# APPENDIX 'A' GEOTECHNICAL REPORT



#### Stantec Consulting Ltd.

500-311 Portage Avenue, Winnipeg MB R3B 2B9

February 14, 2018 File: 123313534

Attention: Mr. Jeff Fraser

KGS Group 3rd Floor - 865 Waverley Street Winnipeg, Manitoba R3T 5P4

Good day Jeff,

Reference: Geotechnical Investigation for McGregor Street 2018 Regional Street Renewals from Selkirk Avenue to Mountain Avenue – Winnipeg, Manitoba

On February 1, 2, and 5, 2018, a total of ten core samples were recovered and ten testholes were drilled on McGregor Street from Selkirk Avenue to Mountain Avenue. The purpose of the geotechnical investigation was to determine the thickness of the pavement structure and observe the underlying soil conditions. The testhole locations are shown on the Testhole Location Plan. Upon completion of the work, the testholes were backfilled with bentonite and clay cuttings; the top 100 mm were repaired with cold mix asphalt. The testhole locations, pavement structure thickness and laboratory test results are provided in the attached Table 1. Photographs of the core samples, testhole logs and the laboratory test reports are also attached to this report.

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

Regards,

STANTEC CONSULTING LTD.

Prepared by:

Lee Boughton

Geotechnical Technologist

Phone: (204) 944-3795

lee.boughton@stantec.com

Attachments:

1. Testhole location plan

2. Table 1

3. Core photos

4. Testhole logs

5. Laboratory test reports

Reviewed by:

German Leal, P. Eng

Associate, Geotechnical Engineering

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ORIGINAL SHEET - ISO 8.5x11 H - v17.05



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Legend



Notes

IMAGE SOURCE: GOOGLE EARTH Client/Project

KGS GROUP

MCGREGOR STREET 2018 REGIONAL STREET RENEWALS WINNIPEG, MANITOBA

Figure No.

123313534

Title

TESTHOLE LOCATION PLAN



# TABLE 1 MCGREGOR STREET SELKIRK AVENUE TO MOUNTAIN AVENUE GEOTECHNICAL INVESTIGATION

Testhole	Testhole Location	Pavemer	nt Surface		t Structure erial	Sample	Sample	Moisture		Particle Siz	e Analysis		4	Atterberg Limit	s
ID		Туре	Thickness (mm)	Туре	Thickness (mm)	Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH01	McGergor Street Southbound median lane,	Asphalt	90	Crushed	100								_		
THUT	30 m south of Pritchard Avenue 5 m east of curb	Concrete	200	Limestone	100	-	-	-	-	-	-	-	-	-	-
	McGergor Street Northbound median lane,	Asphalt	90	Crushed											
TH02	34 m south of Manitoba Avenue 5 m west of curb	Concrete	190	Limestone	100	-	-	-	-	-	-	-	-	-	-
	McGergor Street Northbound median lane,	Asphalt	65	Crushed											
TH03	37 m nouth of Manitoba Avenue 5 m west of curb	Concrete	220	Limestone	100	-	-	-	-	-	-	-	-	-	-
TH04	McGergor Street Southbound median lane,	Asphalt	90	Crushed	100	Silt	1.0	19	0.3	5.5	72.3	21.9	22	17	5
11104	30 m south of Burrows Avenue 5 m east of curb	Concrete	210	Limestone	100	3111	1.0	17	0.5	5.5	72.5	21.7	22	17	3
TH05	McGergor Street Northbound median lane,	Asphalt	100	Crushed	100	_		_	_				_	_	
11103	19 m south of Alfred Avenue 5 m west of curb	Concrete	150	Limestone	100		-	-	-	-	-	-		-	-
TH06	McGergor Street Southbound median lane,	Asphalt	90	Crushed	100	Fill	1.0	32	0.4	3.1	21.6	74.9	82	22	60
11106	18 m south of Aberdeen Avenue 5 m east of curb	Concrete	170	Limestone	100	riii	1.0	32	0.4	3.1	21.0	74.9	62	22	60
TI 10.7	McGergor Street Northbound median lane,	Asphalt	70	Crushed	100										
TH07	16 m south of Redwood Avenue 5 m west of curb	Concrete	175	Limestone	100	-	-	-	-	-	-	-	-	-	-
TUO	McGergor Street Southbound median lane,	Asphalt	65	Crushed	100										
TH08	27 m south of Boyd Avenue 5 m east of curb	Concrete	180	Limestone	100	-	-	-	-	-	-	-	-	-	-
TI. 100	McGergor Street Northbound median lane,	Asphalt	105	Crushed											
TH09	19 m south of College Avenue 5 m west of curb	Concrete	245	Limestone	100	-	-	-	-	-	-	-	-	-	-
TUIC	McGergor Street Southbound median lane,	Asphalt	155	Crushed	100										
TH10	37 m south of Mountain Avenue 5 m east of curb	Concrete	255	Limestone	100	-		-	-				_	-	-





Figure 1 – TH01 Core



Figure 2 – TH02 Core





Figure 3 – TH03 Core



Figure 4 – TH04 Core





Figure 5 – TH05 Core



Figure 6 – TH06 Core





Figure 7 – TH07 Core



Figure 8 – TH08 Core





Figure 9 – TH09 Core



Figure 10 – TH10 Core

P) Lo	ROJE OCA	ECT TION	TH01 TEST KGS Group McGregor Street 2018 Regional Street Renewals McGregor St from Selkirk Ave to Mountain Av DATE February 5, 2018 DRILLING CO. Maple	s ve_	. I	DATUM ELEVAT	G TION	eodet	ic			NO EA	OJE ORTH STIN	HINO NG	G _ -	5:	233 5310 329 A	088		_
u)	m	3OL		S	AMP			tu Sheaket Per	netror		(kPa	) <b>X</b> I		mic (			ng, blo	ows/0	).3m	
DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	TYPE	NUMBER	MOISTURE CONTENT (%)	W <sub>P</sub> ⊢	W — O	kPa W <sub>L</sub> →		ture C	OkPa Conter Penet		tterb				)kPa		<b>DEPTH (ft)</b>
- 0			A sub alt			ŏ	1	0 2	20	30		0	50		60	70	80	)	90	0
-	AS	D L A	Asphalt Concrete																	
-	СО	A A A																		
-	GW		Granular FILL: grey clay	X GS		28														
			- silty, trace fine to coarse sand, trace gravel	Mas		28				0										- - 2
_	FL			X GS	<u> </u>	32				o										. <u>.</u>
-																				
- 1 -			SILT: light brown - clayey, trace fine and coarse sand, trace gravel	X GS	1	22			0											
-	ML		, -,,,	Mas		22														
-				Maga																- <b>4</b>
-			grey fat CLAY (CH)	X GS	1	28				0										
			- silty, trace fine sand - moist				-5 -5 -5 -5													-
_	CII			GS	1	29				O										
-	CH																			- 6
- 2 -				GS	1	30				Ó										
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-	-		• TESTHOLE LOCATION: 30 m south of McGregor																	- 8
			Street and Pritchard Avenue, southbound median lane.																	
-			• No groundwater seepage or sloughing was observed upon completion of drilling.																	
-			<ul> <li>Frost observed to a depth of 1.4 m.</li> <li>Testhole terminated at depth of 2.1 m.</li> </ul>																	
- 3 -	_		•																	10
	San	nple T	ype: GS - Grab Sample SS - Split Spoon RC - Rock Cor ST - Shelby Tube PT - Piston Tube VT - Shear Var	e ne Tes	+	ogged by eviewed							2	١ (	St	<b>~</b> •	<b>~</b> +	·		- 0
		zomet kfill	er Bentonite Drill Cuttings Sand Slow	ıgh		- 10 wed	-J. UCII	iani LTA				V	J	•	JL	al	IL	.C	<b>-</b>	

Pl Lo	ROJE OCA	ECT TION	TH02 TEST KGS Group McGregor Street 2018 Regional Street Renewals McGregor St from Selkirk Ave to Mountain Av DATE February 5, 2018 DRILLING CO. Maple	s ve	. I	DATUM LEVAT	G TION	eodet	ic			NOI EAS	RTHI STING	3		5531 6329		34
DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	TYPE	NUMBER	MOISTURE SA CONTENT (%)	△ Poo	5( ₩ •	netrom )kPa W <sub>L</sub> 	neter (k	(Pa) 1001 re Co	Pa Ontent enetra	ynami 1 & Atte	erberg	e Test a Limits	200 200 3 3.3m	lows/0.:	DEPTH (ft)
- <b>0</b> - -	AS CO	0 A 9	Asphalt Concrete						20						7.0			0
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- - - 1 -	FL			XGS XGS		26			0									-
-   -   -				∬GS		21			0									- <b>4</b>
-	ML		SILT: light brown - clayey, trace fine and coarse sand, trace gravel	\(\sigma \) GS	5	21			o									- 6
- - 2 - -				GS	<b>3</b>	23			o									
- - 	-		• TESTHOLE LOCATION: 34 m south of McGregor															8
-	-		Street and Manitoba Avenue, northbound median lane.  • No groundwater seepage or sloughing was observed upon completion of drilling.  • Frost observed to a depth of 1.4 m.															-
- <b>3</b> -		nple T	• Testhole terminated at depth of 2.1  Type: GS - Grab Sample SS - Split Spoon ST - Shelby Tube PT - Piston Tube VT - Shear Van	ne Tes	+	ogged by						<u> </u>		St	ta	ní	ted	10

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DEPTH (m)	SOIL TYPE	SYMBOL	SOIL DESCRIPTION		AMP			tu Shea ket Per 50		neter (kl		X Dy	ynam		ne Te	•		DEPTH (ft)
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- <b>0</b>	AS	D 12 0	Asphalt Concrete	-														0
-	CO GW	V A A	Granular	-														.   -
	-		FILL: grey clay - silty, trace fine to coarse sand, trace gravel	GS	,	35				0								- 2
-	-			GS		30				0								-
- 1 -	FL			GS		26			0									.   _
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-	-			X GS		25			0									-
-	-		SILT: light brown - clayey, trace fine and coarse sand, trace gravel	GS		19		C										-
-	ML			X GS		27			c	)								6
- 2 -																		.   -
-	=																	
	-		• TESTHOLE LOCATION: 37 m north of McGregor Street and Manitoba Avenue, northbound median lane.															8
-	-		<ul> <li>No groundwater seepage or sloughing was observed upon completion of drilling.</li> <li>Frost observed to a depth of 1.4 m.</li> <li>Toothole terminated at depth of 2.1</li> </ul>															
- 3 -	Sar	nple T	Testhole terminated at depth of 2.1      Sype: GS - Grab Sample SS - Split Spoon RC - Rock Cor		1	ogged by	: I aa	Roughto	nn									10
	Pie	zomet kfill	ST - Shelby Tube PT - Piston Tube VT - Shear Var	ne Tes		eviewed								S	ta	ınt	te	

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- 1 -			SILT: light brown - clayey, trace fine and coarse sand, trace gravel	\ GS		19			0-1									
-			- Grain Size Analysis @ 1.0 m: 0.3% Gravel, 5.5% Sand, 72.3% Silt, 21.9% Clay	N GS		17		:::'										-
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			• TESTHOLE LOCATION: 30 m south of McGregor Street and Burrows Avenue, southbound median lane.															•
-			• No groundwater seepage or sloughing was observed upon completion of drilling.															
-			<ul><li>Frost observed to a depth of 1.4 m.</li><li>Testhole terminated at depth of 2.1</li></ul>															
- 3 -																		-
	San	iple 7	Type: GS - Grab Sample SS - Split Spoon RC - Rock Cor ST - Shelby Tube PT - Piston Tube VT - Shear Var	e e Tec	. —	ogged by				::1			<b>D</b>	\ _	~	1:::		10
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_	GW	000	Granular														
		$\bigotimes$	FILL: grey clay - silty, trace fine to coarse sand, trace gravel	GS	1	37				О							-
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			SILT: light brown														6
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			• TESTHOLE LOCATION: 19 m south of McGregor Street and Alfred Avenue, northbound median lane.														0
-			• No groundwater seepage or sloughing was observed														-
-			upon completion of drilling. • Frost observed to a depth of 1.5 m.														
-			• Testhole terminated at depth of 2.1														_
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-	GW		Granular															_
   .			FILL: grey clay - silty, trace fine to coarse sand, trace gravel	GS		21			О									- - - 2
-				GS		26			C	)								-
- - 1 -			- Grain Size Analysis @ 1.0 m: 0.4% Gravel, 3.1% Sand, 21.6% Silt, 74.9% Clay	GS		32				- 0						- 1		_
-	FL																	- - 4
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-																		-  -  -
- - -			• TESTHOLE LOCATION: 18 m south of McGregor Street and Aberdeen Avenue, southbound median lane.															- 8
-			<ul> <li>No groundwater seepage or sloughing was observed upon completion of drilling.</li> <li>Frost observed to a depth of 1.2 m.</li> </ul>															- - -
- - 3 -			• Testhole terminated at depth of 2.1															10
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P) Lo	RОЛ ОСА	ECT TION	TH07 TEST  KGS Group  McGregor Street 2018 Regional Street Renewals  McGregor St from Selkirk Ave to Mountain Avorate February 5, 2018 DRILLING CO. Maple	8 /e	. I	DATUM LEVAT	G TION	eodet	ic			NO! EAS	RTH STIN	G	_	633	1572	34	
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-	GW	V A A	Granular	-															
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-	-		• TESTHOLE LOCATION: 16 m south of McGregor							- 1 - 1 - 1 - 1								- 8	3
-			Street and Redwood Avenue, northbound median lane. • No groundwater seepage or sloughing was observed																
-	-		<ul><li>upon completion of drilling.</li><li>Frost observed to a depth of 1.4 m.</li><li>Testhole terminated at depth of 2.1</li></ul>																
- 3 -	Sar	nple T	ype: GS - Grab Sample SS - Split Spoon RC - Rock Cor ST - Shelby Tube PT - Piston Tube VT - Shear Var	e ne Tec		ogged by						<u></u>	7					1	0
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(m)	/PE	SYMBOL			<u>~</u>	%) (%)	△ Poo	ket Per 50	netron )kPa		Pa) 100k		-	c Cone 50kPa		-	ows/0.3 kPa	€
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_	GW		Granular															
			FILL: grey clay - silty, trace fine to coarse sand, trace gravel	GS		26			С									
-																		2
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-				X GS		33				0								- 4
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  - 	-		SILT: light brown															-
-			- clayey, trace fine and coarse sand, trace gravel	GS	3	23			0									-
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- <b>2</b> -																		
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=																		
			• TESTHOLE LOCATION: 27 m south of McGregor															8
-			Street and Boyd Avenue, southbound median lane.  • No groundwater seepage or sloughing was observed															
-			upon completion of drilling. • Frost observed to a depth of 1.4 m.															
-			• Testhole terminated at depth of 2.1															
- 3 -																		10
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		zomet kfill	ter Type: Bentonite Drill Cuttings Sand	ıgh		eviewed	by. Gen	nan Lea	.1			V	<b>y</b>	J	.aı	110	ec	•

P: L:	RОЛ ОСА	ECT TION	TH09 TEST KGS Group McGregor Street 2018 Regional Street Renewals McGregor St from Selkirk Ave to Mountain Av DATE February 5, 2018 DRILLING CO. Maple	s ve_	. I	DATUM ELEVAT	I <u>G</u>	eodet	ic		NO! EAS	RTH STIN	G .	5:	5317 3320		<u>4_</u> 
DEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	TYPE	NUMBER	MOISTURE ST CONTENT (%)			kPa W <sub>L</sub>	ter (kPa	) 🗶 D OkPa	ynam	150kPa	Testir		ws/0.3	DEPTH (ft)
- 0	AS	Ö	Asphalt			≥ō	1	0 2		tandard		ation 50	Fest, blo	70	8m 80	90	0 0
-	СО	A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Concrete														
-	GW		Granular FILL: grey clay	X GS	<u> </u>	34				0							-
			- silty, trace fine to coarse sand, trace gravel														_ 2
-	FL			X GS	<b>3</b>	32				0							-
- 1 -	-			GS	}	35				0							-
-			grey fat CLAY (CH) - silty, trace fine sand - moist	\(\sigma \) GS	<b>3</b>	25			О								<b>- 4</b>
	СН			X GS	1	29											-
-	-		SILT: light brown	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	1	29				1							- 6
- 2 -	ML		- clayey, trace fine and coarse sand, trace gravel	GS	}	29			C								-
-																	-
	-		• TESTHOLE LOCATION: 19 m south of McGregor Street and College Avenue, northbound median lane.														8
-	-		<ul> <li>No groundwater seepage or sloughing was observed upon completion of drilling.</li> <li>Frost observed to a depth of 1.2 m.</li> <li>Testhole terminated at depth of 2.1</li> </ul>														
- <b>3</b> -	-		resilione terminated at depth of 2.1														10
	Pie	zomet	Type: GS - Grab Sample SS - Split Spoon RC - Rock Core ST - Shelby Tube PT - Piston Tube VT - Shear Var er Type: Bentonite Drill Cuttings Sand Slow	ne Tes	. —	ogged by					C		St	ar	nt	ec	

P) Lo	ROJE OCA	ECT TION	TH10 TEST  KGS Group  McGregor Street 2018 Regional Street Renewals  McGregor St from Selkirk Ave to Mountain Av  DATE February 5, 2018 DRILLING CO. Maple	s ve	. I	DATUM ELEVAT	I C	Geode	etic			- N	OR'	THII TING	ì		553] 6332	3135 1800 235		_
OEPTH (m)	SOIL TYPE	SOIL SYMBOL	SOIL DESCRIPTION	TYPE	NUMBER	MOISTURE GONTENT (%)		;		Mois	r (kPa	a) X	Dyr a ent 8	namio	on Sac Cone 50kPa	e Test	20 20 3.3m	a) blows/0 0kPa 		O DEPTH (ft)
- <b>V</b> -	AS	D 4 4	Asphalt  Concrete	-															-	
-   -   -	GW FL	\$ 5	Granular FILL: grey clay - silty, trace fine to coarse sand, trace gravel	∑ GS		31	0			0										- 2
- 1 - -			SILT: light brown - clayey, trace fine and coarse sand, trace gravel	GS	<b>1</b>	23			O										-	-
-   -   -	ML			GS	<b>3</b>	23			O										-	- 4
- - - -	-			X GS		23			0											- <b>6</b>
- 2 - - -	-			-		22													-	-
-    -			TESTHOLE LOCATION: 37 m south of McGregor Street and Mountain Avenue, southbound median lane.  No groundwater seepage or sloughing was observed																-	- <b>8</b>
- - 3 -	-		<ul> <li>upon completion of drilling.</li> <li>Frost observed to a depth of 1.4 m.</li> <li>Testhole terminated at depth of 2.1</li> </ul>																-	10
	Piez	zome	Type: GS - Grab Sample SS - Split Spoon RC - Rock Corv ST - Shelby Tube PT - Piston Tube VT - Shear Van ter Type: Bentonite Drill Cuttings Sand Slow		4	ogged by							3		St	a	nt	te	C	10



Sample:

Water Content (%)

#### **Atterberg Limits**

**ASTM D4318** Method A- Multi-Point

TH04 @ 3.5'

22.3%

21.8%

Client: Stantec Consulting Ltd. McGregor Street 2018 Project Name:

123313534 Project No:

Date Received: February 5, 2017 February 12, 2018 Date Tested:

Nestor Abarca, C.Tech. Tested By:

Water Content (%)

**LABORATORY** 

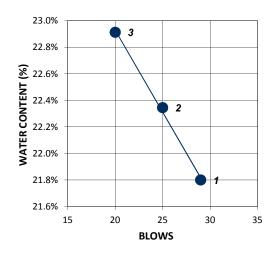
199 Henlow Bay

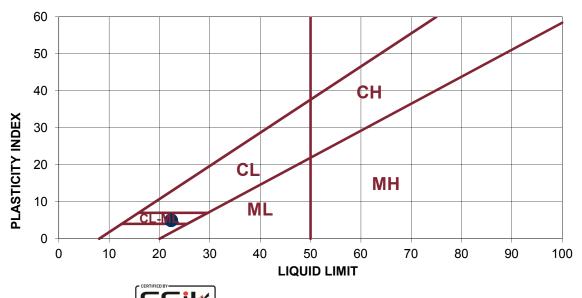
Winnipeg, Manitoba Canada R3Y 1G4 Tel: (204) 488-6999

0 di		0.0				
	LIQUID LIMIT			<u> </u>	STIC LIMIT	
Trial	1	2	3	Trial	1	2
No. of Blows	29	25	20	Indi	'	2
Tare No.	133	174	231	Tare No.	239	288
Wt. Sa. (wet+tare)(g)	52	55	56	Wt. Sa. (wet+tare)(g)	42.09	42.28
Wt. Sa. (dry+tare)(g)	46	48	49	Wt. Sa. (dry+tare)(g)	39.08	39.13
Wt. Tare (g)	20	20	20	Wt. Tare (g)	20.79	20.17
Wt. Dry Soil (g)	26.9	28.3	29.3	Wt. Dry Soil (g)	18.3	19.0
Wt. Water (g)	5.9	6.3	6.7	Wt. Water (g)	3.0	3.2

22.9%

**RESULTS** 22 LL PL 17 PΙ 5 Natural MC (%) 19.0%





16.5%

16.6%

Reviewed By: German Leal, P. Eng

Reporting of these test results constitutes a testing service only. Engineering interpretation or evaluation of the test results is provided only on written request. The data presented above is for the sole use of the 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.



#### **Atterberg Limits**

ASTM D4318 Method A- Multi-Point Client: Stantec Consulting Ltd.
Project Name: McGregor Street 2018

Project No: 123313534

Date Received: February 5, 2017

Date Tested: February 12, 2018

Tested By: Nestor Abarca, C.Tech.

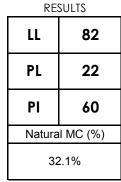
**LABORATORY** 

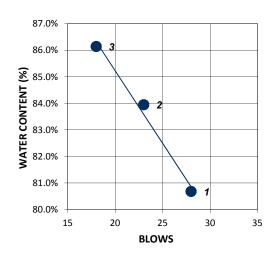
199 Henlow Bay

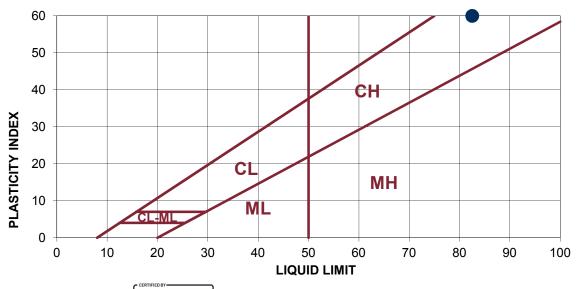
Winnipeg, Manitoba Canada R3Y 1G4 Tel: (204) 488-6999

Sample :	TH06 @ 3.5'
	LIQUID LIMIT

LIQUID LIMIT				PLASTIC LIMIT			
Trial	1	2	3	Trial	1	2	
No. of Blows	28	23	18	Tiliai	'	2	
Tare No.	204	220	230	Tare No.	242	311	
Wt. Sa. (wet+tare)(g)	44	41	43	Wt. Sa. (wet+tare)(g)	28.90	32.3	
Wt. Sa. (dry+tare)(g)	32	31	33	Wt. Sa. (dry+tare)(g)	27.28	30.17	
Wt. Tare (g)	19	19	21	Wt. Tare (g)	20.05	20.73	
Wt. Dry Soil (g)	13.8	11.5	11.8	Wt. Dry Soil (g)	7.2	9.4	
Wt. Water (g)	11.1	9.6	10.2	Wt. Water (g)	1.6	2.1	
Water Content (%)	80.7%	83.9%	86.1%	Water Content (%)	22.4%	22.6%	







Reviewed By: German Leal, P. Eng

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#### **LABORATORY**

199 Henlow Bay Winnipeg MB R3Y 1G4 Tel: (204) 488-6999

# PARTICLE SIZE ANALYSIS ASTM D422

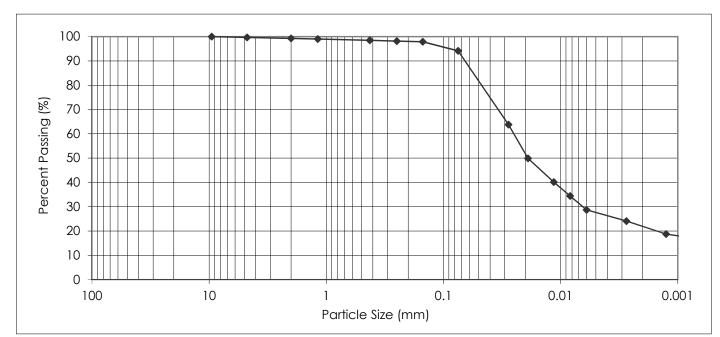
PROJECT: McGregor Street 2018

Stantec Consulting Ltd. 500-311 Portage Avenue Winnipeg, Manitoba R3B 2B9

Attention: Lee Boughton PROJECT NO.: 123313534

SAMPLED BY: Lee Boughton DATE RECEIVED: February 5, 2018

SAMPLE ID: TH04 @ 3.5' TESTED BY: Tabea Kleineberg, M.Sc., GIT



PART	TCLE	PERCENT	PERCENT		PARTICLE	
SIZ	ΖE	PASSING		SIZ	Έ	Passing
37.50	mm	100.0		1.18 mm		99.0
25.00	mm	100.0		0.425	mm	98.5
19.00	mm	100.0		0.250 mm		98.2
16.00 mm		100.0		0.150 mm		97.9
12.50	12.50 mm			0.075	0.075 mm	
9.50	mm	100.0		0.005 mm		27.6
4.75	mm	99.7		0.002 mm		21.9
2.00 mm		99.3		0.001 mm		18.0
		Sand, %				
Gravel, % 75 to 4.75 mm	Coarse	Medium	Fine	Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm

Gravel, %	Coarse	Medium	Fine	Silt, %	Clay, %	Colloids, %
75 to 4.75 mm	<4.75 to 2.0 mm	<2.0 to 0.425 mm	<0.425 to 0.075 mm	<0.075 to 0.002 mm	<0.002 mm	< 0.001 mm
0.3	0.4	0.8	4.3	72.3	21.9	18.0

REPORT DATE: February 12, 2018



REVIEWED BY: German E. Leal, B.Sc., P. Eng.



#### **LABORATORY**

199 Henlow Bay Winnipeg MB R3Y 1G4 Tel: (204) 488-6999

## PARTICLE SIZE ANALYSIS ASTM D422

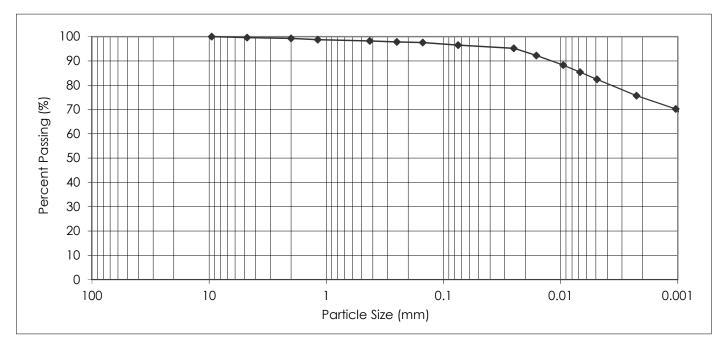
PROJECT: McGregor Street 2018

Stantec Consulting Ltd. 500-311 Portage Avenue Winnipeg, Manitoba R3B 2B9

Attention: Lee Boughton PROJECT NO.: 123313534

SAMPLED BY: Lee Boughton DATE RECEIVED: February 5, 2018

SAMPLE ID: TH06 @ 3.5' TESTED BY: Tabea Kleineberg, M.Sc., GIT



			il			
PART	PARTICLE PERCENT			PARTICLE		PERCENT
SIZ	ZE	PASSING		SIZ	E	PASSING
37.50	mm	100.0		1.18 mm		98.8
25.00	mm	100.0		0.425 mm		
19.00	19.00 mm			0.250 mm		97.8
16.00 mm		100.0	0.150 mm		mm	97.5
12.50 mm		100.0		0.075	mm	96.5
9.50	9.50 mm			0.005	mm	82.6
4.75	4.75 mm			0.002	mm	74.9
2.00 mm		99.3		0.001	mm	69.5
		Sand, %				
Gravel, % 75 to 4.75 mm	Coarse	Medium	Fine	Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm

Gravel, %	Coarse Medium <4.75 to 2.0 mm <2.0 to 0.425 mm		Fine	Silt, %	Clay, %	Colloids, %
75 to 4.75 mm			<0.425 to 0.075 mm	<0.075 to 0.002 mm	<0.002 mm	< 0.001 mm
0.4	0.3	1.1	1.7	21.6	74.9	69.5

REPORT DATE: February 12, 2018



REVIEWED BY: German E. Leal, B.Sc., P. Eng.