING DRAWING - **CONTRACT 2**

McADAM AV FROM ST. CROSS ST TO SCOTIA ST - MINOR REHAB
LUXTON AV FROM ST CROSS ST TO EAST END - RECONSTRUCTION



NOTE:
- ALL FULL GEOTECHNICAL TESTHOLE DEPTH 2.0m
- MACHRAY = FOLLOW TABLE 2: BOREHOLES TESTING FREQUENCY (#1, 2, 4)

EXACT LOCATIONS OF TEST HOLES TO BE MARKED IN FIELD BY CONTRACT ADMINISTRATOR.

DATE:	DRAWING NO.:	DRAWN BY:	SCALE:	
09/28/2023	4 of 4			TESTHOLE

2024 LOCAL STREET RENEWAL PROGRAM CORING DRAWING - **CONTRACT 2**

ALLEY FROM ANDERSON AVE TO FOWLER AVE TO ST. JOHNS AVE - RECONSTRUCTION

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

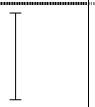
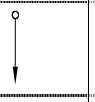
Numbers in this column are the field results of the Standard Penetration Test: the number of blows of a 140 pound (63.5 kg) hammer falling 30 inches (760 mm), required to drive a 2 inch (50.8 mm) O.D. split spoon sampler one foot (300 mm) into the soil. In accordance with ASTM D1586, the N-Value equals 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-16

CLIENT: **City of Winnipeg**
PROJECT: **2024 Local Street Renewals**
LOCATION: **Machray Avenue**
DATE BORED: **January 10 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**						
		Firm to stiff black fat **CLAY (CH)**		AS				
								Sieve/Hydro at 0.7 m G 0% S 2% M 24% C 74%
		- brown below 0.8 m		AS				
1		Soft tan lean **CLAY (CL)**		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

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.
Drilling Method: 125 mm SSA
Completion Depth: 2.4 m

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

Printed Feb 8 2024 17:14:30 SOIL 123316853-2024_LOCAL_STREET_RENEWALS.GPJ NEW TEMPLATE TEST PROJECT.GPJ 2/8/24

BOREHOLE RECORD

BH-17

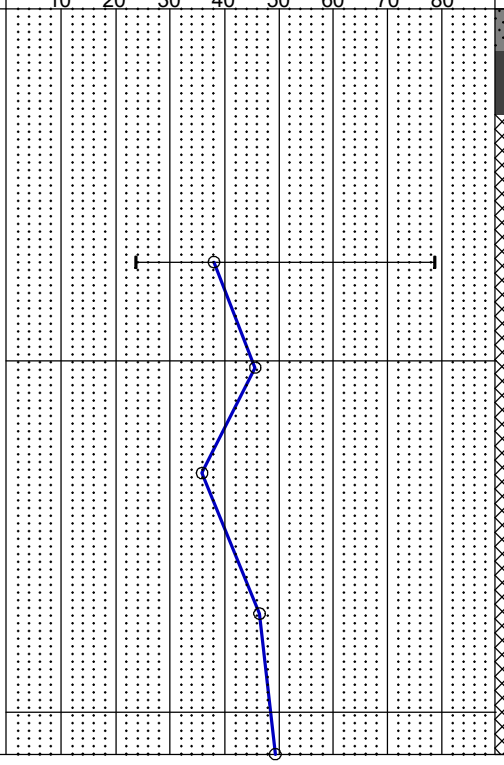
CLIENT: **City of Winnipeg**
PROJECT: **2024 Local Street Renewals**
LOCATION: **Machray Avenue**
DATE BORED: **January 15 2024**

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**						
		Firm brown fat **CLAY (CH)**		AS				Sieve at 0.7 m G S Fines 79% 0% 67%
1		Soft tan lean **CLAY (CL)**		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 2.120 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: 2.12 m

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

Printed Feb 8 2024 17:14:30 SOIL 123316853-2024_LOCAL_STREET_RENEWALS.GPJ NEW TEMPLATE TEST PROJECT.GPJ 2/8/24

Stantec

BOREHOLE RECORD

BH-18

CLIENT: **City of Winnipeg**
PROJECT: **2024 Local Street Renewals**
LOCATION: **Machray Avenue**
DATE BORED: **January 15 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**						
		Firm brown fat **CLAY (CH)**		AS				
		Soft tan lean **CLAY (CL)**		AS				Sieve/Hydro at 0.7 m G 0% S 4% M 38% C 58%
1				AS				
		Firm brown fat **CLAY (CH)**		AS				
				AS				
2				AS				

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 2.090 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

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

Drilling Contractor: Paddock Drilling Ltd.
Drilling Method: 125 mm SSA
Completion Depth: 2.09 m

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

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Stantec

BOREHOLE RECORD

BH-19

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

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

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

DATE BORED: **January 10 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**						
		Firm black fat **CLAY (CH)**		AS				Sieve/Hydro at 0.7 m G S M C 0% 1% 31% 68%
1		- brown below 0.85 m		AS				
				AS				
		Soft tan lean **CLAY (CL)**		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. Logged By: GP

Drilling Method: 125 mm SSA Reviewed By: GB

Completion Depth: 2.4 m Page 1 of 1

Stantec

BOREHOLE RECORD

BH-20

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

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

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

DATE BORED: **January 24 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	BACKFILL	ELEVATION (m)
0		**ASPHALT**								
		Stiff black fat **CLAY (CH)**		AS						
		- brown below 0.9 m		AS				Sieve/Hydro at 0.8 m G 0%, S 2%, M 31%, C 68%		
1		Soft tan lean **CLAY (CL)**		AS						
2										
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

End of Borehole

- Borehole terminated at a depth of 1.500 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: 1.5 m	Page 1 of 1

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Stantec

BOREHOLE RECORD

BH-21

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

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

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

DATE BORED: **January 24 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	BACKFILL	ELEVATION (m)
0		**ASPHALT** **CONCRETE** Stiff black fat **CLAY (CH)** - some gravel		AS AS						
1		**End of Borehole** • auger refusal at a depth of 0.75 m on suspected concrete. • 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.								
2										
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 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: 0.75 m Page 1 of 1

Stantec

BOREHOLE RECORD

BH-22

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

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

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

DATE BORED: **January 24 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**						
		Stiff black fat **CLAY (CH)**		AS				
								Sieve/Hydro at 0.8 m G S M C 0% 2% 37% 61%
1		- grey and firm below 0.9 m		AS				
		Soft tan lean **CLAY (CL)**		AS				
2								
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 1.500 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: 1.5 m	Page 1 of 1

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BOREHOLE RECORD

BH-23

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

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

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

DATE BORED: **January 10 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**						
		Stiff black fat **CLAY (CH)**		AS				Sieve/Hydro at 0.7 m G 0% S 4% M 40% C 56%
1		Soft tan lean **CLAY (CL)**		AS				
				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

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-24

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

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

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

DATE BORED: **January 10 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**						
		Stiff black fat **CLAY (CH)**		AS				
								Sieve/Hydro at 0.6 m G 0% S 3% M 30% C 68%
1		Soft tan lean **CLAY (CL)**		AS				
				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

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

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BOREHOLE RECORD

BH-36

CLIENT: **City of Winnipeg**
PROJECT: **2024 Local Street Renewals**
LOCATION: **Luxton Avenue**
DATE BORED: **January 10 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						
		Stiff black fat **CLAY (CH)**		AS				
1		- brown below 1.1 m		AS				Sieve/Hydro at 0.8 m G S M C 0% 1% 35% 63%
				AS				
		Soft tan lean **CLAY (CL)** - sandy		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 2.400 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

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Stantec

BOREHOLE RECORD

BH-37

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

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

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

DATE BORED: **January 10 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 S M C 0% 1% 47% 51%
1				AS				
		- brown and firm below 1.5 m		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 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. Logged By: GP

Drilling Method: 125 mm SSA Reviewed By: GB

Completion Depth: 2.4 m Page 1 of 1

Stantec

BOREHOLE RECORD

BH-38

CLIENT: **City of Winnipeg**
PROJECT: **2024 Local Street Renewals**
LOCATION: **Luxton Avenue**
DATE BORED: **January 10 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	BACKFILL	ELEVATION (m)
0		**ASPHALT**								
		CONCRETE								
		Stiff black fat **CLAY (CH)**		AS				Sieve/Hydro at 0.8 m G S M C 0% 1% 56% 43%		
1		- brown and firm below 0.85 m		AS						
				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 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
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Stantec

BOREHOLE RECORD

BH-39

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

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

LOCATION: **Winnipeg, Manitoba** DATUM: **N/A**

DATE BORED: **January 10 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		**ASPHALT**								
		FILL: granular								
		CONCRETE								
		Stiff black fat **CLAY (CH)**		AS				Sieve/Hydro at 0.8 m G S M C 0% 0% 61% 31%		
1		- brown and firm below 0.9 m		AS						
				AS						
				AS						
2		Soft tan lean **CLAY (CL)** - sandy		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. | Logged By: GP

Drilling Method: 125 mm SSA | Reviewed By: GB

Completion Depth: 2.4 m | Page 1 of 1

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BOREHOLE RECORD

BH-40

CLIENT: **City of Winnipeg**
PROJECT: **2024 Local Street Renewals**
LOCATION: **Luxton Avenue**
DATE BORED: **January 15 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		**ASPHALT**								
		CONCRETE								
		Stiff black fat **CLAY (CH)**								
		Soft tan sandy lean **CLAY (CL)**		AS				Sieve/Hydro at 0.8 m G 2% S 40% M 37% C 21%		
1				AS						
				AS						
2				AS						
				AS						
3										
4										

End of Borehole
- Borehole terminated at a depth of 2.175 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: 2.175 m	Page 1 of 1

BOREHOLE RECORD

BH-41

CLIENT: **City of Winnipeg**
PROJECT: **2024 Local Street Renewals**
LOCATION: **Backlane (Anderson Ave/St. Johns Ave)**
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						
		Stiff black fat **CLAY (CH)**						
		Soft tan lean **CLAY (CL)**		AS				Sieve/Hydro at 0.8 m G 0% S 2% M 85% C 13%
1				AS				
		Firm brown fat **CLAY (CH)**		AS				
2				AS				
				AS				
3		**End of Borehole** • Borehole terminated at a depth of 2.700 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.	Logged By: RB
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 2.7 m	Page 1 of 1

Stantec

BOREHOLE RECORD

BH-42

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

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

LOCATION: **Backlane (Anderson Ave/St. Johns Ave)** 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**						
		Firm black fat **CLAY (CH)**		AS				Sieve/Hydro at 0.6 m G S M C 0% 2% 36% 62%
		- brown below 0.76 m		AS				
1				AS				
		Soft tan lean **CLAY (CL)** - sandy		AS				
2				AS				
3		**End of Borehole** • Borehole terminated at a depth of 2.700 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.	Logged By: RB
Drilling Method: 125 mm SSA	Reviewed By: GB
Completion Depth: 2.7 m	Page 1 of 1

Stantec

BOREHOLE RECORD

BH-43

CLIENT: **City of Winnipeg**
PROJECT: **2024 Local Street Renewals**
LOCATION: **Backlane (Anderson Ave/St. Johns Ave)**
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**						
		Firm black fat **CLAY (CH)** with sand		AS				
								Sieve/Hydro at 0.8 m G 1% S 21% M 41% C 37%
1		Soft tan lean **CLAY (CL)** - sandy		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

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 17:14:43 SOIL 123316853-2024_LOCAL_STREET_RENEWALS.GPJ NEW TEMPLATE TEST PROJECT.GPJ 2/8/24

APPENDIX D

Core Photographs

Figure 1 – Core No. 16 (Machray Ave)

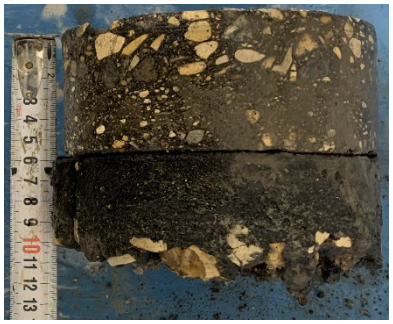


Figure 2 – Core No. 17 (Machray Ave)

Figure 3 – Core No. 18 (Machray Ave)

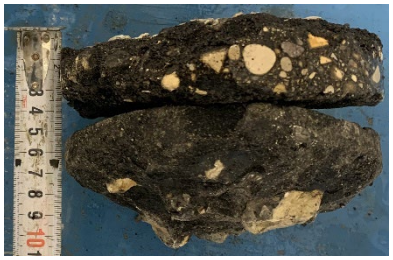


Figure 4 – Core No. 19 (Machray Ave)

Figure 5 – Core No. 20 (Charles St)

Figure 6 – Core No. 21 (Charles St)

Figure 7 – Core No. 22 (Charles St)

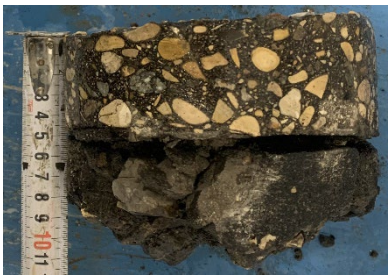


Figure 8 – Core No. 23 (Church Ave)

Figure 9 – Core No. 24 (Church Ave)

Figure 10 – Core No. 25 (Lansdowne Ave)

Figure 11 – Core No. 26 (Lansdowne Ave)

Figure 12 – Core No. 27 (Lansdowne Ave)

Figure 13 – Core No. 28 (Lansdowne Ave)

Figure 14 – Core No. 29 (Cochrane St)

Figure 15 – Core No. 30 (Cochrane St)

Figure 16 – Core No. 31 (Cochrane St)

Figure 17 – Core No. 32 (McAdam Ave)

Figure 18 – Core No. 33 (McAdam Ave)

Figure 19 – Core No. 34 (McAdam Ave)

Figure 20 – Core No. 35 (McAdam Ave)

Figure 21 – Core No. 36 (Luxton Ave)

Figure 22 – Core No. 37 (Luxton Ave)

Figure 23 – Core No. 38 (Luxton Ave)

Figure 24 – Core No. 39 (Luxton Ave)

Figure 25 – Core No. 40 (Luxton Ave)

Figure 26 – Core No. 41 (Alley)

Figure 27 – Core No. 42 (Alley)

Figure 28 – Core No. 43 (Alley)

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.10
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

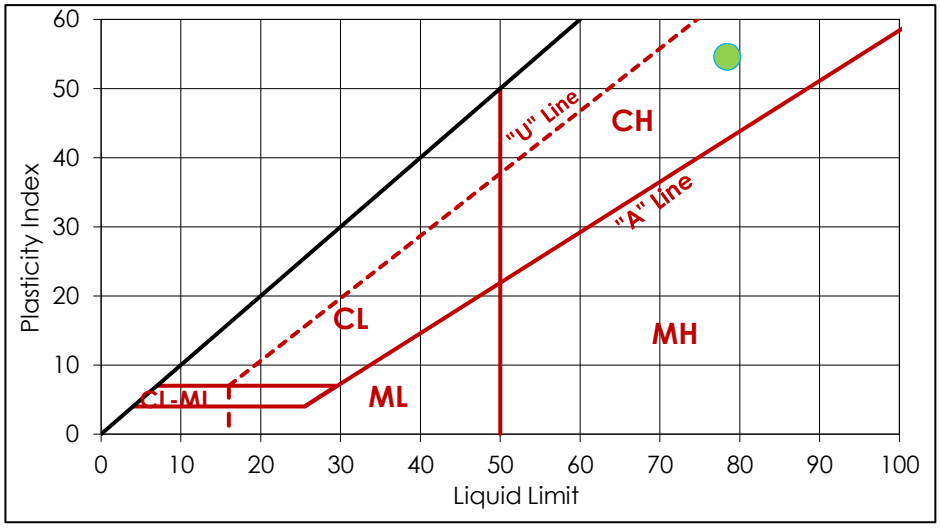
CLIENT FIELD ID BH-16, 680 mm

STANTEC SAMPLE NO. 2956

LIQUID LIMIT		
TRIAL	1	2
BLOWS	23	24
MC (%)	79	79

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	24	24

LIQUID LIMIT, LL	78
PLASTIC LIMIT, PL	24
PLASTICITY INDEX, PI	55
AS REC'D MC (%)	30.60



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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

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

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.15
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.15
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.25
TESTED BY: Carson Cockwell

MATERIAL IDENTIFICATION

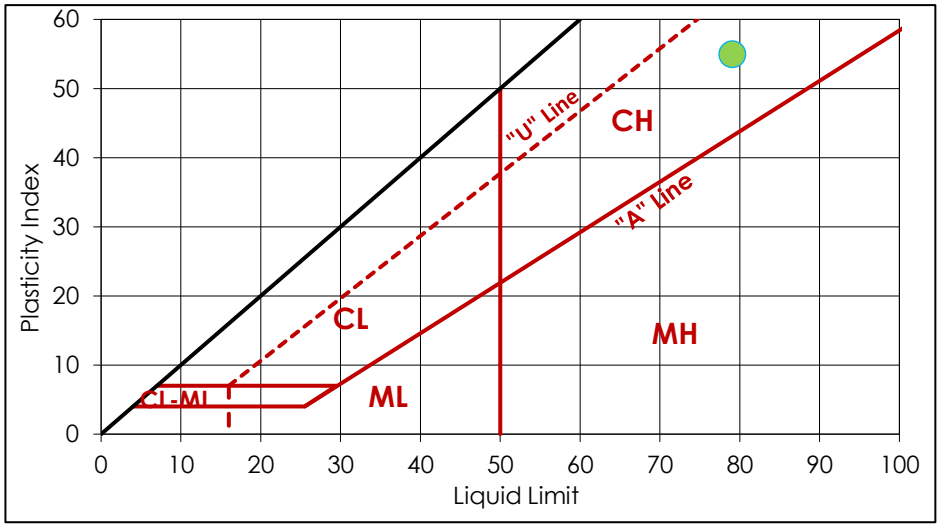
CLIENT FIELD ID BH-17, 720 mm

STANTEC SAMPLE NO. 2975

LIQUID LIMIT		
TRIAL	1	2
BLOWS	22	24
MC (%)	80	80

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	24	24

LIQUID LIMIT, LL	79
PLASTIC LIMIT, PL	24
PLASTICITY INDEX, PI	55
AS REC'D MC (%)	38.60



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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

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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.15
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.15
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.25
TESTED BY: Carson Cockwell

MATERIAL IDENTIFICATION

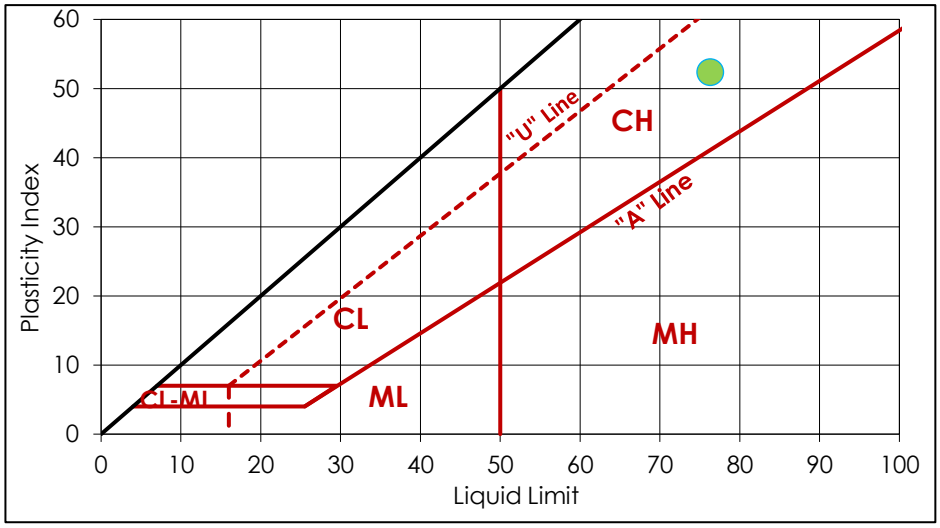
CLIENT FIELD ID BH-18, 690 mm

STANTEC SAMPLE NO. 2976

LIQUID LIMIT		
TRIAL	1	2
BLOWS	23	24
MC (%)	78	76

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	25	23

LIQUID LIMIT, LL	76
PLASTIC LIMIT, PL	24
PLASTICITY INDEX, PI	52
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

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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.10
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

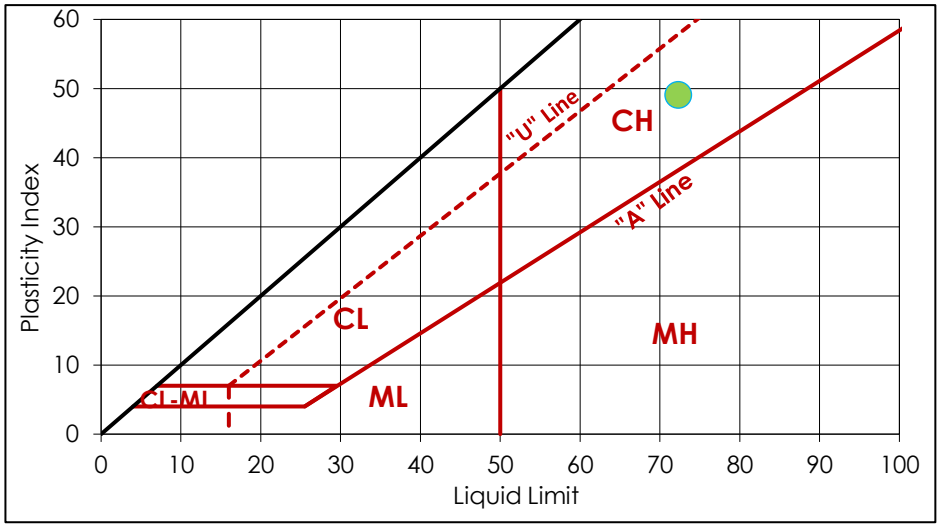
CLIENT FIELD ID BH-19, 680 mm

STANTEC SAMPLE NO. 2957

LIQUID LIMIT		
TRIAL	1	2
BLOWS	23	23
MC (%)	74	72

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	23	23

LIQUID LIMIT, LL	72
PLASTIC LIMIT, PL	23
PLASTICITY INDEX, PI	49
AS REC'D MC (%)	29.40



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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

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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.29
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.29
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Feb.05
TESTED BY: Graeme Patrick

MATERIAL IDENTIFICATION

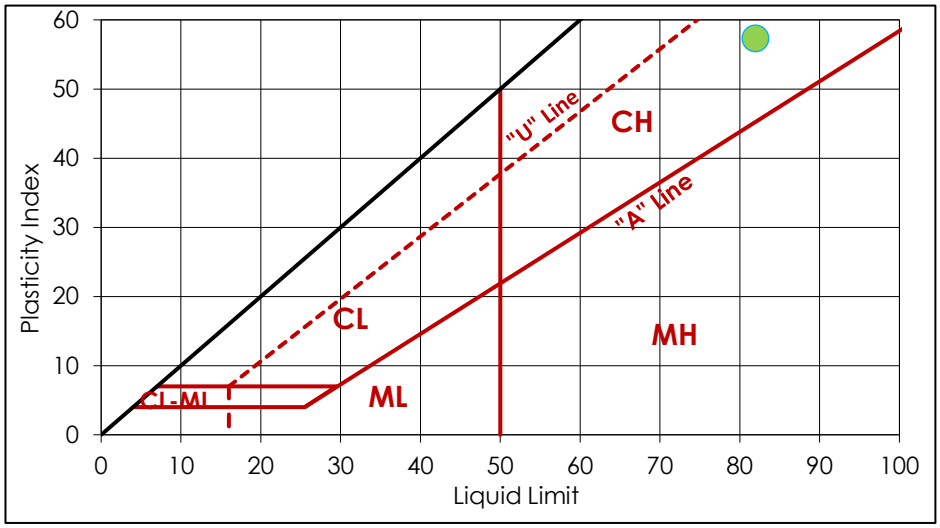
CLIENT FIELD ID BH-20, 800 mm

STANTEC SAMPLE NO. 4025

LIQUID LIMIT		
TRIAL	1	2
BLOWS	27	27
MC (%)	81	81

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	25	25

LIQUID LIMIT, LL	82
PLASTIC LIMIT, PL	25
PLASTICITY INDEX, PI	57
AS REC'D MC (%)	30.50



COMMENTS
No comments.

REPORT DATE 2024.Feb.06

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

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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.29
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.29
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Feb.05
TESTED BY: Graeme Patrick

MATERIAL IDENTIFICATION

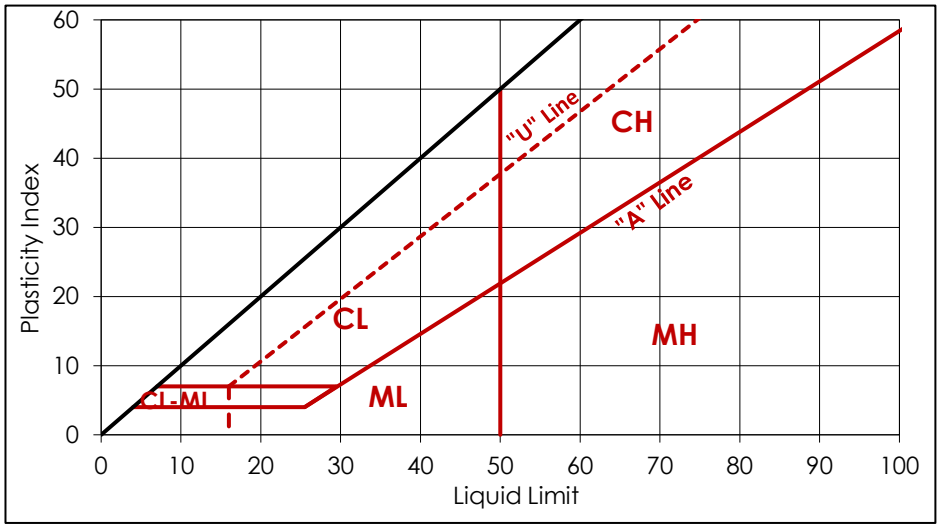
CLIENT FIELD ID BH-22, 795 mm

STANTEC SAMPLE NO. 4026

	LIQUID LIMIT	
TRIAL	1	2
BLOWS	24	25
MC (%)	93	92

	PLASTIC LIMIT	
TRIAL	1	2
MC (%)	29	29

LIQUID LIMIT, LL	92
PLASTIC LIMIT, PL	29
PLASTICITY INDEX, PI	63
AS REC'D MC (%)	35.70



COMMENTS
No comments.

REPORT DATE 2024.Feb.06

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

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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.10
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

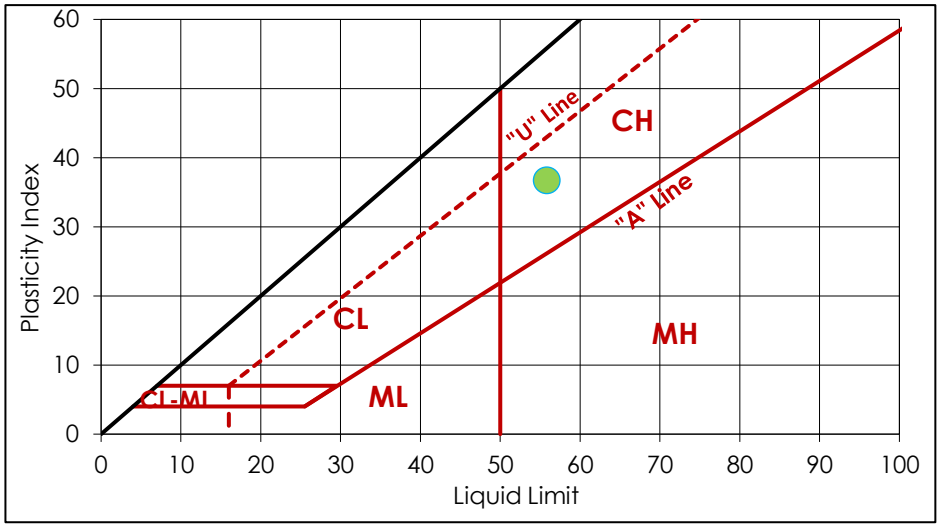
CLIENT FIELD ID BH-23, 690 mm

STANTEC SAMPLE NO. 2958

LIQUID LIMIT		
TRIAL	1	2
BLOWS	26	26
MC (%)	56	55

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	19	20

LIQUID LIMIT, LL	56
PLASTIC LIMIT, PL	19
PLASTICITY INDEX, PI	37
AS REC'D MC (%)	37.20



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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

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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.10
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

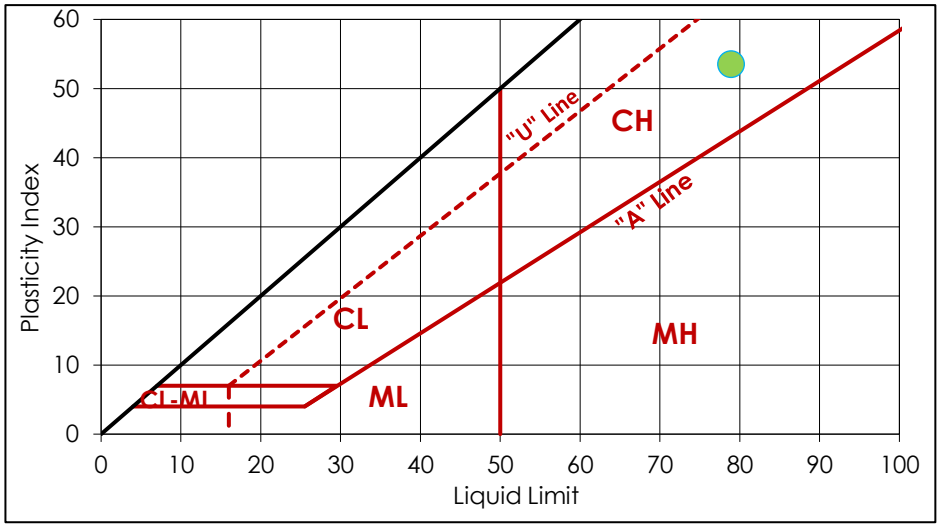
CLIENT FIELD ID BH-24, 630 mm

STANTEC SAMPLE NO. 2959

LIQUID LIMIT		
TRIAL	1	2
BLOWS	28	26
MC (%)	78	78

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	25	26

LIQUID LIMIT, LL	79
PLASTIC LIMIT, PL	25
PLASTICITY INDEX, PI	54
AS REC'D MC (%)	35.90



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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

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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.10
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-36, 825 mm

STANTEC SAMPLE NO. 2961

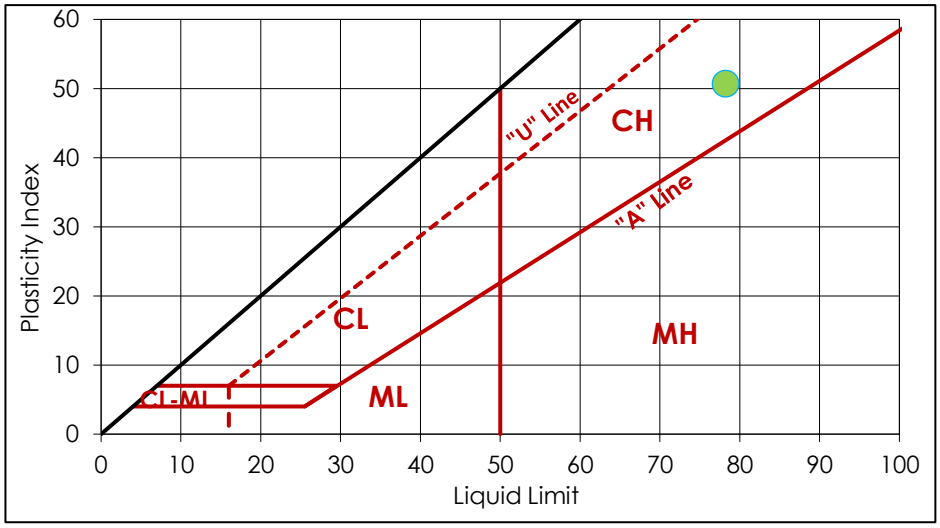
LIQUID LIMIT

TRIAL	1	2
BLOWS	27	27
MC (%)	77	78

PLASTIC LIMIT

TRIAL	1	2
MC (%)	27	28

LIQUID LIMIT, LL	78
PLASTIC LIMIT, PL	28
PLASTICITY INDEX, PI	51
AS REC'D MC (%)	37.10



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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

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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.10
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

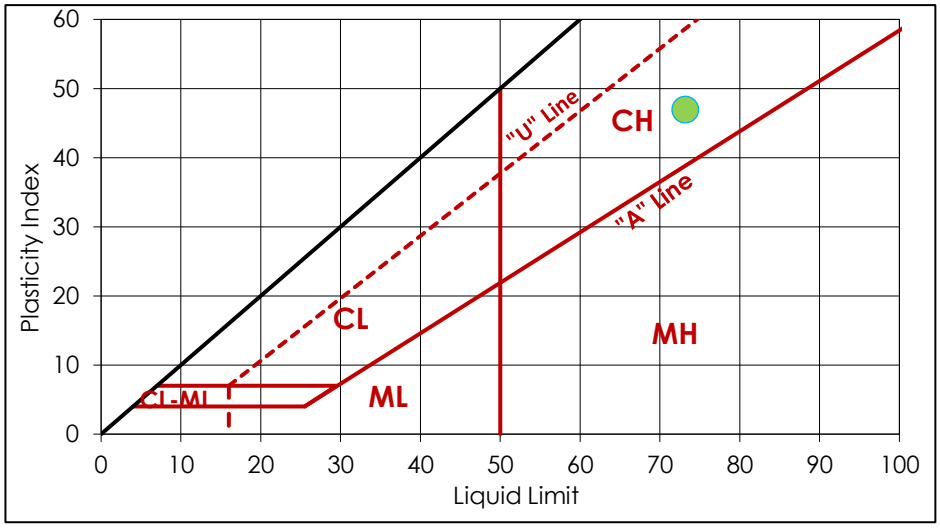
CLIENT FIELD ID BH-37, 825 mm

STANTEC SAMPLE NO. 2961

LIQUID LIMIT		
TRIAL	1	2
BLOWS	21	22
MC (%)	75	74

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	26	27

LIQUID LIMIT, LL	73
PLASTIC LIMIT, PL	26
PLASTICITY INDEX, PI	47
AS REC'D MC (%)	25.00



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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

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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.10
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

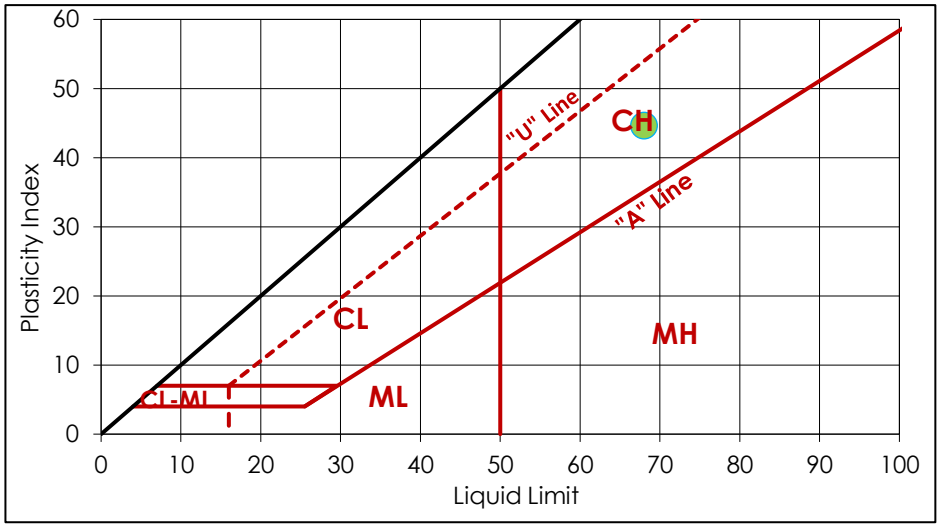
CLIENT FIELD ID BH-38, 800 mm

STANTEC SAMPLE NO. 2962

LIQUID LIMIT		
TRIAL	1	2
BLOWS	20	22
MC (%)	69	70

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	24	23

LIQUID LIMIT, LL	68
PLASTIC LIMIT, PL	23
PLASTICITY INDEX, PI	45
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

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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.10
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

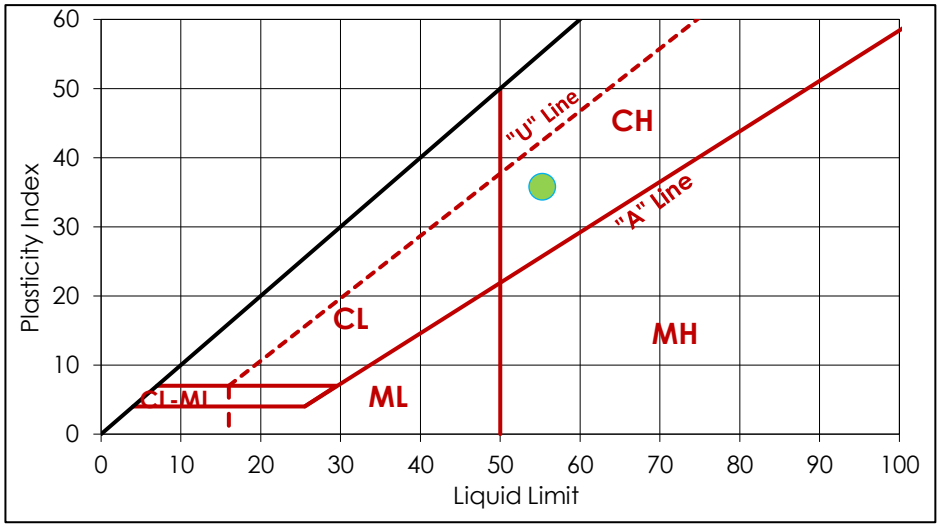
CLIENT FIELD ID BH-39, 800 mm

STANTEC SAMPLE NO. 2963

LIQUID LIMIT		
TRIAL	1	2
BLOWS	20	20
MC (%)	57	57

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	20	19

LIQUID LIMIT, LL	55
PLASTIC LIMIT, PL	20
PLASTICITY INDEX, PI	36
AS REC'D MC (%)	21.50



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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

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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.15
SAMPLED BY: Stantec Consulting Ltd.

DATE RECEIVED: 2024.Jan.15
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.25
TESTED BY: Carson Cockwell

MATERIAL IDENTIFICATION

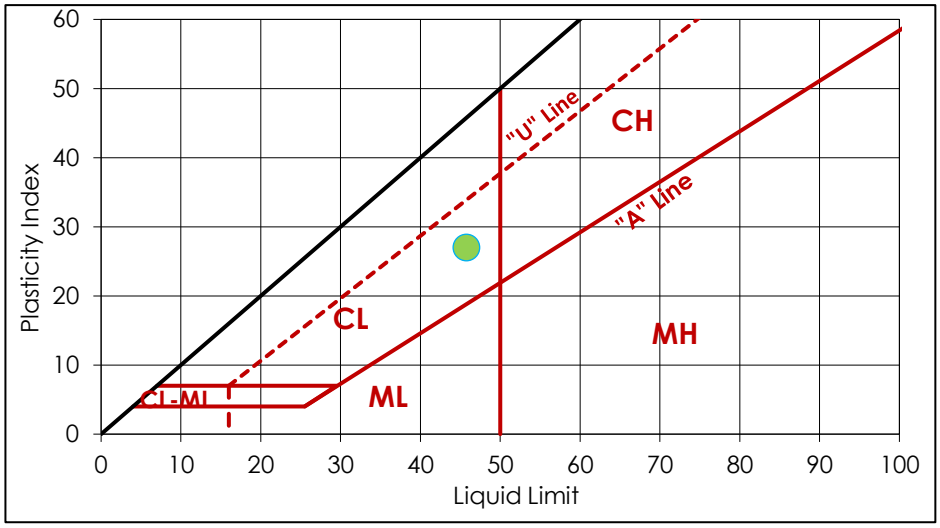
CLIENT FIELD ID BH-40, 775 mm

STANTEC SAMPLE NO. 2977

LIQUID LIMIT		
TRIAL	1	2
BLOWS	28	29
MC (%)	46	44

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	19	19

LIQUID LIMIT, LL	46
PLASTIC LIMIT, PL	19
PLASTICITY INDEX, PI	27
AS REC'D MC (%)	27.40



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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

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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.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

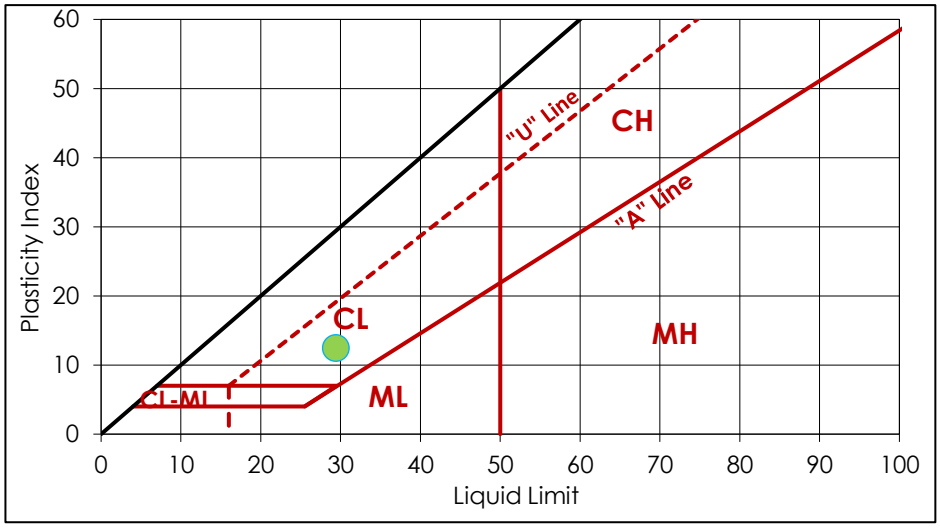
CLIENT FIELD ID BH-41, 770 mm

STANTEC SAMPLE NO. 2986

LIQUID LIMIT		
TRIAL	1	2
BLOWS	25	26
MC (%)	29	29

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	17	17

LIQUID LIMIT, LL	29
PLASTIC LIMIT, PL	17
PLASTICITY INDEX, PI	12
AS REC'D MC (%)	21.80



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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

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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.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

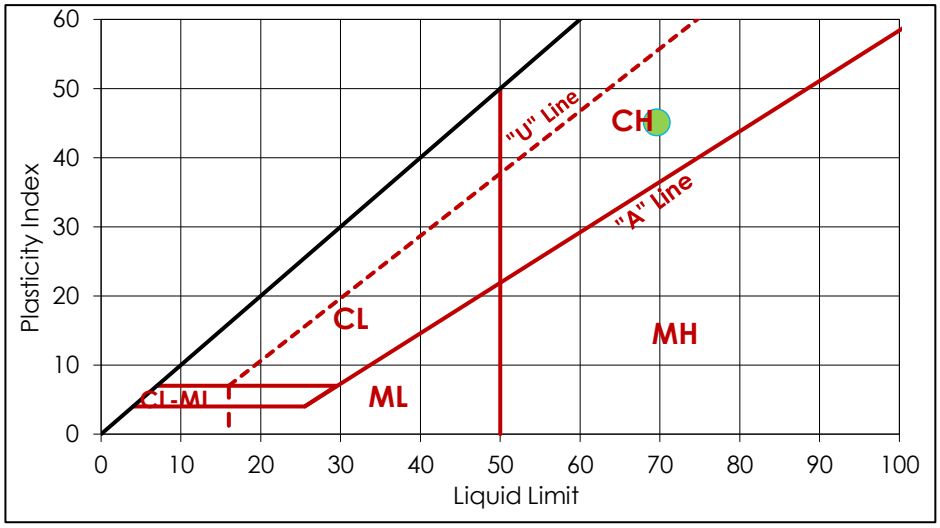
CLIENT FIELD ID BH-42, 635 mm

STANTEC SAMPLE NO. 2987

LIQUID LIMIT		
TRIAL	1	2
BLOWS	22	22
MC (%)	72	70

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	25	24

LIQUID LIMIT, LL	70
PLASTIC LIMIT, PL	25
PLASTICITY INDEX, PI	45
AS REC'D MC (%)	38.70



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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

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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. 16

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

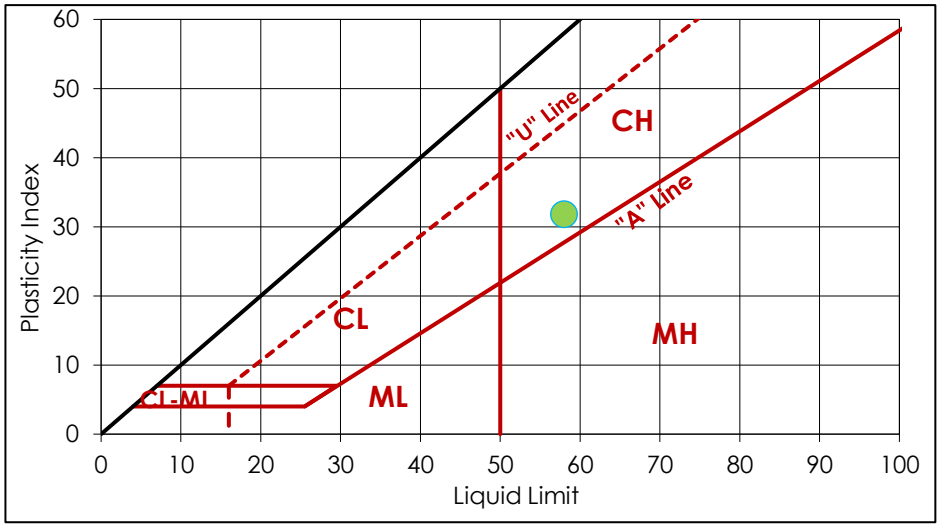
CLIENT FIELD ID BH-43, 760 mm

STANTEC SAMPLE NO. 2988

LIQUID LIMIT		
TRIAL	1	2
BLOWS	24	24
MC (%)	58	58

PLASTIC LIMIT		
TRIAL	1	2
MC (%)	26	26

LIQUID LIMIT, LL	58
PLASTIC LIMIT, PL	26
PLASTICITY INDEX, PI	32
AS REC'D MC (%)	40.40



COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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

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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.10
SAMPLED BY: Stantec Consulting Ltd.

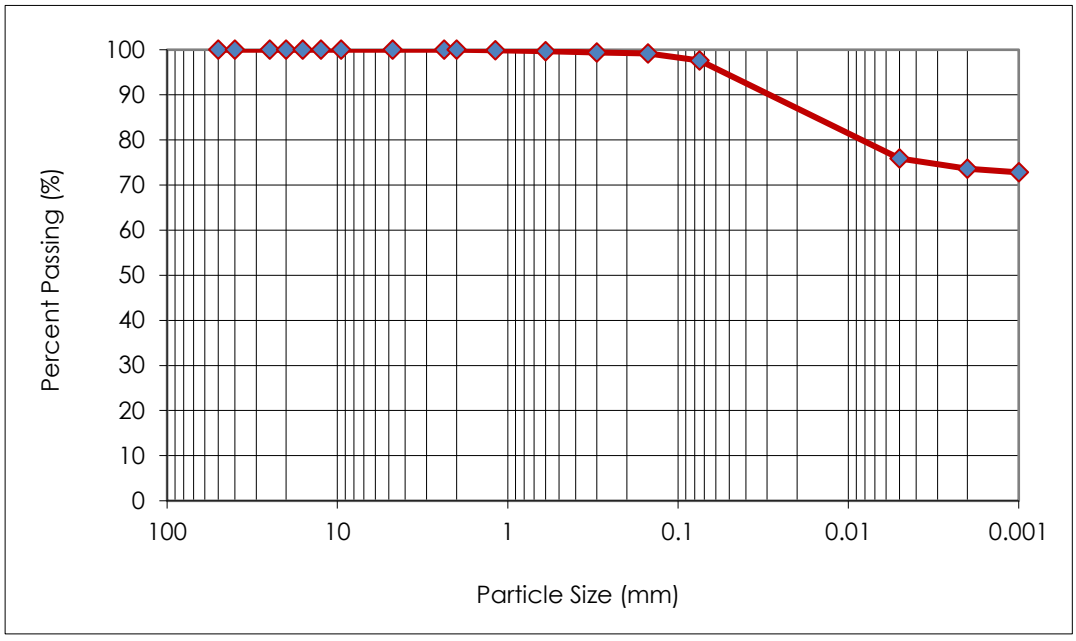
DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-16, 680 mm

STANTEC SAMPLE NO. 2956



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	99.9
0.600	99.7
0.300	99.4
0.150	99.2
0.075	97.6
0.005	75.9
0.002	73.6
0.001	72.8

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.5	1.9	24.0	73.6	72.8

COMMENTS
No comments.

REPORT DATE 2024.Jan.18

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

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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.15
SAMPLED BY: Stantec Consulting Ltd.

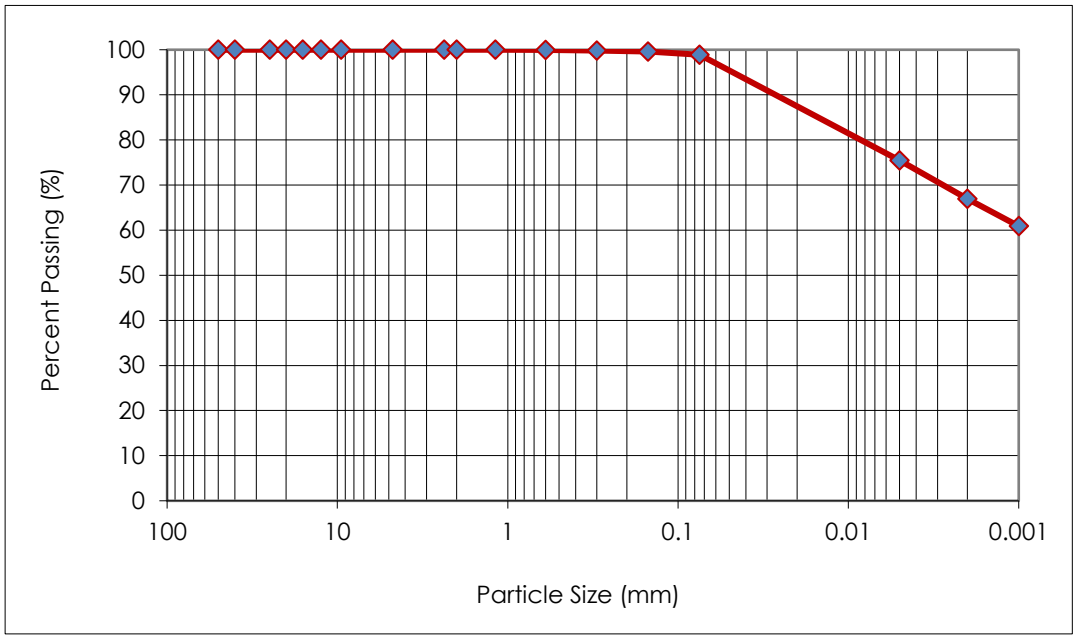
DATE RECEIVED: 2024.Jan.15
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.23
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-17, 720 mm

STANTEC SAMPLE NO. 2975



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	100.0
0.600	100.0
0.300	99.8
0.150	99.6
0.075	98.9
0.005	75.5
0.002	67.0
0.001	60.9

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.1	1.0	31.9	67.0	60.9

COMMENTS
No comments.

REPORT DATE 2024.Jan.25

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

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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.15
SAMPLED BY: Stantec Consulting Ltd.

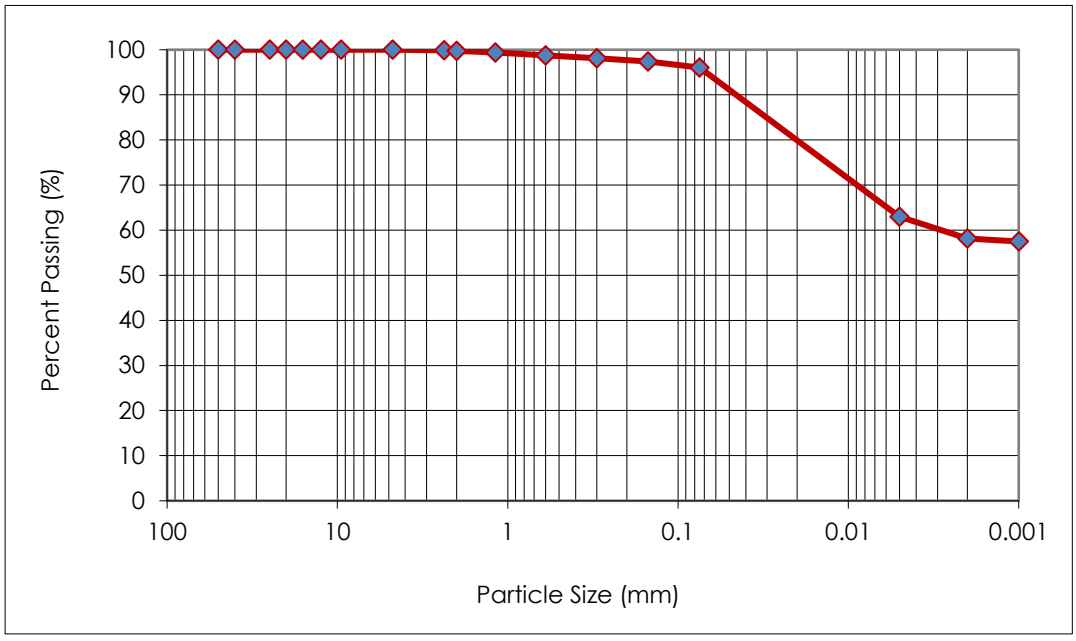
DATE RECEIVED: 2024.Jan.15
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.23
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-18, 690 mm

STANTEC SAMPLE NO. 2976



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	99.7
1.18	99.4
0.600	98.8
0.300	98.1
0.150	97.4
0.075	96.0
0.005	63.0
0.002	58.1
0.001	57.5

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.3	1.3	2.4	37.9	58.1	57.5

COMMENTS
No comments.

REPORT DATE 2024.Jan.25

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

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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.10
SAMPLED BY: Stantec Consulting Ltd.

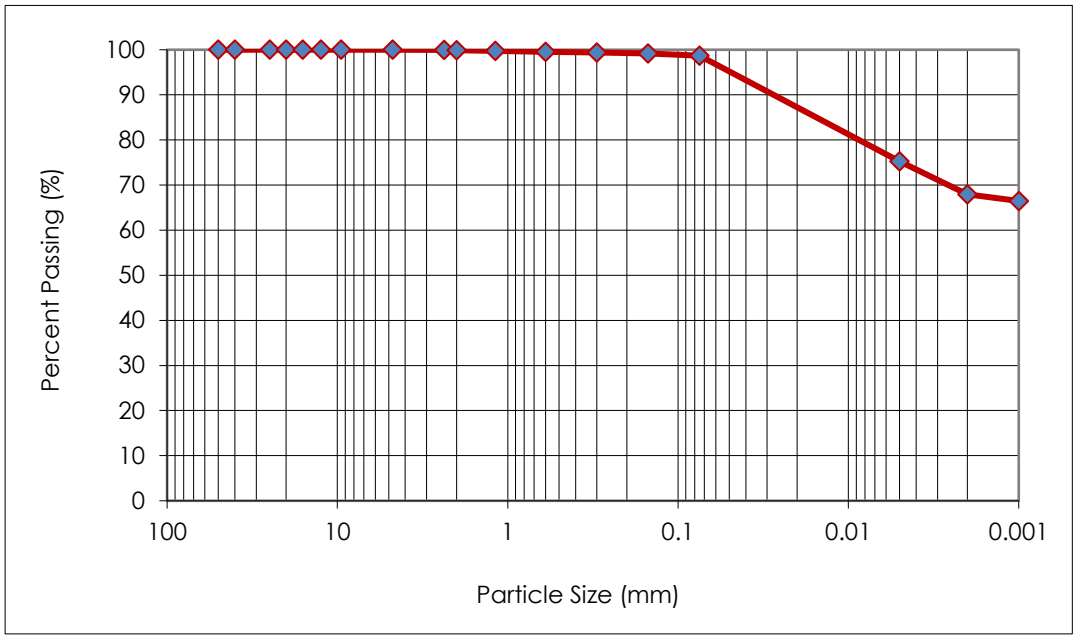
DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-19, 680 mm

STANTEC SAMPLE NO. 2957



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	99.7
0.600	99.5
0.300	99.4
0.150	99.2
0.075	98.7
0.005	75.3
0.002	68.0
0.001	66.5

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.1	0.5	0.7	30.7	68.0	66.5

COMMENTS
No comments.

REPORT DATE 2024.Jan.18

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

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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.29
SAMPLED BY: Stantec Consulting Ltd.

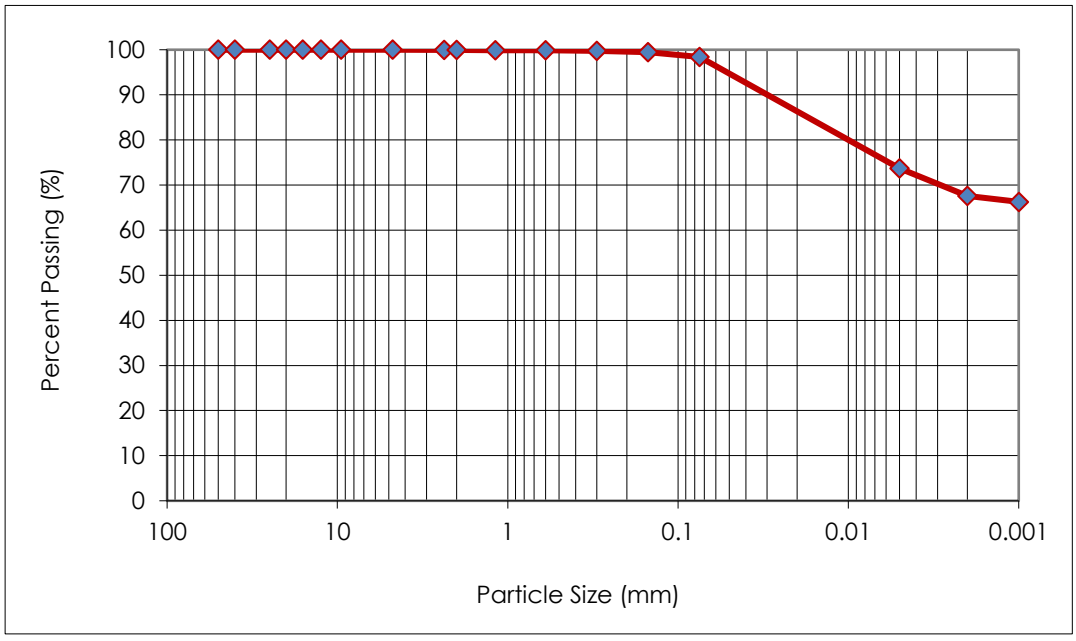
DATE RECEIVED: 2024.Jan.29
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Feb.02
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-20, 800 mm

STANTEC SAMPLE NO. 4025



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	99.9
1.18	99.9
0.600	99.9
0.300	99.7
0.150	99.4
0.075	98.4
0.005	73.7
0.002	67.6
0.001	66.3

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.1	0.1	1.4	30.8	67.6	66.3

COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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

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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.29
SAMPLED BY: Stantec Consulting Ltd.

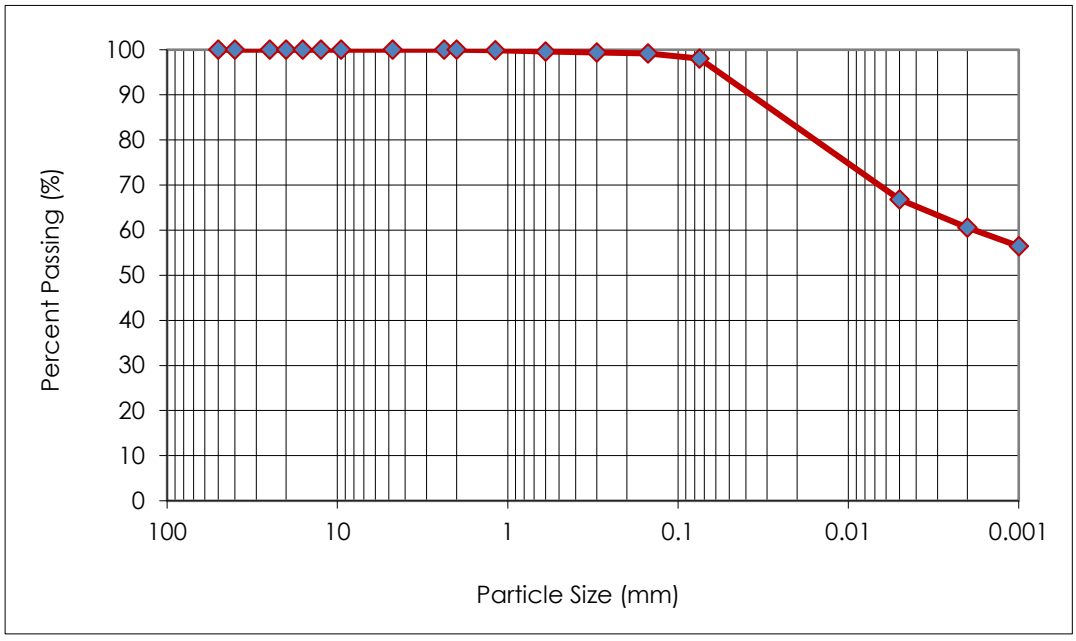
DATE RECEIVED: 2024.Jan.29
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Feb.02
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-22, 795 mm

STANTEC SAMPLE NO. 4026



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	99.6
0.300	99.4
0.150	99.1
0.075	98.0
0.005	66.8
0.002	60.6
0.001	56.5

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.5	1.5	37.4	60.6	56.5

COMMENTS
No comments.

REPORT DATE 2024.Feb.05

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

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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.10
SAMPLED BY: Stantec Consulting Ltd.

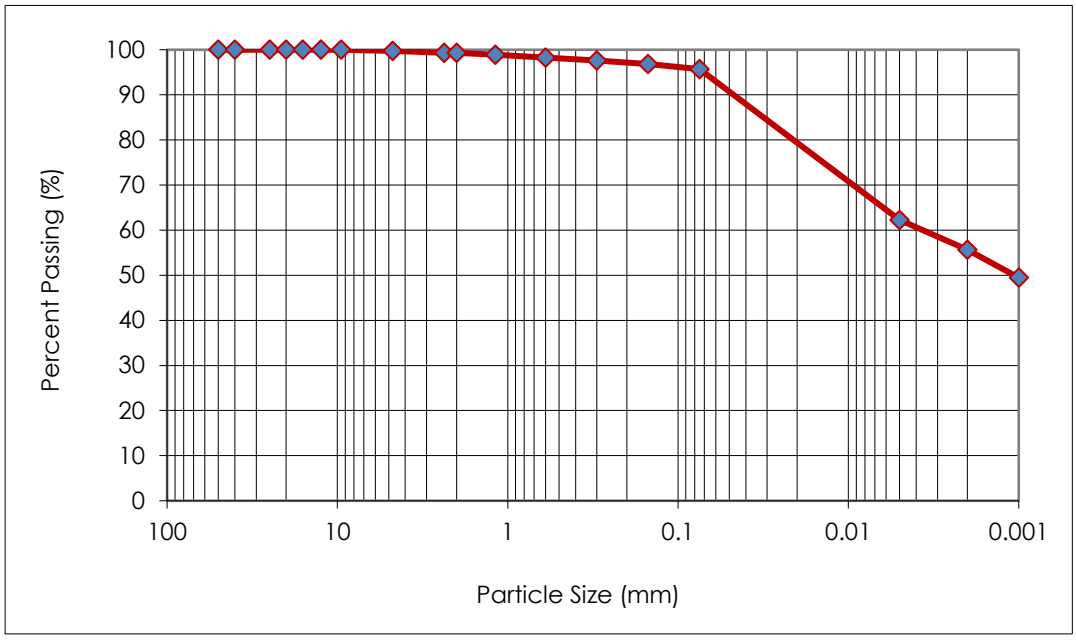
DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-23, 690 mm

STANTEC SAMPLE NO. 2958



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	99.3
2.00	99.3
1.18	98.9
0.600	98.2
0.300	97.6
0.150	96.9
0.075	95.7
0.005	62.2
0.002	55.6
0.001	49.5

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.3	0.4	1.4	2.2	40.1	55.6	49.5

COMMENTS
No comments.

REPORT DATE 2024.Jan.18

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

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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.10
SAMPLED BY: Stantec Consulting Ltd.

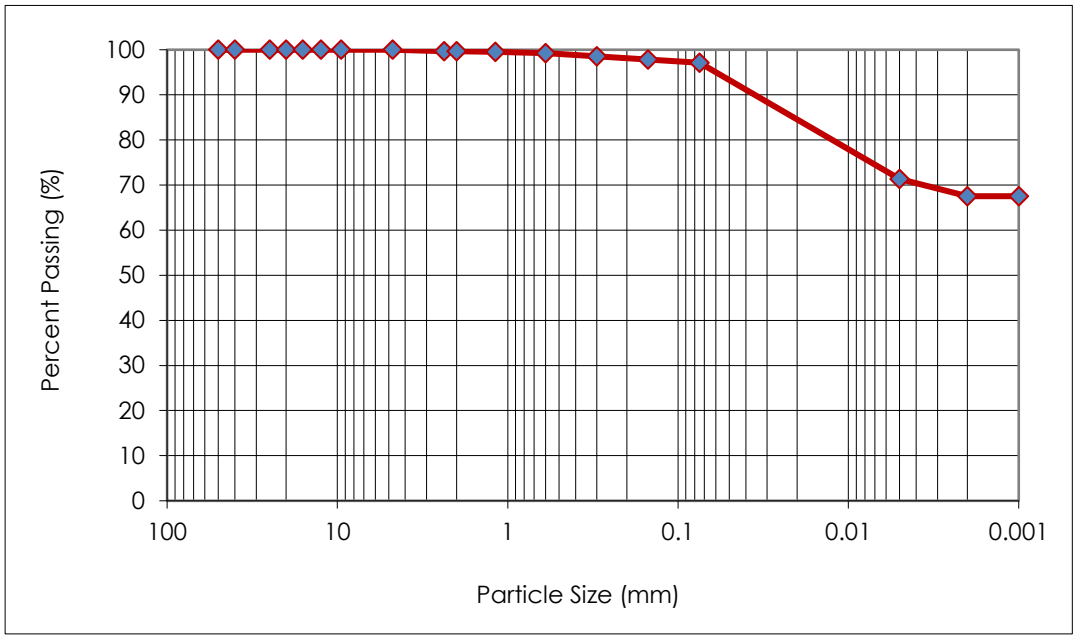
DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-24, 630 mm

STANTEC SAMPLE NO. 2959



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	99.7
2.00	99.7
1.18	99.5
0.600	99.2
0.300	98.6
0.150	97.8
0.075	97.1
0.005	71.4
0.002	67.5
0.001	67.5

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.3	0.9	1.7	29.6	67.5	67.5

COMMENTS
No comments.

REPORT DATE 2024.Jan.18

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

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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.10
SAMPLED BY: Stantec Consulting Ltd.

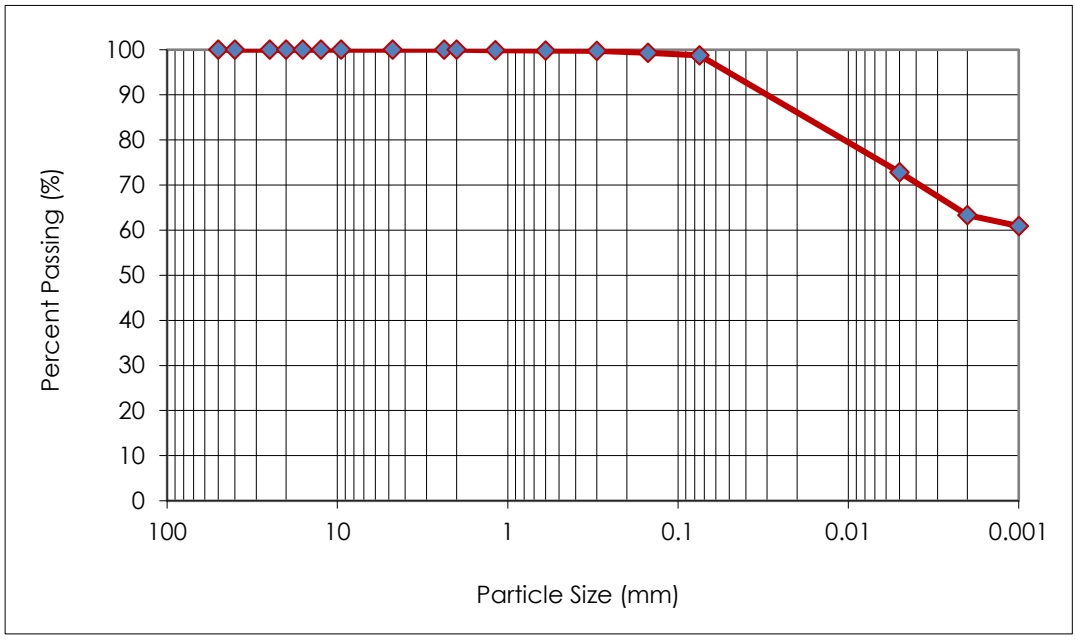
DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-36, 825 mm

STANTEC SAMPLE NO. 2960



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	99.7
0.150	99.3
0.075	98.7
0.005	72.8
0.002	63.3
0.001	60.9

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.3	1.0	35.4	63.3	60.9

COMMENTS
No comments.

REPORT DATE 2024.Jan.18

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

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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.10
SAMPLED BY: Stantec Consulting Ltd.

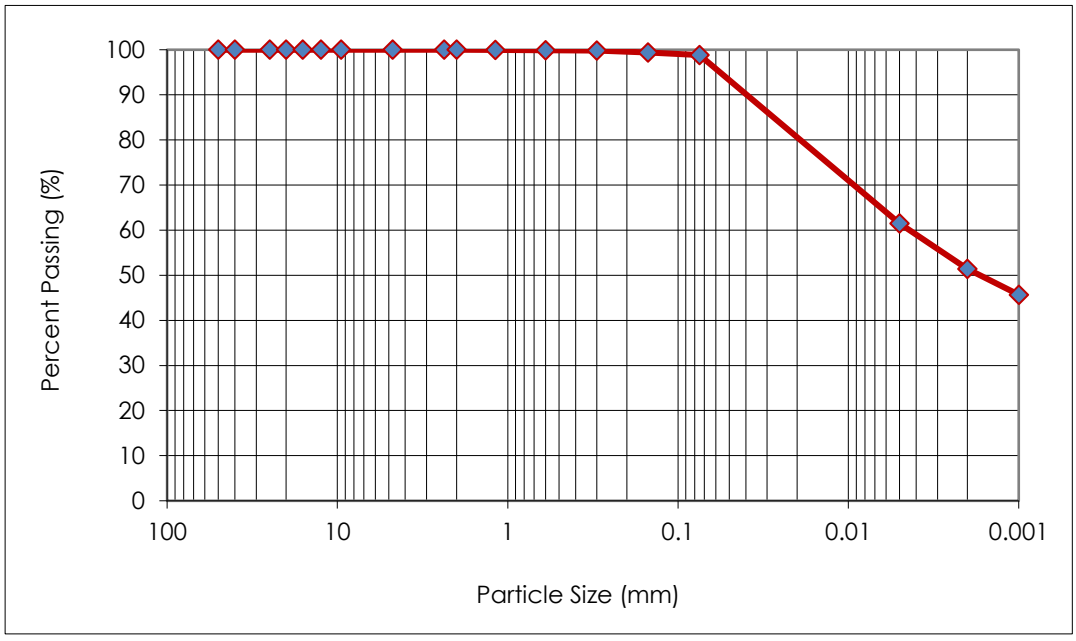
DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-37, 825 mm

STANTEC SAMPLE NO. 2961



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	99.9
0.300	99.8
0.150	99.4
0.075	98.8
0.005	61.5
0.002	51.4
0.001	45.7

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.1	1.1	47.4	51.4	45.7

COMMENTS
No comments.

REPORT DATE 2024.Jan.18

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

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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.10
SAMPLED BY: Stantec Consulting Ltd.

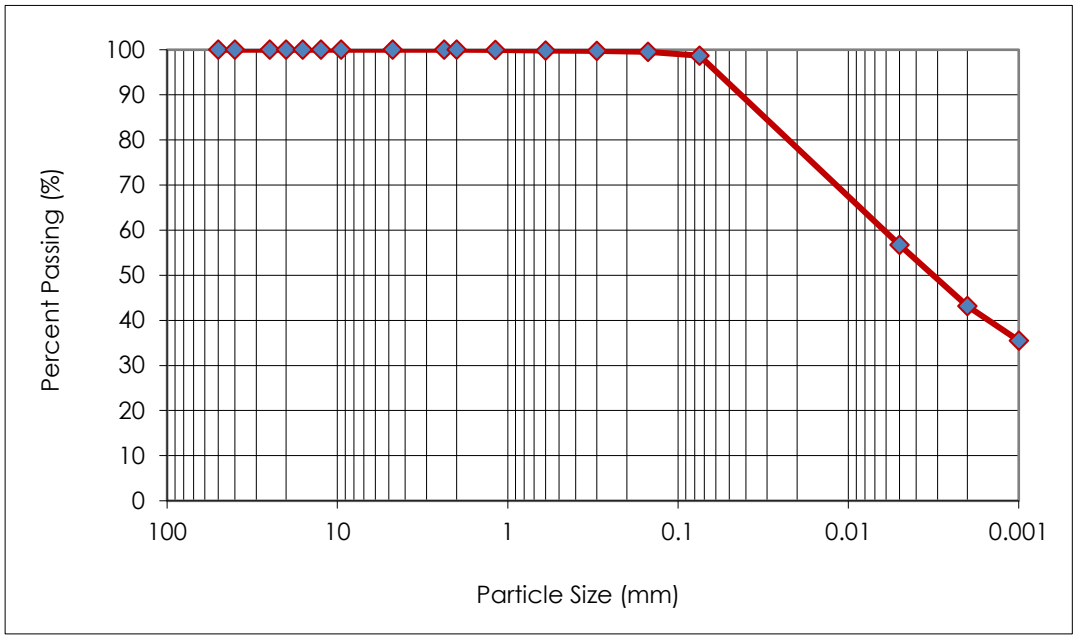
DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-38, 800 mm

STANTEC SAMPLE NO. 2962



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	99.7
0.150	99.5
0.075	98.7
0.005	56.7
0.002	43.1
0.001	35.5

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.2	1.1	55.6	43.1	35.5

COMMENTS
No comments.

REPORT DATE 2024.Jan.18

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

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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.10
SAMPLED BY: Stantec Consulting Ltd.

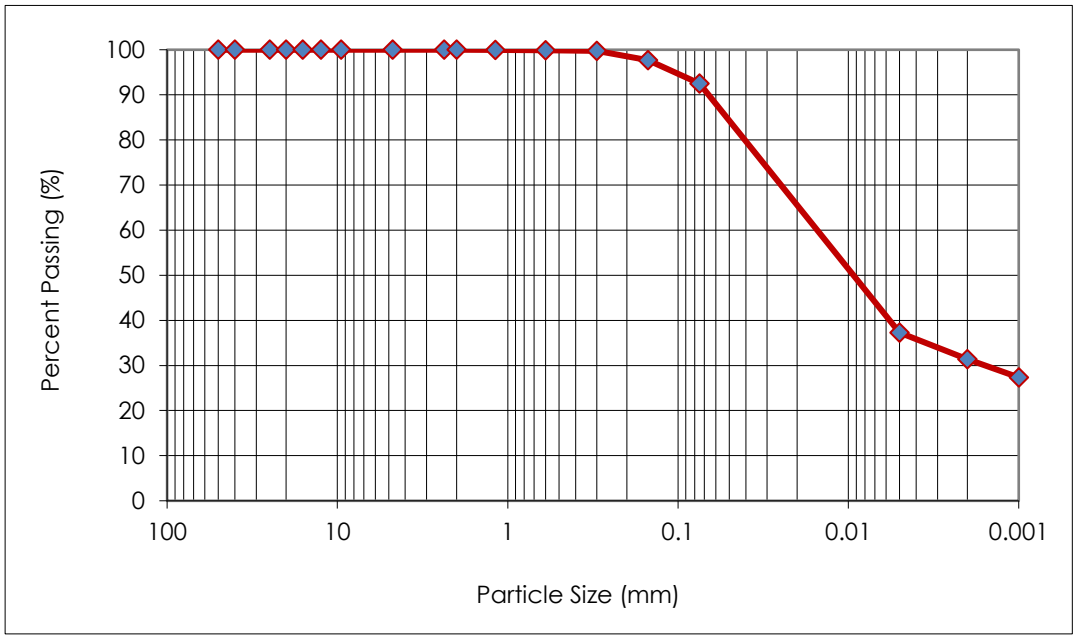
DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-39, 800 mm

STANTEC SAMPLE NO. 2963



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	99.9
0.300	99.7
0.150	97.7
0.075	92.5
0.005	37.2
0.002	31.4
0.001	27.4

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.2	7.3	61.1	31.4	27.4

COMMENTS
No comments.

REPORT DATE 2024.Jan.18

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

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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.15
SAMPLED BY: Stantec Consulting Ltd.

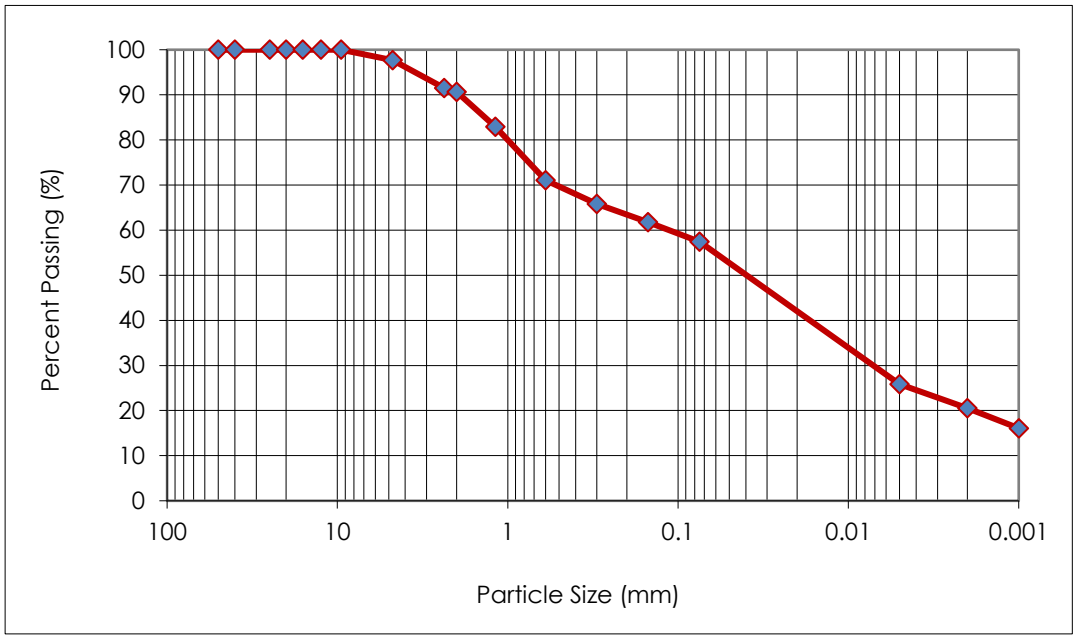
DATE RECEIVED: 2024.Jan.15
SUBMITTED BY: Stantec Consulting Ltd.

DATE TESTED: 2024.Jan.23
TESTED BY: Larry Presado

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-40, 775 mm

STANTEC SAMPLE NO. 2977



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	97.7
2.36	91.5
2.00	90.6
1.18	82.9
0.600	71.1
0.300	65.8
0.150	61.8
0.075	57.4
0.005	25.8
0.002	20.6
0.001	16.1

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
2.3	7.1	22.6	10.6	36.8	20.6	16.1

COMMENTS
No comments.

REPORT DATE 2024.Jan.25

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

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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.16
SAMPLED BY: Stantec Consulting Ltd.

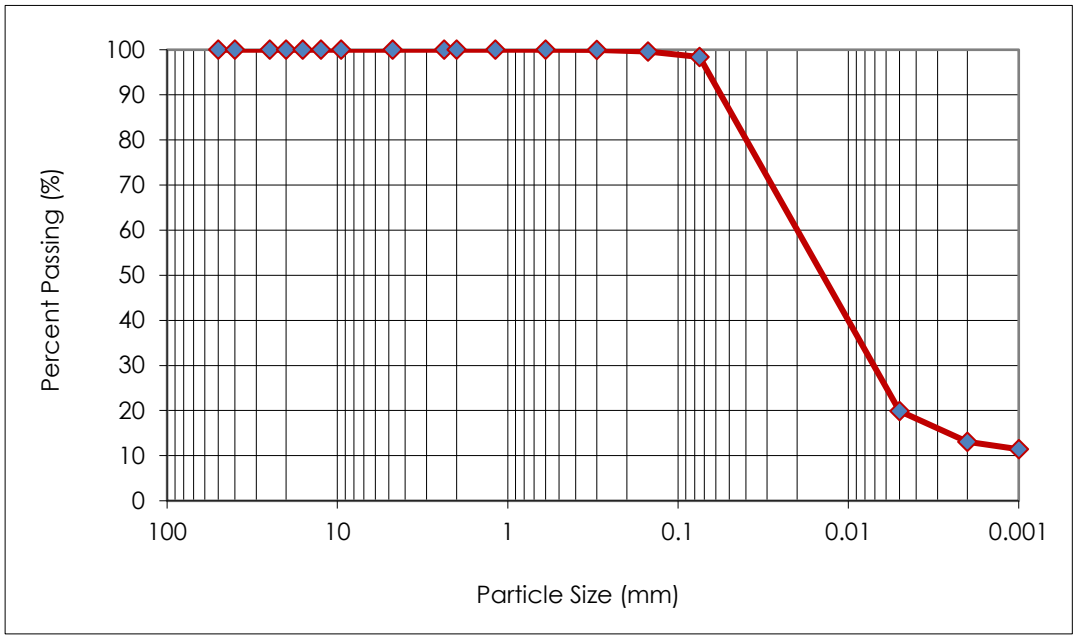
DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-41, 770 mm

STANTEC SAMPLE NO. 2986



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	100.0
0.150	99.6
0.075	98.4
0.005	19.9
0.002	13.1
0.001	11.4

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.0	1.6	85.3	13.1	11.4

COMMENTS
No comments.

REPORT DATE 2024.Jan.22

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

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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.16
SAMPLED BY: Stantec Consulting Ltd.

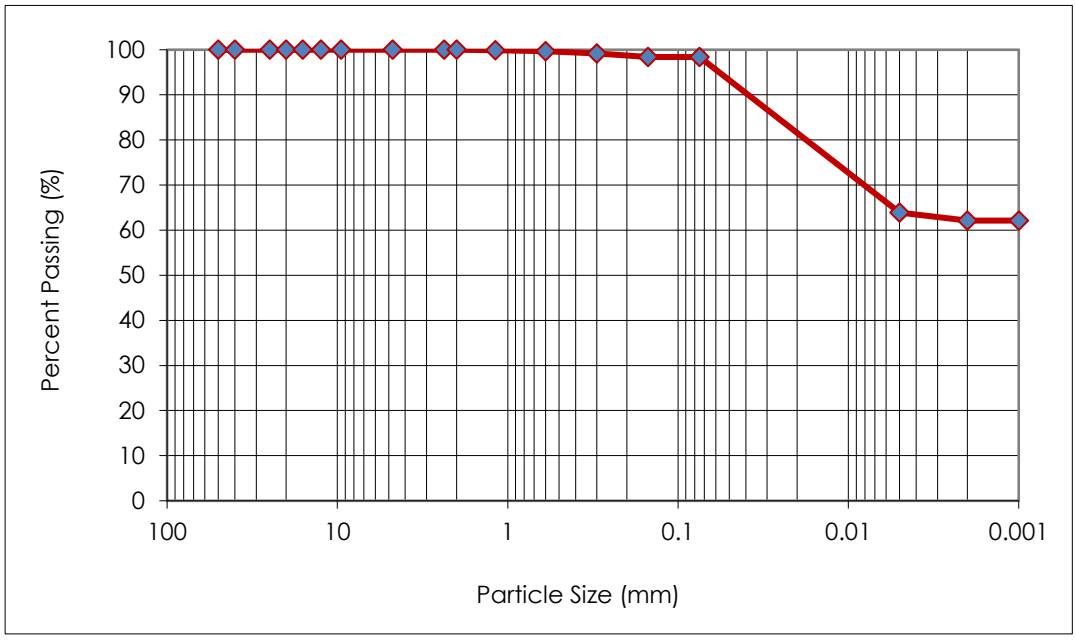
DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-42, 635 mm

STANTEC SAMPLE NO. 2987



Sieve Size (mm)	% Passing
50.0	100.0
40.0	100.0
25.0	100.0
20.0	100.0
16.0	100.0
12.5	100.0
9.5	100.0
4.75	100.0
2.36	100.0
2.00	100.0
1.18	99.9
0.600	99.7
0.300	99.2
0.150	98.4
0.075	98.4
0.005	63.9
0.002	62.1
0.001	62.1

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.0	0.0	0.6	1.0	36.3	62.1	62.1

COMMENTS
No comments.

REPORT DATE 2024.Jan.22

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

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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. 16

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

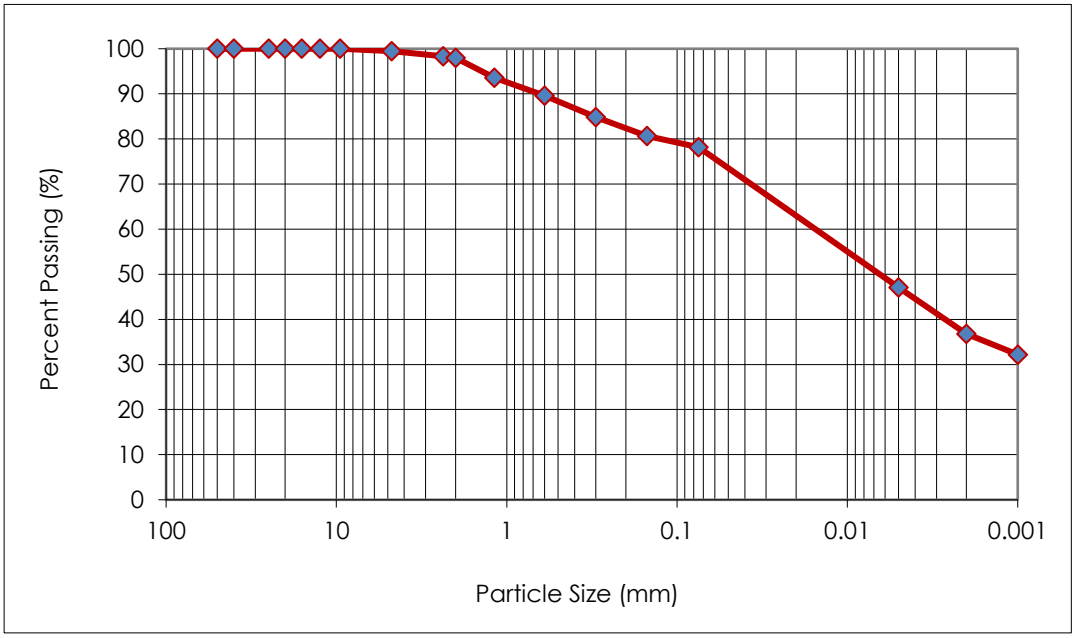
DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consulting Ltd.

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

MATERIAL IDENTIFICATION

CLIENT FIELD ID BH-43, 760 mm

STANTEC SAMPLE NO. 2988



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	99.4
2.36	98.3
2.00	98.0
1.18	93.6
0.600	89.6
0.300	84.8
0.150	80.7
0.075	78.2
0.005	47.1
0.002	36.8
0.001	32.2

Gravel	Sand			Silt	Clay	Colloids
	Coarse	Medium	Fine			
0.6	1.4	11.2	8.6	41.4	36.8	32.2

COMMENTS
No comments.

REPORT DATE 2024.Jan.22

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

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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

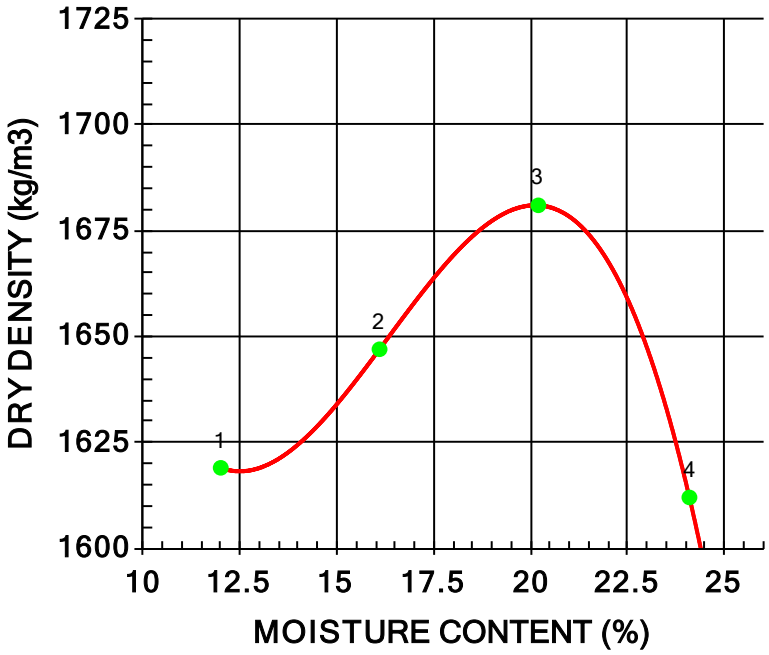
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-2 - Contract 2
PROCTOR NO. 1 DATE SAMPLED 2024.Jan.10 DATE RECEIVED 2024.Jan.10 DATE TESTED 2024.Jan.17

INSITU MOISTURE	27.4 %	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	Fat CLAY (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Machray Ave - BH-16, 0.68 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1813	1619	12.0
2	1912	1647	16.1
3	2021	1681	20.2
4	2001	1612	24.1

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1680	20.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2956.

Page 1 of 1 2024.Jan.18 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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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

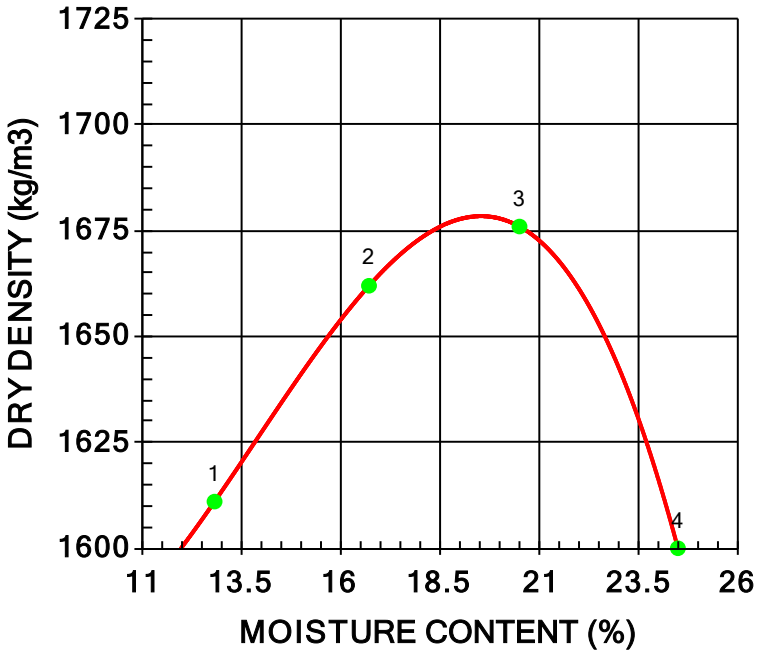
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-2 - Contract 2
PROCTOR NO. 2 DATE SAMPLED 2024.Jan.15 DATE RECEIVED 2024.Jan.15 DATE TESTED 2024.Jan.24

INSITU MOISTURE	33.5 %	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	Fat CLAY (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Machray Ave - BH-17, 0.72 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1817	1611	12.8
2	1939	1662	16.7
3	2019	1676	20.5
4	1992	1600	24.5

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1680	19.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2975.

 2024.Jan.25 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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Stantec
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Email: jason.thompson@stantec.com

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PROCTOR TEST REPORT

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

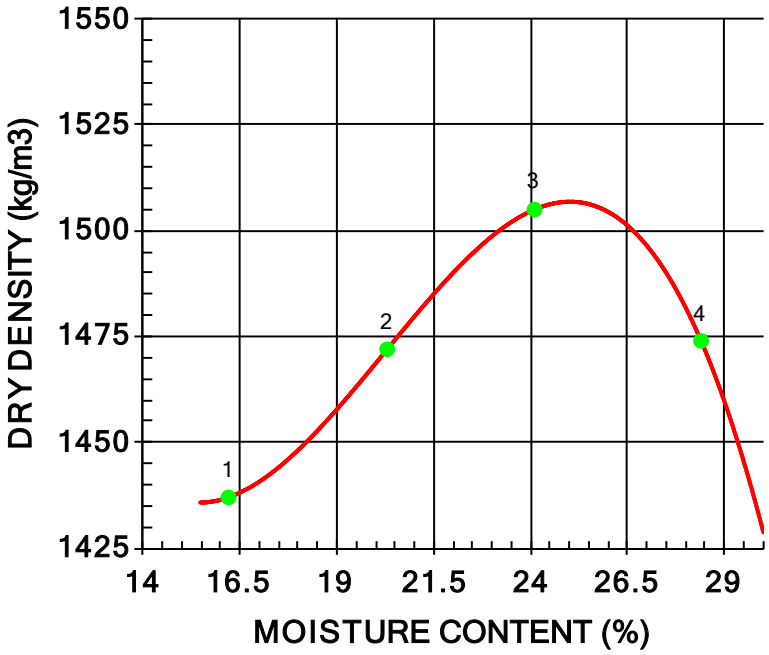
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-2 - Contract 2
PROCTOR NO. 3 DATE SAMPLED 2024.Jan.15 DATE RECEIVED 2024.Jan.15 DATE TESTED 2024.Jan.25

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	Subgrade		
SIZE		RAMMER TYPE	Manual
DESCRIPTION	Fat CLAY (CH)	PREPARATION	Dry
SUPPLIER	Existing Material	OVERSIZE CORRECTION METHOD	None
SOURCE	Machray Ave, BH-18, 0.69 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1670	1437	16.2
2	1771	1472	20.3
3	1868	1505	24.1
4	1893	1474	28.4

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1510	25.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample no. 2976.

Page 1 of 1 2024.Jan.26 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.
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CLIENT City of Winnipeg
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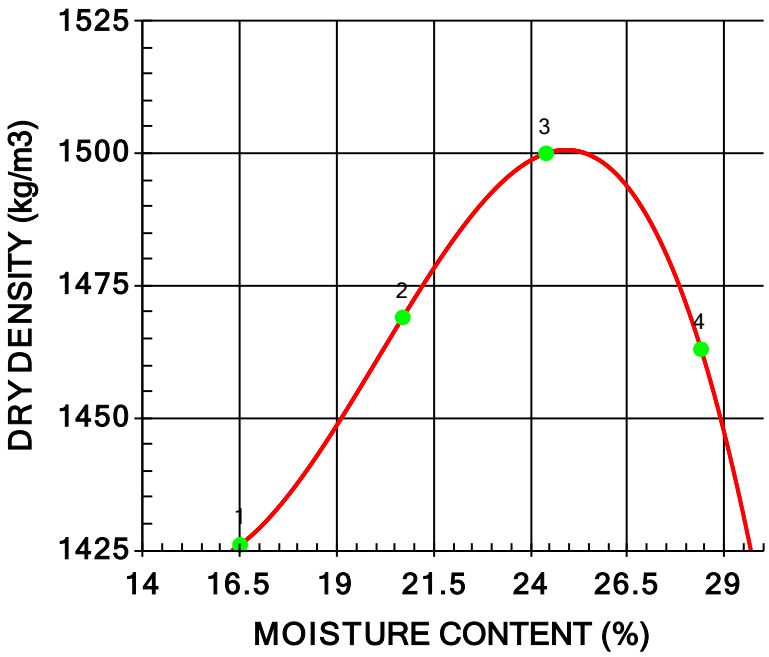
ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-2 - Contract 2
PROCTOR NO. 4 DATE SAMPLED 2024.Jan.10 DATE RECEIVED 2024.Jan.10 DATE TESTED 2024.Jan.18

INSITU MOISTURE	25.2 %	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	Fat CLAY (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Machray Ave - BH-19, 0.68 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1661	1426	16.5
2	1773	1469	20.7
3	1866	1500	24.4
4	1878	1463	28.4

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1500	25.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2957.

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PROCTOR TEST REPORT

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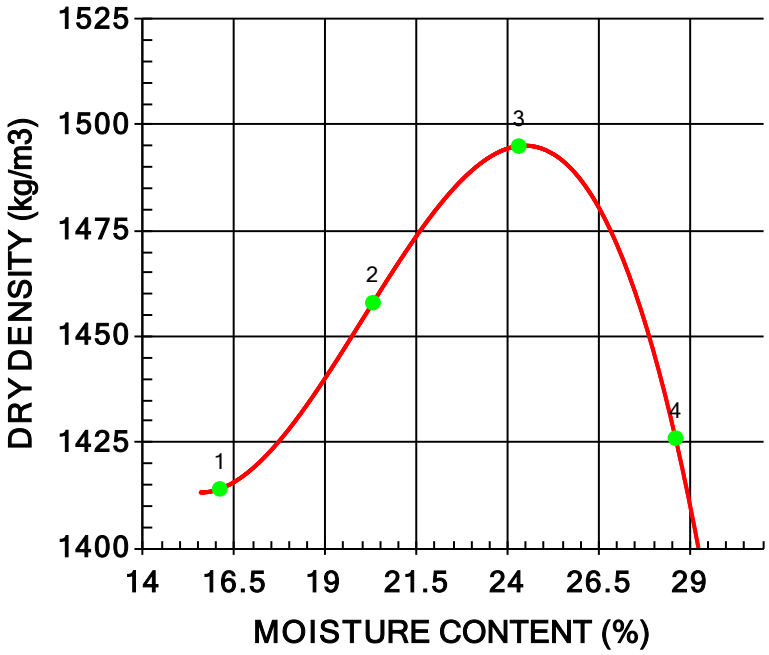
ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-2 - Contract 2
PROCTOR NO. 5 DATE SAMPLED 2024.Jan.29 DATE RECEIVED 2024.Jan.29 DATE TESTED 2024.Feb.07

INSITU MOISTURE	31.5 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Madison Murphy		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Fat CLAY (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Charles Street - BH-20, 0.80 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1642	1414	16.1
2	1754	1458	20.3
3	1858	1495	24.3
4	1834	1426	28.6

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1500	24.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 4025.

 2024.Feb.08 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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PROCTOR TEST REPORT

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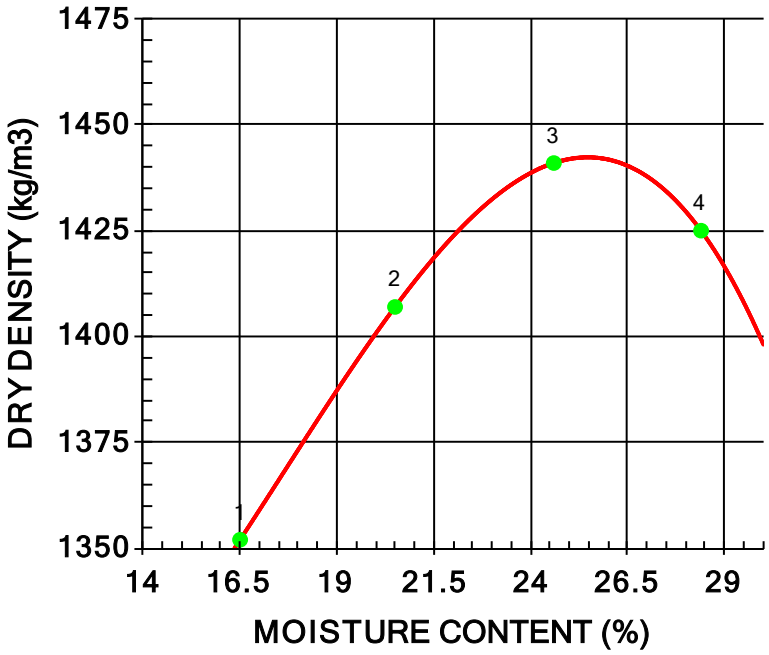
ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-2 - Contract 2
PROCTOR NO. 6 DATE SAMPLED 2024.Feb.08 DATE RECEIVED 2024.Feb.09 DATE TESTED 2024.Feb.09

INSITU MOISTURE	33.2 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Fat CLAY (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Charles Street - BH 22, 0.79 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1575	1352	16.5
2	1696	1407	20.5
3	1796	1441	24.6
4	1830	1425	28.4

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1440	25.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 4026.

 2024.Feb.09 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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PROCTOR TEST REPORT

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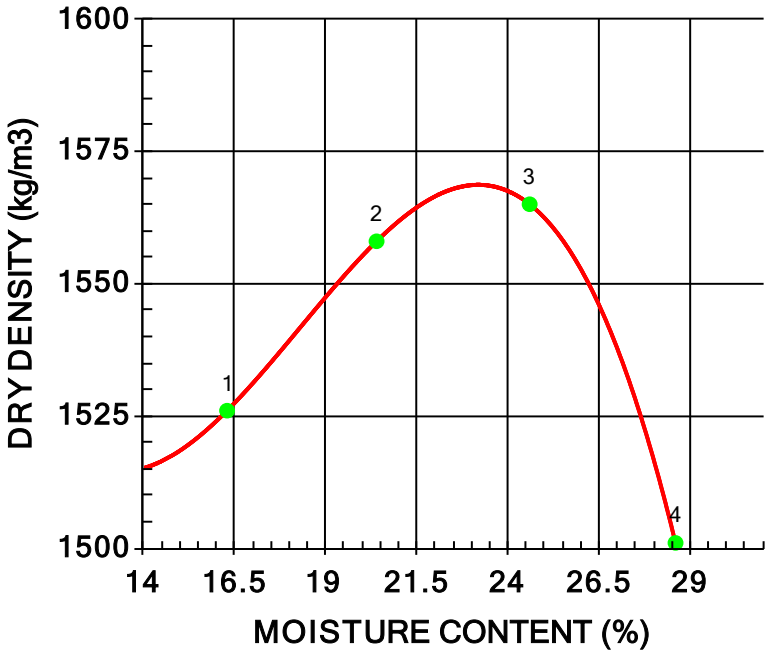
PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-2 - Contract 2
PROCTOR NO. 7 DATE SAMPLED 2024.Jan.10 DATE RECEIVED 2024.Jan.10 DATE TESTED 2024.Jan.18

INSITU MOISTURE	28.0 %	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	Fat CLAY (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materails	OVERSIZE CORRECTION METHOD	None
SOURCE	Church Ave - BH-23, 0.69 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1775	1526	16.3
2	1876	1558	20.4
3	1950	1565	24.6
4	1930	1501	28.6

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1570	23.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2958.

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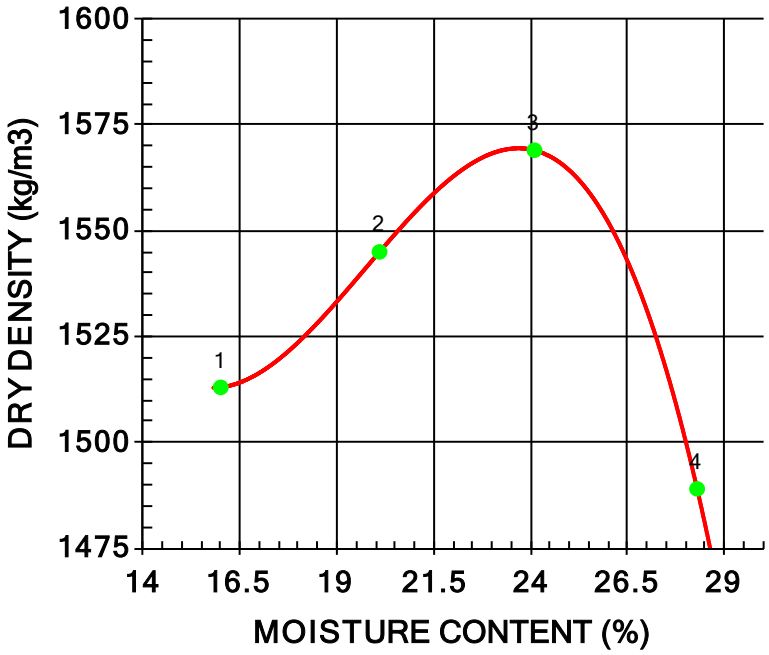
PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-2 - Contract 2
PROCTOR NO. 8 DATE SAMPLED 2024.Jan.10 DATE RECEIVED 2024.Jan.10 DATE TESTED 2024.Jan.18

INSITU MOISTURE	34.6 %	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	Fat CLAY (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Church Ave - BH-24, 0.63 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1755	1513	16.0
2	1856	1545	20.1
3	1947	1569	24.1
4	1911	1489	28.3

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1570	23.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2959.

 2024.Jan.19 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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PROCTOR TEST REPORT

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Winnipeg, MB
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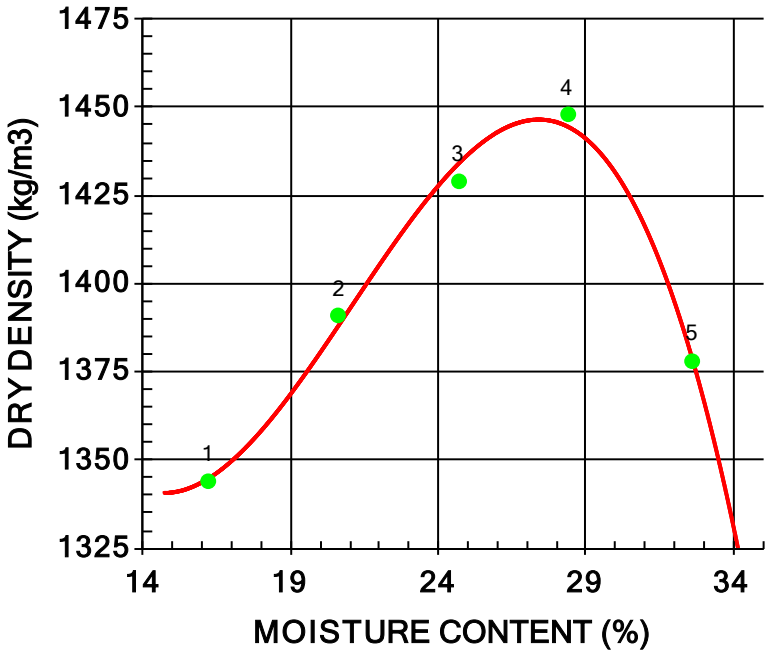
ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-2 - Contract 2
PROCTOR NO. 9 DATE SAMPLED 2024.Jan.10 DATE RECEIVED 2024.Jan.10 DATE TESTED 2024.Jan.18

INSITU MOISTURE	29.3 %	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	Fat CLAY (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Luxton Ave - BH-36, 0.83 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1562	1344	16.2
2	1678	1391	20.6
3	1782	1429	24.7
4	1859	1448	28.4
5	1827	1378	32.6

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1450	27.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2960.

Page 1 of 1 2024.Jan.19 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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PROCTOR TEST REPORT

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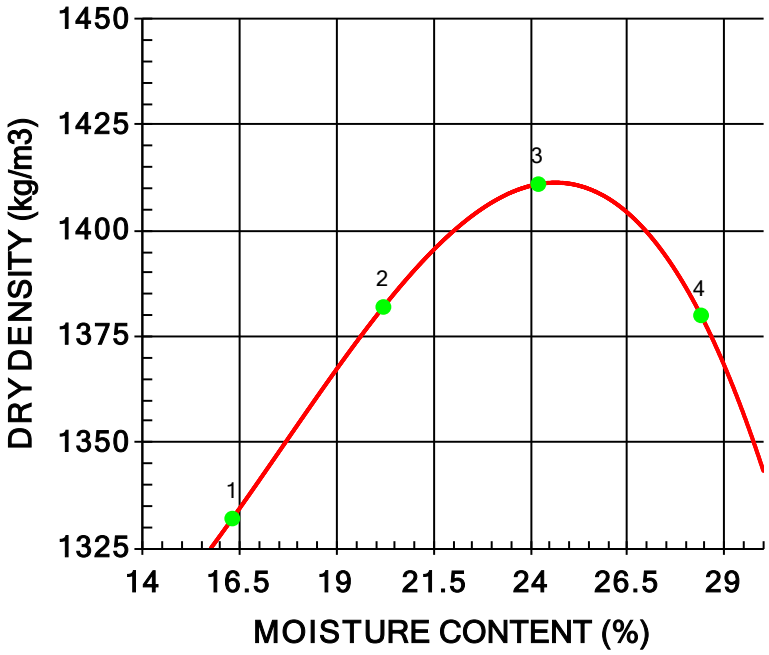
PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-2 - Contract 2
PROCTOR NO. 10 DATE SAMPLED 2024.Jan.10 DATE RECEIVED 2024.Jan.10 DATE TESTED 2024.Jan.18

INSITU MOISTURE	28.8 %	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	Fat CLAY (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Luxton Ave - BH-37 , 0.83 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1549	1332	16.3
2	1661	1382	20.2
3	1753	1411	24.2
4	1772	1380	28.4

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1410	24.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2961.

 2024.Jan.22 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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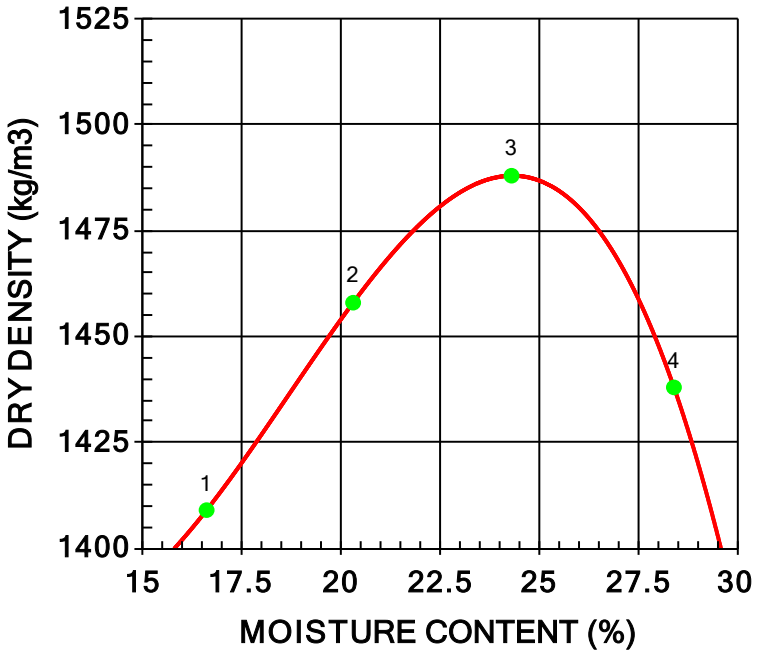
PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-2 - Contract 2
PROCTOR NO. 11 DATE SAMPLED 2024.Jan.10 DATE RECEIVED 2024.Jan.10 DATE TESTED 2024.Jan.19

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	Backfill		
SIZE	Fat CLAY (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Luxton Ave - BH-38, 0.80 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1643	1409	16.6
2	1754	1458	20.3
3	1849	1488	24.3
4	1846	1438	28.4

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1490	24.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2962.

 2024.Jan.22 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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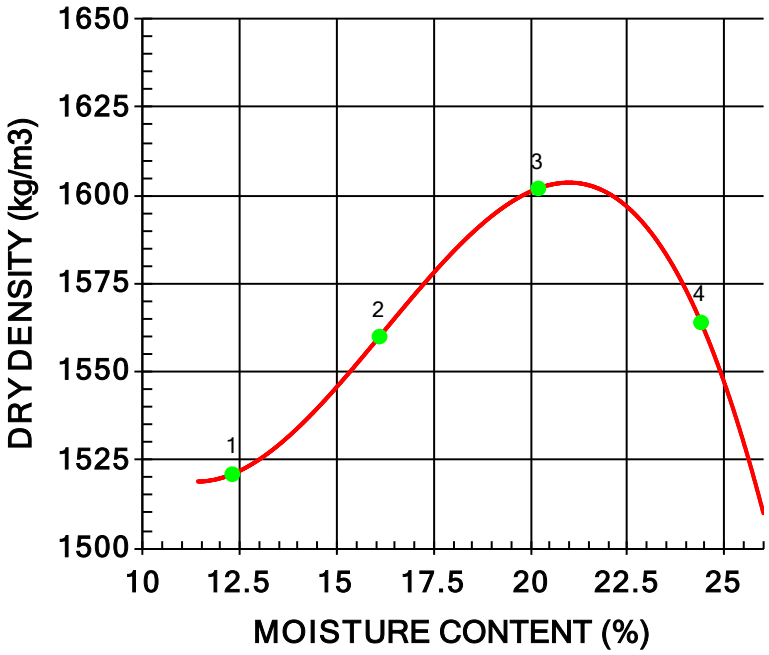
PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-2 - Contract 2
PROCTOR NO. 12 DATE SAMPLED 2024.Jan.10 DATE RECEIVED 2024.Jan.10 DATE TESTED 2024.Jan.19

INSITU MOISTURE	23.8 %	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	Fat CLAY (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Luxton Ave - BH-39, 0.80 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1708	1521	12.3
2	1811	1560	16.1
3	1926	1602	20.2
4	1945	1564	24.4

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1600	21.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2963.

 2024.Jan.22 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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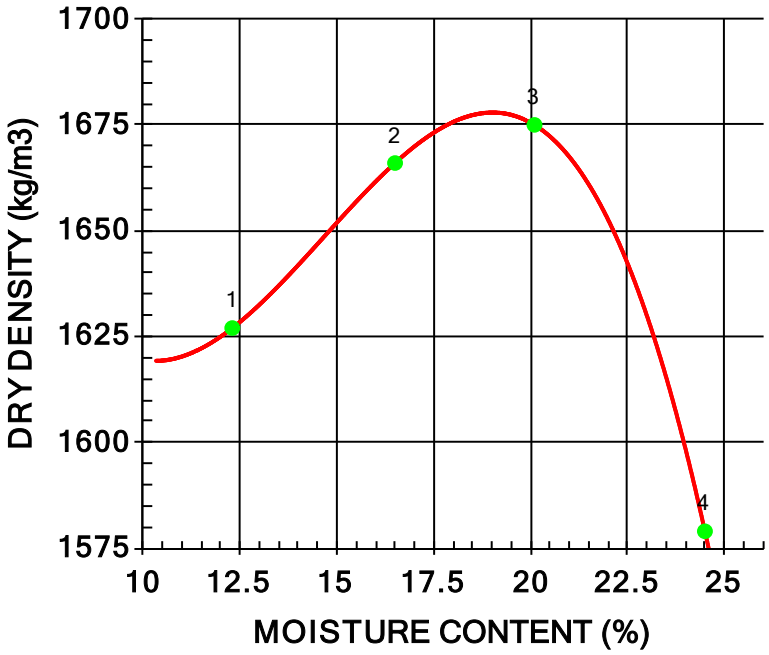
PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-2 - Contract 2
PROCTOR NO. 13 DATE SAMPLED 2024.Jan.15 DATE RECEIVED 2024.Jan.15 DATE TESTED 2024.Jan.25

INSITU MOISTURE	19.4 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE		RAMMER TYPE	Automatic
DESCRIPTION	Sandy lean CLAY (CL)	PREPARATION	Dry
SUPPLIER	Existing Material	OVERSIZE CORRECTION METHOD	None
SOURCE	Luxton Ave, BH-40, 0.775 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1827	1627	12.3
2	1941	1666	16.5
3	2012	1675	20.1
4	1966	1579	24.5

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1680	19.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample no. 2977.

 2024.Jan.26 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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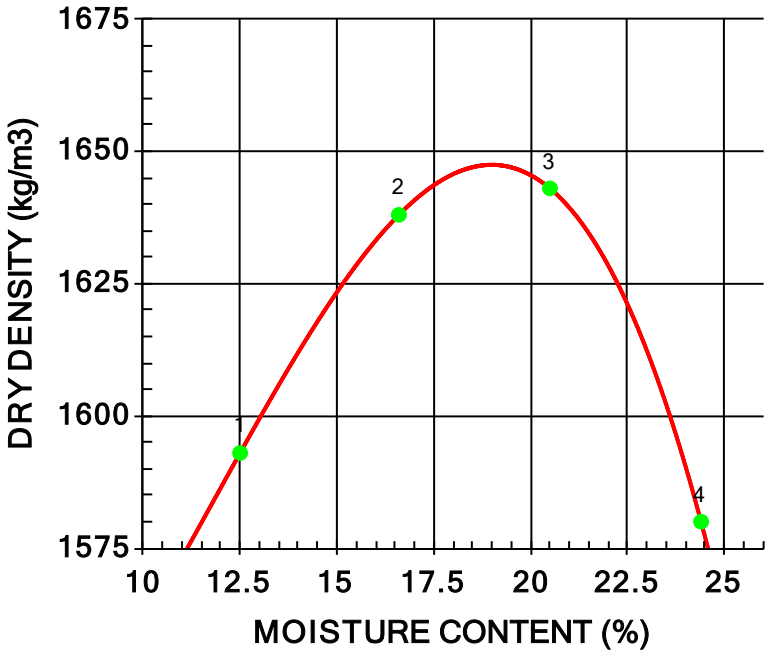
PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-2 - Contract 2
PROCTOR NO. 14 DATE SAMPLED 2024.Jan.16 DATE RECEIVED 2024.Jan.16 DATE TESTED 2024.Jan.29

INSITU MOISTURE	35.6 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Lean CLAY (CL)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Alley - BH-41, 0.77 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1792	1593	12.5
2	1910	1638	16.6
3	1980	1643	20.5
4	1965	1580	24.4

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

COMMENTS

Stantec Sample No. 2986. Material tested was sampled from above-mentioned location at the backlane of Anderson Ave & St. Johns Ave.

Page 1 of 1 2024.Jan.30 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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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

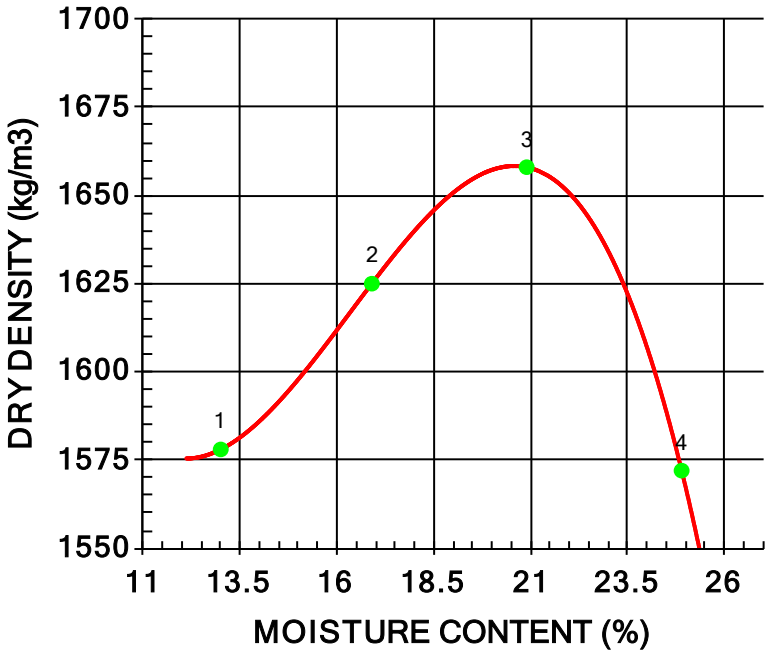
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

PROJECT NO. 123316853-2 - Contract 2
PROCTOR NO. 15 DATE SAMPLED 2024.Jan.16 DATE RECEIVED 2024.Jan.16 DATE TESTED 2024.Jan.29

INSITU MOISTURE	27.7 %	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	Fat CLAY (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Alley - BH-42, 0.64	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1783	1578	13.0
2	1900	1625	16.9
3	2004	1658	20.9
4	1963	1572	24.9

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1660	20.5
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2987. Material tested was sampled from the above-mentioned location at the backlane of Anderson Ave & St. Johns Ave.

 2024.Jan.30 Stantec Consulting Ltd. REVIEWED BY: Jason Thompson, C.E.T.

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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

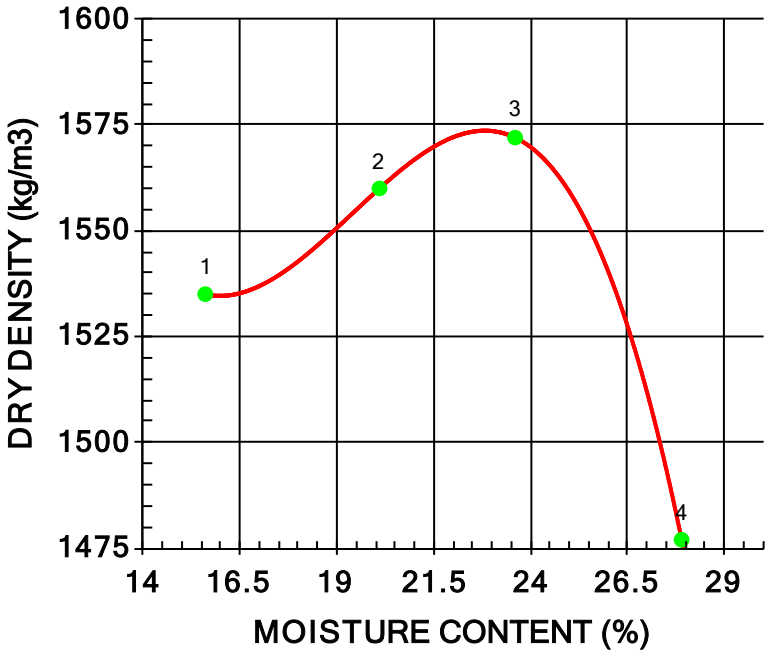
CLIENT City of Winnipeg
C.C.

ATTN: Richard Weibel

PROJECT 2024 Local Street Renewals Program

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

INSITU MOISTURE	37.8 %	COMPACTION STANDARD	Standard Proctor, ASTM D698
TESTED BY	Donald Eliazar		
MATERIAL IDENTIFICATION		COMPACTION PROCEDURE	A: 101.6mm Mold, Passing 4.75mm
MAJOR COMPONENT	Subgrade		
SIZE	Fat CLAY with sand (CH)	RAMMER TYPE	Manual
DESCRIPTION		PREPARATION	Moist
SUPPLIER	Existing Materials	OVERSIZE CORRECTION METHOD	None
SOURCE	Alley - BH-43, 0.76 m	RETAINED 4.75mm SCREEN	N/A %



TRIAL NUMBER	WET DENSITY (kg/m³)	DRY DENSITY (kg/m³)	MOISTURE CONTENT (%)
1	1774	1535	15.6
2	1873	1560	20.1
3	1943	1572	23.6
4	1889	1477	27.9

	MAXIMUM DRY DENSITY (kg/m³)	OPTIMUM MOISTURE CONTENT (%)
CALCULATED	1570	23.0
OVERSIZE CORRECTED		

COMMENTS

Stantec Sample No. 2988. The material tested was sampled from the above-mentioned location at the backlane of Anderson Ave & St. Johns Ave.

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

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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 2

PROJECT NO. 123316853

REPORT NO. 1

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

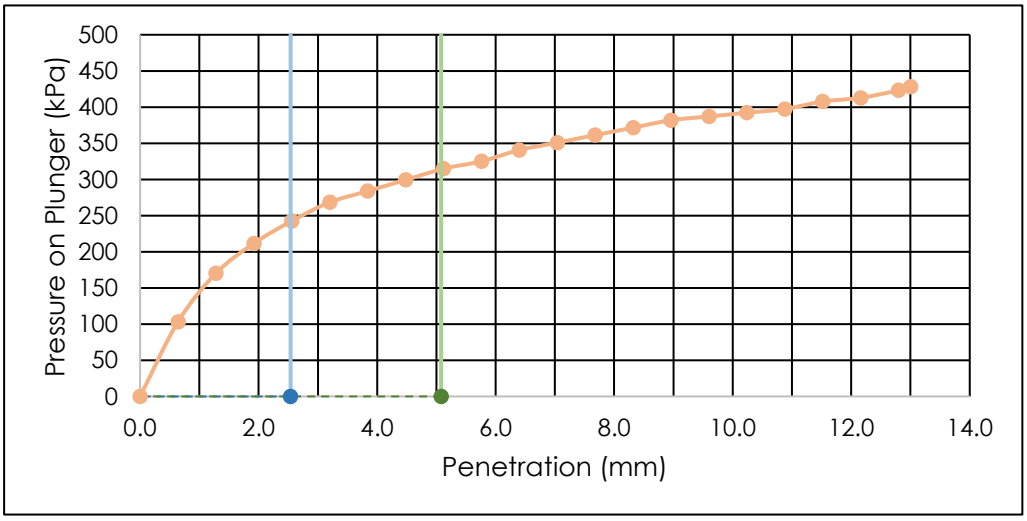
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Graeme Patrick

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

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Fat CLAY (CH)	SAMPLE LOCATION	BH-16, 0.680 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2956

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1680 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	1597 kg/m^3
SWELL OF SAMPLE	0.03 %	AS-COMPACTED MOISTURE	19.9 %
POST-TEST MOISTURE	29.9 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
3.5

CBR VALUE AT 5.08 mm PENETRATION
3.1

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

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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 2

PROJECT NO. 123316853

REPORT NO. 2

DATE SAMPLED: 2024.Jan.15
SAMPLED BY: Stantec Consutling Ltd.

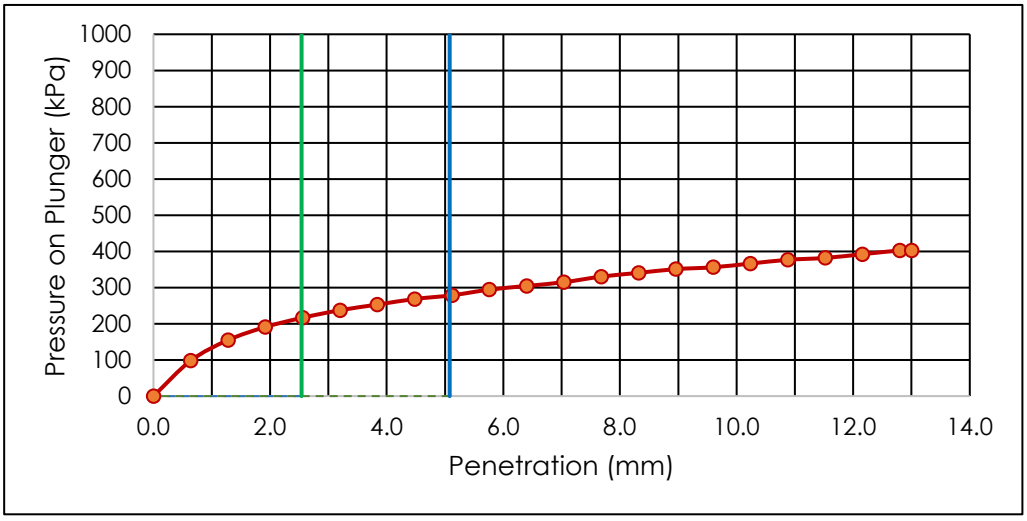
DATE RECEIVED: 2024.Jan.15
SUBMITTED BY: Stantec Consutling Ltd.

DATE TESTED: 2024.Feb.02
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Fat CLAY (CH)	SAMPLE LOCATION	BH-17, 0.720 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2975

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1680 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	19.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1596 kg/m^3
SWELL OF SAMPLE	2.58 %	AS-COMPACTED MOISTURE	19.5 %
POST-TEST MOISTURE	28.5 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
3.1

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.Feb.07

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

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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 2

PROJECT NO. 123316853

REPORT NO. 3

DATE SAMPLED: 2024.Jan.15
SAMPLED BY: Stantec Consutling Ltd.

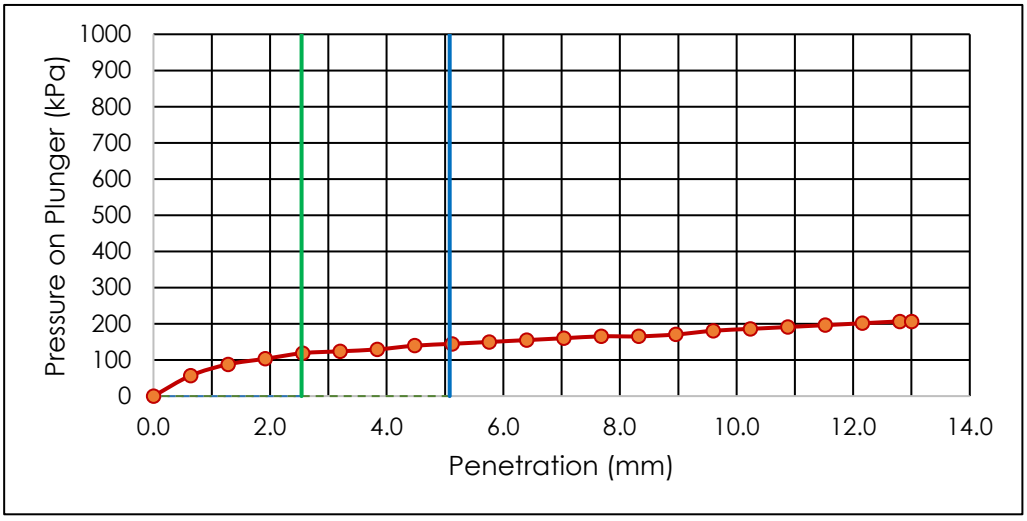
DATE RECEIVED: 2024.Jan.15
SUBMITTED BY: Stantec Consutling Ltd.

DATE TESTED: 2024.Feb.02
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Fat CLAY (CH)	SAMPLE LOCATION	BH-18, 0.690 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2976

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1510 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	1434 kg/m^3
SWELL OF SAMPLE	4.93 %	AS-COMPACTED MOISTURE	25.1 %
POST-TEST MOISTURE	41.8 %	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.Feb.07

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

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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 2

PROJECT NO. 123316853

REPORT NO. 4

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

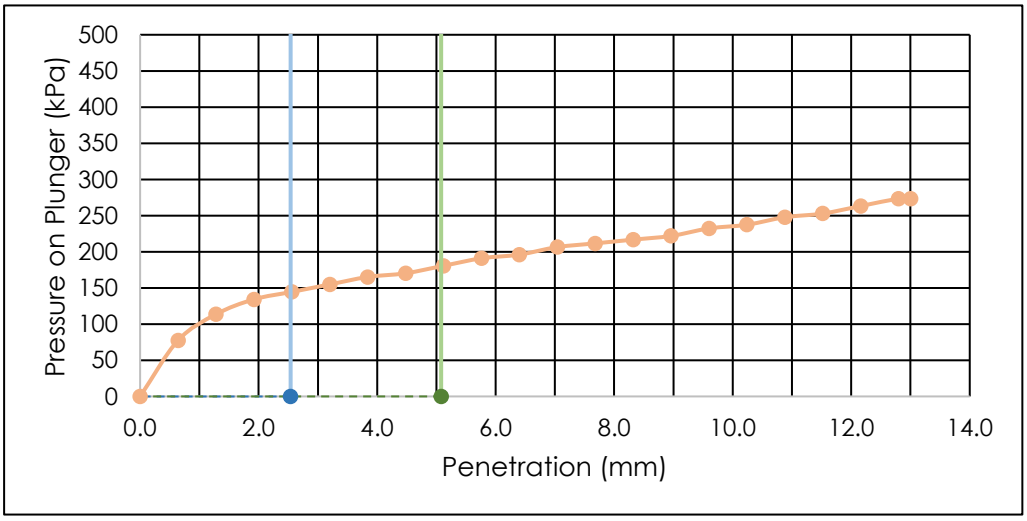
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.29
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Fat CLAY (CH)	SAMPLE LOCATION	BH-19, 0.680 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2957

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1500 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	1427 kg/m^3
SWELL OF SAMPLE	0.03 %	AS-COMPACTED MOISTURE	24.9 %
POST-TEST MOISTURE	33.2 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.1

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.03

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

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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 2

PROJECT NO. 123316853

REPORT NO. 5

DATE SAMPLED: 2024.Jan.17
SAMPLED BY: Stantec Consutling Ltd.

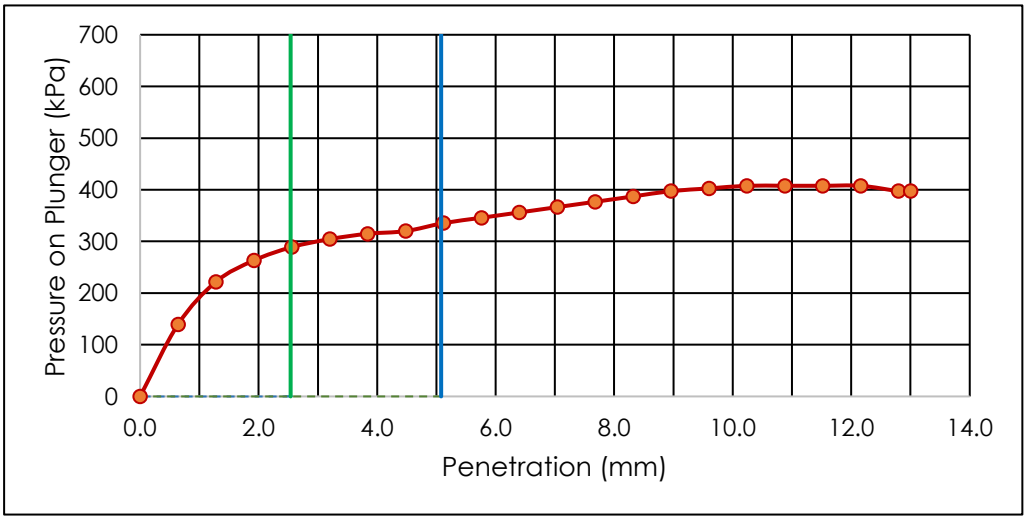
DATE RECEIVED: 2024.Jan.17
SUBMITTED BY: Stantec Consutling Ltd.

DATE TESTED: 2024.Feb.19
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Fat CLAY (CH)	SAMPLE LOCATION	BH-20, 0.800 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	4025

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1500 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	1424 kg/m^3
SWELL OF SAMPLE	2.21 %	AS-COMPACTED MOISTURE	24.6 %
POST-TEST MOISTURE	35.2 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
4.2

CBR VALUE AT 5.08 mm PENETRATION
3.3

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

REPORT DATE 2024.Feb.26

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

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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 2

PROJECT NO. 123316853

REPORT NO. 6

DATE SAMPLED: 2024.Jan.17
SAMPLED BY: Stantec Consutling Ltd.

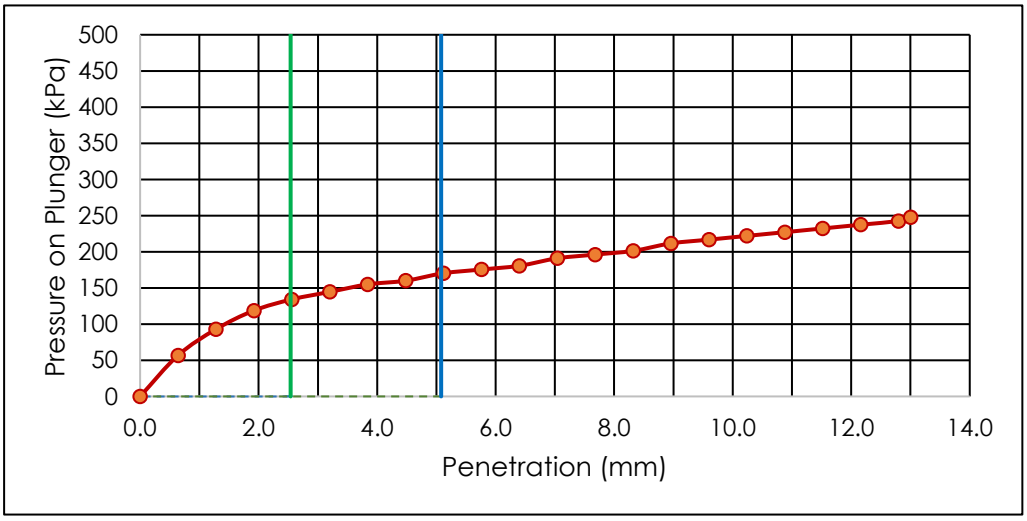
DATE RECEIVED: 2024.Jan.17
SUBMITTED BY: Stantec Consutling Ltd.

DATE TESTED: 2024.Feb.19
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Fat CLAY (CH)	SAMPLE LOCATION	BH-22, 0.795 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	4026

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1440 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	1369 kg/m^3
SWELL OF SAMPLE	3.82 %	AS-COMPACTED MOISTURE	25.4 %
POST-TEST MOISTURE	44.2 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
1.9

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.Feb.26

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

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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 2

PROJECT NO. 123316853

REPORT NO. 7

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

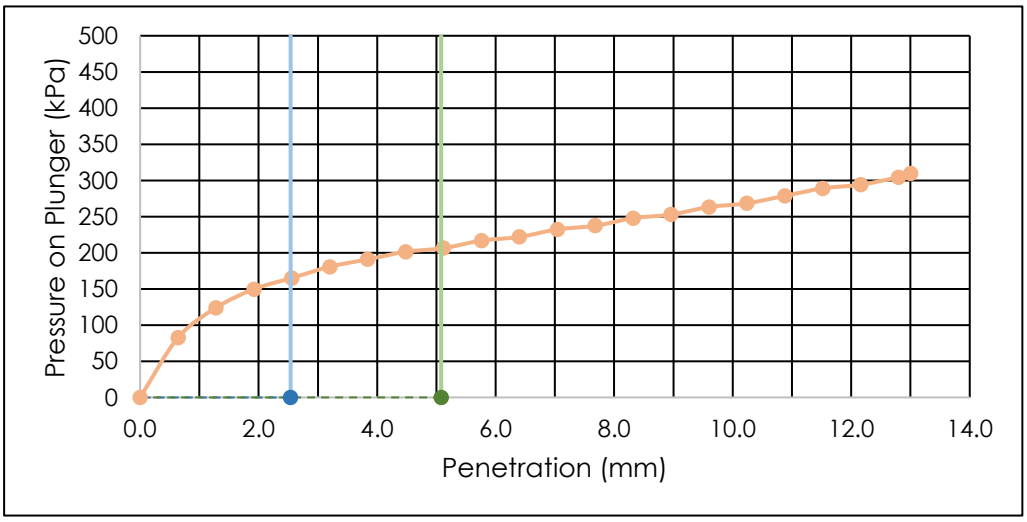
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.29
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Fat CLAY (CH)	SAMPLE LOCATION	BH-23, 0.690 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2958

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1570 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	23.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1491 kg/m^3
SWELL OF SAMPLE	0.04 %	AS-COMPACTED MOISTURE	23.0 %
POST-TEST MOISTURE	35.8 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.4

CBR VALUE AT 5.08 mm PENETRATION
2.1

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

REPORT DATE 2024.Feb.03

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

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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 2

PROJECT NO. 123316853

REPORT NO. 8

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

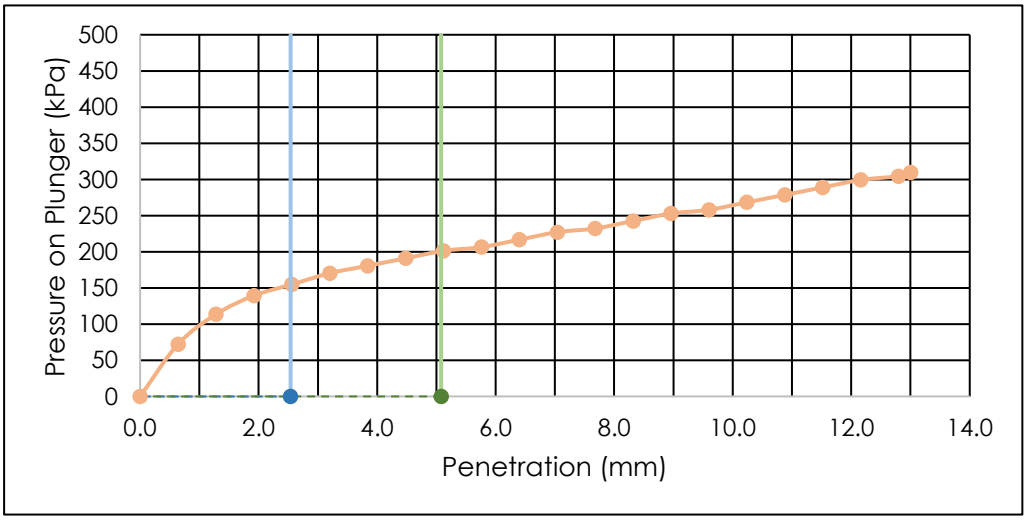
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.29
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Fat CLAY (CH)	SAMPLE LOCATION	BH-24, 0.630 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2959

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1570 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	1491 kg/m^3
SWELL OF SAMPLE	0.04 %	AS-COMPACTED MOISTURE	23.6 %
POST-TEST MOISTURE	36.2 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.2

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.03

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

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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 2

PROJECT NO. 123316853

REPORT NO. 9

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

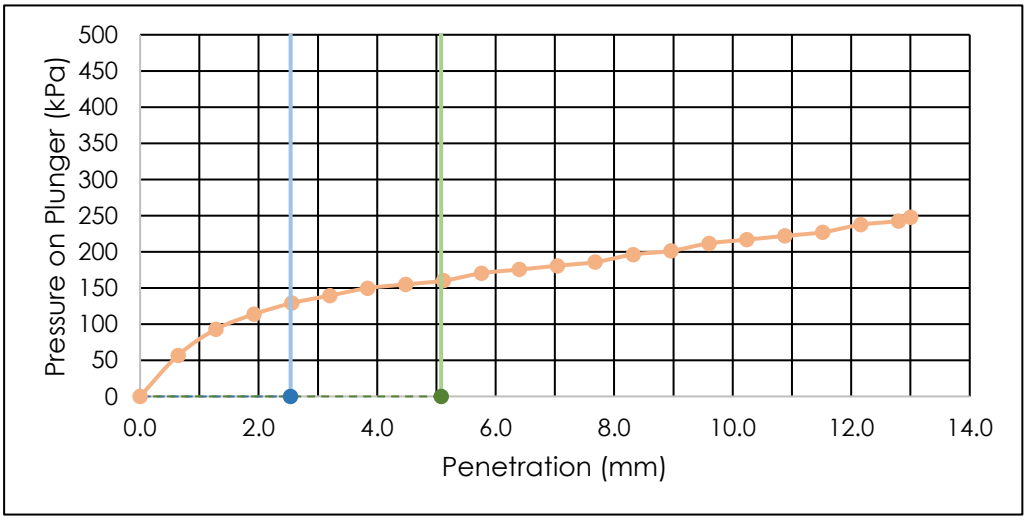
DATE RECEIVED: 2024.Jan.09
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.29
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Fat CLAY (CH)	SAMPLE LOCATION	BH-36, 0.825 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2960

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1450 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	27.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1377 kg/m^3
SWELL OF SAMPLE	0.04 %	AS-COMPACTED MOISTURE	27.6 %
POST-TEST MOISTURE	39.7 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
1.9

CBR VALUE AT 5.08 mm PENETRATION
1.6

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

REPORT DATE 2024.Feb.03

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

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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 2

PROJECT NO. 123316853

REPORT NO. 10

DATE SAMPLED: 2024.Jan.10
SAMPLED BY: Graeme Patrick

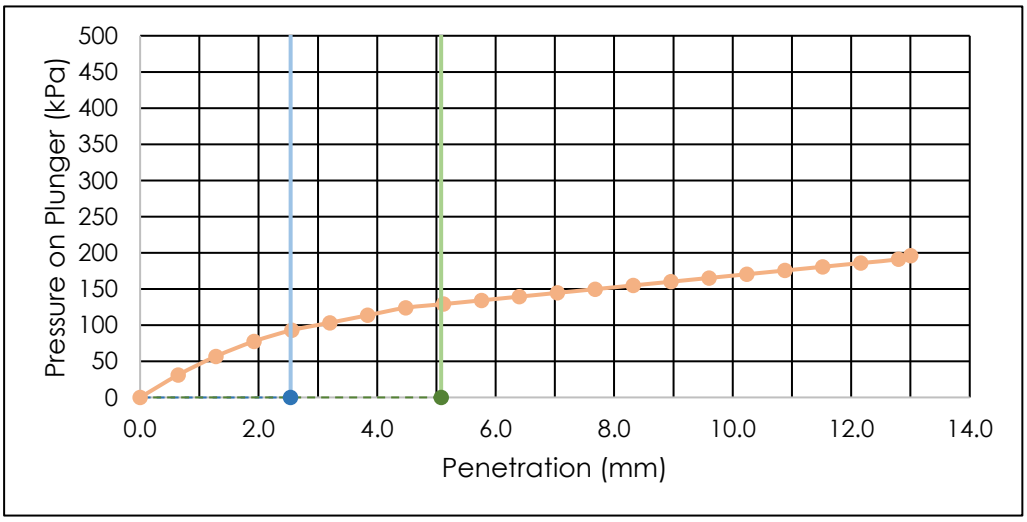
DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.25
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Fat CLAY (CH)	SAMPLE LOCATION	BH-37, 0.825 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2961

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1410 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	1339 kg/m^3
SWELL OF SAMPLE	0.07 %	AS-COMPACTED MOISTURE	24.6 %
POST-TEST MOISTURE	48.2 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
1.3

CBR VALUE AT 5.08 mm PENETRATION
1.3

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

REPORT DATE 2024.Jan.30

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

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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 2

PROJECT NO. 123316853

REPORT NO. 11

DATE SAMPLED: 2024.Jan.10
SAMPLED BY: Graeme Patrick

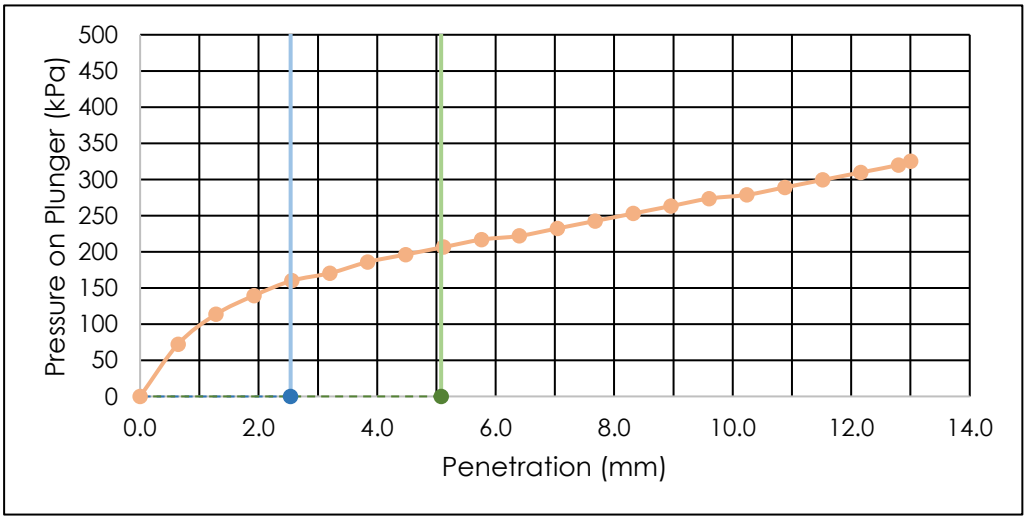
DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.25
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Fat CLAY (CH)	SAMPLE LOCATION	BH-38, 0.800 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2962

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1490 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	1414 kg/m^3
SWELL OF SAMPLE	0.04 %	AS-COMPACTED MOISTURE	24.6 %
POST-TEST MOISTURE	39.3 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
2.3

CBR VALUE AT 5.08 mm PENETRATION
2.1

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

REPORT DATE 2024.Jan.30

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

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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 2

PROJECT NO. 123316853

REPORT NO. 12

DATE SAMPLED: 2024.Jan.10
SAMPLED BY: Graeme Patrick

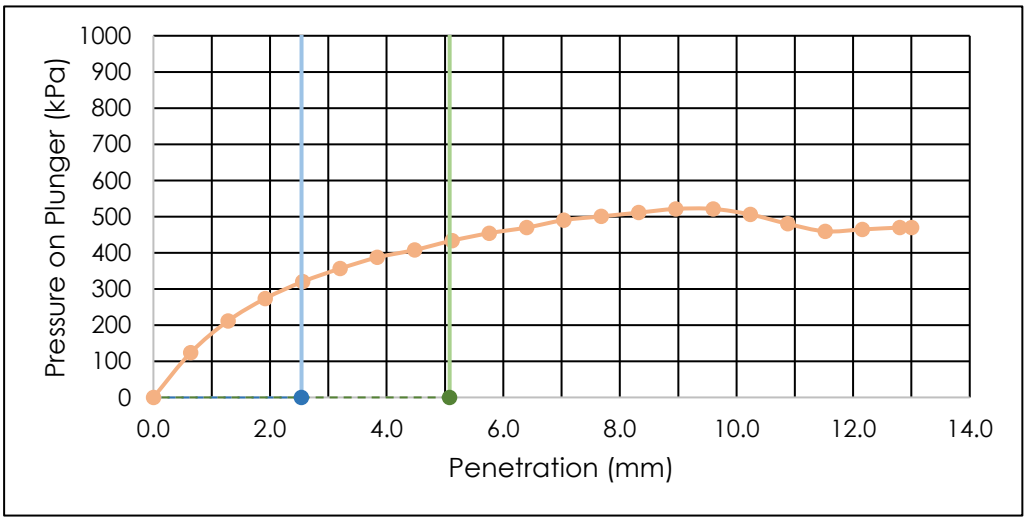
DATE RECEIVED: 2024.Jan.10
SUBMITTED BY: Graeme Patrick

DATE TESTED: 2024.Jan.25
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Fat CLAY (CH)	SAMPLE LOCATION	BH-39, 0.775 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2963

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1600 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	21.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1522 kg/m^3
SWELL OF SAMPLE	0.02 %	AS-COMPACTED MOISTURE	20.9 %
POST-TEST MOISTURE	24.9 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
4.6

CBR VALUE AT 5.08 mm PENETRATION
4.3

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

REPORT DATE 2024.Jan.30

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

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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 2

PROJECT NO. 123316853

REPORT NO. 13

DATE SAMPLED: 2024.Jan.15
SAMPLED BY: Stantec Consutling Ltd.

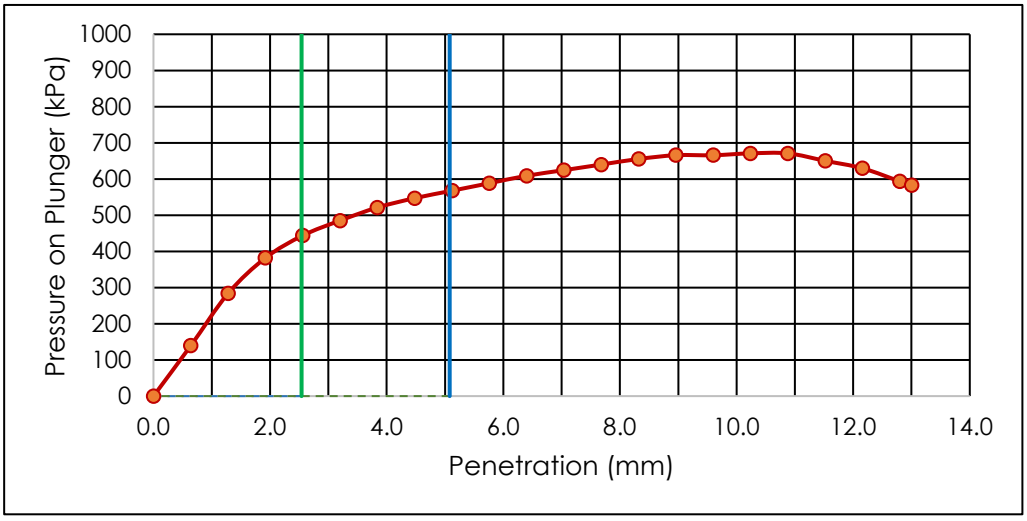
DATE RECEIVED: 2024.Jan.15
SUBMITTED BY: Stantec Consutling Ltd.

DATE TESTED: 2024.Feb.02
TESTED BY: Donald Eliazar

MATERIAL IDENTIFICATION

MATERIAL USE	Subgrade	SUPPLIER	Existing Material
MAX. NOMINAL SIZE	4.75 mm	SOURCE	Existing Material
MATERIAL TYPE	Sandy lean CLAY (CL)	SAMPLE LOCATION	BH-40, 0.775 mm
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2977

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1680 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	1597 kg/m^3
SWELL OF SAMPLE	1.37 %	AS-COMPACTED MOISTURE	18.9 %
POST-TEST MOISTURE	23.2 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
6.4

CBR VALUE AT 5.08 mm PENETRATION
5.7

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

REPORT DATE 2024.Feb.07

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

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199 Henlow Bay, Winnipeg, MB R3Y 1G4
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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 2

PROJECT NO. 123316853

REPORT NO. 14

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

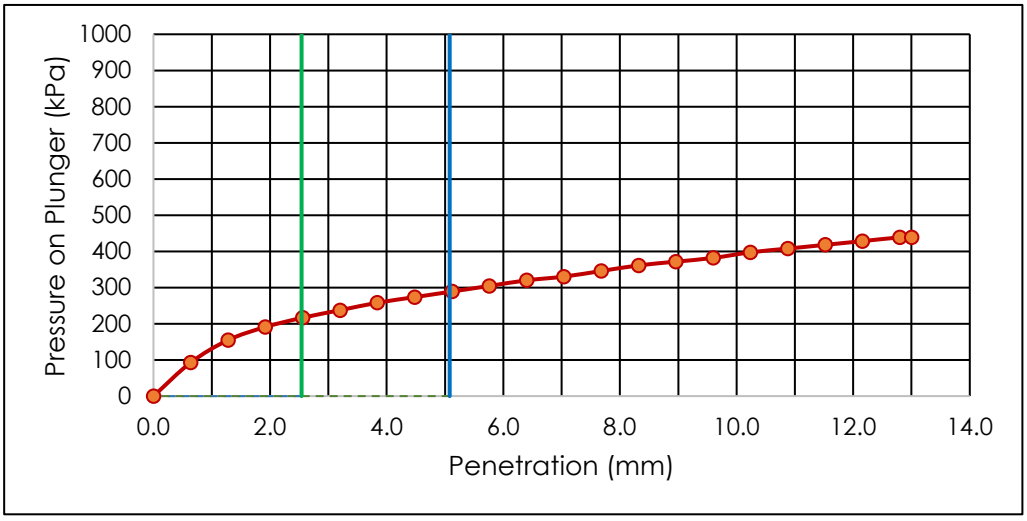
DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consutling Ltd.

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	Lean CLAY (CL)	SAMPLE LOCATION	BH-41, 0.770 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2986

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1650 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	19.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1569 kg/m^3
SWELL OF SAMPLE	2.58 %	AS-COMPACTED MOISTURE	18.9 %
POST-TEST MOISTURE	27.4 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
3.1

CBR VALUE AT 5.08 mm PENETRATION
2.9

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

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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 2

PROJECT NO. 123316853

REPORT NO. 15

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

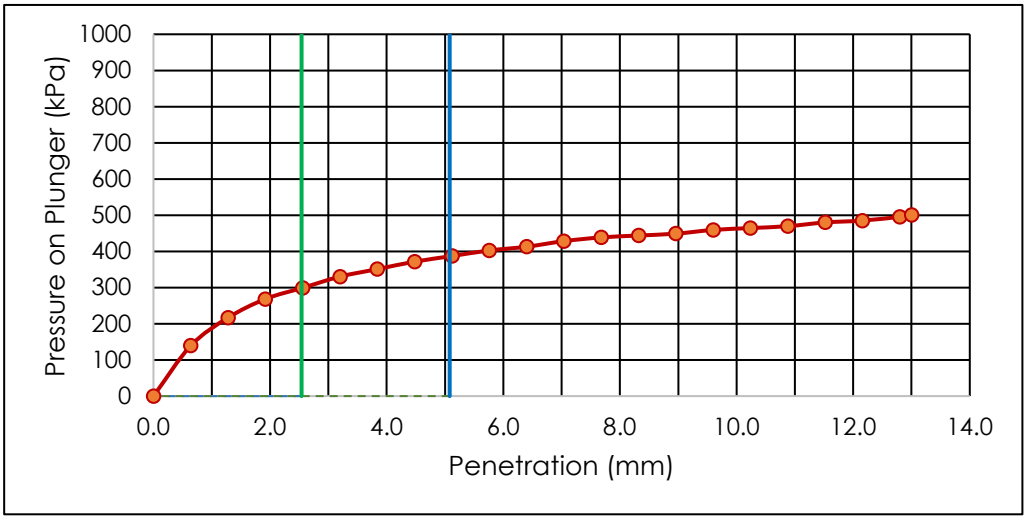
DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consutling Ltd.

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	Fat CLAY (CH)	SAMPLE LOCATION	BH-42, 0.635 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2987

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1660 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	20.5 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1577 kg/m^3
SWELL OF SAMPLE	1.91 %	AS-COMPACTED MOISTURE	20.4 %
POST-TEST MOISTURE	25.5 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
4.3

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.Feb.12

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

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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 2

PROJECT NO. 123316853

REPORT NO. 16

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

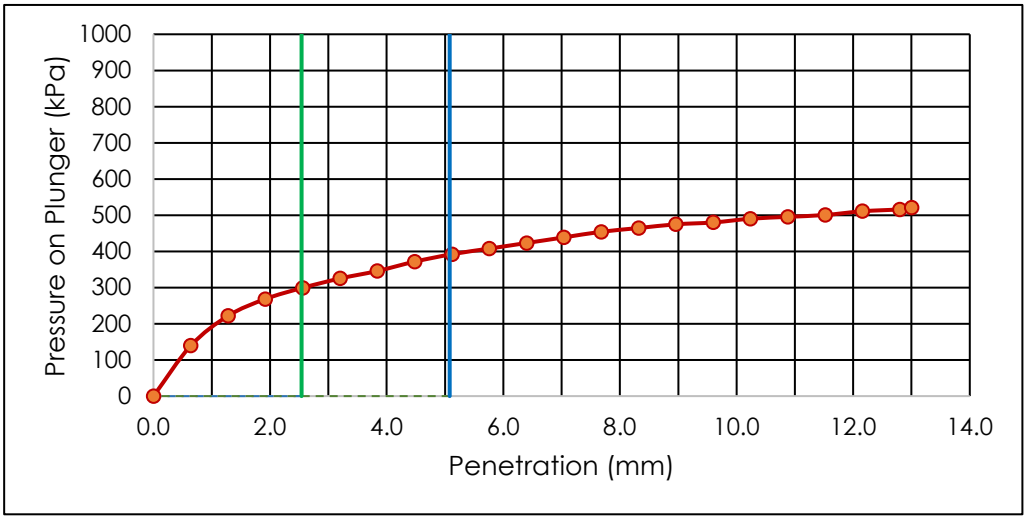
DATE RECEIVED: 2024.Jan.16
SUBMITTED BY: Stantec Consutling Ltd.

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	Fat CLAY with sand (CH)	SAMPLE LOCATION	BH-43, 0.760 m
SPECIFICATION ID	Not Applicable	STANTEC SAMPLE NO.	2988

IMMERSION PERIOD	96 ± 2 hr	TARGET MAX. DRY DENSITY	1570 kg/m^3
CONDITION OF SAMPLE	Soaked	TARGET OPTIMUM MOISTURE	23.0 %
SURCHARGE MASS	4.54 kg		
+19 mm OVERSIZE	0 %	AS-COMPACTED DRY DENSITY	1491 kg/m^3
SWELL OF SAMPLE	2.83 %	AS-COMPACTED MOISTURE	23.0 %
POST-TEST MOISTURE	26.6 %	AS-COMPACTED % COMPACTION	95 %



CBR VALUE AT 2.54 mm PENETRATION
4.3

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.Feb.12

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

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199 Henlow Bay, Winnipeg MB R3Y 1G4

Table 1 - Compressive Strength Test Data

Street	Core ID	Diameter (mm)	Length (mm)	L/D Ratio	Correction Factor	Peak Load (kN)	Compressive Strength (MPa)	
							Measured	Corrected
Lansdowne Ave	BH-25	100.44	177.78	1.770	0.9816	533	67.27	66.03
Lansdowne Ave	BH-27	100.46	135.91	1.353	0.9424	382.13	48.21	45.43
Cochrane St	BH-29	100.45	154.45	1.538	0.9630	408.59	51.56	49.65
Cochrane St	BH-30	100.40	184.09	1.834	0.9867	347.48	43.89	43.31
Cochrane St	BH-31	76.50	164.99	2.157	1.0000	209.1	45.49	45.49
McAdam Ave	BH-32	76.66	187.91	2.451	1.0000	297.17	64.38	64.38
McAdam Ave	BH-33	76.44	161.43	2.112	1.0000	314.92	68.62	68.62
McAdam Ave	BH-34	100.70	165.63	1.645	0.9716	423.85	53.22	51.71
McAdam Ave	BH-35	76.54	165.02	2.156	1.0000	262.43	57.04	57.04

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***
St. Johns Avenue/Anderson Avenue Alley from Main Street to Fowler Street	3.9
Charles Street from Church Avenue to Machray Avenue	2.7
Church Avenue from Charles Street to Main Street	2.3
Luxton Avenue from St. Cross Street to End	1.8
Machray Avenue from Aikins Street to Main Street	2.6

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