APPENDIX 'A' GEOTECHNICAL REPORT

APPENDIX 'A' - GEOTECHNICAL REPORT

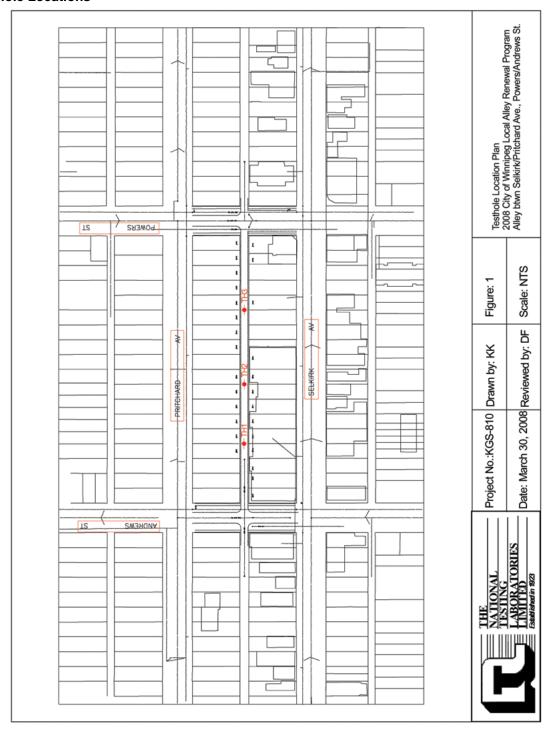
TABLE OF CONTENTS

GEOTECHNICAL REPORT FOR SELKIRK AVENUE / PRITCHARD AVENUE ALLEY	1
Test Hole Locations Summary of Core Samples Test Hole Log for TH1 Test Hole Log for TH2 Test Hole Log for TH3 Pavement Core Photos	1 2 3 4 5 6
GEOTECHNICAL REPORT FOR BOYD AVENUE / COLLEGE AVENUE ALLEY	7
Test Hole Locations Summary of Core Samples Test Hole Log for TH1 Test Hole Log for TH2 Test Hole Log for TH3 Pavement Core Photos	7 8 9 10 11 12
GEOTECHNICAL REPORT FOR INKSTER BOULEVARD SOUTH ALLEY	13
Test Hole Locations Summary of Core Samples Test Hole Log for TH1 Test Hole Log for TH2 Test Hole Log for TH3 Pavement Core Photos	13 14 15 16 17 18
GEOTECHNICAL REPORT FOR MAIN STREET EAST ALLEY	19
Test Hole Locations Summary of Core Samples Test Hole Log for TH1 Test Hole Log for TH2 Pavement Core Photos	19 20 21 22 23

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.

Geotechnical Report for Selkirk Avenue / Pritchard Avenue Alley

Test Hole Locations



Summary of Core Samples

Site 1 - North Contract 2008 City of Winnipeg Alley Renewal Program Selkirk Avenue to Pritchard Avenue / Powers Street to Andrews Street

		Paveme	nt Surface	Pavement S	tructure Material	2	Sample	Moisture	Pa	ticle Size	Analy	sis	A	tterberg L	imits
Testhole ID	Testhole Location	Туре	Thickness (mm)	Туре	Thickness (mm)	Sample Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	Centre of alley, in line with the property line of 520/518 Pritchard Street	Asphalt / Concrete	30 / 150	Granular Base	120	Clay	1.2	32	0.0	1.2	4.8	94.0	88	24	64
TH2	Centre of alley, in line with the property line of 506/504 Pritchard Street	Asphalt / Concrete	25 / 150	Granular Base	130	Clayey Silt	1.0	27	0.0	8.8	60.1	31.1	30	17	13
тнз	Centre of alley, in line with the property line of 490/488 Pritchard Street	Asphalt / Concrete	35 / 150	Granular Base	220	N/A	N/A	-81							1

TESTHOLE TH1

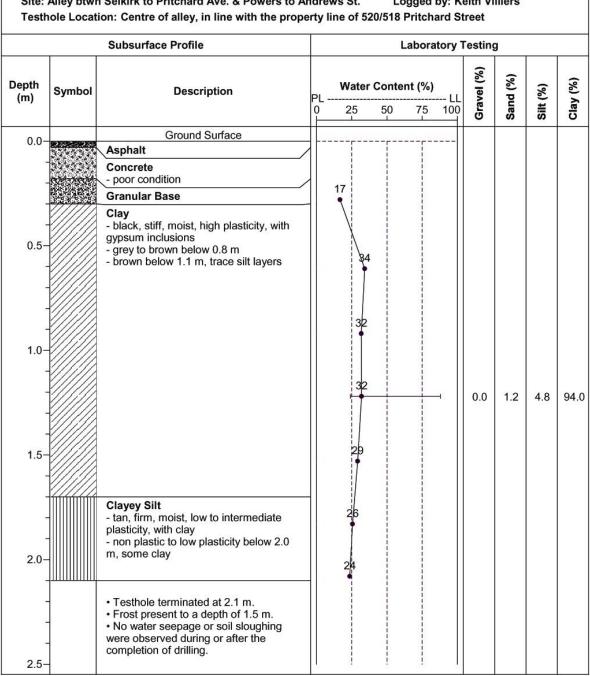


Project Name: 2008 City of Winnipeg Alley Renewal Program Client: KGS Group Inc.

Site: Alley btwn Selkirk to Pritchard Ave. & Powers to Andrews St.

Depth of Testhole: 2.1 m Logged by: Keith Villiers

Date Drilled: February 26, 2008



TESTHOLE TH2



Project Name: 2008 City of Winnipeg Alley Renewal Program

Client: KGS Group Inc.
Site: Alley btwn Selkirk to Pritchard Ave. & Powers to Andrews St.

Depth of Testhole: 2.1 m Logged by: Keith Villiers

Date Drilled: February 26, 2008

		Subsurface Profile			L	aboratory [*]	Testing	g		
epth (m)	Symbol	Description	PL -	Water 25	Conte	nt (%) LL 75 100	Gravel (%)	Sand (%)	Silt (%)	(/0/ /10/)
0.0-		Ground Surface Asphalt Concrete - poor condition Granular Base - 37.5 mm aggregate size Clay - black to grey, stiff, moist, high plasticity, with gravel - grey below 0.5 m, firm, with silt layers		21						
1.0-		Clayey Silt - tan, firm, moist, intermediate plasticity, trace sand, with clay - with clay layers below 1.7 m		277 			0.0	8.8	60.1	31
2.0-		Clay - brown, stiff, moist, high plasticity, with silt layers • Testhole terminated at 2.1 m. • Frost present to a depth of 1.4 m. • No water seepage or soil sloughing were observed during or after the completion of drilling.		22						

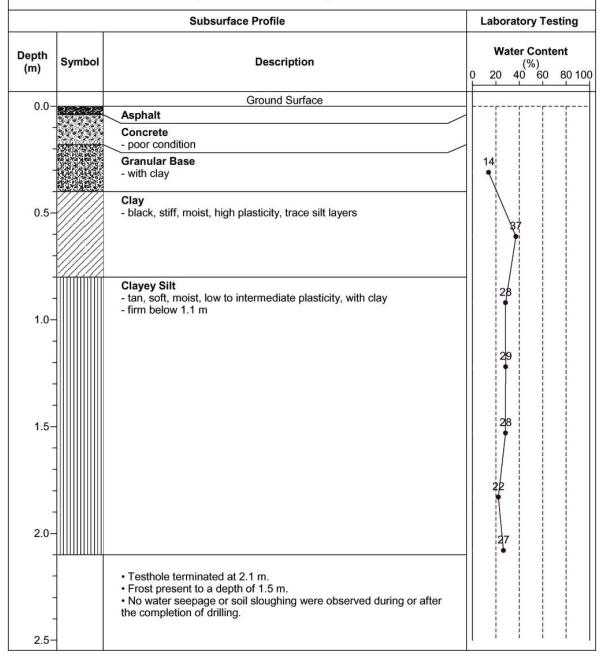
TESTHOLE TH3

Project Name: 2008 City of Winnipeg Alley Renewal Program Client: KGS Group Inc.

Date Drilled: February 26, 2008 Depth of Testhole: 2.1 m Logged by: Keith Villiers

Site: Alley btwn Selkirk to Pritchard Ave. & Powers to Andrews St.

Testhole Location: Centre of alley, in line with the property line of 490/488 Pritchard Street

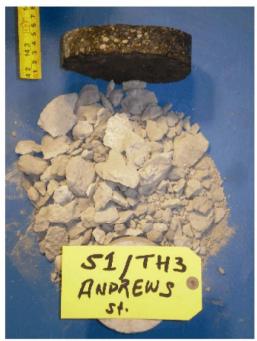


Pavement Core Photos



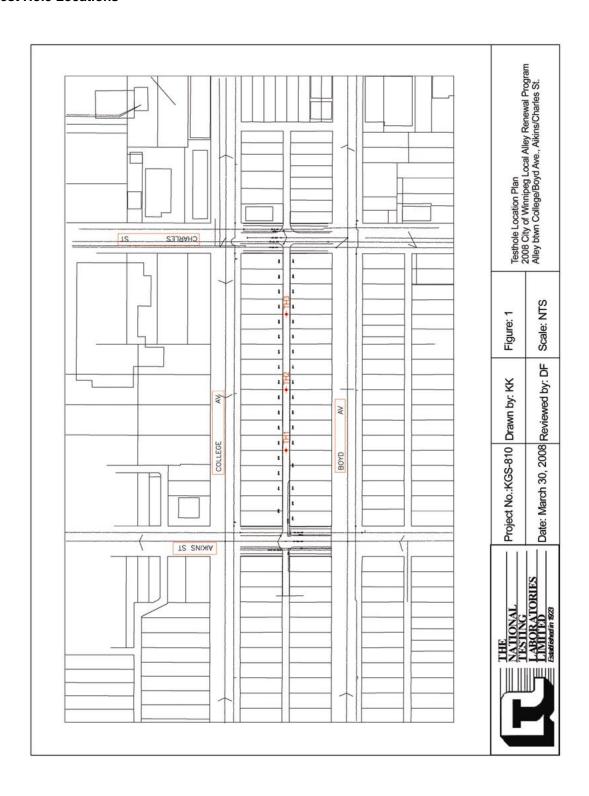






Geotechnical Report for Boyd Avenue / College Avenue Alley

Test Hole Locations



Summary of Core Samples

Site 2 - North Contract 2008 City of Winnipeg Alley Renewal Program College Avenue to Boyd Avenue / Aikins Street to Charles Street

	10.00 (10.00)	Paveme	nt Surface	Pavement S	tructure Material		Sample	Moisture	Pa	rticle Size	Analy:	sis	A	tterberg L	imits
Testhole ID	Testhole Location	Туре	Thickness (mm)	Туре	Thickness (mm)	Sample Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	Centre of alley, in line with the property line of 338/334 College Avenue	Asphalt	40	Limestone Base	260	N/A	N/A			2.71		-	-	-	
TH2	Centre of alley, in line with the property line of 320/318 College Avenue	Asphalt	40	Limestone Base	260	Silt	1.5	22	0.0	5.9	71.4	22.7	21	17	4
	Centre of alley, in line with the property line of 304/306 College Avenue	Asphalt	45	Limestone Base	255	Clay	0.9	32	0.0	1.2	7.2	91.6	85	26	59

TESTHOLE TH1

THE NATIONAL TESTING LABORATORIES LIMITED

Project Name: 2008 City of Winnipeg Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m Logged by: Keith Villiers

Date Drilled: February 26, 2008

Site: Alley btwn College to Boyd Ave. & Aikins to Charles St.

Testhole Location: Centre of alley, in line with the property line of 338/334 College Avenue

		Subsurface Profile	L	aborate	ory Tes	ting
Depth (m)	Symbol	Description	o_	Water	r Conte (%) 60	nt 80 100
0.0-		Ground Surface	#			
0.0		Asphalt	\parallel			
		Limestone Base]] 1	1		
0.5-		Clay Fill - brown, stiff, moist, and limestone base				
-		Clay - black to grey, stiff, moist, high plasticity - brown below 0.8 m		31		
1.0-		2011		31		
- - 1.5- -		Silt - tan, firm, moist, low to intermediate plasticity, trace clay layers		28		
2.0- - -		Clay - brown, stiff, moist, high plasticity • Testhole terminated at 2.1 m. • Frost present to a depth of 1.5 m.		34		
2.5-	-	 No water seepage or soil sloughing were observed during or after the completion of drilling. 				

TESTHOLE TH2

Project Name: 2008 City of Winnipeg Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m Logged by: Keith Villiers

Date Drilled: February 26, 2008

Site: Alley btwn College to Boyd Ave. & Aikins to Charles St.

Testhole Location: Centre of alley, in line with the property line of 320/318 College Avenue Subsurface Profile **Laboratory Testing** Sand (%) Clay (%) Depth Water Content (%) Symbol Description (m) 75 25 50 100 **Ground Surface Asphalt Limestone Base** 17 Clay Fill - brown, firm, moist, intermediate plasticity, with limestone base 0.5 - black, stiff, moist, high plasticity, trace silt inclusions - brown below 0.8 m Silt - tan, firm, moist, low plasticity, some clay 0.0 5.9 71.4 22.7 • Testhole terminated at 2.1 m. • Frost present to a depth of 1.5 m. · No water seepage or soil sloughing were observed during or after the completion of drilling. 2.5

TESTHOLE TH3

Project Name: 2008 City of Winnipeg Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m Logged by: Keith Villiers

Date Drilled: February 26, 2008

Site: Alley btwn College to Boyd Ave. & Aikins to Charles St.

Testhole Location: Centre of alley, in line with the property line of 304/306 College Avenue

		Subsurface Profile				Labora	tory	Γestin	g		
Depth (m)	Symbol	Description	PL -	Water	Conte	ent (%) 75	LL 100	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0-		Ground Surface Asphalt	#		F	F-			1000		
5		Limestone Base		24		1					
0.5-		Clay - brown, stiff, moist, high plasticity				1					
				35							
				32			4	0.0	1.2	7.2	91.6
1.0-				29							
1.5-				31							
		Silt		26							
2.0-	-	- tan, firm, moist, low to intermediate plasticity - some clay below 1.9 m		31		!					
	7/////	Clay - brown, stiff, moist, high plasticity		•							
2.5-	-	 Testhole terminated at 2.1 m. Frost present to a depth of 1.5 m. No water seepage or soil sloughing were observed during or after the completion of drilling. 				1					

Pavement Core Photos



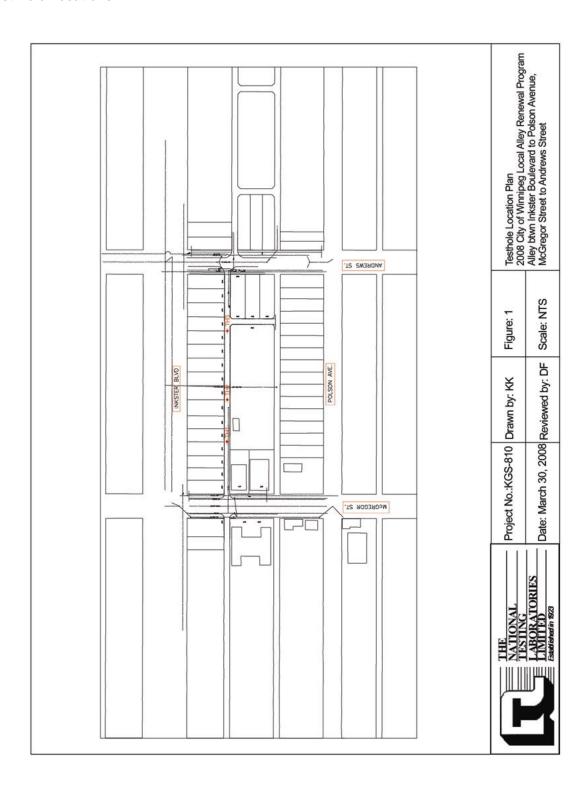






Geotechnical Report for Inkster Boulevard South Alley

Test Hole Locations



Summary of Core Samples

Site 3 - North Contract 2008 City of Winnipeg Alley Renewal Program Inkster Boulevard to Polson Avenue / McGregor Street to Andrews Street

Testhole	5000 80 mmms 20	Paveme	nt Surface	Pavement :	Structure Material	Commite	Sample	Moisture	Pa	rticle Size	Analy:	sis	Α	tterberg L	mits
ID	Testhole Location	Туре	Thickness (mm)	Туре	Thickness (mm)	Sample Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	Centre of alley, in line with the property line of 510/504 Inkster Boulevard	Asphalt / Concrete	25 / 150	N/A	N/A	Clay	0.6	35	0.0	1.7	14.1	84.2	89	28	61
TH2	Centre of alley, in line with the property line of 494/498 Inkster Boulevard	Asphalt / Concrete	25 / 175	N/A	N/A	Silt	1.5	23	0.0	4.3	73.8	21.9	23	17	6
тнз	Centre of alley, in line with the property line of 480/482 Inkster Boulevard	Asphalt / Concrete	25 / 125	N/A	N/A	N/A	N/A					9			•

TESTHOLE TH1

THE AATIONAL LESTING LABORATORIES LAMITED

Project Name: 2008 City of Winnipeg Alley Renewal Program

Client: KGS Group Inc.
Site: Alley btwn Inkster Blvd./Polson Ave. & McGregor/Andrews St.

Date Drilled: February 26, 2008 Depth of Testhole: 2.1 m Logged by: Keith Villiers

	, ,	Subsurface Profile	\perp		l	aboratory	Testin	g		
Depth (m)	Symbol	Description	PL -		Conte	nt (%) LL 75 100	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
			Ĭ–	25	50	75 100	ō	S	Si	ਹ
0.0-		Ground Surface								
		Asphalt	41		- 1					
		Concrete	_	- 1	1					
0.5-		Clay - dark grey to black, soft, moist, high plasticity - grey below 0.5 m, stiff - grey to brown below 0.8 m		35	5/	74	0.0	1.7	14.1	84.
1.0-		Silt - tan, firm, moist, low to intermediate plasticity, with clay		33						
1.5-	-	- low plasticity below 1.4 m, some clay		24						
2.0-		 Testhole terminated at 2.1 m. Frost present to a depth of 1.4 m. No water seepage or soil sloughing were observed during or after the completion of drilling. 		24						

TESTHOLE TH2

THE NATIONAL LESTING LABORATORIES LABORATORIES

Project Name: 2008 City of Winnipeg Alley Renewal Program

Client: KGS Group Inc.
Site: Alley btwn Inkster Blvd./Polson Ave. & McGregor/Andrews St

Date Drilled: February 26, 2008
Depth of Testhole: 2.1 m
Logged by: Keith Villiers

		Subsurface Profile	\perp		L	aboratory 1	Testin:	g		
epth (m)	Symbol	Description	PL -	Water (Conte	nt (%) LL 75 100	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
		Ground Surface			50			15.0	7.50	
0.0-	10000	Asphalt	الا	[<u>-</u>	[
9		Concrete		İ	ĺ	į				
0.5-	-	Clay - black, firm, moist, high plasticity - brown below 0.5 m, stiff - light brown below 0.8 m, firm, intermediate plasticity, with silt		32	49					
1.0-	-	Silt - tan, soft, moist, low plasticity, some clay, trace sand - thin layer of sand observed at 1.8 m		23						
1.5-	-	a unit layer of saina observed at 1.0 m		23 25			0.0	4.3	73.8	21
2.0-	- - - - - -	Testhole terminated at 2.1 m. Frost present to a depth of 1.4 m. No water seepage or soil sloughing were observed during or after the completion of drilling.		25						

TESTHOLE TH3

Testhole Location: Centre of alley, in line with the property line of 480/482 Inkster Boulevard

THE NATIONAL LESTING LABORATORIES LAMITED

Project Name: 2008 City of Winnipeg Alley Renewal Program Client: KGS Group Inc.

Site: Alley btwn Inkster Blvd/Polson Ave. & McGregor/Andrews St

Date Drilled: February 26, 2008 Depth of Testhole: 2.1 m Logged by: Keith Villiers

Subsurface Profile Laboratory Testing Water Content Depth Symbol Description (m) 80 100 Ground Surface **Asphalt** Concrete Clay - black, stiff, moist, high plasticity, trace organics - black to grey below 0.6 m, firm to soft, intermediate to high plasticity, some silt - brown below 0.9 m, stiff 0.5 - tan, firm, moist, low to intermediate plasticity, with clay - low to non-plastic below 1.8 m, trace clay · Testhole terminated at 2.1 m. • Frost present to a depth of 1.4 m. · No water seepage or soil sloughing were observed during or after the completion of drilling. 2.5

Pavement Core Photos



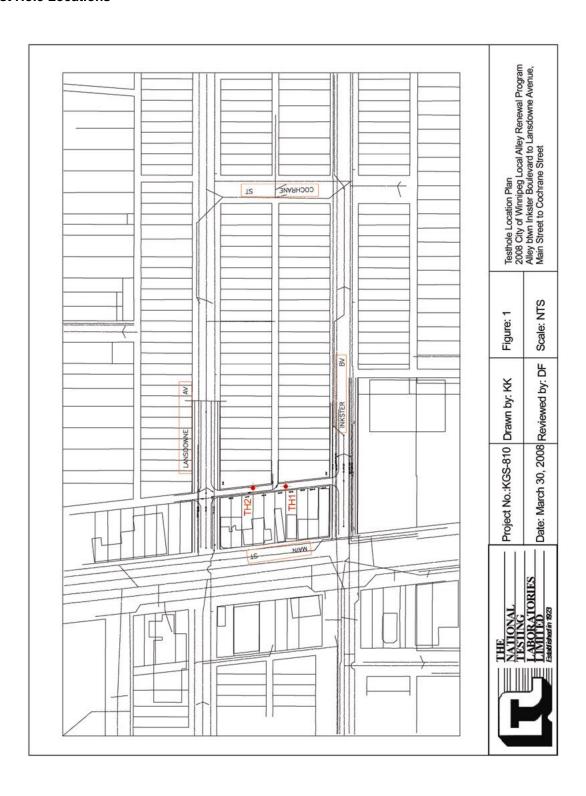






Geotechnical Report for Main Street East Alley

Test Hole Locations



Summary of Core Samples

Site 4 - North Contract 2008 City of Winnipeg Alley Renewal Program Inkster Boulevard to Lansdowne Avenue / Main Street to Cochrane Street

Testhole		Paveme	nt Surface	Pavement 5	Structure Material	0	Sample	Moisture	Pa	rticle Size	Analys	sis	A	tterberg L	imits
ID	Testhole Location	Туре	Thickness (mm)	Туре	Thickness (mm)	Sample Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	Centre of alley, in line with the property line of 1465/1467 Main Street	Concrete	175	N/A	N/A	Clay	0.6	36	0.0	3.5	16.2	80.3	87	28	59
TH2	1 m W of the E side of alley, in line with the property line of 1473/1477 Main Street	Concrete	225	N/A	N/A	Clayey Silt	1.5	24	0.0	6.7	69.0	24.3	27	18	9

TESTHOLE TH1

THE NATIONAL LESTING LABORATORIES LIMITED

Project Name: 2008 City of Winnipeg Alley Renewal Program

Client: KGS Group Inc.

Date Drilled: February 26, 2008 Depth of Testhole: 2.1 m

Site: Alley btwn Inkster Blvd./Lansdowne Ave. & Main/Cochrane St. Logged by: Keith Villiers Testhole Location: Centre of alley, in line with the property line of 1465/1467 Main Street

		Subsurface Profile			L	.aboratory	Testin	g		
Depth (m)	Symbol	Description	PL -	Water	Conte	nt (%) L 75 10		Sand (%)	Silt (%)	Clay (%)
		Ground Surface	1	50-				5000		
0.0-	_	Concrete				[
9		Clay - black, soft to firm, moist, high plasticity, some silt, trace sand - brown below 0.6 m, stiff			42					
0.5-				3	6		0.0	3.5	16.2	80.3
1.0-				33						
1.5-	- - - - -	Silt - tan, firm, moist, low to intermediate plasticity, with clay - low to non-plastic below 1.8 m, some clay		31						
2.0-		Clay - brown, stiff, moist, high plasticity, with		30						
2.5-	- - -	Testhole terminated at 2.1 m. Frost present to a depth of 1.4 m. No water seepage or soil sloughing were observed during or after the copmpletion of drilling.					×			

TESTHOLE TH2

THE NATIONAL LESTING LABORATORIES LIMITED

Project Name: 2008 City of Winnipeg Alley Renewal Program

Client: KGS Group Inc.

Date Drilled: February 26, 2008 Depth of Testhole: 2.1 m Logged by: Keith Villiers

Site: Alley btwn Inkster Blvd./Lansdowne Ave. & Main/Cochrane St. Logged by: Keith Villiers Testhole Location: 1 m W of E side of alley, in line with the property line of 1473/1477 Main Street

		Subsurface Profile			- 1	Labora	atory	resting	g		
Depth (m)	Symbol	Description	PL - 0	Wate : 25	Conte	nt (%)	LL 100	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
		Ground Surface	+					0	0)	65	-
0.0- - -		Concrete									
0.5-		Clay - black, soft to firm, moist, high plasticity, some silt, trace sand, some wood debris		333							
-		Clayey Silt		26							
1.0- - - -	-	- tan, firm, moist, low plasticity, some clay		23							
1.5-	-			24				0.0	6.7	69.0	24.
2.0-		Clay - brown, stiff, moist, high plasticity		31	5						
- - 2.5-		Testhole terminated at 2.1 m. Frost present to a depth of 1.4 m. No water seepage or soil sloughing were observed during or after the completion of drilling.									

Pavement Core Photos





