APPENDIX 'A' - GEOTECHNICAL REPORT

PAVEMENT CORES FOR:

Alwood Crescent from Egesz Street to Egesz Street – Asphalt Pavement Rehabilitation Benbow Road from Egesz Street to Burrows Avenue – Asphalt Pavement Resurfacing Bunting Street from Church Avenue to Inkster Boulevard – Concrete Pavement Rehabilitation Channing Street from Burrows Avenue to Wendon Bay – Asphalt Pavement Resurfacing Charter Drive from Egesz Street to Benbow Road – Asphalt Pavement Resurfacing Garden Grove Drive from Fairgrove Bay to Fairgrove Bay – Asphalt Pavement Rehabilitation Groverdale Avenue from Garden Grove Drive to Burdick Place – Asphalt Pavement Resurfacing

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

January 31, 2023

Project/File: 123316298

Erik Hansen

City of Winnipeg 1155 Pacific Avenue Winnipeg, MB R3B 1B9

Good day Erik,

Reference: 2023 Local Street Renewals Program – Alwood Crescent and Various Locations

Stantec Consulting Ltd. (Stantec) was retained to undertake a factual geotechnical investigation for the 2023 Local Street Renewals Program (Alwood Crescent and Various Locations) located in Winnipeg, MB. 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 January 6 to January 16, 2023. Pavement coring was performed by Stantec geotechnical personnel, and drilling services were provided by Maple Leaf Drilling Ltd. under Stantec's supervision. The borehole locations are shown on the attached Borehole Location Plan provided in **Appendix B**. The pavement cores were sampled with a 150 or 100 mm bit and boreholes were drilled with 125 mm solid stem augers. Geotechnical drilling boreholes were terminated at a depth of 1.0 m below pavement, and soil samples were obtained directly from the auger flights at 0.3 m intervals. Upon completion of drilling, the testholes were examined for evidence of sloughing and groundwater seepage. The soil classification used in the borehole records is as per ASTM D2487 – *Standard Practice for Classification of Soils for Engineering Purposes.* The borehole records are provided in **Appendix C** and core photographs are provided in **Appendix D**.

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
- CSA A23.2-14C Obtaining and testing drilled cores for compressive strength testing

The concrete compressive strength tests were conducted under wet conditions. The moisture content results are shown on the borehole records, and the laboratory test reports are provided in **Appendix E**.

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

January 31, 2023 Erik Hansen Page 2 of 2

Reference: 2023 Local Street Renewals Program – Alwood Crescent and Various Locations

Regards,

STANTEC CONSULTING LTD.

fuce

Guillaume Beauce P.Eng. Field Supervisor, Materials Testing Services Phone: 204-928-7618 Mobile: 204-898-8290 guillaume.beauce@stantec.com

Jason Thompson C.E.T. Manager, Materials Testing Services Phone: 204-928-4004 Mobile: 204-981-8445 jason.thompson@stantec.com

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

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



Stantec Stantec Consulting Ltd.

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



Scale

APPROXIMATE BOREHOLE LOCATION





Title



ORIGINAL SHEET - ISO 11x17 - v17.05

Stantec

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



Scale

APPROXIMATE BOREHOLE LOCATION

BH23-38	
SE S	
TREET RENEWAL PROGRAM DRING DRAWING FROM ALWOOD CR TO END FROM EGESZ ST TO EGESZ ST	
	2023-01-25 123316298
Client/Project CITY OF WINNIPEG 2023 LOCAL STREET RENEWALS PRO	DGRAM

WINNIPEG, MB Figure No.

ALWOOD

Title



ORIGINAL SHEET - ISO 11x17 - v17.05

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



APPROXIMATE BOREHOLE LOCATION

BOREHOLE LOCATION PLAN

GAYNOR

Title



\\CA0196-PPFSS01\WorkGroup\1233\ 2023/01/31 2:03 PM By: Boughton, Lee ORIGINAL SHEET - ISO 11x17 - v17.05

Stantec

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



Scale

APPROXIMATE BOREHOLE LOCATION





2023-01-25 123316298



ORIGINAL SHEET - ISO 11x17 - v17.05

\\CA0196-PPF5S01\WorkGroup\1233\a 2023/01/25 11:17 AM By: Boughton, Lee

Stantec

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



Scale

APPROXIMATE BOREHOLE LOCATION

BOREHOLE LOCATION PLAN



WINNIPEG, MB Figure No. GARDEN GROVE

Client/Project CITY OF WINNIPEG 2023 LOCAL STREET RENEWALS PROGRAM





EXACT LOCATIONS OF TEST HOLES TO BE MARKED IN	D	18/02/2021	DRAWING NO.: 1	2023 LOCAL S
FIELD BY CONTRACT ADMINISTRATOR.	D	DRAWN BY: M.A.D.	SCALE: N.T.S.	CC Channing ST : FRC

ORIGINAL SHEET - ISO 11x17 - v17.05

Stantec

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



 \bigcirc

Scale

APPROXIMATE BOREHOLE LOCATION





Title



Stantec

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



Scale

APPROXIMATE BOREHOLE LOCATION



EET RENEWAL PROGRAM NG DRAWING EGESZ ST TO BURROWS AV	
M BENBOW RD TO EGESZ ST	2023-01-2 12331625
Client/Project	



Stantec

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



Scale

APPROXIMATE BOREHOLE LOCATION



F.	$\overline{\mathcal{L}}$	
	V	
0		
ORING DRAWING		
ROM BENBOW RD TO EGESZ ST		2023-0
		12331



ORIGINAL SHEET - ISO 11x17 - v17.05

Stantec

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



Scale

APPROXIMATE BOREHOLE LOCATION



2023 LOCAL STREET RENEWALS PROGRAM WINNIPEG, MB

Figure No.

CHARTER (2 OF 2)

Title

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	Approximate		
Consistency	kips/sq.ft.	kPa	SPT N-Value
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



RECOVERY

BS

HQ, NQ, BQ, etc.

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 6 to 18 in. (150 to 450 mm). However, when a 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)

Bulk sample

Rock core samples obtained with the use

of standard size diamond coring bits.

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
Н	Hydrometer analysis
k	Laboratory permeability
Y	Unit weight
Gs	Specific gravity of soil particles
CD	Consolidated drained triaxial
CU	Consolidated undrained triaxial with pore
C0	pressure measurements
UU	Unconsolidated undrained triaxial
DS	Direct Shear
С	Consolidation
Qu	Unconfined compression
	Point Load Index (Ip on Borehole Record equals
lp	I_p (50) in which the index is corrected to a
	reference diameter of 50 mm)

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

inferred

CL	IENT:	<u>City of Winnipeg</u>		D													PR	OJE	ECT	NO.	: 12	33162	9
PR		CT: <u>2023 Local Street Rene</u>	ewals AB	Prog	ram				_								BH	I ELE	EVA ⊿∙	TION N/	: _ A	<u>N/A</u>	-
DA	ATE BO	DRED: January 6, 2023	to Ja	nuar	y 10	, 20:	23		v	VAT	er li	EVE	L: <u>N</u>	N/A						-14/			
SAMP		PLES			UN	IDR.	AINE) SHI	EAR	STRE	NGT	Cu (k	Pa)					1					
PTH (m)	ATION (m)	SOIL DESCRIPTION	A PLOT		~	(mm) %	ш %	OTHER TESTS / REMARKS -	P	ABC OCI	RATC KET PI 50	DRY EN. kPa	TEST	▲ ★ 100	kPc	FIE PC	LD V OCKE 15	ANE T SHI 0 kPc	ETES EAR C	T VAN 200	♦ ■ ■	CKFILL/ TOR WELL OMETER	
DEI	ELEVA	(05C3)	STRAL	TYPE	NUMBE	ECOVERY or TCR 3	N-VALU or RQD		W SF	/ ATE PT (N	R CC -value) DNTE e) BL	int & ows	& ATT 5/0.3n	TERBI	erg	lim	ITS	W _P	w 0	" ₩∟ −1	BA MONI PIEZ	BAG MONII PIEZO
0 -		CONCRETE: 148 mm				~			:::	10	2	0	Wat 30	er Cont	ent (%) 40	and B 50	low Co	unt 60	7(0	30 ::::		
			D							:													
										:													
			D							:													
			\triangleleft																				
										:													
			D																				
			4							:													
-																							
			7																				
										:													
			D																				
		End of Devokolo	4																				
										:													
										:													
_										:													
										:													
										:													
_	<u> </u>	1	I	L.I	1	1	ı L	Drilling Co	ntrac	ctor	: Stc	inte	C		<u>.::</u>		<u> </u>	::		L	ogge	d By: LE	1 3
AC	KFILL	symbol 🛃 asphalt	GR	OUT	D	CON	ICRETE	Drilling Me	thod	l: C	oring	g _								R	eviev	ved By:	

CL	IENT:	<u>City of Winnipeg</u>		D													PR	501	ECT	NO	.: <u>12</u>	331629
PR		ON: Bunting St. Winning A	wals AB	rrog	ram				_								BH	i EL Ati i	EVA M:	101. N	ו: ׂA	N/A
DA	ATE BO	DRED: January 6, 2023	to Ja	nuai	y 10	, 20:	23		v	NA	ter l	EVE	L: <u> </u>	N/A			0,				Λ	
					SAM	PLES			1U	NDR	AINE	D SH	EAR	STRE	NG	ΓH, C	Cu (k	(Pa)				
PTH (m)	ATION (m)		A PLOT		ĸ	(mm) %	щ ж	OTHER TESTS /	P	ABC POC	ORATO KET P 50	DRY EN. kPa	TEST	▲ ★ 100) kPc	FIE PC	LD \ DCKE 15	/AN ET SH 0 kP	E TES HEAR Pa	T VAN 20	♦ E ■) kPa	CKFILL/ TOR WELL
DE	ELEV,	(0503)	STRAT	TYPE	NUMBE	RECOVERY or TCR	N-VALI or RQD		V SI	TAV 1) Tq	ER CC N-valu) DNTE e) BL	ent a ows	& ATI 5/0.3n	TERB n	ERG	, LIM	ITS	W _F	• W •		BA MONI PIEZ
0 -		CONCRETE: 143 mm								10) 2 ::::	0	30	ter Cont	tent (%) 40	and B	llow Cc) ::::	60	7	0	80	
										· · · · · · · · · · · · · · · · · · ·								· · · · · · · · · · · · · · · · · · ·				
			A A							· · · · · · · · · · · · · · · · · · ·								· · · · · · · · · · · · · · · · · · ·				
			A D							· · · · · · · · · · · · · · · · · · ·								· · · · · · · · · · · · · · · · · · ·				
										• • •												
			A V							· · · · · · · · · · · · · · · · · · ·												
-										· · · · · · · · · · · · · · · · · · ·												
										· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·									
		End of Borehole	$P \triangleleft$																			
										· · · · · · · · · · · · · · · · · · ·								· · · · · · · · · · · · · · · · · · ·				
										· · · · · · · · · · · · · · · · · · ·								· · · · · · · · · · · · · · · · · · ·				
-										· · · · · · · · · · · · · · · · · · ·												
										· · · · · · · · · · · · · · · · · · ·												
										· · · · · · · · · · · · · · · · · · ·								· · · · · · · · · · · · · · · · · · ·				
										· · · · · · · · · · · · · · · · · · ·								· · · · · · · · · · · · · · · · · · ·				
										· · · · · · · · · · · · · · · · · · ·								· · · · · · · · · · · · · · · · · · ·				
		_			_			Drilling Co	ntra	cto	r: Sto	inte	C							L	ogge	d By: LB
BAC	KFILL	SYMBOL RASPHALT	GR	OUT	D	CON	VCRETE	Drilling Me	thoc	d: C	orin	g								- F	eviev	ved By:

LICATORY Luming 3, Winnpeg. MB DAIlys: N/A DATE FORE	CL PR	IENT:	City of Winnipeg	wals	Prog	ram												PR(BH	OJE(CT I √ATI	10. 0N:	: <u>12</u> 	33162 N/A	9
DATE BORD: Jonuary 6, 2023 to Jonuary 10, 2023 WATER LEVEL N/A Image: Solution of the state of	LC	CATI	ON: <u>Bunting St, Winnipeg, M</u>	\B						_				_				DA	TUM	:	N//	۹		_
SAMPLES Dimmediation	DA	ATE BO	DRED: <u>January 6, 2023</u>	to Ja	nuar	y 10	<u>, 20:</u>	23		V				_: <u>N</u>		NCT			Pal					ī
0 0	DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	ТҮРЕ	NUMBER	RECOVERY (mm) SI	N-VALUE or RQD %	OTHER TESTS / REMARKS	L/ P(W SF		RATC ET PE 50 I R CC	DRY 1 EN. kPa DNTE e) BL	NT 8	▲ ★ 100 & ATT /0.3m		FIEL PO	LIMI	ane ⁻ TSHE kPa TS	TEST AR V W _P	∕ANE 200 ₩ ●	♦ ■ kPa ₩L	BACKFILL/ MONITOR WELL/ PIEZOMETER	
End of Borehole	0 -		CONCRETE: 165 mm				<u> </u>				10	2	0 : : :	30	4	0	50	ow Cou	50 :::	70	8	0		
End of Borehole																								
End of Borehole																					· · · · · · · · · · · · · · · · · · ·			
End of Borehole																					· · · · · · · · · · · · · · · · · · ·			
End of Borehole Image: Contractor: State Logged By: LB	-			V A V																				
End of Borehole I																								
End of Borehole I																								
Drilling Contractor: Stantec Logged By: LB			End of Borehole	<u> </u>																	· · · · · · · · · · · · · · · · · · ·			1
Drilling Contractor: Stantec Logged By: LB	-																							
Drilling Contractor: Stantec Logged By: LB																					· · · · · · · · · · · · · · · · · · ·			
Drilling Contractor: Stantec Logged By: LB																								
Drilling Contractor: Stantec Logged By: LB																								
Drilling Contractor: Stantec Logged By: LB	_																							
			57						Drilling Co	ntrac	ctor	: Sta	inte	С							Lc	ogge	d By: LE	3

CL PR	LIENT:	City of Winnipeg 2023 Local Street Rene	ewals I	Prog	E ram	BOF	REHO	DLE RECO	RD							PI BI	4 EL	ect eva	ои 1017	₿ .:_ 12 י:	H23- 331629 N/A	35 98
LC	CATI	ON: <u>Bunting St, Winnipeg, A</u>	<u>AB</u>		10					(A TE						D	ATU	M: .	N/	Ά		
D/	AIF RC	DRED:	to Ja	nuar	<u>y 10</u>	, <u>20</u>	23			DRA	INED	SHEA	N/AR STR		ЭТН,	Cu (kPa)					Γ
DEPTH (m)	EVATION (m)	SOIL DESCRIPTION (USCS)	ATA PLOT	PE	ABER	RY (mm)	ALUE QD %	OTHER TESTS / REMARKS	LA PC	BOR DCKI	RATO ET PE 50 k	RY TE N. Pa	ST . 1(▲ ★ 00 kP	FI P a	ELD OCK	VAN ET SH 50 kP	E TES IEAR 'a	ST 20	€ □ D kPa	BACKFILL/ DNITOR WELL/ IEZOMETER	
	EL		STF	Ţ	NUN	RECOVE or IC	N-V or RC		W) SP1	ATER T (N-'	CO ? Value	NTEN) BLO'	T & A WS/0.: Water Cr		BERG	G LIN	AITS	₩ _F	, w ————————————————————————————————————		°. Ng	
.0 –		CONCRETE: 155 mm	D D D											40								-
										· · · · · · · · · · · · · · · · · · ·												
			V A V							· · · · · · · · · · · · · · · · · · ·		• •										
-			A V A							· · · · · · · · · · · · · · · · · · ·		· ·										
										· · · · · · · · · · · · · · · · · · ·												
		End of Borehole								· · · · · · · · · · · · · · · · · · ·												
_												· ·										-
																					
																					
-								Drilling Co	ntrac	tor:	Stai	ntec							L	ogge	d By: LB	5
BAC	KFILL S	Symbol 🛃 Asphalt	GR	OUT	D	100	NCRET	E Drilling Me	thod:	: Co	oring	J							F	Review	ved By:	G

CL		City of Winnipeg			E	BOR	REHO	DLE RECOR	D					PR	DJEC.	T NC	B). : <u>12</u>	H23-	36 ⁹⁸
PR	OJEC	T: 2023 Local Street Renewo	als P	rog	ram				-					BH	ELEV		N: _	N/A	
	CATION TE BO	DN: <u>Alwood Cr, Winnipeg, MB</u>		mar	v 10	20	23		- w	ATER I	FVFI・	N/A		DA	IUM:	<u> </u>	/ A		
		<u></u>		<u></u>	<u>, 10</u>					RAINE	D SHEA	R STREM	NGTH,	Cu (kF	°a)				
DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	TYPE	NUMBER	RECOVERY (mm)	N-VALUE or RQD %	OTHER TESTS / REMARKS	LAE PO WA SPT	SORATO CKET P 50 TER CO (N-valu	DRY TES EN. kPa DNTENT e) BLOV	5T ▲ ★ 100 F & ATTE VS/0.3m	FII PC kPa ERBERC	ELD V DCKET 150 G LIMI	ANE TE SHEAI KPa TS W		♦ NE □ NO kPa ₩L	BACKFILL/ MONITOR WELL/ PIEZOMETER	ELEVATION (m)
- 0 -		ACDUALT: 105 mm				–					$\frac{20}{1}$	0 40	nt (%) and) 5	Blow Cou	50 5 1 : : : :	70	80		-
		ASPHALI: 105 mm																	
		Brown, moist, silty CLAY (CL-ML)																	-
-				AS						0									-
-																			-
				AS						0									_
-																			-
-																			-
-				AS											0				-
- 1 -																		_	_
-				AS							0								-
																			_
-		 End of Borehole The soil was frozen to a depth of 0.9 m. No groundwater seepage or soil sloughing was observed upon completion of drilling. Borehole stopped at a depth of 1.2 m. 																	-
Ţ	<u> </u>	I		_	I	1		Drilling Con	tract	or: Mo	aple L	eaf Dr	illing	Liiii Ltd.	1::::		Logge	d By: LB	-
BAC	<fill s<="" td=""><td>SYMBOL 🔛 ASPHALT</td><td>GRO</td><td>DUT</td><td>D</td><td>]C01</td><td>NCRET</td><td>E Drilling Metl</td><td>hod:</td><td>125 m</td><td>nm SS/</td><td>۹</td><td></td><td></td><td></td><td></td><td>Reviev</td><td>ved By:</td><td>GB</td></fill>	SYMBOL 🔛 ASPHALT	GRO	DUT	D]C01	NCRET	E Drilling Metl	hod:	125 m	nm SS/	۹					Reviev	ved By:	GB
BE		nite 🕅 drill cuttings 🚺]san	ID		slo	UGH	Completion	n Dep	oth:	I.2 m					F	Page	1 of 1	

Printed Jan 31 2023 11:1:40 STANTEC GEO 2016 123316298_STREET.RENEWALS.2023.GPJ GINT_1233_SOIL_2018_DATA_TEMP_REV2.GDT 1/31/23

(tantoc			F		FH		חי										
CL	JENT:	City of Winnipeg			-									PR	O.JEC	t no.	В : 12	H23- 331629	5/ 8
PR	OJEC	T: 2023 Local Street Renew	als P	rogi	ram				_					BH	ELEV	ATION	1_ :	N/A	
LC	CATIO	DN: <u>Alwood Cr, Winnipeg, MI</u>	3						-					DA	TUM:	<u>N/</u>	Α		
DA	ATE BC	DRED: <u>January 6, 2023 to</u>	Jar	nuar	y 10	<u>, 202</u>	23		_ WA	TER I	EVEL:	N/A	NGTH	Cu (k	Pa)				
_	ε.				SAM	PLES			LAB	ORAT	ORY TE	ST 🔺	FI	ELD V	'ANE TE	ST	٠	R R	E
μ (m	NOI	SOIL DESCRIPTION	PLOT			(m		OTHER TESTS /	PO	CKET F 50	PEN. kPa	★ 100	P kPa	OCKE 150	T SHEA) kPa	R VANI 200	kPa	KFILL/ DR WI	TION
DEPI	LEVAI	(USCS)	IRATA	ΥPE	MBER	ICR %		REMARKS	14/4			T 0 ATT		~	+ w	P W	+ w _L	BAC	LEVA
	ш		- 0	F	NN	RECOV	z p		SPT	N-valu	Je) BLO	NS/0.3m		3 LI/VII	· · ·	•	-1	2	ш
- 0 -		ASPHALT: 120 mm							1	0	20 3 ::::	30 4	0 5	0 0	60	70	30 : : : :		-
-																		-	
		Tan, moist, sandy SILT (ML)																	
-				AS					:0									-	
-																		-	
-																		-	
				AS					O I									-	_
				(
_																			
_																			
				AS				Sieve/Hydro at 0.8 m G S M C	:	H									
				(4% 82% 10% 5%											
_ 1 _									· · · · · · · · · · · · · · · · · · ·										
1																			
				AS															
				(2										
-		End of BoreholeThe soil was frozen to a depth of 0.9																	
		 m. No groundwater seepage or soil 																	
-		Source upon completion of drilling.Borehole stopped at a depth of 1.2																	
		m.																	
L				-!		· I	I	Drilling Con	tract	or: M	aple L	eaf D	rilling	Ltd.	1		oggeo	d By: LB	_
BAC	CFILL S		GRO	TUC				E Drilling Met	hod:	125 n	nm SS.	Ą				R	eview	ed By:	GB
B	IOTA	NIE 🖾 DRILL CUTTINGS	SAN	ID		Islol	JGH	Completior	n Dep	oth:	1.2 m					P	age	of 1	

Printed Jan 31 2023 11:11:40 STANTEC GEO 2016 123316298_STREET.RENEWALS.2023.GPJ GINT_1233_SOIL_2018_DATA_TEMP_REV2.GDT 1/31/23

Contact Dirity or munipregi In Reaching			Stantec			E	BOR	eho	LE RECOR	۶D						סס			B	H23-	38
LOCATION:	PR	O.JEC	Chy of winnipeg 1: 2023 Local Street Renew	als F	roa	am				_						BH	ELEV	ation	<u>12</u> 1:	<u>331627</u> N/A	<u>o</u> _
DATE FORD: January 4, 2023 to Jonuary 10, 2023 WATER LPEL: NA ugg Solid Descaption SAMUS SAMUS Second State Processing	LC	CATI	DN: <u>Alwood Cr, Winnipeg, MI</u>	3						_						DA	TUM:	N/	'A		
Bit Description SAMPUS Description SAMPUS Description SAMPUS 0 Soil Description Soil Description <th>DA</th> <th>ATE BC</th> <th>DRED: January 6, 2023 to</th> <th>o Jai</th> <th>nuar</th> <th>y 10</th> <th>, 202</th> <th>3</th> <th></th> <th>_ v</th> <th>VAT</th> <th>er li</th> <th>EVEL:</th> <th>N/A</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	DA	ATE BC	DRED: January 6, 2023 to	o Jai	nuar	y 10	, 202	3		_ v	VAT	er li	EVEL:	N/A							
Open model service Solid Desc Like Tron (UACS) Open model service Open model service <t< th=""><th></th><th></th><th></th><th></th><th></th><th>SAM</th><th>PLES</th><th></th><th></th><th>UN</th><th>IDR/</th><th>AINE</th><th>) Shea</th><th>R STRE</th><th>NGTH</th><th>, Cu (k</th><th>Pa)</th><th></th><th></th><th></th><th></th></t<>						SAM	PLES			UN	IDR/	AINE) Shea	R STRE	NGTH	, Cu (k	Pa)				
O Solu Discription (USCs) View Product Plant O THE TETS / Product Plant Control of Plant Product Plant Product Plant 0 ASPRALE: IOS mm Product Plant Product Pla	ب	Ē		F						L/	ABO	RATC	ORY TE	ST 🔺	F	FIELD V	ANE TE	ST R VAN	► D	VELL, VELL,	E) Z
B S (USC) S NMARS 0 ASPNALT: 105 mm -	TH (r	NOIL	SOIL DESCRIPTION	A PLO		~	m m m	<u>"</u> к	OTHER TESTS /			50	kPa	100	kPa	150) kPa	20) kPa		ATIOI
0 ASPNALE: 105 mm 0 ASPNALE: 105 mm 0	DEP	ELEVA	(USCS)	STRAT/	TYPE	NUMBEI	OVERY (N-VALU	REMARKS	W		R CC		T & AT	ERBER	rg limi	TS F	P W	₩ I	BAG MONIT PIEZG	ELEV
0 ASPNALT: 105 mm 0				1			REC			J	1 (14	-vuiu		Water Cont	ent (%) ar	nd Blow Co	unt	•	00		
Gronular ΠL A Brown, moil, ally CLAY (CL-AL) A J J	- 0 -		ASPHALT: 105 mm								10	2		<u>30 4</u>	10	50	60	/0	80		-
Gronular RIL Add Brown, moldt silly CLAY (CL.ML) Add Add D																					
Granular HL 2/41 0 Brown, moid; silly CLAY (CL-ML) 2/45 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 <td>-</td> <td></td>	-																				
Brown, mobil: silty CLAY (CL-ML) Image: Second			Granular FILL																		
Prown, moët, sifty CLAY (CI-MI) Image: Constant of the second secon					AS																
Brown, moist, silly CLAY (CL-ML) Image: Constraint of the solution of the soluti	-				<u> </u>																
advertionable, siny CLAT (CLANC) Image: Astronomy State (CLANC) Image: Astronomy State (CLANC) Image: Astronomy State (CLANC) Image: Astrono			Proven moist site CLAV (CLAU)																		
Image: Second State Secon	-		DIOWN, MOIST, SITY CLAT (CL-ML)																		
Image:																					
Image: Second State Sta																					
Tan, moist, sandy SLT (ML)	-																				
Image: Second Standy					V																
Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML)					AS							0									_
Image:																					
I Image: Standy SILT (ML)																					
Image: Strate in the second strate in the	-																				
Image: Standy SILT (ML) Image: Standy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Standy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Standy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Standy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Standy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Standy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Standy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Standy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Standy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Standy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Standy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Standy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Standy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Standy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Standy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Standy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan																					
Image:	-																				
Image: Second State of the second s																					
Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML) Image: Tan, moist, sandy SiLT (ML)					AS							Ō.									
Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML)	-				ā																•
Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML) Image: Tan, moist, sandy SILT (ML)																					
1 Image: Construction of dilling. 1 Image:	-																				
1 AS O			Tan, moist, sandy SILT (ML)																		
End of Borehole • • • • • • • • • • • • • • • • • • •	_ 1 _																				_
End of Borehole • • • • • • • • • • • • • • • • • • •	1																				
End of Borehole • The soil was frazen to a depth of 0.9 m. • No groundwater seepage or soil sloughing was observed upon completion of drilling. • Borehole stopped at a depth of 1.2 m. • BreckFill SYMBOL SASPHALT BACKFILL SYMBOL CUTINGS • SAND • Source 1 of 1.2 m.					AS																
End of Borehole • The soil was frozen to a depth of 0.9 m. • Mo groundwater seepage or soil sloughing was observed upon completion of drilling. • Borehole stopped at a depth of 1.2 m. • Borehole stopped at a depth of 1.2 m. • Drilling Contractor: Maple Leaf Drilling Ltd. Logged By: LB Drilling Method: 125 mm SSA Reviewed By: GB	-				4																
End of Borehole • The soil was frozen to a depth of 0.9 • No groundwater seepage or soil sloughing was observed upon completion of drilling. • Borehole stopped at a depth of 1.2 m. • Borehole stopped at a depth of 1.2 m. • Drilling Contractor: Maple Leaf Drilling Ltd. Logged By: LB Drilling Method: 125 mm SSA Reviewed By: GB RENTONITE																					
End of Borehole • The soil was frozen to a depth of 0.9 m. • No groundwater seepage or soil sloughing was observed upon completion of drilling. • Borehole stopped at a depth of 1.2 m. • Borehole stopped at a depth of 1.2 m. • BackKFILL SYMBOL SAPHALT • GROUT • Bentronitte • SAND • SAND	-																				
m. No groundwater seepage or soil sloughing was observed upon completion of drilling. Image: Stand St			End of BoreholeThe soil was frozen to a depth of 0.9																		
slougning was observed upon completion of drilling. • Borehole stopped at a depth of 1.2 m. Image: Construction of drilling. • Borehole stopped at a depth of 1.2 m. Image: Construction of drilling. Image: Construction of drilling. • BackFill SYMBOL Image: Construction of drilling. Image: Construction of drilling. • BackFill SYMBOL Image: Construction of drilling. Image: Construction of drilling. • BackFill SYMBOL Image: Construction of drilling. Image: Construction of drilling. • BackFill SYMBOL Image: Construction of drilling. Image: Construction of drilling. • Bention Nite Image: Construction of drilling. Image: Construction of drilling. • Bention Nite Image: Construction of drilling. Image: Construction of drilling. • Image: Construction of drilling. Image: Construction of drilling. Image: Construction of drilling. • Image: Construction of drilling. Image: Construction of drilling. Image: Construction of drilling. • Image: Construction of drilling. Image: Construction of drilling. Image: Construction of drilling. • Image: Construction of drilling. Image: Construction of drilling. Image: Construction of drilling. • Image: Construction of drilling. Image: Constructing. Image: Construction of drill			m. • No groundwater seepage or soil																		
• Borehole stopped at a depth of 1.2 Image: Constraint of the stopped at a depth of 1.2 • BackFill SYMBOL • BackFill SYMBOL • BACKFILL SYMBOL • BackFill Cultifue • BackFill SYMBOL • Conscience • BackFill SYMBOL • Conscience <t< td=""><td>-</td><td></td><td>sloughing was observed upon completion of drilling.</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	-		sloughing was observed upon completion of drilling.																		
BACKFILL SYMBOL MASPHALT GROUT CONCRETE Drilling Method: 125 mm SSA Reviewed By: CB BENTONITE MOREL SAND MOREL Completion Depth: 1.2 mm Depth: 1.2 mm			• Borehole stopped at a depth of 1.2 m.																		
BACKFILL SYMBOL ASPHALT GROUT CONCRETE Drilling Method: 125 mm SSA Reviewed By: GB BENTONITE KADRILL CUTTINGS SAND KASPLACH Completion Depth: 1.2 m Depth: 1.2 m																					-
BENTONITE ASPHALT GROUT CONCRETE Drilling Method: 125 mm SSA Reviewed By: GB	-			1	<u></u>		1		Drilling Cor	ntrac	tor	: Mc	aple L	.eaf C	rilling	g Ltd.			ogge	d By: LB	
		KHILL (ENTOP	otmeol Rasphali Littings L	GR	JUL			CREIE GH			n 12 eptk	20 m 1: 1	.2 m	4							GD

Printed Jan 31 2023 11:11:41 STANTEC GEO 2016 123316298_STREET.RENEWALS.2023.GPJ GINT_1233_SOIL_2018_DATA_TEMP_REV2.GDT 1/31/23

C		Stantec			E	BOREI	101		2D								В	H23-:	39
CL	IENT:	City of Winnipeg)ro a					_					PRO		NO.	: <u>12</u> ;	<u>331629</u>	8
LC	CAT	DN: <u>Gaynor PI, Winnipeg, MB</u>		log	um				_					DA	TUM:	N/.	· _r A	I/A	
DA	ATE BC	DRED: January 6, 2023 to	o Jar	nuar	y 10	, 2023			_ W.	ATER L	EVEL:	N/A							
	Ê				SAM	PLES			UNE LAI	oraine Borat	d shea Ory te	AR STREI ST ▲	NGTH, Fil	Cu (kF ELD V/	°a) ANE TES	ST	٠	RLL	(u
DEPTH (m)	EVATION (SOIL DESCRIPTION (USCS)	ATA PLOT	H	IBER	RY (mm) .R % ALUE		OTHER TESTS / REMARKS	PC	CKET F 50	PEN. kPa	★ 100	P(kPa	DCKET 150	SHEAR kPa	200	E ■ kPa	BACKFILL/ NITOR WE IEZOMETEI	EVATION (
	EU		STR	Υ	NUN	RECOVE or IC N-V/	or Ro		WA SPT	TER C (N-valu	ONTEN Je) BLO	T & ATTI WS/0.3m	ERBERC			•	₩L - I	°. No	Ц
- 0 -		ASPHALT: 110 mm									20 3	30 4	0 5				30 		-
-																		_	-
		Granular FILL																	
-				AS					C									-	
		Brown, moist, lean CLAY (CL)																	
-																		-	
-																		-	
				/															
				AS			_			0								-	-
-																			
-																		-	
				(Sieve	e/Hydro at 0.8 m											
-							0%	S M C 11% 73% 17%										-	
_																		-	-
- 1 -																		-	-
				AS			_				0								
-				(
-		End of Borehole																	
		 The soil was frozen to a depth of 0.9 m. No groundwater seepaae or soil 																	
-		sloughing was observed upon completion of drilling. • Borehole stopped at a depth of 1.2 m.																	
_								Drilling Corr					rillina						-
BAC	KFILL S	Symbol 🔛 Asphalt	GR	JUT		CONCF	RETE	Drilling Met	hod:	125 n	nm SS.	A	gunnig	10.		R	eview	ed By: (GB
BI		NITE 🕅 DRILL CUTTINGS	San	1D		slougi	Н	Completion	n Dep	oth:	1.2 m					P	age 1	of 1	

Printed Jan 31 2023 11:11:42 STANTEC GEO 2016 123316298_STREET.RENEWALS.2023.GPJ GINT_1233_SOIL_2018_DATA_TEMP_REV2.GDT 1/31/23

C		itantec			B	SOF	REH		D									В	H23-4	40
CL		City of Winnipeg	als P	roa	am				-						PR BH		CT NC).: <u>12</u>	<u>331629</u> N/A	8_
LC		DN: Groverdale Ave, Winnipe	eg, N	AB					_						DA	ATUM	: <u>N</u>	∖l ∕A	ŊA	_
DA	ATE BC	DRED: January 6, 2023 to	o Jar	nuar	y 10	<u>, 20</u> 2	23		_ W.	ATER	LE	VEL:	N/A							
	Ê				SAM	PLES			UNE LAI	DRAIN BORA	NED NTO	SHEA RY TE	AR STRE ST ▲	ENGTH, F	. Cu (k IELD V	:Pa) 'ANE 1	EST	٠	"F	ε Έ
TH (m)	TION (r	SOIL DESCRIPTION	A PLOT		~	(um)	ш%	OTHER TESTS /	PC	CKE	Г РЕ 50 k	N. Pa	★ 100	P kPa	OCKE	et SHE 0 kPa	AR VAI 20	NE 🗖 10 kPa	CKFILL/ FOR WEI OMETER	ATION (
DEI	ELEVA	(03C3)	STRAL	TYPE	NUMBE	RECOVERY	N-VALU or RQD	KEMAKKS	WA SPT	ATER (N-vo	COI Dulue	nten) blo'	T & AT WS/0.3r	r FERBER n	g lim	ITS	w _P w ► O	WL 	BA MONI	ELEV
- 0 -		ASPHALT: 100 mm								10 : :	20 : :		Water Con 30	tent (%) and 40 { :::::	d Blow Co 50	60	70 : : : :	80		-
_																				
		Granular FILL																		
-		Brown, moist, fat CLAY (CH)		AS							0								-	
-																			-	
-											· · · · · · · · · · · · · · · · · · ·									
				AS									0							-
-																				
-											· · · · · · · · · · · · · · · · · · ·									
-				AS				Sieve/Hydro at 0.8 m G S M C 0% 7% 38% 54%					€				1		-	
-												· · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · · <td></td> <td></td> <td></td> <td></td> <td></td> <td>· ·</td> <td></td> <td></td>						· ·		
- 1 -				(-	-
-																		· ·		
-		End of Borehole • The soil was frozen to a depth of 0.9 m.																		
-		 No groundwater seepage of soll sloughing was observed upon completion of drilling. Borehole stopped at a depth of 1.2 m. 																		
_	I			_				Drilling Con	Itract	or: I	.∷ I Maj	ole L	.eaf C	Drilling	Ltd.	:1:::	<u> </u>	Logge	d By: LB	-
BAC	KFILL S	YMBOL 🔛 ASPHALT	GRC	JUT	Þ	CON	ICRE	E Drilling Met	hod:	125	mr	n SS,	Ą					Review	/ed By: (GB
BI	ENTON	NITE 🔀 DRILL CUTTINGS [SAN	ID		SLOI	JGH	Completion	n Dep	oth:	1.	2 m						Page	l of 1	

Printed Jan 31 2023 11:11:43 STANTEC GEO 2016 123316298_STREET.RENEWALS.2023.GPJ GINT_1233_SOIL_2018_DATA_TEMP_REV2.GDT 1/31/23

Current End of besteld: Provide 10 / 2023 Prov			Stantec			E	BOF	REHO	OLE RECO	RD									CT		B	H23-4	41
LOCATION: Groverdale Ave. Winnipeg. Me. Datum: N/A DATE DORED: January 10, 2023 VATER LEVEL. M/A VATER LEVEL. M/A UNDERVED: Solu DESCRIPTION Solution: Solution: Note: Solution: No	PR		City of winnipeg I: 2023 Local Street Renew	als P	roa	ram				_							гк BH			190. [ION:	<u>۲۲</u> . ا	331829 N/A	0
DATE ROPED: Lonuary 10, 2023 WATER LIVEL, NA 0 Solution: Soluti	LC		ON: Groverdale Ave, Winnipe	eg, N	AB					_							DA	ATUN	1: _	N//	<u>_</u>		
Oligon Building Soul DESCRIPTION (USCS) Soul DESCRIPTION (USCS) Soul DESCRIPTION (USCS)	DA	ATE BO	DRED: January 10, 2023							W/	ATE	r Le	EVEL	:_ N /	Ά								
O Solid DESCRIPTION (USC3) D <thd< th=""> <thd< th=""> D D <t< th=""><th></th><th></th><th></th><th></th><th></th><th>SAM</th><th>PLES</th><th></th><th></th><th>UNE</th><th>DRAI</th><th>INEC</th><th>) SHE</th><th>AR ST</th><th>REN</th><th>GTH,</th><th>Cu (k</th><th>Pa)</th><th></th><th></th><th></th><th></th><th>~</th></t<></thd<></thd<>						SAM	PLES			UNE	DRAI	INEC) SHE	AR ST	REN	GTH,	Cu (k	Pa)					~
Bit Diff Solid Description Exception	Ê	E Z		5			2			PO	30r ICKE	atc Et pe	DRY TI EN.	EST	▲ ★	FI P	ield v OCke	'ane et she	test Ear	i Vane	•	WELL WELL	m) N
B 1	РТН (ATIOI	SOIL DESCRIPTION	APL		e:	l m w	<u></u> Щ %	OTHER TESTS / REMARKS			50 I	ĸPa		100 k	Pa	15	0 kPc	a l	200	kPa	OME	ATIO
- 0 ASPHALT: 100 mm -	DE	ELEV,	(0303)	STRAT	TYPE	NUMBE	COVERY or TCR	N-VALI or RQD	K2117 KILO	W.A SPT	ATER (N-v	CC CC) NTEN) BLC	NT & . 2/SWS	ATTEI 1.3m	RBER	g lim	ITS	W _P	₩ •	w _L	BA MONI PIEZ	ELEV
• ASPHAIE: 100 mm Gronular Fill • • •	_ 0 _				-		B				10	20	2	Water 30	Content 40	t (%) and	i Blow Co	unt 60	70) (5	0		_
Cranular RLL Cranular RLL Brown, mobil. (of CLAY (Cl)) Chan Brown, mobil. (of CLAY (Cl)) Chan D AA D AA	0		ASPHALT: 100 mm																				
Granular fil				E																			
Brown, model, tot CLAY (CH) Image: CH im	-		Granular FILL																				-
Brown, mold, for CLAY [CH]					۵۵ (
Brown, molti, fet CLAY (CH) 0 3 45 0 3 45 0 3 45 0 3 45 0 4 0 5 0 5 0 5 0 5 0 6 0 6 0 7 45 0 7 45 0 7 45 0 7 45 0 7 45 0 9 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 0	-				4																		-
A A			Brown, moist, fat CLAY (CH)	Ø																			
Interviewed By: CB Excepted in a depth of 1.2 m. BACKEILL SYMBOL ASHALT EACHILL SYMBOL ASHALT EA	-																						-
Ind of Borehole																							
In the set of sorehole In the set of s																							
As As As As As As As As As BackHLI SYMBOL MAPHALI MAPHAL	-																						-
Ind of Barehole					AS																		
Interference					(
As BACKFILL SYMBOL ASPHALT GROUT GR	-																						-
I I																							
AS AS	_																						_
As BACKFILL SYMBOL MASHALT GROUT GROUT GROUT CONCRET DIlling Contractor: Maple Leaf Drilling Ltd. Logged By: LB Drilling Contractor: Maple Leaf Drilling Lt																							
					AS). D: : :										
Interview of the second s	-				4																		-
-1 -1																							
As O	-																						-
I - 1 - I -																							
End of Borehole • As •	- 1 -												· · · ·		::: :::				::: :::	· · · · ·			_
End of Borehole • Infling																							
End of Borehole • The soil was frozen to a depth of 0.9 • No groundwater seepage or soil sloughing was observed upon completion of drilling. • Borehole stopped at a depth of 1.2 • BackFill SYMBOL CUITINGS • SAND • SAND • SAND • SAND					AS								o : :										
End of Borehole • The soil was frozen to a depth of 0.9 m. • No groundwater seepage or soil sloughing was observed upon completion of drilling. • Borehole stopped at a depth of 1.2 m. BACKFILL SYMBOL CASPHALT CONCRETE Drilling Contractor: Maple Leaf Drilling Ltd. Logged By: LB Drilling Method: 125 mm SSA Reviewed By: GB																							
End of Borehole • The soil was frozen to a depth of 0.9 • No groundwater seepage or soil sloughing was observed upon completion of drilling. • Borehole stopped at a depth of 1.2 m. BACKFILL SYMBOL BACKFILL SYMBOL • ASPHALT • GROUT • SAND • Stopped to 12 • Stopped to 2 • Concrete • Drilling Method: 125 mm SSA • Reviewed By: GB																							
Image: Solution of depintion of depintion of milling. • No groundwater seepage or soil sloughing was observed upon completion of drilling. • Borehole stopped at a depth of 1.2 m. BACKFILL SYMBOL BACKFILL SYMBOL CONCRETE Drilling Contractor: Maple Leaf Drilling Ltd. Logged By: LB Drilling Method: 125 mm SSA Reviewed By: GB Reviewed By: GB	-		End of Borehole																				-
Image: Soughing was observed upon completion of drilling, • Borehole stopped at a depth of 1.2 m. Image: Soughing was observed upon completion of drilling, • Borehole stopped at a depth of 1.2 m. BACKFILL SYMBOL Image: Soughing was observed upon completion of drilling, • Borehole stopped at a depth of 1.2 m. BACKFILL SYMBOL Image: Soughing was observed upon completion of drilling, • Borehole stopped at a depth of 1.2 m. Drilling Contractor: Maple Leaf Drilling Ltd. Logged By: LB Drilling Method: 125 mm SSA Reviewed By: GB BENTONITE Image: Soughing was observed upon completion Depth; 1.12 m.			m.																				
Borehole stopped at a depth of 1.2 M. BACKFILL SYMBOL ASPHALT BACKFILL SYMBOL ASPHALT BENTONITE BENTONITE BORDERING SAND	-		sloughing was observed upon completion of drilling.																				-
BACKFILL SYMBOL			Borehole stopped at a depth of 1.2 m.																				
BACKFILL SYMBOL MASPHALT GROUT CONCRETE Drilling Contractor: Maple Leaf Drilling Ltd. Logged By: LB BENTONITE MASPHALT GROUT CONCRETE Drilling Method: 125 mm SSA Reviewed By: GB															:::				::	<u></u>			_
BACKFILL SYMBOL ASPHALT GROUT CONCRETE Drilling Method: 125 mm SSA Reviewed By: GB			5	-1			,		Drilling Co	ntract	or:	Ma	iple	Lea	f Dri	lling	Ltd.			Lo	ogge	d By: LB	<u></u>
	BAC		SYMBOL ASPHALT	GR(TUC	Ð	100 100	NCRET	E Drilling Me	thod:	125	5 m	$\frac{m}{2}$ m	δA						Re		/ed By:	GB

Printed Jan 31 2023 11:11:43 STANTEC GEO 2016 123316298_STREET.RENEWALS.2023.GPJ GINT_1233_SOIL_2018_DATA_TEMP_REV2.GDT 1/31/23

(Stantec			B	BOR	REHO	OL	E RECOR	۶D								B	H23-4	12
CI	LIENT:	City of Winnipeg								_					PR	OJECT	NO.	:_123	331629	<u>8</u>
PR		T: 2023 Local Street Renew	<u>als F</u>	rogi	am					_					BH	ELEVA		: <u> </u>	I/A	
D/	ATE BC	DR:	eg,	/V\D						WA	ATER L	EVEL:	N/A		DA	10///	IN/ <i>I</i>	۹		
					SAM	PLES				UND	RAINE) SHEA	r strei	NGTH,	Cu (kł	°a)			_	_
(L)	m) No		ō			Ê				LAB PO	ORATO CKET P	DRY TES EN.	ST ▲ ★	FI P	eld V. Ocket	ane tes i sheaf	st r vane	●□	ILL/ ETER	m) NO
DEPTH	VATIC	SOIL DESCRIPTION (USCS)	ATA PI	ň	BER	r (m R %	LUE D %	TO I	HER TESTS / REMARKS		50	kPa 	100	kPa	150	kPa 	200	kPa 	SACKF NITOR EZOM	EVATIO
_	ELE		STR	Ι¥Ι	MUN	RECOVER or TC	N-VA or RG			WA SPT	TER CC (N-valu	DNTENT e) BLOV	& ATT VS/0.3m		G LIMI	rs ⊮ _F	• W	₩L - I	¶. Maria	ELE
- 0 -		ASPHALT: 140 mm								1	0 2	0 3	0 4	0 5		50 7 ::::	70 E	80 : : : :		-
			HKH																	
		Brown, moist, lean CLAY (CL)																		
-				AS															-	
-				(
-																			-	
				(<u>^</u> s															-	-
-																			-	
-				AS				Sieve/ G 1%	'Hydro at 0.8 m S M C 10% 61% 28%			0							-	
-																			-	
- 1 -																				_
-				AS								Ö							-	
-		End of Borehole																		
-		 The solit was indeen to a depth of 0.9 m. No groundwater seepage or soil sloughing was observed upon completion of drilling. 																	-	
		 Borehole stopped at a depth of 1.2 m. 																		
			. 1			•			Drilling Cor	ntract	or: Mo	aple L	eaf D	rilling	Ltd.	•••••	Lo	oggeo	d By: LB	-
BAC				TUC				re	Drilling Met	hod:	125 m	im SSA	4				Re	eview	ed By: (GB
B	ENIO		SAN	D		ISFOI	JGH		Completio	n Dep	oth: 1	.2 m					Po	age 1	ot 1	

Printed Jan 31 2023 11:11:44 STANTEC GEO 2016 123316298_STREET.RENEWALS.2023.GPJ GINT_1233_SOIL_2018_DATA_TEMP_REV2.GDT 1/31/23

C		itantec			E	BOR	REHO	OLE RECO	RD										В	H23-4	43
Cl	IENT:	City of Winnipeg							_						Ρ	ROJ	JECT	NO.	: <u>12</u>	331629	8
PR	OJEC	T: <u>2023 Local Street Renew</u>	als F og		am				_						B		EVA	NION.	: <u> </u> ^	N/A	
		UN: <u>Galdell Glove DI, Willing</u>	eg,	IVID					— w	ATFR	I FVF	1:	N/A		L	AIU		IN//	4		
					SAM	PLES					IED SH	IEAF	r stre	NGTH	, Cu	(kPa))				
٦	Ē		╞						LA	BORA		TES	Т 🔺	l	FIELD		IE TES	ST	•	ER ELL/	٦ س
TH (n	TION	SOIL DESCRIPTION	L PLO			Ĩ.		OTHER TESTS /	PO	CKEI E	PEN. 50 kPa	I	100	kPa	-0Ck 1	50 kF	неак Ра	200 200	kPa	KFILI OR VI	TION
DEP	ELEVA:	(USCS)	STRATA	ТҮРЕ	NUMBER	SOVERY (N-VALUE	REMARKS	W/	ATER (& ATT	ERBE	rg Li <i>n</i>	nits	W _F	, w	W _L	MONITIO	ELEVA
			1			E C			311	10-00	200	W	ater Cont	ent (%) ar	nd Blow (7	n d	20		
- 0 -		ASPHALT: 135 mm																			-
-			Ť.																		
		Granular FILL																			
-				(
		Brown moist lean CLAY (CL)												· · · · · · · · · · · · · · · · · · ·							
-																					
_																					
				,																	
				AS																	
-																					
-																					
				/																	
				AS								Э: 									
-																					
- 1 -												::: :::	<u> </u>				<u></u>			$\frac{1}{2}$	-
-				(:::									
				1																	
-		End of Borehole • The soil was frozen to a depth of 0.9																			
		 m. No groundwater seepage or soil 																			
-		sloughing was observed upon completion of drilling.																			
		• Borehole stopped at a depth of 1.2 m.																			
												::		::: 							-
	/EII /		1 ~~	דיור	[···				ntract	or: N	Naple mm	e Le	eat D	rilling	g Ltd	•				a By: LB	GR
BAC	NTILL 3			JUI D		lsi oi	IGH		n Der	th.	1.2 r	557 n	`								

Printed Jan 31 2023 11:11:45 STANTEC GEO 2016 123316298_STREET.RENEWALS.2023.GPJ GINT_1233_SOIL_2018_DATA_TEMP_REV2.GDT 1/31/23

C		Stantec			E	BOR	EH¢	OLE RECO	RD								В	H23-4	44
CL	IENT:	City of Winnipeg												PRC	OJECT	NO.	: <u>123</u>	331629	8
PR	OJEC	CT: 2023 Local Street Renew	als P	rog	ram									BH		TION:	<u> </u>	I/A	
D/	ATE BO	ON: <u>Channing Sr, Winnipeg, r</u> DRED: January 10, 2023	VID						- v	/ATER	LEVEL:	N/A		DA	IUM:	IN/ <i>F</i>	\		
					SAM	PLES			UN	DRAIN	ED SHE/	AR STRE	NGTH, C	Cu (kF	,a)				
Ē	(m) N		Б			2			L/ P(BORA DCKET	fory te Pen.	ST ▲ ★	FIEI PO	LD V/ CKET	ANE TES SHEAF	ST R VANE	•	ull/ Well/	m) No
EPTH (/ATIO	SOIL DESCRIPTION (USCS)	TA PL	ш	ER	un %	ш%	OTHER TESTS / REMARKS		5	0 kPa	100	kPa	150	kPa	200	kPa	ACKFI	VATIC
D	ELEV		STRA	ТҮР	NUMB	ECOVER' or TCF	N-VAI or RQI		W SP	ATER C T (N-val	ONTEN ue) BLO	T & ATT WS/0.3m	ERBERG	LIMIT	rs 🖡	• • •	₩ _L ┨	MON	ELE
- 0 -		ACDUALT: 05 mm		1		~			:::	10	20	Water Conte 30 4	ent (%) and B 0 50	ow Cour	50 7	0 8	0		-
		ASTRALI: 73 mm																	
-		Granular FILL		(A 6															
-		Brown, moist, fat CLAY (CH)																-	
-																		-	-
-																			
																		-	-
-																		-	-
																			_
				AS				Sieve/Hydro at 0.7 m GSMC			I O								
-				((1% 7% 40% 53%										-	
-																		-	
- 1 -										· · · · · · · · · · · · · · · · · · ·									-
				AS								Ō.							
-		End of Borehole • The soil was frozen to a depth of 0.9 m.																	
-		 No groundwater seepage or soil sloughing was observed upon completion of drilling. Borehole stopped at a depth of 1.2 m. 																-	
_								Drilling Co		tor M	i i i i i Ianle I		rilling	td				Byt IP	-
BAC	KFILL	SYMBOL 🙀 ASPHALT	GRO	JUT			CRET	E Drilling Me	thod	: 125	nm SS	A	ıyı	.u.		Re	eview	ed By: (GB
B		NITE 🕅 DRILL CUTTINGS 🛛	SAN	ID	Ŵ	slou	GH	Completic	n De	pth:	1.2 m					Pc	ige 1	of 1	

Printed Jan 31 2023 11:11:45 STANTEC GEO 2016 123316298_STREET.RENEWALS.2023.GPJ GINT_1233_SOIL_2018_DATA_TEMP_REV2.GDT 1/31/23

\langle	Stantec BOREHOLE RECOR																		BUJJ	A 5
	JENT:	City of Winnipeg			-										PR	OJE	CT N	D.: 1	оп∠о- 2331629	45 78
PR	OJEC	T: 2023 Local Street Renew	als F	rog	ram				_						BH	ELE	VATIC	N: _	N/A	
LC	CATI	ON: <u>Channing St, Winnipeg, I</u>	MB						-						DA	ATUM	: _ N	I/A		
DA	ATE BC	DRED: January 6, 2023 to	o Jar	nuar	y 11	, 20:	23		W/	ATER	LEV	/EL:_	N/A		<u> </u>					
	ĉ				SAM	PLES			UND LAB		IED S	shea Y tes	R STRE	NGTH, F	. Cu (k IELD V	(Pa) ANE	TEST	٠	L.	Ê
(m)	on (r	SOU DESCRIPTION	ſ			Ē			PO	CKET	PEN	I.	*	F	OCKE	ET SHE	AR VA		FILL/ R WEI Aeter) NOI
DEPTH	VATI	(USCS)	ATA I	뷥	BER	۳ ۳%	ALUE 2D %	REMARKS				a	100		15		4			EVAT
	ELE		STR	ΤY	NUN	RECOVEI or TC	N-V		WA SPT	TER ((N-vc	CON alue)	ITENT BLOV	& ATT VS/0.3n	ERBER	G LIM	ITS	W _P V		_0¶	ELI
- 0 -		ASPHALT: 80 mm							1	0	20	3			50	60 : : : :	70	80		_
																			•	
-		Granular FILL																	•	-
				(•	
				1															•	
-																			•	
																			•	
-		Brown, moist, fat CLAY (CH)													-					
	Brown, moist, fat CLAY (CH)																			
-																	-			
				AS								0: :								
				(•	_
																			•	
-																			•	-
																			•	
-																			•	-
				AS									D:							
-				-															•	-
																			•	
_																			•	-
																			•	
1																			•	
- -				7																_
				AS									Ö							
-																			•	-
																			•	
-		End of Borehole							<u> </u>			<u></u>								-
		• The soil was frozen to a depth of 0.9 m.																		
-		 No groundwater seepage or soil sloughing was observed upon 																		-
		completion of drilling.Borehole stopped at a depth of 1.2																		
		m.																		
								Drilling Con	tract	or: N	Лар	le L	eaf D	rilling	Ltd.			Logg	ed By: LB	►
BAC	KFILL	Symbol 🛃 Asphalt	GR	JUT		CON	ICRET	E Drilling Met	nod:	125	mm	n SSA	<u>ــــــــــــــــــــــــــــــــــــ</u>					Revie	ewed By:	GB
BI	ENTOI	NITE 🔛 DRILL CUTTINGS [SAN	1D		SLO	JGH	Completion	n Dep	oth:	1.2	m					1	Page	1 of 1	

Printed Jan 31 2023 11:11:46 STANTEC GEO 2016 123316298_STREET.RENEWALS.2023.GPJ GINT_1233_SOIL_2018_DATA_TEMP_REV2.GDT 1/31/23

Stantec BOREHOLE RECORD												E	BH23-	46									
CL	IENT:	City of Winnipeg							_								PR	OJE	CT	NC	. : <u>12</u>	331629	<u>8</u>
PR LC		T: <u>2023 Local Street Renewo</u> DN: Benbow Rd, Winnipeg, M	ais P B	rogi	am				_								BH DA	ELE TUN	:VА И:	1011 N	√: _ ∕A	<u>N/A</u>	
DA	ATE BC	DRED: January 6, 2023 to	Jar	nuar	<u>y 11</u>	, 202	23		_ w/	ATER	LE	VEL:	<u>N</u>	/ A									
	٦ د				SAM	PLES			UNE			SHE/	AR S =ST	TRE	NGT	H, C FIFI	ט (kl ע ס ע	Pa) ANF	TFS	т	•	L I	Ê
(m) T	n) NO		PLOT			(E			PO	CKET	I PEI	۷. Ра		*	kBa	PO	CKE	T SH	EAR	VAN		(FILL/ R Wel Meter	I) NOI
DEPTI	EVATI	(USCS)	RATA	ſPE	MBER	ERΥ (π CR %	ALUE QD %	REMARKS				ru		100			130		u Wa	20 W		BACK DNITO	EVAT-
	Ξ		ST	Ĺ	NN	RECOVI or T	2 N 2 N		WA SPT	(N-vo	COI alue) 20	NTEN BLC	IT & IWS/ Water 30	ATT 0.3m Conte	ERBE	and Bi	LIMI ow Cou	ITS	۲(• •	പ ് ജറ	¥	Ξ
- 0 -		ASPHALT: 80 mm																					_
		Tan maist sandy SILT (ML)																					
-		Tan, moisi, sanay siti (ML)		/																			-
				AS						0: : : :													
-																							-
																			· · · · · · · · · · · · · · · · · · ·				_
																					-		
				<u>م</u>																			
				////																			_
-																							-
-																							-
				AS			S	iieve/Hydro at 0.7 m G S M C	0														
-				(2	2% 76% 14% 8%															-
-																							-
- 1 -																			::: :::	· · ·		<u>.</u>	_
			K	AS					0														
-				ž.																			-
-		End of Borehole					-+																-
		The soil was frozen to a depth of 0.9 m. No groundwater seenage or soil																					
-		sloughing was observed upon completion of drilling.																					-
		• Borehole stopped at a depth of 1.2 m.																					
							[Drilling Con	L:::: Itract	:: or: №	∷ Mai	ole	Lec	i i i If D	L:: rillin	g L	td.	1::	::	::: 	.ogge	d By: LB	_
BAC	<fill s<="" td=""><td>YMBOL 🔛 ASPHALT</td><td>GR</td><td>JUT</td><td>P</td><td>CON</td><td>ICRET</td><td>E Drilling Met</td><td>hod:</td><td>125</td><td>mr</td><td>n SS</td><td>A</td><td></td><td></td><td><u> </u></td><td></td><td></td><td></td><td>I</td><td>Review</td><td>ved By:</td><td>GB</td></fill>	YMBOL 🔛 ASPHALT	GR	JUT	P	CON	ICRET	E Drilling Met	hod:	125	mr	n SS	A			<u> </u>				I	Review	ved By:	GB
BE	BENTONITE CUTTINGS SAND SLOUGH Completion Depth: 1.2 m Page 1 of 1																						

Printed Jan 31 2023 11:11:147 STANTEC GEO 2016 123316298_STREET.RENEWALS.2023.GPJ GINT_1233_SOIL_2018_DATA_TEMP_REV2.GDT 1/31/23

	Stantec BOREHOLE REC														PP				B	H23-4	47 8
PR	OJEC	T: 2023 Local Street Renew	als	Prog	ram				-						BH	ELEV		9 N:	<u></u> N	/A	<u>o</u>
LO	CATI	ON: <u>Benbow Rd, Winnipeg, M</u>	В						-						DA	TUM:	_N	/ A			
DA	TE BC	DRED: <u>January 6, 2023 to</u>	Ja	nuar	y 11	, 202	23		_ W				N/A		Cu /4					i	
	Ê				SAM	PLES			LA	BO BO	RATC	D SHEA	st ▲	ngih F	, CU (ki FIELD V	Pa) ANE T	EST		•	ΓE	Ê
Ē	i) NO		PLOT			Ē		OTHER TESTS /	PC	DCk	ET PE	EN.	*	F	POCKE	T SHEA	AR VA			R WE	NOI
DEPTI	evati	(USCS)	ATA	H	ABER	۳۲ ۳۳	ALUE 2D %	REMARKS			501		100		130				u	BACK IEZO	EVAT
	EU		STR	Ţ	NUN	RECOVE or IC	N-V Or RO		W SP	ATE T (N	R CC -value	DNTEN) BLOV	F & ATT VS/0.3n Vater Cont	ERBER	G LIMI	TS V			-	M 04	Е
- 0 -		ASPHALT: 70 mm								10	2	0 3	80	10	50	60 : : : :	70 ::::::::::::::::::::::::::::::::::::	80			-
			H K																		
-		Granular FILL	- Mi																	-	
		Brown, moist, silly CLAY (CL-ML)		X as								o									
				¥																	
Ī																					
-																				ŀ	
-																				-	
				X as								0									
				X																	_
-																				ŀ	
-																				-	
				X as								0.									
				Ä																	
-																				ŀ	
- 1 -								-	<u></u>		<u></u>						<u>: : :</u> : : : :			ŀ	-
				X AS								0									
-				^																	
1		End of Borehole • The soil was frozen to a depth of 0.9																			
		m.No groundwater seepage or soil																			
-		sloughing was observed upon completion of drilling.																		ŀ	
		• Borehole stopped at a depth of 1.2 m.																			
									-												
					[<u>···</u>		ורטרזי	Drilling Cont	trac	tor	: Mc	iple L	eaf D	rilling	ı Ltd.			Log	geo	By: LB	
BACI	CKFILL SYMBOL ASPHALT GROUT CONCRETE Drilling Method: 125 mm SSA Reviewed By: GB BENTONITE Concrete Drilling Method: 125 mm SSA Reviewed By: GB																				

Printed Jan 31 2023 11:11:48 STANTEC GEO 2016 123316298_STREET.RENEWALS.2023.GPJ GINT_1233_SOIL_2018_DATA_TEMP_REV2.GDT 1/31/23

(Stantec			E	BOR	REH		2D								В	H23-4	48
CL	IENT:	City of Winnipeg							_					PRO	OJECT	NO.	: 12:	331629	8
PR	OJEC	T: 2023 Local Street Renew	als F	rogi	ram				_					BH	ELEVA	TION	: <u> </u>	I/A	
LC	CATI	ON: Charter Dr, Winnipeg, MI	3.						-		/			DA	tum:	N//	Α		
DA	ATE BC	DRED: <u>January 6, 2023 f</u>		nuar	<u>y 11</u>	, 202	23		_ WA		SHEA		NGTH		a)				
	Ê				SAM	PLES			LAB	ORATO	DRY TES	ST 🔺	FI	ELD V	ANE TE	ST	٠		<u>ا</u>
(m) H) NO	SOIL DESCRIPTION	PLOT			Ē		OTHER TESTS /	POG	CKET PI	EN. KPa	*	P	OCKET	SHEAF	2000 SVANE		KFILL/	NOL
DEPTI	EVATI	(USCS)	ATA	F	ABER	۳۲ ۲۳	ALUE 2D %	REMARKS		50		100		150		200		BAC	EVAI
	Ш		STF	Ł	NN	NO NE	or RC		WA SPT	TER CC		& ATT		g limit	rs 🖡	, w	- 1	×.	Ц
						REC			1	0 2	0 3		• ent (%) anc		nt SO 7	rn s	20		
- 0 -		ASPHALT: 120 mm																	-
-																		-	
		Brown, moist, sandy lean CLAY (CL)																	
-				AS						0									
				(
_																		Ē	
-																		ŀ	
				AS						C								-	-
				1															
-																		ŀ	
-				AS				Sieve/Hydro at 0.8 m G S M C 1% 35% 41% 24%		⊦ -c								-	
-																			
1																			
- -																· · · · · · · · · · · · · · · · · · ·			-
				/															
-				AS						0								ŀ	
-		End of Porobala																	
		• The soil was frozen to a depth of 0.9 m.																	
_		 No groundwater seepage or soil sloughing was observed upon 																	
		completion of drilling. • Borehole stopped at a depth of 1.2																	
		m.																	
		I		1	1	1		Drilling Con	u <u>::::</u> itracto	or: Mo	u::::: aple L	eaf D	rilling	Liii Ltd.	1::::	L:::: Lo	u:::: oggeo	d By: LB	-
BACI	<fill s<="" th=""><th>Symbol 🔛 Asphalt</th><th>GR</th><th>JUT</th><th></th><th></th><th>ICRE</th><th>TE Drilling Met</th><th>hod:</th><th>125 m</th><th>m SS/</th><th>۹</th><th></th><th></th><th></th><th>R</th><th>eview</th><th>ed By: (</th><th>GB</th></fill>	Symbol 🔛 Asphalt	GR	JUT			ICRE	TE Drilling Met	hod:	125 m	m SS/	۹				R	eview	ed By: (GB
BE	BENTONITE DRILL CUTTINGS SAND SLOUGH Completion Depth: 1.2 m Page 1 of 1																		

Printed Jan 31 2023 11:11:48 STANTEC GEO 2016 123316298_STREET.RENEWALS.2023.GPJ GINT_1233_SOIL_2018_DATA_TEMP_REV2.GDT 1/31/23

CL		City of Winnipeg			F	BOREH	OLE RECOR	RD							PR	OJEC.	r no	B .∶_12:	H23-4 331629	49 8
PR	OJEC	T: 2023 Local Street Renewo	als P	rog	ram			_							BH	ELEV		l: _ I	I/A	
	CATION TE BC	DN: <u>Charter Dr, Winnipeg, MB</u>	lar	mar	v 11	2023		- ,	WA	TFR I	I FVF	=1 • 1	N/Δ		DA	ATUM:	<u>N/</u>	Α		
		<u> </u>			SAM	PLES		_ U	ND		ED SH	IEAR	STRE	NGTH,	Cu (k	Pa)				
DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	ТҮРЕ	NUMBER	RECOVERY (mm) or TCR % N-VALUE or RQD %	OTHER TESTS / REMARKS	 	_AB(POC 	ORAT CKET I 50 TER C N-valu	ORY PEN.) kPa 	ENT LOW	[▲ ★ 100 & ATT \$/0.3m	FI P kPa ERBER(n ent (%) and	IELD V OCKE 150 G LIMI	'ANE TE T SHEAI D kPa H ITS W ITS H	ST R VAN 200 P W O	♦ E □ DkPa ₩L	BACKFILL/ MONITOR WELL/ PIEZOMETER	ELEVATION (m)
- 0 -		ASPHALT: 135 mm							10)	20	30 :::) 4	0 5	50	60	70 : : : : :	80		-
-												· · · · · · · · · · · · · · · · · · ·								
-		Backfilling sand FILL		AS						0		· · · · · · · · · · · · · · · · · · ·								
-									· · · · · · · · · · · · · · · · · · ·											
				AS																-
-		End of Borehole • The soil was frozen to a depth of 0.6 m.		i 					· · · · · · · · · · · · · · · · · · ·											
-		 No globing was observed upon completion of drilling. Borehole stopped at 0.6 m at two seperate locations due to potential underground utilities nearby. 							· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·								
-									· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·								
- 1									· · · · · · · · · · · · · · · · · · ·											
-									· · · · · · · · · · · · · · · · · · ·											
1				1			Drilling Cor	L:: htra	icto	or: M	aple	÷i e Le	eaf D	rilling	Ltd.	1	L:::: L		d By: LB	-
BACI	<fill s<="" td=""><th>Ymbol 🔛 asphalt 🔣</th><th>GRC</th><td>DUT</td><td></td><td></td><td>E Drilling Met</td><td>ho</td><td>d: 1</td><td>25 r</td><td>nm :</td><td>SSA</td><td></td><td></td><td></td><td></td><td>F</td><td>eview</td><td>ed By:</td><td>GB</td></fill>	Ymbol 🔛 asphalt 🔣	GRC	DUT			E Drilling Met	ho	d: 1	25 r	nm :	SSA					F	eview	ed By:	GB
BE	KHILL SYMBOL ASPHALT GROUT CONCRETE Drilling Method: 125 mm SSA Reviewed By: GB ENTONITE Completion Depth: 1.2 m Page 1 of 1																			

Printed Jan 31 2023 11:11:49 STANTEC GEO 2016 123316298_STREET.RENEWALS.2023.GPJ GINT_1233_SOIL_2018_DATA_TEMP_REV2.GDT 1/31/23

(Stantec			E	BOR	EHC		D								В	H23-	50
CL	IENT:	City of Winnipeg							_					PRO	OJECT	NO.	: 12;	331629	8
PR	OJEC	T:2023 Local Street Renew	als I	Prog	ram				_					BH	ELEVA	TION	<u> </u>	I/A	
LC		ON: <u>Charter Dr, Winnipeg, M</u>	B to ta			1 00			-			NI / A		DA	TUM:	N//	۹		
DA	VIE BC	DRED:		anuc		1, 20	123				ED SHEA	R STREE	NGTH,	Cu (kF	,a)				
DEPTH (m)	ELEVATION (m)	SOIL DESCRIPTION (USCS)	STRATA PLOT	TYPE	NUMBER	ECOVERY (mm)	N-VALUE or RQD %	OTHER TESTS / REMARKS	LAI PO WA SPT	SORAT CKET 50 ATER C (N-val	ORY TE PEN.) kPa + :ONTEN ue) BLO	ST ▲ 100 T & ATTI WS/0.3m	FI PC kPa FRBERC	ELD V/ OCKET 150 G LIMIT	ANE TES SHEAF kPa	5T 200 , w 0	♦ kPa ₩L	BACKFILL/ MONITOR WELL/ PIEZOMETER	ELEVATION (m)
- 0 -		400UAUT 105 mm		-1		~				10	20 3	Nater Conte	ent (%) and 0 5	Blow Cour	50 7	0 E	60 : : : : :		-
-		ASPHALT: 105 mm																-	
		Brown, moist, sandy lean CLAY (CL)	- 7																
_				AS															
-																		-	
-																		-	
				X AS							0							-	_
_																		-	
				AS							Q								
_																		-	
- -				X .c															_
-				AS							Q							-	
-		End of Borehole • The soil was frozen to a depth of 0.9 m. • No groundwater seepage or soil sloughing was observed upon																	
		 completion of drilling. Borehole stopped at a depth of 1.2 m. 																	
-			I		•	. 1	I	Drilling Con	itract	or: N	laple L	eaf Di	rilling	Ltd.	• • • • • •	Lo	bggeo	d By: LB	-
BACI	FILL S	SYMBOL ASPHALT	GR	OUT		CON	ICRETE	Drilling Met	hod:	125 r	nm SS.	Ą				Re	eview	ed By:	GB
BE	IOTA	NITE 🔛 DRILL CUTTINGS [SAN	١D		SLOU	JGH	Completior	n Dep	oth:	1.2 m					Po	age 1	of 1	

Printed Jan 31 2023 11:11:50 STANTEC GEO 2016 123316298_STREET.RENEWALS.2023.GPJ GINT_1233_SOIL_2018_DATA_TEMP_REV2.GDT 1/31/23

APPENDIX D

Core Photographs





Figure 1 – Core No. 32 (Bunting St)



Figure 3 – Core No. 34 (Bunting St)



Figure 2 – Core No. 33 (Bunting St)



Figure 4 – Core No. 35 (Bunting St)





Figure 5 – Core No. 36 (Alwood Cr)



Figure 7 – Core No. 38 (Alwood Cr)





Figure 8 – Core No. 39 (Gaynor PI)









Figure 10 – Core 41 (Groverdale Ave)



Figure 12 – Core 43 (Garden Grove Dr)





Figure 13 – Core 44 (Channing St)



Figure 15 – Core 46 (Benbow Rd)





Figure 16 – Core 47 (Benbow Rd)









Figure 18 – Core 49 (Charter Dr)



Figure 19 – Core 50 (Charter Dr)

APPENDIX E

Laboratory Test Reports





то	City of Winni 104 - 1155	peg, Public Works I Pacific Avenue	Department			PROJECT	202	3 Local Stre	eets Renewa	Ils Program	
	R3E 3P1	Vianitoba				PROJECT	NO.	123316298			
	ATTN:	Erik Hansen				REPORT N	IO ^	1			
DATE SAMF	E SAMPLED PLED BY:	2023.Jan.17 Stantec Consult	ing Ltd.	DATE RECEI SUBMITTED	VED: 2023. BY: Stante	Jan.17 ec Consulting	g Ltd.	DA ⁻ TES	TE TESTED STED BY:	: 2023.Jan. Larry Pres	27 sado
SAN	MPLE ID:	BH23-37, 2.7' (A	Alwood Cr)								
TRI BLC MC Cor	AL DWS (%) r. MC (%)	LIQUID L 21 12 12 12	IMIT 2 20 12 12	TRIAL MC (%)	PLASTI 1 11 11 CL-MI 10 20	C LIMIT 2 11 C LIMIT C LIMIT 2 1 0 0 30		LIQUID LIM PLASTIC LI PLASTICIT AS REC'D N	IT, LL MIT, PL Y INDEX, PI AC (%) CH KA ^T ¹¹ MH	12 11 1 3.8	D 100
	MENTS:	2023 Jan 30			REVIE		Guillau	Betwee	PEng		
Reporting	g of these test resul	ts constitutes a testing servi liable, for the use of this rep	ice only. Engineering inter port by any other party, wi	rpretation or evaluation o ith or without the knowled	f the test results is dge of Stantec.	provided on written	Geotec	chnical Engi	for sole use of clier	rials Testing	Services
Desig	n with comm	nunity in mind									





TO City of Winni 104 - 1155	peg, Public Works Department Pacific Avenue	PROJECT 2023 Local Streets Renewals Program
R3E 3P1	Vianitopa	PROJECT NO. 123316298
ATTN:	Erik Hansen	REPORT NO. 2
DATE SAMPLED SAMPLED BY:	: 2023.Jan.17 Stantec Consulting Ltd.	DATE RECEIVED: 2023.Jan.17DATE TESTED: 2023.Jan.25SUBMITTED BY:Stantec Consulting Ltd.TESTED BY:Donald Eliazar
SAMPLE ID:	BH23-39, 2.7' (Gaynor PI)	
TRIAL	1 2	TRIAL 1 2 PLASTIC LIMIT, PL 16
BLOWS	25 27	MC (%) 16 16 PLASTICITY INDEX, PI 13
MC (%)	29 29	AS REC'D MC (%) 16.6
Corr. MC (%)	29 29	60
		50 40 30 20 10 CL ML
		0 10 20 30 40 50 60 70 80 90 100 Liquid Limit
COMMENTS:		Betwee
REPORT DATE	2023.Jan.30	REVIEWED BY Guillaume Beauce, P.Eng. Geotechnical Engineer - Materials Testing Services
Reporting of these test resul responsible, nor can be held	ts constitutes a testing service only. Engineerin I liable, for the use of this report by any other pa	ig 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 arty, with or without the knowledge of Stantec.
Design with comn	nunity in mind	





то	City of Winni 104 - 1155 Winnipeg	peg, Public Worł Pacific Avenue Manitoba	ks Department			PROJECT	2023 Local Str	eets Renewa	ls Program	
	R3E 3P1	Vanitoba				PROJECT N	IO. 123316298			
	ATTN:	Erik Hansen				REPORT NO	D. 3			
DATE SAMI	E SAMPLED PLED BY:	: 2023.Jan.17 Stantec Cons	ulting Ltd.	DATE RECE SUBMITTED	IVED: 2023.J BY: Stante	lan.17 c Consulting	DA Ltd. TE	TE TESTED: STED BY:	2023.Jan.2 Larry Presa	7 ido
SAI	MPLE ID:	BH23-40, 2.6	' (Groverdale Ave))						
TRI BLC MC Cor	AL DWS (%) r. MC (%)	LIQUIE 26 75 75	2 27 75 76	TRIAL MC (%)		C LIMIT 2 21 21 CL CL 30	LIQUID LIM PLASTIC L PLASTICIT AS REC'D	IIT, LL IMIT, PL Y INDEX, PI MC (%)	75 21 54 29.8	100
	MENTS:	2023 Jan 30			REVIE	WED BY	Betwee Guillaume Beauce	P Eng		
		2020100					Geotechnical Eng	ineer - Mater	ials Testing S	Services
Reporting responsi	g of these test resul ble, nor can be held	ts constitutes a testing s liable, for the use of thi	service only. Engineering inte s report by any other party, v	erpretation or evaluation with or without the knowle	of the test results is p edge of Stantec.	provided on written re	equest. The data presented is	s for sole use of clien	t stipulated above. S	tantec is not
Desig	n with comm	nunity in mind								





TO C	ity of Winni 04 - 1155 /ippipog	peg, Public Work Pacific Avenue	s Department			PROJECT	2023 L	ocal Streets	Renewal	s Program	
R	3E 3P1	vianiilopa				PROJECT	NO. 123	3316298			
A	TTN:	Erik Hansen				REPORT N	IO. 4				
DATE S SAMPL	SAMPLED ED BY:	2023.Jan.17 Stantec Const	ulting Ltd.	DATE RECE SUBMITTED	IVED: 2023 BY: Stant	.Jan.17 ec Consultin	ig Ltd.	DATE TESTE	TESTED: D BY:	2023.Jan.2 Larry Pres	27 ado
SAMF	PLE ID:	BH23-42, 2.8'	(Garden Grove	Dr)							
TRIAL BLOW MC (% Corr. 1	- /S 6) MC (%)	LIQUID 1 25 40 40	LIMIT 26 40 40	TRIAL MC (%)	PLAST 1 17 CLI-M 10 2	IC LIMIT 2 17 C 0 30	LIG PL/ PL/ AS	QUID LIMIT, ASTIC LIMIT ASTICITY IN REC'D MC	LL T, PL NDEX, PI (%) CH NH MH 70	40 17 23 24.5	
	ENTS: T DATE	2023.Jan.30			REVI	EWED BY	Guillaume	Beauce. P	.Ena.		
Reporting of responsible,	these test resul nor can be held with comm	ts constitutes a testing se liable, for the use of this	ervice only. Engineering i report by any other party	nterpretation or evaluation v, with or without the knowle	of the test results is	provided on writter	Geotechn	ical Enginee	er - Materia	als Testing	Services Stantec is not





TO City 104	of Winni - 1155	peg, Public Works Pacific Avenue	S Department			PROJECT	2023	Local Stree	ets Renewal	s Program	
R3E	E 3P1	vianiliopa				PROJECT	NO. 12	23316298			
ATT	N:	Erik Hansen				REPORT N	IO. 5				
DATE SAI	MPLED D BY:	: 2023.Jan.17 Stantec Consu	Ilting Ltd.	DATE RECE SUBMITTED	IVED: 2023 BY: Stant	Jan.17 ec Consulting	g Ltd.	DATI TEST	E TESTED: TED BY:	2023.Jan. Larry Pres	27 sado
SAMPLE	E ID:	BH23-44, 2.6'	(Channing St)								
TRIAL BLOWS MC (%) Corr. MC	C (%)	LIQUID 1 26 67 68	LIMIT 27 68 68	TRIAL MC (%)	PLAST 1 19 CI-M 1 10 2	IC LIMIT 2 19 0 30		QUID LIMIT LASTIC LIN S REC'D MO	r, LL IIT, PL INDEX, PI C (%) CH KH	68 19 49 24.6	0 100
COMMEN REPORT	TS: DATE	2023.Jan.30			REVI	EWED BY	Guillaum	Betuce ne Beauce,	P.Eng.		
Reporting of the responsible, nor Design wit	se test resul can be helc h comn	ts constitutes a testing se liable, for the use of this nunity in mind	rvice only. Engineering inte report by any other party, v	erpretation or evaluation or with or without the knowle	of the test results is dge of Stantec.	provided on written	Geotech	INICAL Engin	eer - Materi	als Testing	Services





то	City of Winni 104 - 1155	peg, Public Works Department Pacific Avenue	PROJECT 20	023 Local Streets Renewals Program
	R3E 3P1	Vianitoda	PROJECT NO.	123316298
	ATTN:	Erik Hansen	REPORT NO.	6
DATE SAMI	E SAMPLED PLED BY:	: 2023.Jan.17 Stantec Consulting Ltd.	DATE RECEIVED: 2023.Jan.17 SUBMITTED BY: Stantec Consulting Ltd.	DATE TESTED: 2023.Jan.27 TESTED BY: Larry Presado
SAI	MPLE ID:	BH23-46, 2.6' (Benbow Rd)		
TRI BLC MC Cor	AL DWS (%) r. MC (%)	LIQUID LIMIT 1 2 29 29 14 15 15 15	PLASTIC LIMIT TRIAL 1 MC (%) 12 0	LIQUID LIMIT, LL PLASTIC LIMIT, PL PLASTICITY INDEX, PI AS REC'D MC (%)
	MENTS:	2023 Jan 30		Betwee Jaume Beauce, P. Eng
Reporting	g of these test resul ble, nor can be held	ts constitutes a testing service only. Engineering in liable, for the use of this report by any other party	Geot erpretation or evaluation of the test results is provided on written request. with or without the knowledge of Stantec.	technical Engineer - Materials Testing Services The data presented is for sole use of client stipulated above. Stantec is not
Desig	n with comm	nunity in mind		





TO City of Winnipeg, Public Works Department 104 - 1155 Pacific Avenue		rks Department e			PROJECT	2023 Local Streets Renewals Program	
	R3E 3P1	Manitoba				PROJECT N	NO. 123316298
	ATTN:	Erik Hansen				REPORT N	NO. 7
DATE SAMP	SAMPLED PLED BY:	: 2023.Jan.17 Stantec Con	sulting Ltd.	DATE RECE SUBMITTED	IVED: 2023. BY: Stante	Jan.17 ec Consulting	DATE TESTED: 2023.Jan.27 ng Ltd. TESTED BY: Larry Presado
SAM	1PLE ID:	BH23-48, 2.	7' (Charter Dr)				
		LIQUI	D LIMIT		PLAST	C LIMIT	LIQUID LIMIT, LL 37
TRIA	4L	1	2	TRIAL	1	2	PLASTIC LIMIT, PL 15
BLO	WS	23	24	MC (%)	15	15	PLASTICITY INDEX, PI 22
MC	(%)	37	37				AS REC'D MC (%) 18.8
				60 50 40 30 10 0 0	CL-M 10 2		NL MH 40 50 60 70 80 90 100
COMN REPO	MENTS: PRT DATE	2023.Jan.30			REVI	EWED BY	Betwee Guillaume Beauce, P.Eng. Geotechnical Engineer - Materials Testing Services
Reporting responsib Desigr	of these test resul le, nor can be held n with comn	ts constitutes a testing I liable, for the use of t nunity in mind	g service only. Engineering in his report by any other party	nterpretation or evaluation or evaluation or with or without the knowle	of the test results is dge of Stantec.	provided on written	n request. The data presented is for sole use of client stipulated above. Stantec is no





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

ΤО City of Winnipeg, Public Works Department PROJECT 2023 Local Streets Renewals Program 104 - 1155 Pacific Avenue Winnipeg, Manitoba 123316298 R3E 3P1 PROJECT NO. 1 ATTN: Erik Hansen REPORT NO. DATE SAMPLED: 2023.Jan.17 DATE RECEIVED 2023.Jan.17 DATE TESTED: 2023.Jan.20 Stantec Consulting Ltd. SUBMITTED BY: Stantec Consulting Ltd. Donald Eliazar SAMPLED BY: TESTED BY: SIEVE SIZE % 100 PASSING (mm) 90 50.0 100.0 80 40.0 100.0 Percent Passing (%) 25.0 100.0 70 20.0 100.0 60 100.0 16.0 50 12.5 100.0 40 9.5 100.0 30 4.75 96.4 20 2.36 76.5 10 2.00 71.5 1.18 56.8 0 0.1 0.01 100 10 1 0.001 0.600 37.0 0.300 23.7 Particle Size (mm) 0.150 17.3 0.075 14.7 7.2

Gravel	Sand			Silt	Clay	Colloide
	Coarse	Medium	Fine	Siit	Ciay	Colloids
3.6	24.9	34.5	22.3	10.0	4.7	3.5

0.005	7.2
0.002	4.7
0.001	3.5

COMMENTS:

Material tested was identified as BH23-37, 2.7' (Alwood Cr).

REPORT DATE 2023.Jan.30

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.





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

ΤО City of Winnipeg, Public Works Department PROJECT 2023 Local Streets Renewals Program 104 - 1155 Pacific Avenue Winnipeg, Manitoba 123316298 R3E 3P1 PROJECT NO. 2 ATTN: Erik Hansen REPORT NO. DATE SAMPLED: 2023.Jan.17 DATE RECEIVED 2023.Jan.17 DATE TESTED: 2023.Jan.23 Stantec Consulting Ltd. SUBMITTED BY: Stantec Consulting Ltd. Donald Eliazar SAMPLED BY: TESTED BY: % SIEVE SIZE 100 PASSING (mm) 90 50.0 100.0 80 40.0 100.0 Percent Passing (%) 25.0 100.0 70 20.0 100.0 60 16.0 100.0 50 12.5 100.0 40 9.5 100.0 30 20 10 0 10 0.1 0.01 100 1 0.001 Particle Size (mm)

Gravel		Sand		Silt	Clay	Colloide	
Glavel	Coarse	Medium	Fine			Colloids	
0.0	0.0	0.4	10.2	72.5	16.9	14.7	

4.75	100.0
2.36	100.0
2.00	100.0
1.18	99.8
0.600	99.6
0.300	99.2
0.150	98.4
0.075	89.4
0.005	21.5
0.002	16.9
0.001	14.7

COMMENTS:

Material tested was identified as BH23-39, 2.7' (Gaynor PI).

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

REPORT DATE 2023.Jan.30

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.

REVIEWED BY





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

ΤО City of Winnipeg, Public Works Department PROJECT 2023 Local Streets Renewals Program 104 - 1155 Pacific Avenue Winnipeg, Manitoba 123316298 R3E 3P1 PROJECT NO. 3 ATTN: Erik Hansen REPORT NO. DATE SAMPLED: 2023.Jan.17 DATE RECEIVED 2023.Jan.17 DATE TESTED: 2023.Jan.20 Stantec Consulting Ltd. SUBMITTED BY: Stantec Consulting Ltd. Donald Eliazar SAMPLED BY: TESTED BY: SIEVE SIZE % 100 PASSING (mm) 90 50.0 100.0 80 40.0 100.0 Percent Passing (%) 25.0 100.0 70 20.0 100.0 60 100.0 16.0 50 12.5 100.0 40 9.5 100.0 30 4.75 99.6 20 2.36 99.3 10 2.00 99.2 1.18 98.7 0 10 0.1 0.01 100 1 0.001 0.600 98.3 0.300 97.7 Particle Size (mm) 0.150 96.9 0.075 92.7

Gravel	Sand			Cil+	Clay	Colloide
	Coarse	Medium	Fine	Siit	Ciay	Colloids
0.4	0.4	1.0	5.6	38.3	54.3	47.4

Material tested was identified as BH23-40, 2.6' (Groverdale Ave).

2023.Jan.30

6		
1	1. 00	

0.005

0.002

0.001

64.5

54.3

47.4

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.

COMMENTS:





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

ΤО City of Winnipeg, Public Works Department PROJECT 2023 Local Streets Renewals Program 104 - 1155 Pacific Avenue Winnipeg, Manitoba 123316298 R3E 3P1 PROJECT NO. 4 ATTN: Erik Hansen REPORT NO. DATE SAMPLED: 2023.Jan.17 DATE RECEIVED 2023.Jan.17 DATE TESTED: 2023.Jan.20 Stantec Consulting Ltd. SUBMITTED BY: Stantec Consulting Ltd. Donald Eliazar SAMPLED BY: TESTED BY: SIEVE SIZE % 100 PASSING (mm) 90 50.0 100.0 80 40.0 100.0 Percent Passing (%) 25.0 100.0 70 20.0 100.0 60 100.0 16.0 50 12.5 100.0 40 9.5 100.0 30 20 10 0 0.1 0.01 100 10 1 0.001 Particle Size (mm)

Gravel	Sand			Silt	Clay	Colloide
Glavel	Coarse	Medium	Fine	Siit	Ciay	Colloids
0.9	0.0	0.8	9.6	61.0	27.7	23.7

4.75	99.1
2.36	99.1
2.00	99.1
1.18	98.8
0.600	98.3
0.300	97.6
0.150	96.8
0.075	88.7
0.005	34.7
0.002	27.7
0.001	23.7

COMMENTS:

Material tested was identified as BH23-42, 2.8' (Garden Grove Dr).

REPORT DATE 2023.Jan.30

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.

REVIEWED BY





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

ΤО City of Winnipeg, Public Works Department PROJECT 2023 Local Streets Renewals Program 104 - 1155 Pacific Avenue Winnipeg, Manitoba 123316298 R3E 3P1 PROJECT NO. 5 ATTN: Erik Hansen REPORT NO. DATE SAMPLED: 2023.Jan.17 DATE RECEIVED 2023.Jan.17 DATE TESTED: 2023.Jan.20 Stantec Consulting Ltd. SUBMITTED BY: Stantec Consulting Ltd. Donald Eliazar SAMPLED BY: TESTED BY: SIEVE SIZE % 100 PASSING (mm) 90 50.0 100.0 80 40.0 100.0 Percent Passing (%) 25.0 100.0 70 20.0 100.0 60 100.0 16.0 50 12.5 100.0 40 9.5 100.0 30 4.75 100.0 20 2.36 99.9 10 2.00 99.9 1.18 0 99.3 10 0.1 0.01 100 1 0.001 0.600 98.7 0.300 97.8 Particle Size (mm) 0.150 96.7 0.075 93.3

Gravel	Sand			Cil+	Clay	Colloide
	Coarse	Medium	Fine	SIL	Ciay	Colloids
0.0	0.1	1.2	5.4	39.9	53.4	46.6

\sum		
m.		

0.005

0.002

0.001

63.8

53.4

46.6

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.

REVIEWED BY

Material tested was identified as BH23-44, 2.6' (Channing St).

2023.Jan.30

COMMENTS:





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

ΤО City of Winnipeg, Public Works Department PROJECT 2023 Local Streets Renewals Program 104 - 1155 Pacific Avenue Winnipeg, Manitoba 123316298 R3E 3P1 PROJECT NO. 6 ATTN: Erik Hansen REPORT NO. DATE SAMPLED: 2023.Jan.17 DATE RECEIVED 2023.Jan.17 DATE TESTED: 2023.Jan.20 Stantec Consulting Ltd. SUBMITTED BY: Stantec Consulting Ltd. Donald Eliazar SAMPLED BY: TESTED BY: SIEVE SIZE % 100 PASSING (mm) 90 50.0 100.0 80 40.0 100.0 Percent Passing (%) 25.0 100.0 70 20.0 100.0 60 100.0 16.0 50 12.5 100.0 40 9.5 100.0 30 4.75 98.1 20 2.36 85.8 10 2.00 82.4 1.18 70.5 0 0.1 0.01 100 10 1 0.001 0.600 50.7 0.300 35.2 Particle Size (mm) 0.150 26.2 0.075 21.9 0.005 11.9

Gravel	Sand			Silt	Clay	Colloide
	Coarse	Medium	Fine	511	Clay	Colloids
1.9	15.7	31.6	28.9	14.1	7.8	5.6

)_		
1		

0.002

0.001

7.8

5.6

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.

Material tested was identified as BH23-46, 2.6' (Benbow Rd).

2023.Jan.30

COMMENTS:





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

ΤО City of Winnipeg, Public Works Department PROJECT 2023 Local Streets Renewals Program 104 - 1155 Pacific Avenue Winnipeg, Manitoba 123316298 R3E 3P1 PROJECT NO. 7 ATTN: Erik Hansen REPORT NO. DATE SAMPLED: 2023.Jan.17 DATE RECEIVED 2023.Jan.17 DATE TESTED: 2023.Jan.20 Stantec Consulting Ltd. SUBMITTED BY: Stantec Consulting Ltd. Donald Eliazar SAMPLED BY: TESTED BY: SIEVE SIZE % 100 PASSING (mm) 90 50.0 100.0 80 40.0 100.0 Percent Passing (%) 25.0 100.0 70 20.0 100.0 60 100.0 16.0 50 12.5 100.0 40 9.5 100.0 30 4.75 99.5 20 2.36 96.7 10 2.00 96.1 1.18 90.7 0 0.1 0.01 100 10 1 0.001 0.600 82.7 0.300 75.1 Particle Size (mm) 0.150 70.7 0.075 64.6 0.005 29.6

Gravel	Sand			Silt	Clay	Colloida	
Glavel	Coarse	Medium	Fine	Siit	Clay	Collolus	
0.5	3.5	13.4	18.0	41.0	23.6	19.7	

0.002

0.001

23.6

19.7

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.

REVIEWED BY

Material tested was identified as BH23-48, 2.7' (Charter Dr).

2023.Jan.30

COMMENTS:



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

Test	Core	Diameter	Length	L/D Ratio	Correction	Peak Load (kN)	Compressive Strength (MPa)	
NO.	Identification	(mm)	(mm)		Factor		Measured	Corrected
1	BH-23-32	146	160	1.10	0.894	718.57	39.4	35.2
2	BH-23-34	146	168	1.15	0.906	1141.00	62.6	56.7

Table 1 - Compressive Strength Test Data

Design with community in mind