APPENDIX 'A'

GEOTECHNICAL REPORT

APPENDIX 'A' – GEOTECHNICAL REPORT

2014 CITY OF WINNIPEG ALLEY PACKAGE CONTRACT 2 (14-RL-02)

GEOTECHNICAL INVESTIGATION



Prepared for: KGS Group Inc. 3rd Floor – 865 Waverley Street Winnipeg, MB R3T 5P4

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

April 15, 2014 Project No. 123301329



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The geotechnical report is provided to aid in Contractor's evaluation of the soil conditions. The information presented is considered accurate at the locations shown on the Drawings and at the time of drilling. However, variations in 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.



2014 CITY OF WINNIPEG ALLEY PACKAGE CONTRACT 2 (14-RL-02)

GARFIELD STREET N AND SHERBURN STREET ALLEY BETWEEN YARWOOD AVENUE AND GRUNDY AVENUE

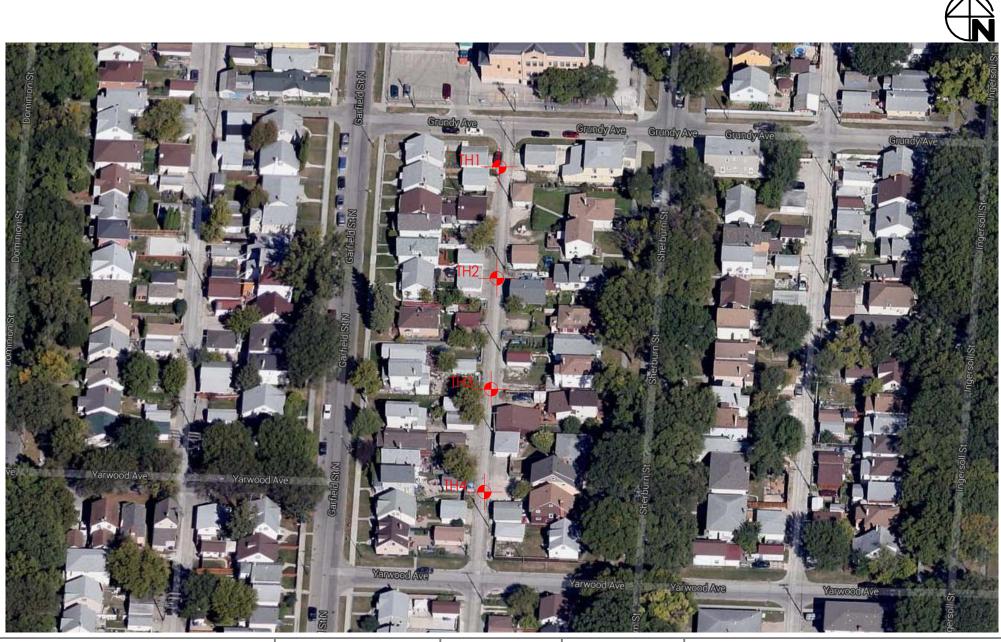
GEOTECHNICAL INVESTIGATION



Prepared for: KGS Group Inc. 3rd Floor – 865 Waverley Street Winnipeg, MB R3T 5P4

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

February 26, 2014 Project No. 123301330



Stantec	Project No. 123301330	Drawn by: NB	Figure: 1	Testhole Location Plan 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Stanlet	Date: Feb 26, 2014	Reviewed by: GL	Scale: NTS	Garfield St N & Sherburn St Alley between Yarwood Ave & Grundy Ave



TABLE 1 2014 CITY OF WINNIPEG ALLEY PACKAGE CONTRACT 2 (14-RL-02) GARFIELD STREET N AND SHERBURN STREET ALLEY BETWEEN YARWOOD AVENUE AND GRUNDY AVENUE GEOTECHNICAL INVESTIGATION

Testhole	Testhole Location	Pavement Surface Pavement Structur		cture Material	Sample	Sample		Pa	article Siz	ze Analys	is	Atterberg Limits					
ID			Thickness (mm)	Туре	Thickness (mm)	Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index		
TH1	UTM Coordinates: 14U 631035 m East, 5529538 m North	Asphalt	40							_	_			_	-	_	_
	011/1 Coordinates. 140 051055 III East, 5525556 III Notth	Concrete 170	-	-	_		-	-	_	-	_	-	-				
TH2	UTM Coordinates: 14U 631034 m East, 5529496 m North	Asphalt	30		_	Clay Fill	0.6	32	0.2	2.7	39.2	57.9	63	21	42		
1112	o five coordinates. 140 031034 in Last, 3323430 in North	Concrete	200	_	_	Ciay I III	0.0	52	0.2	2.1	55.2	57.5	05	21	42		
тнз	UTM Coordinates: 14U 631034 m East, 5529456 m North	Asphalt	25		_	Ciltur Claur	Silty Clay		0.9	27	0.5	4.6	31.7	63.2	76	22	54
1113	011/1 Coordinates. 140 051034 III East, 5523450 III Notth	Concrete	205	-	-	Silty Cidy	0.9	21	0.5	4.0	51.7	03.2	70	22	54		
TH4	LITM Coordinatos: 141 621024 m East 5520421 m North	Asphalt	30		-	-	-	_	-			-					
1 🗆 4	UTM Coordinates: 14U 631034 m East, 5529421 m North	Concrete	185	-			-	-	-	-	-	-	-	-	-		

Proje Clier Drilli Drilli	Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)Date DrilledProject Location: Garfield and Sherburn Alley from Yarwood to GrundyDepth of TeClient: KGS Group Inc.Logged by:				Stantec led: January 24, 2014 Testhole: 2.1 m by: Nestor Abarca d by: German Leal							
Depth (m)	Symbol	Description	, and the second se	Sample Type		Content %)						
		Asphalt			25 50	75 100						
 		Concrete Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel		3S -	•17 •17 •20 							
- 0.5 - 			В	3S -								
- 1.0 -		Silty Clay - grey, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel - brown below 1.1 m	B	3S	●36 							
		Silt	B	3S	●35¦ 							
- 1.5 - 		- tan, soft, moist, low plasticity - some clay - trace fine to medium sand	В	3S	• <u>+</u> • <u>2</u> 1 - +- - • <u>1</u> - +-							
 - 2.0 -			В	3S .	●22 							
			В	ss -	22							

 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completion of Testhole terminate at a depth of 2.1 m. 	drilling.	



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Project Location: Garfield and Sherburn Alley from Yarwood to Grundy Client: KGS Group Inc. Drilling Contractor: Active Drilling and Piling

Drilling Method: 100 mm Solid Stem Auger

UTM Coordinates: 14U 631034.0 m E, 5529496.0 m N

Depth (m)	Symbol	Description			Distril	le Size bution	1		● Wate	(%)	nten LL	ıt
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	2	5 50) 75	5 10	00
		Asphalt / Concrete								 	 	
 - 0.5 -		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS BS	······					●36 ●31 	 	 	· · · · · · · · · · · · · · · · · · ·
			BS	0.2	2.7	39.2	57.9	F	+ ●32 		 	
- 1.0		Silty Clay - grey, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel - brown below 1.1 m	BS					· · · · · · · · ·	●36 		 	
- 1.5 -		Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS	······					23		 	
			BS	······					23		 	
		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon c Testhole terminate at a depth of 2.1 m. 	BS	oletio	n of (drillin	ıg.		25			

TESTHOL	E TH3
---------	-------



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Project Location: Garfield and Sherburn Alley from Yarwood to Grundy Client: KGS Group Inc. Drilling Contractor: Active Drilling and Piling

Drilling Method: 100 mm Solid Stem Auger

Page 1 of 1

UTM Coordinates: 14U 631034.0 m E, 5529456.0 m N

Depth (m)	Symbol	Description adA E			Partic Distril	bution	1		er Content (%) LL
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	25 50	0 75 100
		Asphalt //							
		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS BS	·······				•27 •25 	
		Silty Clay	BS					●25 	
- 1.0 - - 1.0 -		- grey, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel - brown below 1.1 m	BS	0.5	4.6	31.7	63.2	 ●27 	
		0.11	BS					●28 	
- 1.5 -		Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS	······					
			BS					●21 	
- 2.0 -			BS					++ •	
		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon c Testhole terminate at a depth of 2.1 m. 	omj	oletio	n of (drillin	ıg.		

		TESTHOLE TH4	🕥 St	ta	nt	e	0						
Proje Clier Drilli Drilli	ect Lo nt: KG ng Co ng Mo	cation: Garfield and Sherburn Alley from Yarwood to Grundy ES Group Inc.	Date Drilled Depth of Test Logged by: Reviewed by	sth Ne	ole: stor	2.1 r Aba	n rca	14					
Depth (m)	Description				• Water Content (%)								
	7 5 1	Aanhalt			2	25 5	50 7	′5 1	00				
		Asphalt Concrete				 	 	 	 .				
		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel		BS BS		 	 47 	I I I I I I I I I I I	 				
- 0.5 -				BS		 	 	 					
- 1.0 -		Silty Clay - grey, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel		BS		●27 ↓	 	 	 				
		- brown below 1.1 m		BS		●29	 	 	 				
- 1.5 -				BS		 •29 	 	 	 				
		Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand		BS	•	 22 	 	 	 				
				BS		22	 	 	 				
 		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completio Testhole terminate at a depth of 2.1 m. 	n of drilling.	-									



Core sample from Testhole TH1



Core sample from Testhole TH2





Core sample from Testhole TH3



Core sample from Testhole TH4

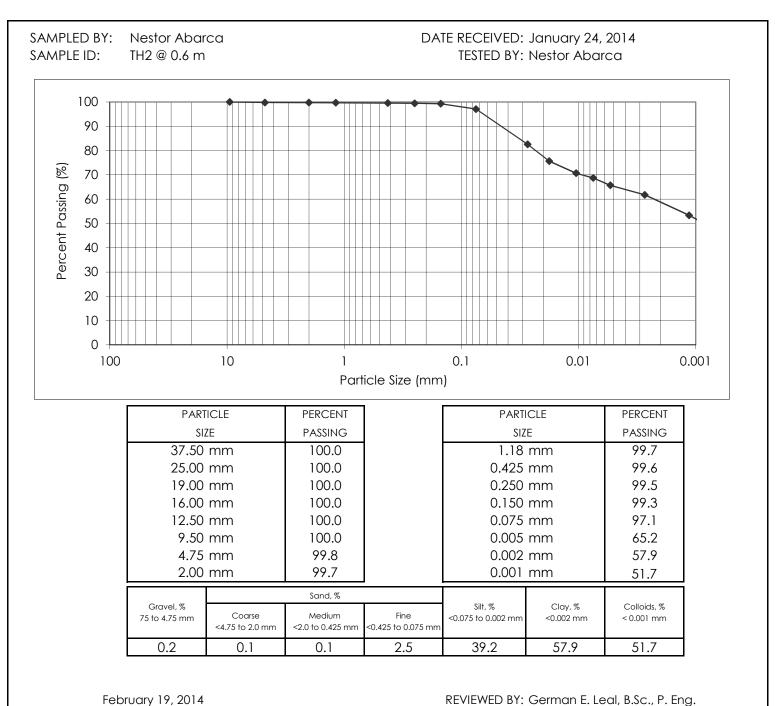




KGS Group Inc. 3rd Floor - 865 Waverley Street Winnipeg, MB R3T 5P4 PROJECT: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Garfield St N & Sherburn St Alley between Yarwood Ave & Grundy Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330

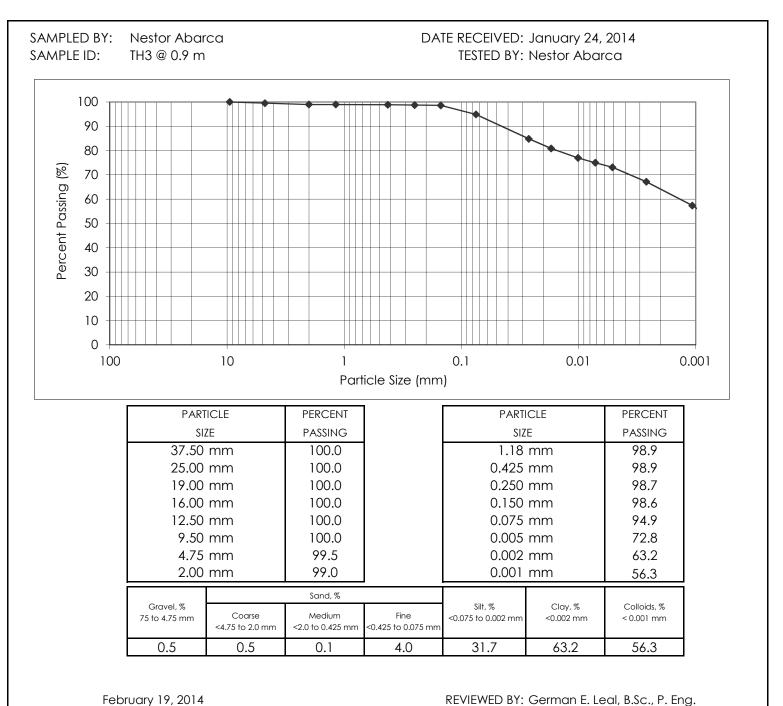




KGS Group Inc. 3rd Floor - 865 Waverley Street Winnipeg, MB R3T 5P4 PROJECT: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Garfield St N & Sherburn St Alley between Yarwood Ave & Grundy Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330



2014 CITY OF WINNIPEG ALLEY PACKAGE CONTRACT 2 (14-RL-02)

INGERSOLL STREET AND LIPTON STREET ALLEY BETWEEN SARGENT AVENUE AND WELLINGTON AVENUE

GEOTECHNICAL INVESTIGATION

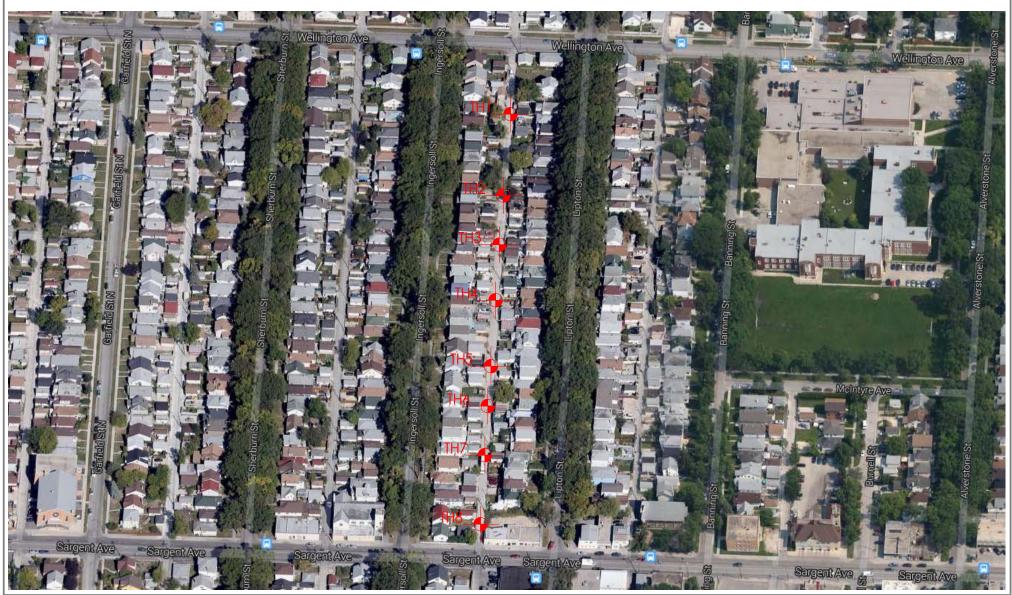


Prepared for: KGS Group Inc. 3rd Floor – 865 Waverley Street Winnipeg, MB R3T 5P4

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

February 27, 2014 Project No. 123301330





Stantec		Drawn by: NB	Testhole Location Plan 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Stantec	Date: Feb 26, 2014	Reviewed by: GL	Ingersoll St & Lipton St Alley between Sargent Ave & Wellington Ave



TABLE 1 2014 CITY OF WINNIPEG ALLEY PACKAGE CONTRACT 2 (14-RL-02) INGERSOLL STREET AND LIPTON STREET ALLEY BETWEEN SARGENT AVENUE AND WELLINGTON AVENUE GEOTECHNICAL INVESTIGATION

Testhole	Testhole Location	Paveme	nt Surface	Pavement Stru	cture Material	l Sample	Sample	Sample Sa	le Sample Mo					Atterberg Limits			
ID		Туре	Thickness (mm)	Туре	Thickness (mm)	Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index		
TH1	UTM Coordinates: 14U 631188 m East, 5529108 m North	Concrete	190	-	-	-	-	-	-	-	-	-	-	-	-		
TH2	UTM Coordinates: 14U 631186 m East, 5529048 m North	Concrete	160	-	-	-	-	-	-	-	-	-	-	-	-		
тнз	UTM Coordinates: 14U 631185 m East, 5529009 m North	Concrete	120	-	-	-	-	-	-	-	-	-	-	-	-		
TH4	UTM Coordinates: 14U 631184 m East, 5528969 m North	Concrete	170	-	-	-	-	-	-	-	-	-	-	-	-		
TH5	UTM Coordinates: 14U 631183 m East, 5528920 m North	Concrete	190	-	-	Clay	0.9	32	0.0	11.5	28.1	60.4	63	22	41		
TH6	UTM Coordinates: 14U 631182 m East, 5528889 m North	Concrete	160	-	-	Clay Fill	0.6	33	0.2	18.2	40.7	40.9	54	20	34		
TH7	UTM Coordinates: 14U 631181 m East, 5528853 m North	Concrete	165	-	-	-	-	-	-	-	-	-	-	-	-		
TH8	UTM Coordinates: 14U 631180 m East, 5528801 m North	Asphalt	20		-	Clayey Silt	0.9	32	0.0	5.9	65.9	28.2	35	18	17		
		Concrete	150														

TESTHOLE TH	11
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Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Project Location: Ingersoll and Lipton Alley from Sargent to Wellington Client: KGS Group Inc. Drilling Contractor: Active Drilling and Piling

Drilling Method: 100 mm Solid Stem Auger

UTM Coordinates: 14U 631188.0 m E, 5529108.0 m N

Depth (m)	Symbol	Description	Sample Type		● Wat	ter C (%)	onte	nt
	P 6 4			2	25 5	50 7	75 1	100
		Concrete			 	; 	 	 -
		Clay Fill	BS		 	•59	 	
		- black, firm, moist, high plasticity	BS	,	∣ ●24 · · ·	 	 	
		- some fine to coarse sand - trace fine gravel				 	Ì 1	
							i i	i
- 0.5 -					<u> </u>	¦ 	' 	<u> </u>
			BS		●34	 	 	 · · · · · ·
					 .	 	 	
		Clay				ļ	 	
		- brown, stiff, moist, high plasticity						
-		- some silt - some fine to coarse sand	BS		•27	 	····· 	
- 1.0 -		- firm below 1.1 m		<u>-</u> -	⊥ 	 	 	⊥
					 	 	 	.
L .						 	 	
			BS		●28		i	i
						l 	1 	
		Silt - tan, soft, moist, low plasticity			·····	 	¦	
- 1.5 -	$\left\{ \left \right \right\}$	- some clay - trace fine to medium sand	BS		•25 -	 		
		- trace fine to medium sand			 	 	 	
							ļ	1
			BS	•	20	 	 	
	$\left\{ \left \right \right\}$					 	 	
- 2.0 -				<u> </u>	 +	 †	 	 +
			BS		22	 	 	
		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completion of drilling Testhole terminate at a depth of 2.1 m. 			1			-
Page 1	1 of 1							



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Project Location: Ingersoll and Lipton Alley from Sargent to Wellington Client: KGS Group Inc. Drilling Contractor: Active Drilling and Piling

Drilling Method: 100 mm Solid Stem Auger

UTM Coordinates: 14U 631186.0 m E, 5529048.0 m N

Depth (m)	Symbol	Description	Sample Type		● Wa	ater (%		nten 10	
		Concrete		<u> </u>	25 :	1	75		
	4 4 A A A A A A A A A A A A A A A A A A				 	 	 • • • • •	 	ι [· · · · · ·
		Clay Fill	BS		 .l	 ●53	3	 	ι Ι
		- black, firm, moist, high plasticity			 			l	I
		- some fine to coarse sand - trace fine gravel	BS		" "●3" 	7	· · · · · ·		
		C C C C C C C C C C C C C C C C C C C			. 	. 	· · · · · · 	· · · · ·	j I
- 0.5 -				<u> </u>	<u>i</u>		-i-	İ	<u> </u>
			BS	,	 21	i 		 	
						İ	ļ	ļ	
		Clay - brown, firm, moist, high plasticity				. <u> </u>	···.¦	·····¦	
		- some silt	BS		●33	, 	· · · ·	 	
- 1.0 -		- some fine to coarse sand		<u> </u>	 	 _	 _ _	 	
						 		ļ	1
					. [1	I		
			BS		•34	ŧ¦	· · · · · ·	· · · · · 	
					. l 1	.l	l I	I	l
		Silt			i I	i I	i]
- 1.5 -		- tan, soft, moist, low plasticity			i +	i 	 	 	
1.5		- some clay - trace fine to medium sand	BS		● 24	i	i	İ	
					1	1	····!··	'ا 	
					· [· · · · ·	·	· · · · · ·	·····	
			BS		 .			 	
			60		●25 	 		 	
									i I
- 2.0 -					+	+ ·			
			BS		•23			l	
 		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completion of drilling Testhole terminate at a depth of 2.1 m. 							
Page 1	l of 1								

Proje Clier Drilli Drilli	ect Lo nt: KG ing Co ing Mo	cation: Ingersoll and Lipton Alley from Sargent to Wellington De S Group Inc. Lo	te Drilled: Ja pth of Testh gged by: Ne	Stantec ed: January 24, 2014 Festhole: 2.1 m y: Nestor Abarca by: German Leal								
Depth (m)	Symbol	Description	Sample Type	• Water Content (%) 25 50 75 100								
		Concrete Clay Fill - black, firm, moist, high plasticity	BS		 .	43	 					
		- some fine to coarse sand - trace fine gravel	BS		 23 	 	 	 				
- 0.5 -			BS	 		 						
- 1.0 -			BS		 	 44 	 ·····	 				
		Clayey Silt - brown, firm, moist, medium plasticity - trace fine to medium sand Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS		 ●31 		· · · · · · · · ·					
- 1.5 -	-		BS		21 	 	 	 				
	-		BS		•23	 	 	 				
- 2.0 -		 Clay brown, firm, moist, high plasticity some silt trace fine to coarse sand The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completion Testhole terminate at a depth of 2.1 m. 	of drilling.		 ●33	 	 	 + 				

		TESTHOLE TH4	🚺 Sta	ntec			
Proj Clier Drill Drill	ect Lo nt: KG ing Co ing Mo	ocation: Ingersoll and Lipton Alley from Sargent to Wellington	Date Drilled: Ja Depth of Testh Logged by: Ne Reviewed by: (ole: 2.1 n stor Abar	n rca	4	
Depth (m)	Symbol	Description	Sample Type		ter Co (%)		nt 00
		Concrete Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS		47		
- 1.0 -		Clay - brown, firm, moist, high plasticity - some silt - some fine to coarse sand	BS		 45 	······	
		Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS		45 	······	
- 2.0 -	-		BS			······	
Page	1 of 1	 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completion. Testhole terminate at a depth of 2.1 m. 	on of drilling.				

TESTHOLE TH5



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Project Location: Ingersoll and Lipton Alley from Sargent to Wellington Client: KGS Group Inc.

Drilling Contractor: Active Drilling and Piling

Drilling Method: 100 mm Solid Stem Auger

UTM Coordinates: 14U 631183.0 m E, 5528920.0 m N

Depth (m)	Symbol	Description	ed L Particle ອຸດ ມີ ມີ ຍຸດ ມີ ຍຸດ ຍຸດ ຍຸດ ຍຸດ ຍຸດ ຍຸດ ຍຸດ ຍຸດ ຍຸດ ຍຸດ						Wate (PL	%)	
			S	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	2	5 50	L 75	1 00
		Concrete								 	
		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS BS						●31 ●29 		
- 0.5 -			BS						 ••33 		
 - 1.0 -		Clay - brown, firm, moist, high plasticity - some silt - some fine to coarse sand	BS	0.0	11.5	28.1	60.4		 	 	
			BS						•35		
- 1.5 -		Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS			 		 	 ●30- - 		
			BS					•	24 		
- 2.0 -			BS						⊢ - ●28 - -	· 	-+·
		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon of the terminate at a depth of 2.1 m. 	om	oletio	n of (drillin	ıg.				

TESTHOLE TH6



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Project Location: Ingersoll and Lipton Alley from Sargent to Wellington Client: KGS Group Inc. **Drilling Contractor: Active Drilling and Piling**

Drilling Method: 100 mm Solid Stem Auger

UTM Coordinates: 14U 631182.0 m E, 5528889.0 m N

Depth (m)	Symbol	Description	Sample Type		Partic Distri			● Water Content (%) PL LL				
			S	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	25	50	75	H 100	
-		Concrete Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS					•2	 			
0.5 -			BS	0.2	18.2	40.7	40.9		 33+1 			
1.0 -		Clayey Silt - tan, firm, moist, medium plasticity - trace fine to medium sand	BS		· · · · · · · · · · · · · · · · · · ·				•5 ⁻ 			
1.5 -		Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS					+2- •22				
- - 2.0 -		Clay - brown, firm, moist, high plasticity - some silt - trace fine to coarse sand	BS	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		•3 •3 	 			
-		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon of Testhole terminate at a depth of 2.1 m. 	BS	oletic	n of	drillir	ng.	······ [•;	33	· · · ŀ · · ·	· · · · · · · · · · · · · · · · · · ·	

		TESTHOLE TH7	🚺 Sta	Stantec									
Proje Clier Drilli Drilli	ect Lo nt: K(ng C ng M	ocation: Ingersoll and Lipton Alley from Sargent to Wellington SS Group Inc.	Date Drilled: Ja Depth of Testh Logged by: Ne Reviewed by: (ole: stor	2.1 n Abai	n rca	4						
Depth (m)	Symbol	Description	Sample Type		● Wa t	(%)		nt 00					
		Concrete						 					
		Clay Fill	BS		●33			 					
		 black, firm, moist, high plasticity some fine to coarse sand 	BS		 ●26 · · ·			 					
		- trace fine gravel			 .			 					
- 0.5 -					<u> </u>			<u> </u>					
			BS	••••	•23 · · · ·			 					
					. 			 					
- 1.0 -			BS		●4 ⊥	1 		 					
		Clay			 			 					
		- brown, firm, moist, high plasticity - some silt	BS		 ●4	1		 					
		- some fine to coarse sand			.l			 					
		Silt - tan, soft, moist, low plasticity			 			 ····· 					
- 1.5 -		- some clay - trace fine to medium sand	BS		• <mark>22</mark> -								
			BS		●24			 					
- 2.0 -		Clay			 +			 +					
		- brown, firm, moist, high plasticity - some silt	BS		 ●34			 					
		\ - trace fine to coarse sand	/										
		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completion Testhole terminate at a depth of 2.1 m. 	on of drilling.										
Page 1	l of 1												

	TESTHOLE TH8 Stantec												
Proje Clien Drilli Drilli	ect Lo it: KO ng Co ng M	ame: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) ocation: Ingersoll and Lipton Alley from Sargent to Wellington S Group Inc. ontractor: Active Drilling and Piling ethod: 100 mm Solid Stem Auger rdinates: 14U 631180.0 m E, 5528801.0 m N		C L	Depth .ogg	n of T ed by	ˈesth /: Ne	anuar ole: 2 stor <i>F</i> Germa	2.1 m Abar	n rca	4		
Depth (m)	Symbol	Description	ed L Particle Size ed Distribution E						● Water Content (%) PL LL				
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	25	5 5	0 75	I 5 10	00	
		Asphalt										1	
		Concrete						 		 		 	
		Clay Fill - black, firm, moist, high plasticity	BS					k	28.1	 		 	
		- some fine to coarse sand	BS						●32 	·····] 	
		- trace fine gravel							ן 	 		 	
- 0.5 -				<u> </u>					 	¦		 	
			BS						 ·····	•56		 ·····	
								i	 			 	
		Clayey Silt	-									i I	
		- tan, firm, moist, medium plasticity							 	 		 	
		- trace fine to medium sand	BS	0.0	5.9	65.9	28.2	I I I	6 32	 		 	
- 1.0 -							+	 	 	. 		 !	
		Silt - tan, soft, moist, low plasticity) 	
		- some clay	BS						26	 		 	
		- trace fine to medium sand							ا اا			: 	
									 ·····	İ		 ·····	
- 1.5 -				L				 	 	 		i 	
			BS					- -	23	 		 	
										ľ	Ì	l	
										ļ			
			BS					•2	22] 	
										·····¦		 	
- 2.0 -		Clay	1					+ 	 				
		- brown, firm, moist, high plasticity , - some silt	BS						• •4	1			
		- trace fine to coarse sand											
		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon of Testhole terminate at a depth of 2.1 m. 	om	pletio	n of	drillin	ıg.						
Page 1	of 1												



Core sample from Testhole TH1



Core sample from Testhole TH2





Core sample from Testhole TH3



Core sample from Testhole TH4





Core sample from Testhole TH5









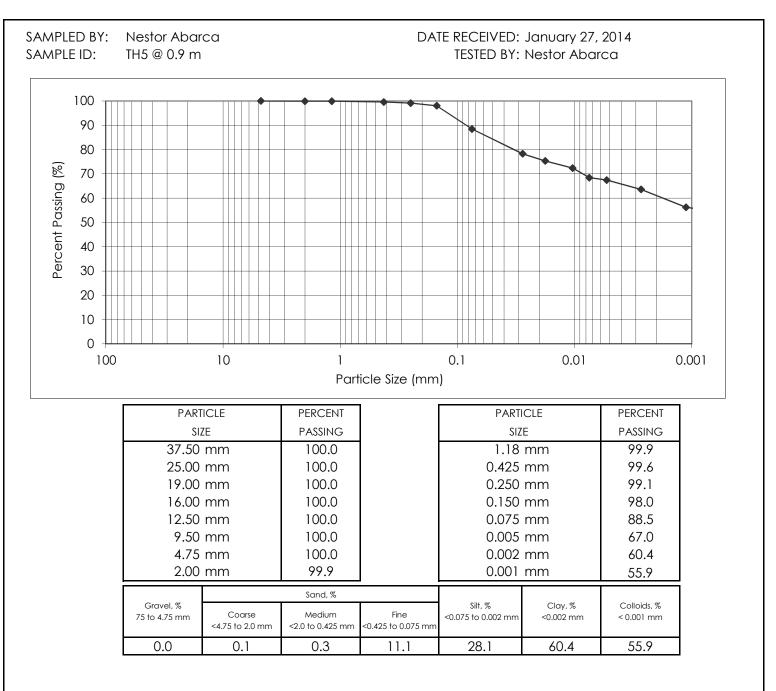




KGS Group Inc. 3rd Floor - 865 Waverley Street Winnipeg, MB R3T 5P4 PROJECT: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Ingersoll St & Lipton St Alley between Sargent Ave & Wellington Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330



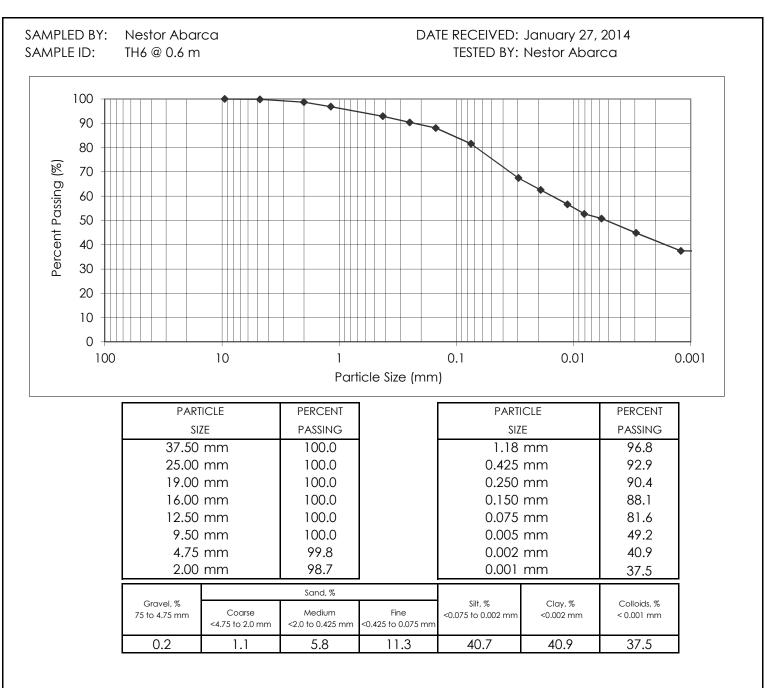
REVIEWED BY: German E. Leal, B.Sc., P. Eng.



KGS Group Inc. 3rd Floor - 865 Waverley Street Winnipeg, MB R3T 5P4 PROJECT: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Ingersoll St & Lipton St Alley between Sargent Ave & Wellington Ave

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February 19, 2014

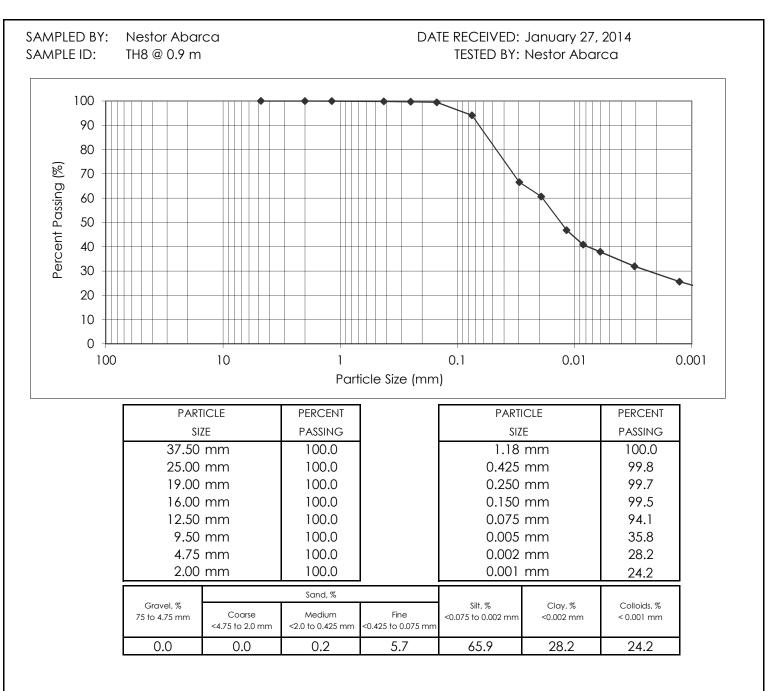
REVIEWED BY: German E. Leal, B.Sc., P. Eng.



KGS Group Inc. 3rd Floor - 865 Waverley Street Winnipeg, MB R3T 5P4 PROJECT: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Ingersoll St & Lipton St Alley between Sargent Ave & Wellington Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330



February 19, 2014

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

2014 CITY OF WINNIPEG ALLEY PACKAGE CONTRACT 2 (14-RL-02)

BANNING STREET AND BURNELL STREET ALLEY BETWEEN ELLICE AVENUE AND SARGENT AVENUE

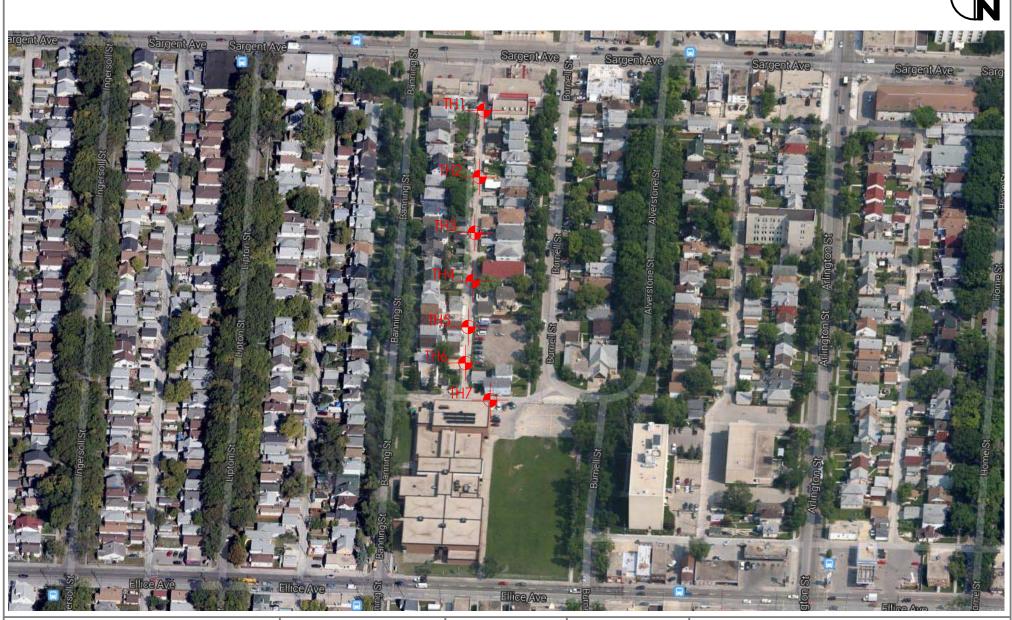
GEOTECHNICAL INVESTIGATION



Prepared for: KGS Group Inc. 3rd Floor – 865 Waverley Street Winnipeg, MB R3T 5P4

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

February 26, 2014 Project No. 123301330



Stantec	Project No. 123301330	Drawn by: NB	Figure: 1	Testhole Location Plan 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Stanlet	Date: Feb 25, 2014	Reviewed by: GL	Scale: NTS	Banning St & Burnell St Alley between Ellice Ave & Sargent Ave



TABLE 1 2014 CITY OF WINNIPEG ALLEY PACKAGE CONTRACT 2 (14-RL-02) BANNING STREET AND BURNELL STREET ALLEY BETWEEN ELLICE AVENUE AND SARGENT AVENUE GEOTECHNICAL INVESTIGATION

Testhole ID	Testhole Location	Pavement Surface		Pavement Structure Material		Sample	Sample	Moisture	Particle Size Analysis				Atterberg Limits		
		Туре	Thickness (mm)	Туре	Thickness (mm)	Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	UTM Coordinates: 14U 631339 m East, 5528732 m North	Concrete	190	-	-	Clay Fill	0.6	40	0.1	13.3	34.0	52.6	70	24	46
TH2	UTM Coordinates: 14U 631338 m East, 5528683 m North	Concrete	180	-	-	-	-	-	-	-	-	-	-	-	-
TH3	UTM Coordinates: 14U 631337 m East, 5528642 m North	Concrete	240	-	-	Silt	0.9	21	0.0	12.3	70.9	16.8	25	16	9
TH4	UTM Coordinates: 14U 631337 m East, 5528605 m North	Concrete	225	Granular Fill	80	Silty Clay	0.9	28	0.0	2.8	34.5	62.7	65	21	44
TH5	UTM Coordinates: 14U 631337 m East, 5528570 m North	Concrete	220	-	-	-	-	-	-	-	-	-	-	-	-
TH6	UTM Coordinates: 14U 631336 m East, 5528543 m North	Concrete	220	-	-	-	-	-	-	-	-	-	-	-	-
TH7	UTM Coordinates: 14U 631350 m East, 5528518 m North	Asphalt	75	Granular Fill	380	-	-	-	-	-	-	-	-	-	-

TESTHOLE TH1



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Project Location: Banning and Burnell Alley from Ellice to Sargent Client: KGS Group Inc. **Drilling Contractor: Active Drilling and Piling**

Drilling Method: 100 mm Solid Stem Auger

UTM Coordinates: 14U 631339.0 m E, 5528732.0 m N

Date Drilled: January 29, 2014 Depth of Testhole: 2.1 m Logged by: Nestor Abarca Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type			le Size bution			Wate	er Co (%)	onter	nt
			Sa	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	2	⊢) 7	-	00
-		Concrete							 	 		
-		Clay Fill	BS					•••1	5 5	 		
-		 black, firm, moist, high plasticity some fine to coarse sand trace fine gravel 	BS						●28 	 		 ····
0.5 -									 	 		
-			BS	0.1	13.3	34.0	52.6	 		 		
-										 		
1.0 -		Silty Clay	BS					•••••	•33	 		
1.0 -		 brown, firm, moist, high plasticity trace fine to medium sand 							 			
_			BS						•33	 		
-									 	 		
1.5 -			BS					4	•30 	 		
-		Silt							 	 		
-		- tan, soft, moist, low plasticity - some clay - some fine to coarse sand	BS						25	 		
2.0 -								 	i i	 		i +
-			BS						21····			 .
-		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed durir Testhole terminate at a depth of 2.1 m. 	ng or upon com	oletio	on of	drillin	g.					

		TESTHOLE TH2	🚺 Sta	n	teo	2						
Proje Clier Drilli Drilli	ect Lo nt: KC ing C ing M	ocation: Banning and Burnell Alley from Ellice to Sargent S Group Inc.	Depth of Testh Logged by: Ne	illed: January 29, 2014 of Testhole: 2.1 m l by: Nestor Abarca ed by: German Leal								
Depth (m)	Symbol	Description	Sample Type			ter Co (%)						
		Concrete			<u> </u>		 	<u>,</u>				
		Clay Fill	BS		 ●27							
		 black, firm, moist, high plasticity some fine to coarse sand trace fine gravel 	BS		 ●31 	 	 					
- 0.5 - 			BS		 ●35		 					
 			BS	· · · · ·	· · · · · · · · · · · · · · · · · · ·	46 	 					
		Silty Clay - brown, firm, moist, high plasticity - trace fine to medium sand	BS		 ●30 		 					
 - 1.5 -		Silt - tan, firm, moist, low plasticity - some clay - some fine to coarse sand	BS		 		 					
 			BS		 		 					
- 2.0 -		Clay - brown, stiff, moist, high plasticity - trace silt	BS		 • • ●32		+ 	 				
 Page 1		 trace fine to medium sand The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completie Testhole terminate at a depth of 2.1 m. 	on of drilling.									

TESTHOLE TH3



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Project Location: Banning and Burnell Alley from Ellice to Sargent Client: KGS Group Inc. Drilling Contractor: Active Drilling and Piling

Drilling Method: 100 mm Solid Stem Auger

UTM Coordinates: 14U 631337.0 m E, 5528642.0 m N

Date Drilled: January 29, 2014 Depth of Testhole: 2.1 m Logged by: Nestor Abarca Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type			le Size bution		● Water Content (%) PL LL
			Sa	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL LL ├────┤ 25 50 75 100
	7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Concrete						
- 0.5 -		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS					
			BS					●32
 - 1.0 -		Silt - tan, firm, moist, low plasticity - some clay - some fine to coarse sand	BS	0.0	12.3	70.9	16.8	I I I I I I I I I I●21 I
			BS					● 26
 - 1.5 			BS					
			BS					•22
- 2.0 -		Clay - brown, stiff, moist, high plasticity - trace silt - trace fine to medium sand • The soil was frozen to a depth of 1.2 m. • No groundwater or soil sloughing was observed during or upon of	BS	oletic	n of	drillin	+ ng.	++ .●4 1
Page 1	of 1	Testhole terminate at a depth of 2.1 m.						

TESTHOLE TH4



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Project Location: Banning and Burnell Alley from Ellice to Sargent Client: KGS Group Inc. Drilling Contractor: Active Drilling and Piling

Drilling Method: 100 mm Solid Stem Auger

UTM Coordinates: 14U 631337.0 m E, 5528605.0 m N

Date Drilled: January 29, 2014 Depth of Testhole: 2.1 m Logged by: Nestor Abarca Reviewed by: German Leal

Depth (m)	Symbol	Description	Samula Tvna			cle Siz ributio		•	Wate (PL	(%)	ntent
			ď	Grav (%		d Silt (%)	Clay (%)	25	5 50	75	⊣ 100
_		Concrete							 	 	
		Granular Fill	B	S				•10	l I		
		 20 mm maximum aggregate size Clay Fill 	В	S				•	25		
- 0.5		- brown, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel			· · · · · · · · ·			 	······ · 		· · · · · · · · · · - <u> </u>
-		-	B	s					●29 	·····	
-		Silty Clay - brown, firm, moist, high plasticity - trace fine to medium sand	B	s 0.0) 2.8	34.5	62.7	H	₽28		
1.0 -		 stiff below 1.1 m firm, some fine to coarse sand below 1.7 m 								 	· ↓ _
-			B	s				 	●34	 	· · · · · · · · · - · · · · · · · ·
1.5 -											
-			B	5					•34 	 	
-			B	s					■28 	 	
2.0 -		Silt							 	 	 +
-		- tan, soft, moist, low plasticity - some clay - some fine to coarse sand	B	s				 	25		
-		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during o Testhole terminate at a depth of 2.1 m. 	or upon con	nplet	ion o	f drilli	ng.				

		TESTHOLE TH5	🚺 Sta	n	t	ec	*		
Proje Clier Drilli Drilli	ect L nt: K ing C ing N	ocation: Banning and Burnell Alley from Ellice to Sargent	Date Drilled: Ja Depth of Testh Logged by: Ne Reviewed by: (ole sto	: 2 or A	.1 m Abar	n rca	14	
Depth (m)	Symbol	Description	Sample Type				er Co (%)		
		Concrete			25	5 50	0 7	5 1	00
			BS		 	 	· · · · · · · 	 	
		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS			●31 		 	
- 0.5 -			BS			 	 	 	<u> </u>
			BS			28	 	 	
- 1.0 -		Silty Clay - brown, firm, moist, high plasticity				 	 	 	
		- trace fine to medium sand	BS			●30 	 	 	
- 1.5 -			BS		- + - + 	•31 	· 	 	
		Silt - tan, soft, moist, low plasticity - some clay	BS		 	 		 	
- 2.0 -		- some fine to coarse sand			 + 	 	 	 	 +
		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completion Testhole terminate at a depth of 2.1 m. 	BS		• • 2	<u>'</u> 4			

		TESTHOLE TH6	🚺 Sta	a	nt	ec			
Proje Clier Drilli Drilli	ect Lo nt: KO ng Co ng Mo	ecation: Banning and Burnell Alley from Ellice to Sargent Elice Sargent	Date Drilled: J Depth of Test ∟ogged by: N Reviewed by:	ho es	le: 2 tor /	2.1 n Abai	n rca	14	
Depth (m)	Symbol	Description	Samula Tune		•	Wat	(%)		nt
		Concrete				5 5			
		Clay Fill			·····			 	
 		 black, firm, moist, high plasticity some fine to coarse sand trace fine gravel 	B	S ·	 	•38	3 · · · · · · · · · · · · · · · · · · ·	 	
- 0.5			B	s [,]	 	•	47	 	
 			B	s [.]		●36		 	
- 1.0 - 		Silt - tan, firm, moist, low plasticity - some clay	B	S	+	24	 	 	
		- some fine to coarse sand Clay			 			 	
- 1.5 -		 brown, firm, moist, high plasticity some silt trace fine to medium sand stiff, trace silt below 1.7 m 	B	S .	 	●31	 	 	
			B	S	 	•3	9	 	
- 2.0 -			B	s ·	 + 	· · · · • 2	13	 	 +
		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completion. Testhole terminate at a depth of 2.1 m. 	on of drilling.						

		TESTHOLE TH7	🚺 Sta	nte	ec		
Proje Clier Drilli Drilli	ect Lo nt: KG ng Co ng Mo	cation: Banning and Burnell Alley from Ellice to Sargent	Date Drilled: Ja Depth of Testh Logged by: Ne Reviewed by: C	ole: 2. stor Al	1 m barca		
Depth (m)	Symbol	Description	Sample Type	• \ 25	Vater (%))	nt
		Asphalt			<u> </u>		
	00	Granular Fill	BS	·•●11	····i I	·	
	0 0 0	- 20 mm maximum aggregate size		Ì	İ		
			BS	 •••₽1	 	 · · · · · · ·	
- 0.5 -		Clay Fill				_	
		- black, firm, moist, high plasticity - some fine to coarse sand	DC		 =		
		- trace fine gravel	BS	•2: 	 		
				¦	····¦···· 	···¦····· 	1 1
			BS	• • 2	5		-
- 1.0 -				÷-		_	
				i	i I	İ	i T
			BS	 	 	 	 .
			63	∀ 2	l		
		Silty Clay - brown, firm, moist, high plasticity			ļ		
- 1.5 -		- trace fine to medium sand - tan, some fine to coarse sand below 1.7 m	BS	+- !	33	 	+
					 	· · · · · · · ·	 · · · · · · · ·
			BS	 ●:	 		
- 2.0 -						 	 +
2.0		Clay - brown, firm, moist, high plasticity					
		- trace silt - trace fine to medium sand	BS		●3 <u>9</u>		1
		The soil was frozen to a depth of 1.2 m.	/				
		 No groundwater or soil sloughing was observed during or upon completion Testhole terminate at a depth of 2.1 m. 	on of drilling.				
Page 1							
rayell							



Core sample from Testhole TH1



Core sample from Testhole TH2





Core sample from Testhole TH3



Core sample from Testhole TH4





Core sample from Testhole TH5



Core sample from Testhole TH6





Core sample from Testhole TH7

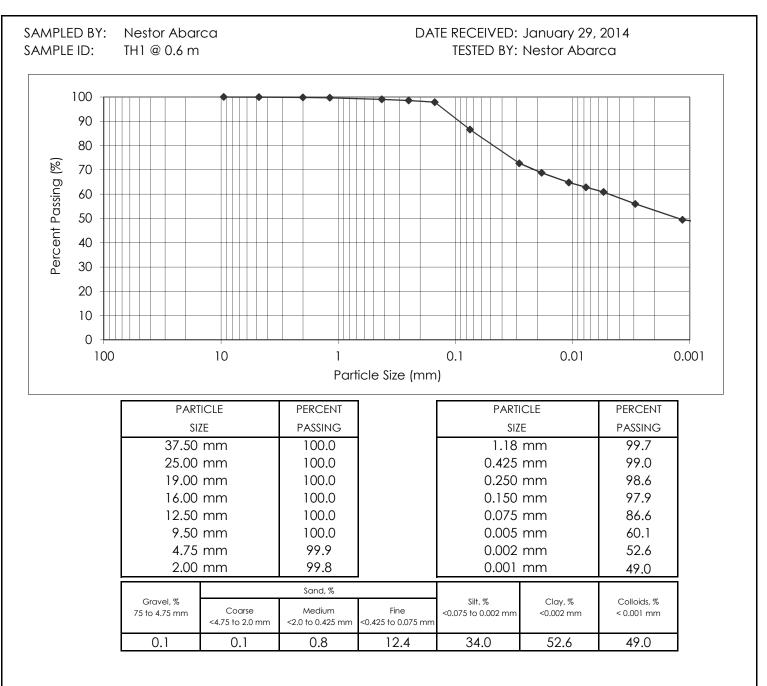




KGS Group Inc. 3rd Floor - 865 Waverley Street Winnipeg, MB R3T 5P4 PROJECT: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Banning St & Burnell St Alley between Ellice Ave & Sargent Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330



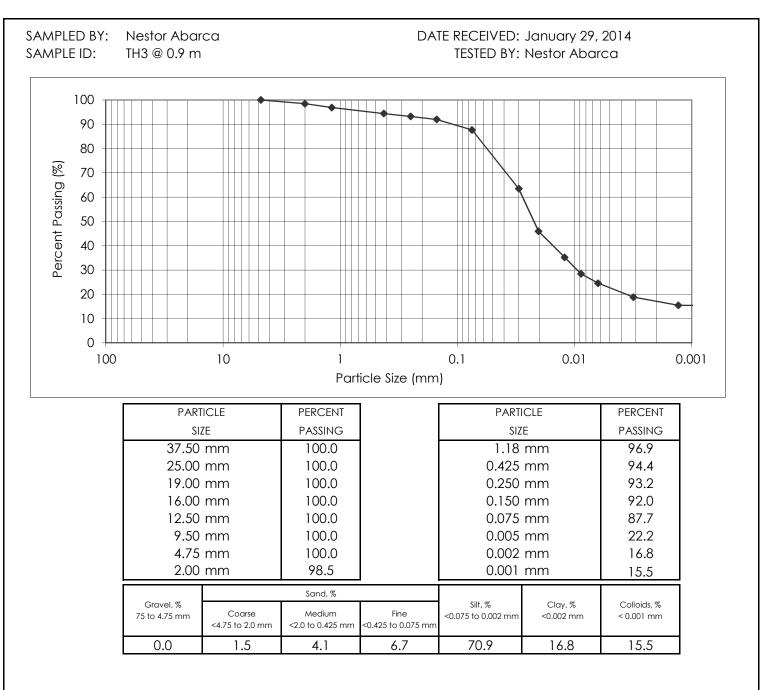
February 19, 2014



KGS Group Inc. 3rd Floor - 865 Waverley Street Winnipeg, MB R3T 5P4 PROJECT: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Banning St & Burnell St Alley between Ellice Ave & Sargent Ave

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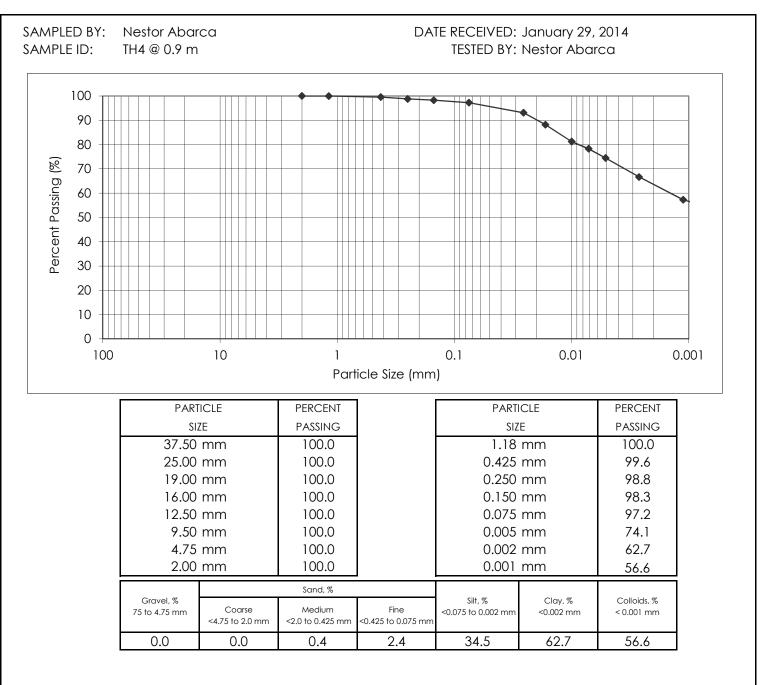
February 19, 2014



KGS Group Inc. 3rd Floor - 865 Waverley Street Winnipeg, MB R3T 5P4 PROJECT: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Banning St & Burnell St Alley between Ellice Ave & Sargent Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330



February 19, 2014

2014 CITY OF WINNIPEG ALLEY PACKAGE CONTRACT 2 (14-RL-02)

YOUNG STREET AND SPENCE STREET ALLEY BETWEEN ELLICE AVENUE AND SARGENT AVENUE

GEOTECHNICAL INVESTIGATION



Prepared for: KGS Group Inc. 3rd Floor – 865 Waverley Street Winnipeg, MB R3T 5P4

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

March 12, 2014 Project No. 123301330

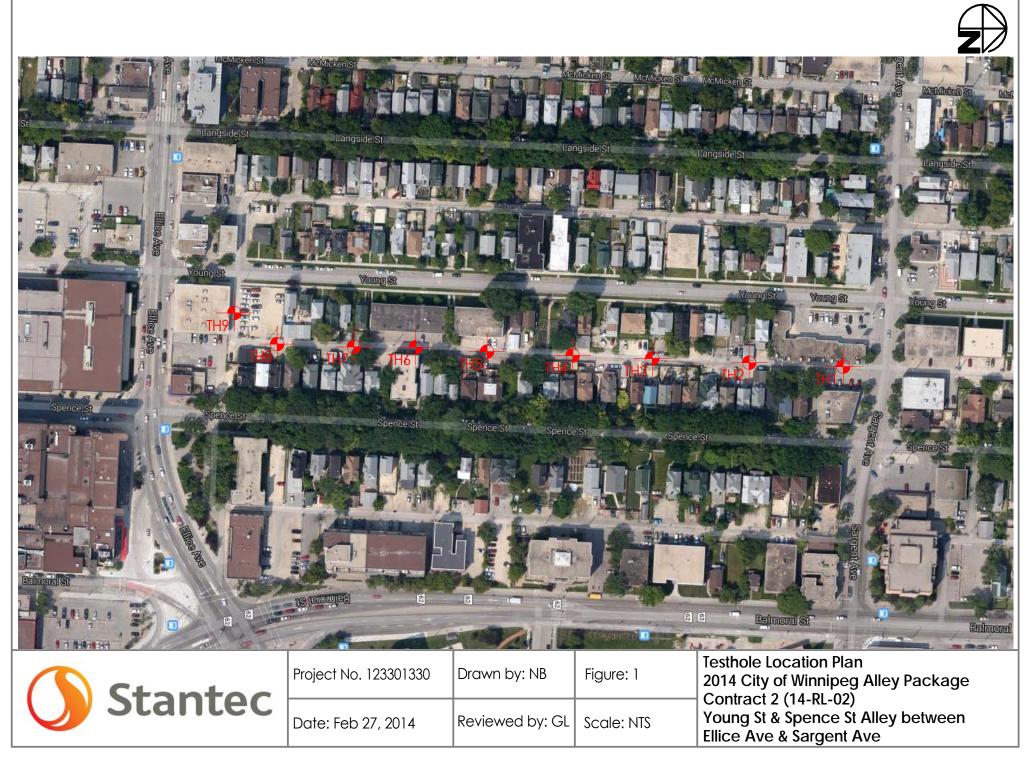




TABLE 1 2014 CITY OF WINNIPEG ALLEY PACKAGE CONTRACT 2 (14-RL-02) YOUNG STREET AND SPENCE STREET ALLEY BETWEEN ELLICE AVENUE AND SARGENT AVENUE GEOTECHNICAL INVESTIGATION

Testhole	Testhole Location	Paveme	nt Surface	Pavement Strue	cture Material	Sample	Sample	Moisture	Pa	article Siz	ze Analys	sis	Att	terberg Lir	nits
ID		Туре	Thickness (mm)	Туре	Thickness (mm)	Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	UTM Coordinates: 14U 632563 m East, 5528721 m North	Asphalt	30		-	Silt	1.2	23	1.0	9.1	75.3	14.6	23	17	6
	0110 Coordinates. 140 052505 III East, 5526721 III North	Concrete	165	-	-	511	1.2	23	1.0	5.1	75.5	14.0	23	17	0
TH2	UTM Coordinates: 14U 632561 m East, 5528670 m North	Concrete	190	Granular Fill	115	-	-	-	-	-	-	-	-	-	-
тнз	UTM Coordinates: 14U 632560 m East, 5528616 m North	Concrete	180	Granular Fill	125	-	-	-	-	-	-	-	-	-	-
TH4	UTM Coordinates: 14U 632559 m East, 5528574 m North	Asphalt	15	_	-	Clay Fill	0.9	28	2.3	9.3	26.0	62.4	76	27	49
1114	0110 Coordinates. 140 052559 III East, 5526574 III North	Concrete	225	-	-		0.9	20	2.3	9.5	20.0	02.4	70	21	45
TH5	UTM Coordinates: 14U 632558 m East, 5528528 m North	Asphalt	30	_	-	-	-	_	-	-	-	-	-	_	_
		Concrete	225												
TH6	UTM Coordinates: 14U 632557 m East, 5528489 m North	Concrete	230	-	-	-	-	-	-	-	-	-	-	-	-
TH7	UTM Coordinates: 14U 632557 m East, 5528454 m North	Asphalt	60		_			_	_			_		_	_
111/	UTW Coordinates: 140 632557 m East, 5526454 m North	Concrete	190	-	-	-	-	-	-	-	-	-	-	-	-
TH8	UTM Coordinates: 14U 632556 m East, 5528412 m North	Concrete	255	-	-	-	-	-	-	-	-	-	-	-	-
TH9	UTM Coordinates: 14U 632539 m East, 5528389 m North	Asphalt	20	Granular Fill	180	_	-	_	-	_	-	_	-	_	_
1119		Concrete	255		100	-	-		-	-		-	-	-	-

		TESTHOLE TH1			J	S	ita	ntec	*		
Proje Clien Drilli Drilli	ect Lo it: KG ng Co ng Me	ame: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) ocation: Young and Spence Alley from Ellice to Sargent as Group Inc. ontractor: Active Drilling and Piling ethod: 100 mm Solid Stem Auger idinates: 14U 632563.0 m E, 5528721.0 m N		C L)epth .ogg	n of T ed by	esthe : Nes	nuary 29 ble: 2.1 n stor Abar German L	n ·ca	4	
Depth (m)	Symbol	Description	Sample Type			le Size		● Wat	ter Co (%)	nten LL	ıt
			Š	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	25 5		-1)0
		Asphalt / Concrete Clay Fill	BS					•23 3 		 	
- 0.5 -		 black, firm, moist, high plasticity trace fine to coarse sand trace fine gravel 	BS					•34 	 	 	
			BS					• • 34 • • 34 • • • • • • • • • • • • • • • • • •	 	 	· · · · · · · · · · · · · · · · · · ·
- 1.0 -		Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand - trace fine gravel	BS							 	· · · · · · · · ·
		Olau	BS	1.0	9.1	75.3	14.6	4 23 	 	 	
- 1.5 -		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS							 + 	
		Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand - trace fine gravel	BS					• 22 		 . 	
			BS					•23		 	
	of 1	 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon c Testhole terminate at a depth of 2.1 m. 	omp	oletio	n of (drillin	g.		1		

		TESTHOLE TH2	🚺 Sta	in	it	ec			
Proje Clier Drilli Drilli	ect Lo nt: KG ng Co ng Mo	cation: Young and Spence Alley from Ellice to Sargent S Group Inc.	Date Drilled: Ja Depth of Testh Logged by: Ne Reviewed by: (ole sto	e: 2 or A	2.1 n Abar	n rca	14	
Depth (m)	Symbol	Description	Sample Type		•		ter C (%)		nt 00
		Concrete				, ,	 	5 1 	
 		Granular Fill - 20 mm maximum aggregate size Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand	BS			27	 	 	
- 0.5		- trace fine gravel	BS			●31 [°]	 		
			BS			●31	 	 	
		Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand - trace fine gravel	BS		· · · · · · · · · · · · · · · · · · ·	26	 		
- 1.5 -			BS		- †	24	 	 	
 - 2.0 -		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS			●29	 	 	
		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completion. Testhole terminate at a depth of 2.1 m. 	bn of drilling.		. 	●4	2	I I	
Page 1	of 1								

Proje Clier Drilli Drilli	ect Lo nt: KG ng Co ng Mo	cation: Young and Spence Alley from Ellice to Sargent S Group Inc.	Date Drilled: Ja Depth of Testh Logged by: Ne Reviewed by: 0	ole: 2.1 ı stor Aba	9, 201 n rca	4	
Depth (m)	Symbol	Description	Sample Type		ter Co (%)		nt 00
- 0.5 -		Concrete Granular Fill - 20 mm maximum aggregate size Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS BS BS BS BS BS	•13 •13 •27 · · · · · · · · · · · · · · · · ·			
- 1.5 -		Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand - trace fine gravel Clay	BS			 	
		 brown, stiff, moist, high plasticity some silt trace fine to coarse sand 	BS	●29 +			
 Page 1	l of 1	 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completie Testhole terminate at a depth of 2.1 m. 	BS		8		I L

		TESTHOLE TH4			C	5	ita	nt	ec			
Proje Clien Drilli Drilli	ect Lo it: KG ng Co ng Mo	ame: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) ocation: Young and Spence Alley from Ellice to Sargent iS Group Inc. ontractor: Active Drilling and Piling ethod: 100 mm Solid Stem Auger rdinates: 14U 632559.0 m E, 5528574.0 m N		C L)epth .ogg	Drille n of T ed by wed	'esth /: Ne	ole: stor	2.1 m Abar	n rca	4	
Depth (m)	Symbol	Description	Sample Type			le Size			• Wat	ter Co (%)	onten LL	ıt
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	2	55	0 7		00
		∖ Asphalt /										
		Concrete Clay Fill								 	 	· · · · · · ·
- 0.5 -		 black, firm, moist, high plasticity trace fine to coarse sand trace fine gravel 	BS	······		· · · · · · · · · · · · · · · · · · ·		•14	4 · · · · · 	,	······	
<			BS						•32	 	 	
- 1.0 -			BS	2.3	9.3	26.0	62.4		●28 L		 	
		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS						●29		 	· · · · · · · · · · · · · · · · · · ·
- 1.5 -			BS						●29	· 	 	
			BS						●32	· · · · · · 	 	 - - -
- 2.0 -		Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand	BS						23	 		
 Page 1	of 1	 trace fine gravel The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon c Testhole terminate at a depth of 2.1 m. 	om	oletio	n of (drillin	g.					

		TESTHOLE TH5	🚺 St	tantec								
Proje Clier Drilli Drilli	ect Lo nt: KG ing Co ing Me	cation: Young and Spence Alley from Ellice to Sargent [S Group Inc.]	Date Drilled: Depth of Tes Logged by: N Reviewed by	the Nes	ole: : stor :	2.1 n Abai	n rca	14				
Depth (m)	Symbol	Description		Sample Type			ter Co (%)		nt			
		Asphalt Concrete Clay Fill		BS		•26						
- 0.5 -		- black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	1	BS		 29	 	 				
			1	BS	······	 ↓	 	 				
			1	BS		 ●35 	 	 				
- 1.5 -		Clay - black, firm, moist, high plasticity - some organic material - some silt	1	BS		 • 	 46 	 	 			
- 2.0 -		- trace fine to coarse sand	1	BS		 •3! 	 9 +	 	 			
		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completio Testhole terminate at a depth of 2.1 m. 		BS		- ●4	<u>4</u>	I 	- - 			
Page 1	1 of 1											

		TESTHOLE TH6		Stantec illed: January 29, 2014									
Proje Clier Drilli Drilli	ect Lo nt: KG ng Co ng Mo	cation: Young and Spence Alley from Ellice to Sargent S Group Inc.	Date Drilled: Ja Depth of Testh Logged by: Ne Reviewed by: (ole: 2.1 m stor Abarca									
Depth (m)	Symbol	Description	Sample Type	 Water Content (%) 25 50 75 100 									
		Concrete Clay Fill											
- 0.5 -		 black, firm, moist, high plasticity trace fine to coarse sand trace fine gravel 	BS										
			BS										
- 1.0 -		Clay - brown, firm, moist, high plasticity	BS										
		 some silt trace fine to coarse sand Silt tan, soft, moist, low plasticity 	BS	•41 									
- 1.5 - 		- some clay - trace fine to coarse sand - trace fine gravel Clay	BS										
 - 2.0 -		 brown, stiff, moist, high plasticity some silt trace fine to coarse sand 	BS	●31 ●31 	· · · · ·								
		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completie Testhole terminate at a depth of 2.1 m. 	BS	•32									
Page 1	of 1												

Proje Clier Drilli Drilli	ect Lo nt: KG ng Co ng Mo	cation: Young and Spence Alley from Ellice to Sargent S Group Inc.	Date Drilled: J Depth of Test Logged by: N Reviewed by:	Ja hc es	nua ble: stor	iry 29 2.1 r Aba	9, 20 n rca	14	
Depth (m)	Symbol	Description	Samula Tvne	odilible ighe			(%)	onter	nt
		Asphalt Concrete Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	B	_		 			
 - 1.0			B			•30 	 		
		Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand - trace fine gravel Clay	B:			•27	+ · · · · · · · · · · · · · · · · · · ·		
		- brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	B			●26 	 	 	
 Page 1	of 1	 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completi Testhole terminate at a depth of 2.1 m. 	on of drilling.						

		TESTHOLE TH8) Sta	Stantec									
Proje Clier Drilli Drilli	ect Lo nt: KG ing Co ing Mo	bocation: Young and Spence Alley from Ellice to Sargent De Los Group Inc. Los	te Drilled: Ja pth of Testh gged by: Ne viewed by: (ole: stoi	: 2.1 i r Aba	n Irca	14						
Depth (m)	Symbol	Description	Sample Type			iter C (%)							
		Concrete Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS		25 	50 7	/5 1/	00 					
			BS	·····	 	 43	 	· · · · · · · · · · · · · ·					
 		Clay - black, firm, moist, high plasticity - some organic material - some silt - trace fine to coarse sand - brown, stiff below 1.7 m	BS		 ●3 	6	 						
- 1.5 - 			BS		•27 	 	 	 					
			BS		 ●32 	 	 	 					
- 2.0 -		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completion 	BS		+ •34	-1 	 	 					
 Page <i>1</i>	1 of 1	• Testhole terminate at a depth of 2.1 m.											

							2		
Proje Clier Drilli Drilli	ect Lo nt: KG ing Co ing Mo	cation: Young and Spence Alley from Ellice to Sargent E S Group Inc. L	Date Drilled Depth of Te Logged by: Reviewed by	sth Ne	ole: stor	2.1 r Aba	n rca	14	
Depth (m)	Symbol	Description		Sample Type		Wa	(%)		
		Asphalt				25 5	50 7	/5 1	100
		Concrete	/			 	 	 	
L .						 	 	 	
				БС	•9	 	 	 	
	000	Granular Fill - 20 mm maximum aggregate size		BS BS	• • •	20	 	····· 	1
- 0.5 -		Clay Fill			<u> </u>	i 	<u> </u>	<u> </u>	<u>i</u>
		- black, firm, moist, high plasticity - trace fine to coarse sand					 a		
		- trace fine gravel		BS			H1 		
						 	 	 	.
				BS		•32			
- 1.0 -						⊥ 	 	 	⊥
		Clay				 	[[
		- brown, firm, moist, high plasticity - some silt					 	 	 .
		- trace fine to coarse sand		BS		•3	8	i	i
		- stiff below 1.4 m				l 	l 	L 	1
- 1.5 -				BS		 +	 	 	
				вэ		●3	ም 		
									1
				BS		●3 	9 	 	
- 2.0 -						+ 1	+		+
				BS			45		.
 	1 of 1	 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completio Testhole terminate at a depth of 2.1 m. 	n of drilling.						
Page 1	1 of 1								



Core sample from Testhole TH1



Core sample from Testhole TH2





Core sample from Testhole TH3



Core sample from Testhole TH4





Core sample from Testhole TH5



Core sample from Testhole TH6





Core sample from Testhole TH7



Core sample from Testhole TH8





Core sample from Testhole TH9

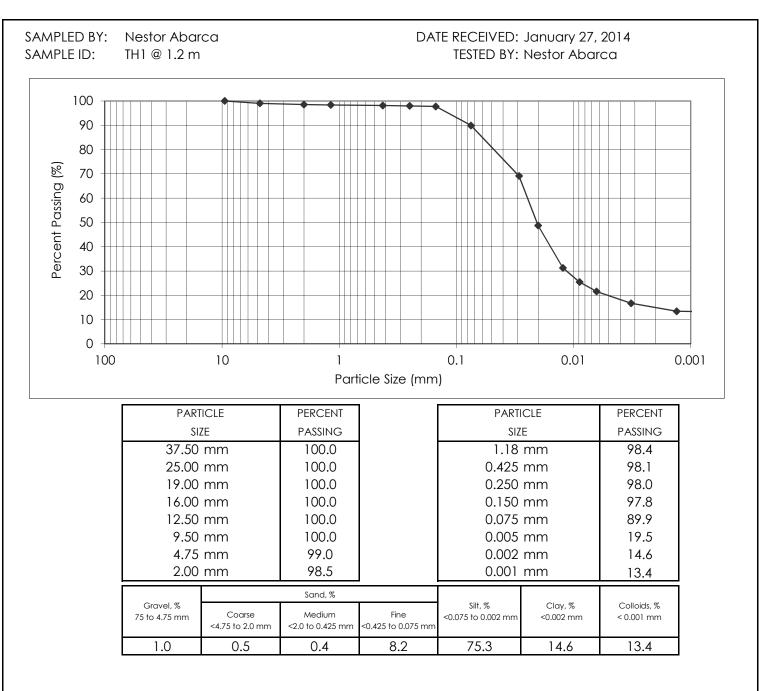




KGS Group Inc. 3rd Floor - 865 Waverley Street Winnipeg, MB R3T 5P4 PROJECT: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Young St & Spence St Alley between Ellice Ave & Sargent Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330



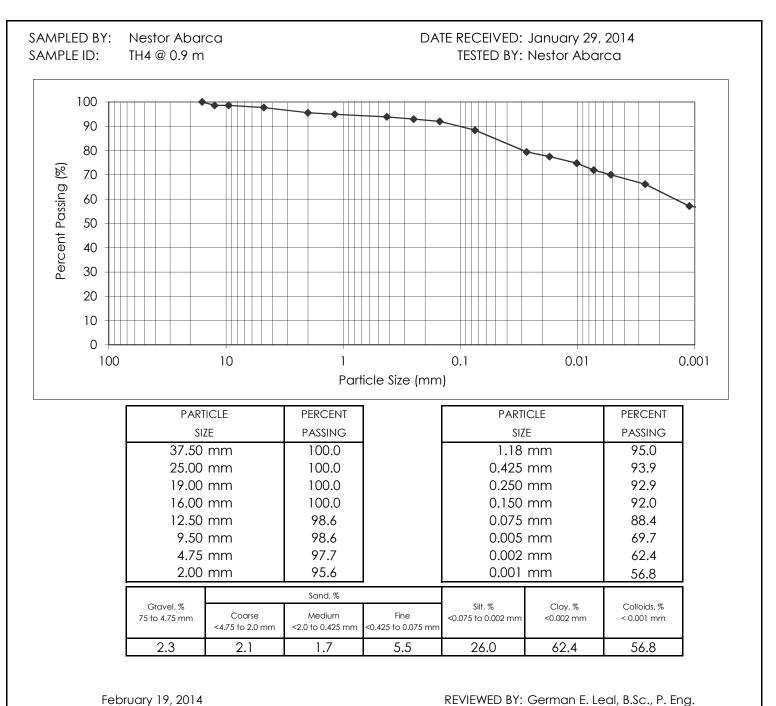
February 19, 2014



KGS Group Inc. 3rd Floor - 865 Waverley Street Winnipeg, MB R3T 5P4 PROJECT: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Young St & Spence St Alley between Ellice Ave & Sargent Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330



199 Henlow Bay, Winnipeg, Manitoba R3Y 1G4 Phone (204) 488-6999 Fax (204) 488-6947

2014 CITY OF WINNIPEG ALLEY PACKAGE CONTRACT 2 (14-RL-02)

JEFFERSON AVENUE NORTH ALLEY BETWEEN POWERS STREET AND SALTER STREET

GEOTECHNICAL INVESTIGATION



Prepared for: KGS Group Inc. 3rd Floor – 865 Waverley Street Winnipeg, MB R3T 5P4

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

February 26, 2014 Project No. 123301330





TABLE 1 2014 CITY OF WINNIPEG ALLEY PACKAGE CONTRACT 2 (14-RL-02) JEFFERSON AVENUE NORTH ALLEY BETWEEN POWERS STREET AND SALTER STREET GEOTECHNICAL INVESTIGATION

Testhole ID	Testhole Location	Paveme	nt Surface	Pavement Stru	cture Material	Sample	Sample	Moisture	Pa	article Siz	ze Analys	sis	Att	terberg Lin	nits
		Туре	Thickness (mm)	Туре	Thickness (mm)	Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	UTM Coordinates: 14U 634406 m East, 5533261 m North	Concrete	165	-	-	-	-	-	-	-	-	-	-	-	-
TH2	UTM Coordinates: 14U 634440 m East, 5533246 m North	Asphalt	135	-	-	Clay	0.9	41	0.0	4.4	25.2	70.4	79	26	53
ТНЗ	UTM Coordinates: 14U 634478 m East, 5533228 m North	Concrete	140	-	-	Clay Fill	0.6	37	1.4	14.2	23.8	60.6	75	26	49
TH4	UTM Coordinates: 14U 634523 m East, 5533208 m North	Concrete	150	-	-	-	-	-	-	-	-	-	-	-	-

		TESTHOLE TH1	🚺 Sta	Stantec										
Proje Clier Drilli Drilli	ect Lo nt: KC ing C ing M	ocation: Jefferson Ave North Alley from Powers to Salter	Depth of Testh Logged by: Ne	Drilled: January 28, 2014 h of Testhole: 2.1 m jed by: Nestor Abarca ewed by: German Leal										
Depth (m)	Symbol	Description	Sample Type			ter Co (%)								
		Concrete			25 5	50 7	'5 1 	00						
 		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS	·····	 ● ●33	44 	 	 						
- 0.5 - 			BS	·····	 	 	 	 						
 - 1.0		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS		 ●34 	 	 							
			BS		 ●33 	 	 	 						
- 1.5 -			BS	 	+ 	 	 	 						
	-	Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand	BS		 	· · · · · · · · · · · · · · · · · · ·	 	 						
- 2.0 -		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS		+ •36	+ — — }	 	+						
 		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completic Testhole terminate at a depth of 2.1 m. 	on of drilling.											

TESTHOLE TH2



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Project Location: Jefferson Ave North Alley from Powers to Salter Client: KGS Group Inc. Drilling Contractor: Active Drilling and Piling

Drilling Method: 100 mm Solid Stem Auger

UTM Coordinates: 14U 634440.0 m E, 5533246.0 m N

Date Drilled: January 28, 2014 Depth of Testhole: 2.1 m Logged by: Nestor Abarca Reviewed by: German Leal

Depth (m)	Symbol	Description		● Water Content (%) PL LL Harrier								
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	2	5 50	75	100	
		Asphalt Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS						•32			
- 0.5 -		Clay	BS							 	 	
- 1.0 -		 brown, stiff, moist, high plasticity some silt trace fine to coarse sand 	BS	0.0	4.4	25.2	70.4		 ●4 			·····
		Silt	BS					· · · · · · · · 	●35	····		
- 1.5 -		- tan, soft, moist, low plasticity - some clay - trace fine to coarse sand	BS			 			22 -	 	+	
			BS					 	22 	 	 	
		• The soil was frozen to a depth of 1.2 m.	BS					•••••	21			
		 No groundwater or soil sloughing was observed during or upon c Testhole terminate at a depth of 2.1 m. 	om	oletio	n of (arıllin	ıg.					

TESTHOLE TH3



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Project Location: Jefferson Ave North Alley from Powers to Salter Client: KGS Group Inc. Drilling Contractor: Active Drilling and Piling

Drilling Method: 100 mm Solid Stem Auger

UTM Coordinates: 14U 634478.0 m E, 5533228.0 m N

Date Drilled: January 28, 2014 Depth of Testhole: 2.1 m Logged by: Nestor Abarca Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type			le Size bution		•		er Con (%) L	tent L
			S	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	2	↓ 5 50		l 100
		Concrete Clay Fill - black, firm, moist, high plasticity	BS					· · · · · · · · · · · · · · · · · · ·	•37	 	
- 0.5 -		- some fine to coarse sand - trace fine gravel	BS	· · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·	• • • • • • • • • • • • • • • • • • •	24 	 	
			BS	1.4	14.2	23.8	60.6	 	 	······	
- 1.0 -		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS		· · · · · · · · · · · · · · · · · · ·				•4 ¹ 1 	·····	
			BS						●40		
- 1.5 -		Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand	BS	· · · · · · · ·				•1	9		
			BS					•	21 	·····	
- 2.0 -		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS		 		· · · · · · · · ·		●28 · · · ·	 	
		 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon c Testhole terminate at a depth of 2.1 m. 	omp	oletic	n of	drillin	ıg.				

		TESTHOLE TH4	🚺 Sta	n	te	С							
Proje Clier Drilli Drilli	ect Lo nt: KO ing Co ing M	ame: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) ocation: Jefferson Ave North Alley from Powers to Salter iS Group Inc. ontractor: Active Drilling and Piling othod: 100 mm Solid Stem Auger rdinates: 14U 634523.0 m E, 5533208.0 m N	Depth of Testh Logged by: Ne	Drilled: January 28, 2014 of Testhole: 2.1 m ed by: Nestor Abarca wed by: German Leal									
Depth (m)	Symbol	Description	Sample Type			ater C (%)		nt 00					
	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Concrete			 · · · · · · ·	 .	 	 .					
		Clay Fill - black, firm, moist, high plasticity	BS		 ●3	7	 	 					
		- some fine to coarse sand - trace fine gravel	BS		 	40 • •	 	 					
- 0.5 -			BS	 		 39	 	 					
		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS	· · · · ·		42 	 	 					
			BS		● 29	 	 	 . 					
- 1.5 - - 1.5 -		Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand	BS		• 25		 	 					
			BS		●21		 	 					
- 2.0 -		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to ecore cond	BS		+		 .	 					
 Page 1	1 of 1	 trace fine to coarse sand The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon complet Testhole terminate at a depth of 2.1 m. 	/										



Core sample from Testhole TH1



Core sample from Testhole TH2





Core sample from Testhole TH3



Core sample from Testhole TH4



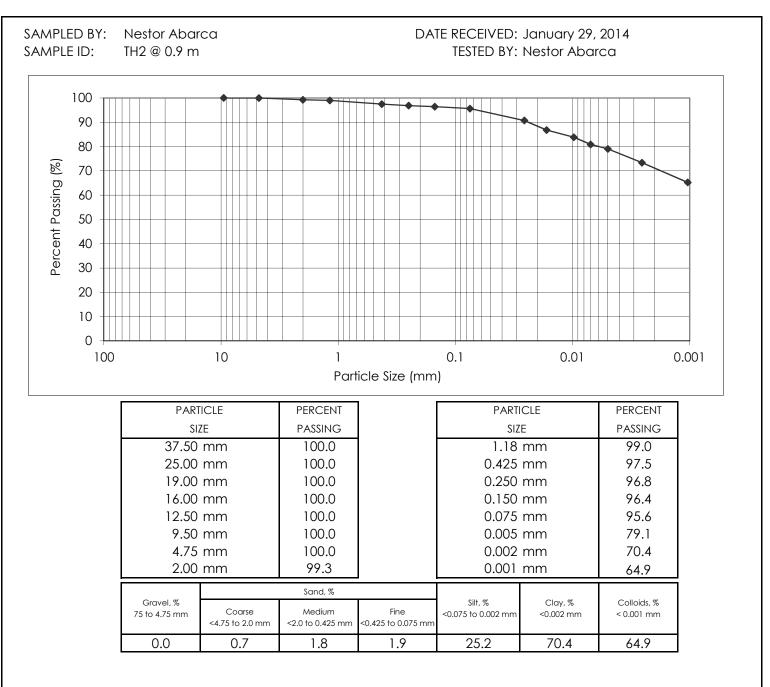


PARTICLE SIZE ANALYSIS ASTM D422

KGS Group Inc. 3rd Floor - 865 Waverley Street Winnipeg, MB R3T 5P4 PROJECT: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Jefferson Ave North Alley between Powers St & Salter St

Attention: Craig Rowbotham

PROJECT NO.: 123301330



February 19, 2014

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

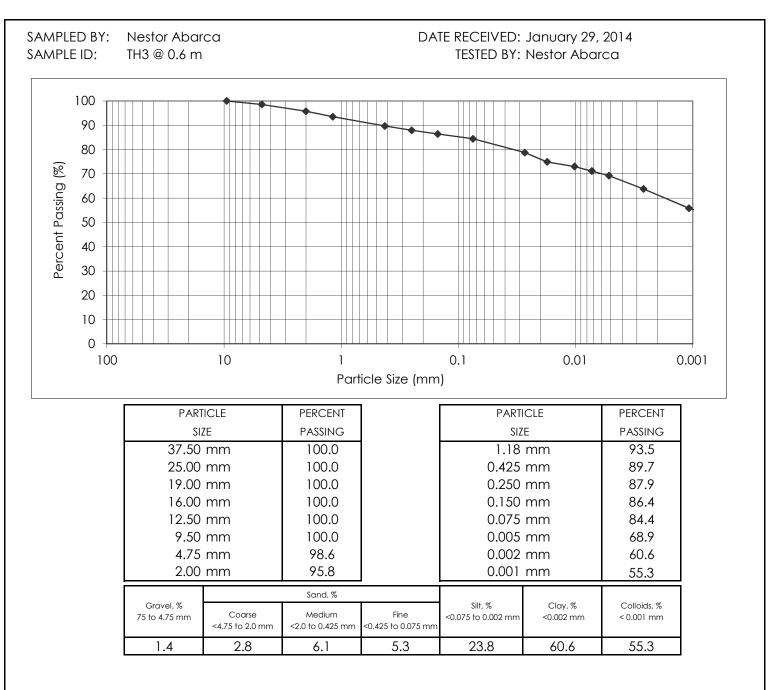


PARTICLE SIZE ANALYSIS ASTM D422

KGS Group Inc. 3rd Floor - 865 Waverley Street Winnipeg, MB R3T 5P4 PROJECT: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Jefferson Ave North Alley between Powers St & Salter St

Attention: Craig Rowbotham

PROJECT NO.: 123301330



February 19, 2014

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

2014 CITY OF WINNIPEG ALLEY PACKAGE CONTRACT 2 (14-RL-02)

MATHESON AVENUE E AND MCADAM AVENUE ALLEY BETWEEN MAIN STREET AND COCHRANE STREET

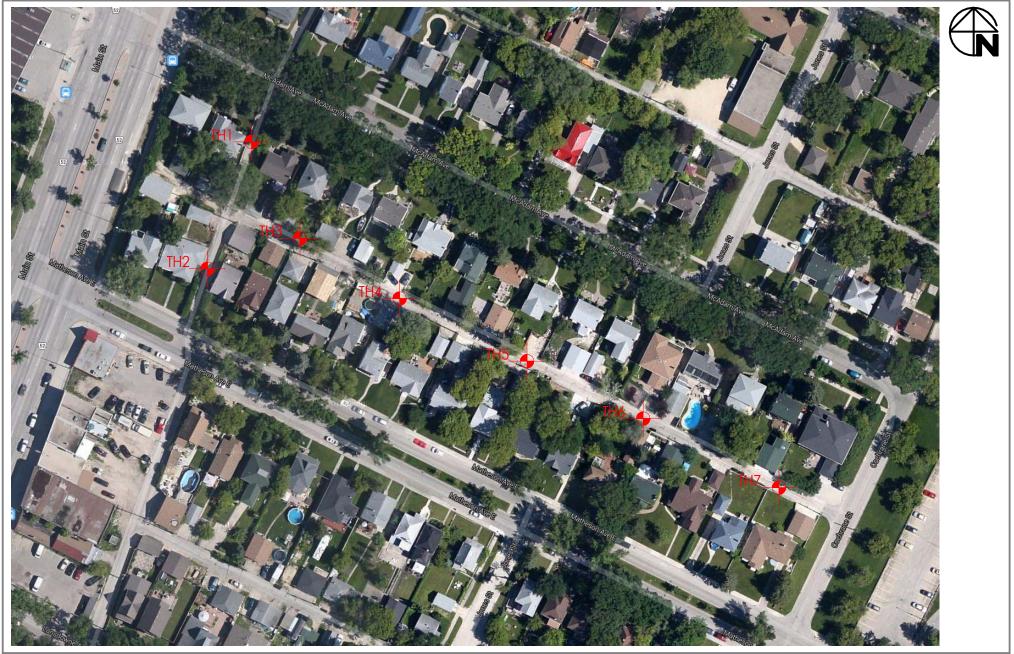
GEOTECHNICAL INVESTIGATION



Prepared for: KGS Group Inc. 3rd Floor – 865 Waverley Street Winnipeg, MB R3T 5P4

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

March 12, 2014 Project No. 123301330



Stantec	Project No. 123301330	Drawn by: NB	Figure: 1	Testhole Location Plan 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Julie		Reviewed by: GL	Scale: NTS	Matheson Ave E & McAdam Ave Alley between Main St & Cochrane St



TABLE 1 2014 CITY OF WINNIPEG ALLEY PACKAGE CONTRACT 2 (14-RL-02) MATHESON AVENUE E AND MCADAM AVENUE ALLEY BETWEEN MAIN STREET AND COCHRANE STREET GEOTECHNICAL INVESTIGATION

Testhole ID	Testhole Location	Paveme	nt Surface	Pavement Stru	cture Material	Sample	Sample	Moisture	Pa	rticle Siz	ze Analys	is	Att	erberg Lin	nits
		Туре	Thickness (mm)	Туре	Thickness (mm)	Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	UTM Coordinates: 14U 634777 m East, 5532497 m North	Asphalt	85	_	-				_	_		_	-	_	_
	on coordinates. 140 054777 in East, 5552497 in North	Concrete	100	_	_	_	-		-	-	-	-	_	_	_
TH2	UTM Coordinates: 14U 634763 m East, 5532457 m North	Asphalt	25	_	-				_	_		_	_	-	
1112	0111 00010111ates. 140 054705 11 Last, 5552457 11 10111	Concrete	155	_	_	_	-		-	-	-	-	_	_	_
ТНЗ	UTM Coordinates: 14U 634793 m East, 5532463 m North	Concrete	100	-	-	-	-	-	-	-	-	-	-	-	-
TH4	UTM Coordinates: 14U 634830 m East, 5532444 m North	Concrete	160	-	-	-	-	-	-	-	-	-	-	-	-
TH5	UTM Coordinates: 14U 634875 m East, 5532424 m North	Asphalt	25		-	Clay Fill	0.6	34	0.2	9.6	32.8	57.4	76	29	46
1 HD	01111 Coordinates. 140 654675 III East, 5552424 III Notth	Concrete	155	-	-		0.6	- 54	0.2	9.0	32.0	57.4	70	29	40
TH6	UTM Coordinates: 14U 634916 m East, 5532405 m North	Concrete	165	-	-	-	-	-	-	-	-	-	-	-	-
TH7	UTM Coordinates: 14U 634964 m East, 5532382 m North	Concrete	170	-	-	-	-	-	-	-	-	-	-	-	-

		TESTHOLE TH1	🚺 Sta	Stantec										
Proje Clier Drilli Drilli	ect Lo nt: K(ing C ing N	ocation: Matheson and McAdam Alley from Main to Cochrane SS Group Inc.	Depth of Testh Logged by: Ne	Drilled: January 28, 2014 of Testhole: 2.1 m ed by: Nestor Abarca wed by: German Leal										
Depth (m)	Symbol	Description	Sample Type				ter Co (%)							
	524	Asphalt			25	55	0 7	51	00					
		Concrete			 		'		 .					
		Clay Fill			 		l	 	 					
		- black, firm, moist, high plasticity	BS		 	•29 ·	, 	 						
		- trace fine to coarse sand - trace fine gravel	60			•29								
- 0.5 -					-	·	¦ — — !		 					
			BS		···þ	•30 [°]	 		 					
							 	 	 .					
			BS		· • •	26	 	 	·[· · · · · · ·					
- 1.0 -		Clay			- ⊥ 	·	 	 	⊥					
		- brown, stiff, moist, high plasticity			i I	i) i		i T					
		- some silt - trace fine to coarse sand			 	Ì] i i	 	 .					
			BS		•	25	ļ i	Ì	i					
							 	 	1					
		Silt - tan, soft, moist, low plasticity			÷		 		 					
- 1.5 -		 trace fine to medium sand 	BS		- 🛉	25	 	 	- 					
		- trace clay					 		 					
					Ì	1		 						
			BS		•2	20		 	 					
							 	 	. <u>.</u> 					
- 2.0 -		Clay			-+			 	+					
		- brown, stiff, moist, high plasticity , - some silt	BS			•30·		 	 					
		- trace fine to coarse sand												
	-	 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completion. Testhole terminate at a depth of 2.1 m. 	on of drilling.											
Page 1	1 of 1													

		TESTHOLE TH2	S 1	Stantec										
Proje Clier Drilli Drilli	ect Lo nt: KG ng Co ng Mo	cation: Matheson and McAdam Alley from Main to Cochrane D S Group Inc. L	epth of Tes ogged by:	Drilled: January 28, 2014 n of Testhole: 2.1 m ed by: Nestor Abarca wed by: German Leal										
Depth (m)	Symbol	Description		Sample Type			(%)	onte r 5 1	nt 00					
		Asphalt Concrete Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel		BS		 	 							
- 1.0 - - 1.5 -		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand		BS BS	· · · · · · · ·	•32 •27								
 - 2.0 -		Silt - tan, soft, moist, low plasticity - trace fine to medium sand - trace clay		BS		22		 						
 Page 1	l of 1	 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completion Testhole terminate at a depth of 2.1 m. 	n of drilling.											

Proje Clier Drilli Drilli	ect Lo nt: KG ng Co ng Mo	ocation: Matheson and McAdam Alley from Main to Cochrane	Date Drilled: Jacob Depth of Testh Logged by: Ne	Stantec Drilled: January 28, 2014 th of Testhole: 2.1 m ged by: Nestor Abarca ewed by: German Leal									
Depth (m)	Symbol	Description	Sample Type		•		(%)	onte i 75 1	nt 00				
		Concrete Clay Fill	BS		 	•32	 	 	 				
 		- black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS		· · · · 	•27 		 	 				
- 0.5			BS			●26 	·	 					
- 1.0 -			BS		 	25	 	 	 				
		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS		 	●28 	 	 	 				
 - 1.5 -		Silt - tan, soft, moist, low plasticity - trace fine to medium sand - trace clay	BS		 	24	 	 	 				
			BS		···· 	 	 	 	 				
- 2.0 -			BS		 	 	 	 	 + 				
 Page 1	of 1	 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completion. Testhole terminate at a depth of 2.1 m. 		1				·	·				

		TESTHOLE TH4	Sta	ar	It	ec						
Proje Clier Drilli Drilli	ect nt: k ing ing	Location: Matheson and McAdam Alley from Main to Cochrane Depth of CGS Group Inc. Logged	ate Drilled: January 28, 2014 epth of Testhole: 2.1 m ogged by: Nestor Abarca eviewed by: German Leal									
Depth (m)	Svmbol	Description	Sample Type	:	•		ter C (%)		nt			
		Concrete		T								
		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS	; ;	 	•32 ⁻						
			BS			•34		 				
- 1.0 - 		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS	}	 	•30	 	 				
- 1.5 - 	-	Silt - tan, soft, moist, low plasticity - trace fine to medium sand - trace clay	BS	; ; ;		22		 				
	-		BS	; ; ; ; ;	•2 •2 +	21	 	 	 			
 	- 	 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completion of dril Testhole terminate at a depth of 2.1 m. 	BS	;		21		I	 			

	TESTHOLE TH5 Stantec											
Proje Clien Drilli Drilli	ect Lo nt: KG ng Co ng Mo	ame: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) ocation: Matheson and McAdam Alley from Main to Cochrane iS Group Inc. ontractor: Active Drilling and Piling othod: 100 mm Solid Stem Auger rdinates: 14U 634875.0 m E, 5532424.0 m N		[[Depth Loggo	Drille n of T ed by wed	'esth /: Ne	ole: 2 stor 2	2.1 m Abar	ca	4	
Depth (m)	Symbol	Description	Sample Type			le Size			Wat	er Co (%)	onten LL	nt
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	2	55	0 7!		00
		Asphalt	+								- 10	
		Concrete								ן 	l	
		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS						24	 		
- 0.5 -			BS	0.2	9.6	32.8	57.4		I●34	 	 	
									l	 		
- 1.0 -			BS						8	 		
		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS						25	 		 · · · · · ·
										 		 ·····
- 1.5 -			BS						23	· -		
										 		 · · · · · ·
			BS						●28 	 		
										 		í I
- 2.0 -			BS		· · · · · · · · ·				26			
 Page 1	of 1	 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon of the terminate at a depth of 2.1 m. 	:om	oletio	n of (drillin	g.					

		TESTHOLE TH6	🚺 Sta	Stantec									
Proj Clier Drill Drill	ect Lo nt: KG ing Co ing Mo	ocation: Matheson and McAdam Alley from Main to Cochrane	Depth of Testh Logged by: Ne	e Drilled: January 28, 2014 th of Testhole: 2.1 m ged by: Nestor Abarca iewed by: German Leal									
Depth (m)	Symbol	Description	Sample Type		● Wat	(%)		n t 00					
		Concrete Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand - trace fine to coarse sand - trace fine to coarse to a depth of 1.2 m.	BS BS BS BS BS BS BS BS BS BS BS										
- - Page	1 of 1	 No groundwater or soil sloughing was observed during or upon completio Testhole terminate at a depth of 2.1 m. 	on of drilling.										

	TESTHOLE TH7					Stantec					
Project Location: Matheson and McAdam Alley from Main to CochraneDepth of TesClient: KGS Group Inc.Logged by: Notesting						: January 28, 2014 sthole: 2.1 m Nestor Abarca y: German Leal					
Depth (m)	-	Symbol	Description	Sample Type	● Water Content (%) 25 50 75 100						
	0 0 0		Concrete				5 5				
						···· 		 	 		
	₿	\bigotimes	Clay Fill - black, firm, moist, high plasticity	BS		اب 	●27	l 	l 	.L 	
	×	\bigotimes	- trace fine to coarse sand - trace fine gravel	BS		 	•30 ·	 	 	1	
- ·	K	\bigotimes						 	 	 	
- 0.5 -	K	\bigotimes						i — — I	 	i	
	K	\bigotimes		BS			•31	 			
	×	\bigotimes						 			
	×	\bigotimes								ļ	
	K	\bigotimes		BS			●31	· · · · · · 	 	1	
- 1.0 -			Clay - brown, stiff, moist, high plasticity			 		 	 	 	
-	V		- some silt - trace fine to coarse sand					 	 	1	
				BS			●29				
	K		Silt								
- 1.5 -			- tan, soft, moist, low plasticity - trace fine to medium sand			 	L	 	 	 +	
			- trace clay	BS		۱ ا	●28	 		i 1	
						 		 	 	 .	
. .				BS		•	24	 	 	i L	
- 2.0 -						 		 +	 	 +	
				BS			20	 	 	 .	
			 The soil was frozen to a depth of 1.2 m. No groundwater or soil sloughing was observed during or upon completic Testhole terminate at a depth of 2.1 m. 								
Page	1 c	of 1									



Core sample from Testhole TH1



Core sample from Testhole TH2





Core sample from Testhole TH3



Core sample from Testhole TH4





Core sample from Testhole TH5



Core sample from Testhole TH6





Core sample from Testhole TH7



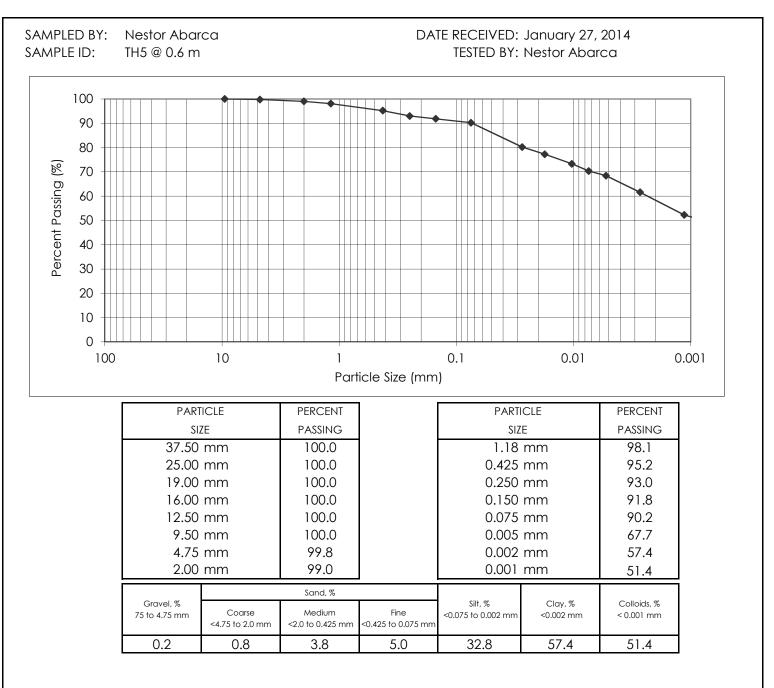


PARTICLE SIZE ANALYSIS ASTM D422

KGS Group Inc. 3rd Floor - 865 Waverley Street Winnipeg, MB R3T 5P4 PROJECT: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02) Matheson Ave E & McAdam Ave Alley between Main St and Cochrane St

Attention: Craig Rowbotham

PROJECT NO.: 123301330



February 19, 2014

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