Template Version: C420081212 - RW

# APPENDIX 'A' GEOTECHNICAL REPORT

Template Version: C420081212 - RW

# **APPENDIX 'A' - GEOTECHNICAL REPORT**

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#### Appendix 'A'

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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 Fort Street West Alley**

#### **Test Hole Locations**



**Summary of Core Samples** 

# Fort Garry Alley Graham Avenue to Portage Avenue City of Winnipeg 2009 Alley Renewal Program

1 1 1 1		Pavement Surfa	nt Surface	Pavement Str	Pavement Structure Material	-1	Sample	Sample   Moisture	Par	Particle Size Analysis	Analysis		Att	Atterberg Limits	iits
i estnoie ID	Testhole Location	Туре	Thickness (mm)	Туре	Thickness (mm)	sample Description	Depth (m)	Content Gravel Sand (%) (%)	Gravel (%)		Silt (%)	Clay (%)	Liquid Limit	Clay Liquid Plastic Plasticity (%) Limit Limit Index	Plasticity Index
TH1	Eastbound lane, 2 m west of the property Asphalt / line between 230 and 234 Portage Avenue Concrete	Asphalt / Concrete	106 / 120	Granular Base/ Granular and clay fill	74 / 460	Clay	6.0	34	0	4.0	28.5	67.5	98	22	64
TH2	Southbound lane, at the property line between 298 and 294 Fort Street	Asphalt / Concrete	70 / 119	Granular and clay fill	420		,			ı	,		1		,
TH3	Southbound lane, 8 m south of the property line between 285 and 279 Garry Street	Concrete	146	Granular and clay fill	310	-		-		1	,	1	-		ı

# **Test Hole #1 for Fort Street West Alley**

# **TESTHOLE TH1**

THE NATIONAL LESTING LABORATORIES LIMITED

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m Logged by: Kurtis Kulchyski

Date Drilled: January 30, 2008

Site: Fort Garry Alley, Portage Ave. to Graham Ave.

Logged by. Kurtis Kulchys

Testhole Location: Eastbound lane, 2 m west of the property line of 230 / 234 Portage Avenue

		Subsurface Profile				Labora	tory	Testin	g		
Depth (m)	Symbol	Description	PL -	Water	Conto	ent (%)  75	LL 100	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0		Ground Surface	$\parallel$								
0.0-	100	Asphalt	7[-								
		Concrete	1								
_	<u> </u>	Granular Base	$\parallel$	33	1						
- 0.5- -		Fill - grey, firm, moist, intermediate to high plasticity clay, with sand and fine gravel		35							
- 1.0- -		Clay - black, stiff, moist, high plasticity, with layers of silt below 1.1 m		34			1	0	4.0	28.5	67.5
- - 1.5 -		Silt - tan, firm, moist, low plasticity		19							
- - 2.0-		Clay - brown, stiff, moist, high plasticity, with layers of silt		32	3						
- - - 2.5		<ul> <li>Frost present to a depth of 1.4 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling</li> <li>Testhole was terminated at 2.1m</li> </ul>									

# Test Hole #2 for Fort Street West Alley

# **TESTHOLE TH2**

THE NATIONAL LESTING LABORATORIES LIMITED

Date Drilled: January 30, 2008

Depth of Testhole: 2.1 m

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Site: Fort Garry Alley, Portage Ave. to Graham Ave.

Logged by: Kurtis Kulchyski

Testhole Location: Southbound lane, In line with property line of 298 / 294 Fort St.

		Subsurface Profile		Laboratory Testing
Depth (m)	Symbol	Description	Q.	Water Content (%) 20 40 60 80 100
0.0-		Ground Surface	$^{\dagger}$	
0.0-	1000	Asphalt		
		Concrete		
		Fill - mixture of sand and clay, trace fine gravel		
0.5-				19
1.0-		Clay - black, stiff, moist, high plasticity, with layers of silt to 1.1 m - grey below 1.2 m		28
1.5-				39
2.0-	- - - -	Silt - tan, firm, moist, low plasticity		<b>22</b> <b>23</b>
2.5-		<ul> <li>Frost present to a depth of 1.7 m</li> <li>No water seepage was observed during or upon completion of drilling</li> <li>Sloughing was observed below 1.8 m upon completion of drilling</li> <li>Testhole was terminated at 2.1m</li> </ul>		

# Test Hole #3 for Fort Street West Alley

#### **TESTHOLE TH3**

IHE MATIONAL LESTING LABORATORIES LIMITED

**Project Name: City of Winnipeg 2009 Alley Renewal Program** 

Client: KGS Group Inc.

Date Drilled: January 30, 2008 Depth of Testhole: 2.1 m Logged by: Kurtis Kulchyski

Site: Fort Garry Alley, Portage Ave. to Graham Ave.

Testhole Location: Southbound lane, 8 m south of the property line of 285 / 279 Garry St.

		Subsurface Profile	Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100
		Ground Surface	
0.0-		Concrete	
-		Fill - mixture of sand and black silty clay, trace fine gravel	33
0.5-		Clay - black, stiff, moist, high plasticity, trace organics and rootlets to 0.5 m - grey, with layers of silt below 1.1 m	46
1.0-			34
1.5- - -		Silt - tan, firm, moist, low plasticity	19
2.0-		Clay - brown, stiff, moist, high plasticity	35
-		<ul> <li>Frost present to a depth of 1.4 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling</li> <li>Testhole was terminated at 2.1m</li> </ul>	
2.5-	<u> </u>		

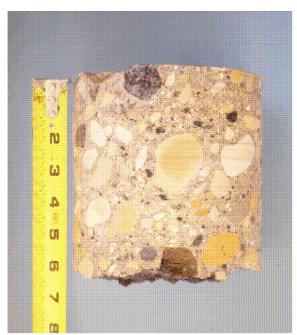
# **Pavement Core Photos**







**Testhole TH2** 



**Testhole TH3** 

# Geotechnical Report for Kennedy / Edmonton Alley

# **Test Hole Locations**



# Kennedy Edmonton Alley Sargent Avenue to Cumberland Avenue City of Winnipeg 2009 Alley Renewal Program

Summary o	f	Core	e Sam	ples	
	mits	Plasticity Index	1	49	6
	Atterberg Limits	Plastic Limit	-	23	19
	Ä	Liquid Limit	ı	72	28
	S.	Clay (%)	,	75.4	27.5
	e Analys	Silt (%)		20.5	70.7
	Particle Size Analysis	Sand (%)	1	4.1	1.8
	۵	Gravel (%)	1	0	0
ram	Sample   Moisture	Content (%)	ı	36	26
Avenue al Progi	Sample	Depth (m)	ı	6:0	1.2
onton Alley Imberland Iey Renewa	-10	sample Description	-	Clay	Silt
Kennedy Edmonton Alley Sargent Avenue to Cumberland Avenue City of Winnipeg 2009 Alley Renewal Program	Pavement Structure Material	Thickness (mm)	15 / 300	120 / 460	50
K. Sargent City of Winr	Pavement Str	Туре	Granular Base/ Clay Fill	Granular Base/ Clay Fill	Granular Base
	Pavement Surface	Thickness (mm)	30 / 155	40 / 140	38 / 212
	Pavemer	Type	Asphalt / Concrete	Asphalt / Concrete	Asphalt / Concrete
		Testhole Location	Centre of alley, 9 m north of the south property line of 435 Sargent Avenue	Southbound lane, 12 m north of the property line between 449 and 445 Kennedy Street	Southbound lane, 2.5 m south of the property line between 448 and 454 Cumberland Avenue
	1 1	estnole ID	TH1	TH2	ТНЗ

# Test Hole Log #1 for Kennedy / Edmonton Alley

# **TESTHOLE TH1**

THE NATIONAL TESTING LABORATORIES LIMITED MATERIAL TESTING LABORATORIES LIMITED

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m

Site: Kennedy Edmonton Alley, Sargent Ave. to Cumberland Ave.

Logged by: Kurtis Kulchyski

Date Drilled: January 26, 2009

Testhole Location: Centre of alley, 9 m north of the south property line of 435 Sargent Ave.

		Subsurface Profile		Laboratory	Testing
Depth (m)	Symbol	Description	C	Water Co (%) 20 40	
0.0-		Ground Surface			
0.0-		Asphalt	7		
-		Concrete			
•		Granular Base	$\exists I$		
-		Fill -black/brown, stiff, moist, high plasticity clay, with trace fine gravel		46	
0.5- - -		Clay -brown, stiff, moist, high plasticity with layers of silt below 0.8 m		34	
1.0- - - -		Silt -tan, firm, moist, low to intermediate plasticity, some clay		3 <sub>1</sub>	
- 1.5- - -	-			23	
2.0-		Clay -brown, stiff, moist, high plasticity		11	
-	-	<ul> <li>Frost present to 1.5 m</li> <li>No water seepage or sloughing observed during or upon completion of drilling</li> <li>Testhole was terminated at 2.1 m</li> </ul>			
2.5-	4				

# Test Hole Log #2 for Kennedy / Edomonton Alley

#### **TESTHOLE TH2**

IHE NATIONAL IESING LABORATORIES LIMITED DO

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Date Drilled: January 26, 2009 Depth of Testhole: 2.1 m

Site: Kennedy Edmonton Alley, Sargent Ave. to Cumberland Ave.

Logged by: Kurtis Kulchyski

Testhole Location: Southbound lane, 12 m north of property line of 449 / 445 Kennedy St.

		Subsurface Profile				Labora	tory <sup>-</sup>	Testin	g		
Depth (m)	Symbol	Description	PL -	Water	Conte	ent (%)  75	LL 100	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0		Ground Surface	+								
0.0-	307337	Asphalt	71								
-		Concrete									
-	600 5000 0.000	Granular Base -20 mm maximum aggregate size		2 <mark>5</mark>							
- 0.5- -		Fill -black, stiff, moist, high plasticity clay with trace fine gravel		28							
- - 1.0-		Clay -grey, stiff, moist, high plasticity		3	6			0	4.1	20.5	75.4
- - -	-	Silt -tan, firm, moist, low to intermediate plasticity, with layers of clay to 1.4 m		34							
1.5- - -				23							
2.0-		Clay -brown, stiff, moist, high plasticity			<b>4</b> 1						
-	-	Frost present to 1.5 m     No water seepage or sloughing observed during or upon completion of									
2.5-		drilling • Testhole was terminated at 2.1 m			!						

#### Test Hole Log #3 for Kennedy / Edmonton Alley

#### **TESTHOLE TH3**

IHE NATIONAL IESTING LABORATORIES LIMITED DO LIMITED D

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m Logged by: Kurtis Kulchyski

Date Drilled: January 26, 2009

Site: Kennedy Edmonton Alley, Sargent Ave. to Cumberland Ave.

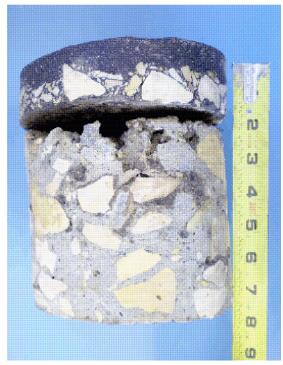
Testhole Location: Southbound lane, 2.5 m south of the property line of 448 / 454 Cumberland Ave.

Subsurface Profile **Laboratory Testing** Sand (%) Clay (%) Depth Water Content (%) Gravel Symbol Description (m) 25 50 100 75 **Ground Surface** 0.0 **Asphalt** Concrete 34 **Granular Base** Clay -black, stiff, moist, high plasticity with trace fine gravel to 0.5 m 0.5 - grey below 0.5 m Silt -tan, firm, moist, low to intermediate plasticity, some clay 0 70.7 27.5 1.8 1.5 2.0 • Frost present to 1.5 m No water seepage or sloughing observed during or upon completion of drilling • Testhole was terminated at 2.1 m 2.5

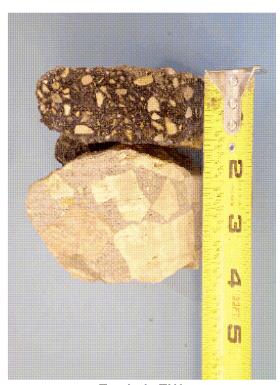
# **Pavement Core Photos**



Testhole TH1



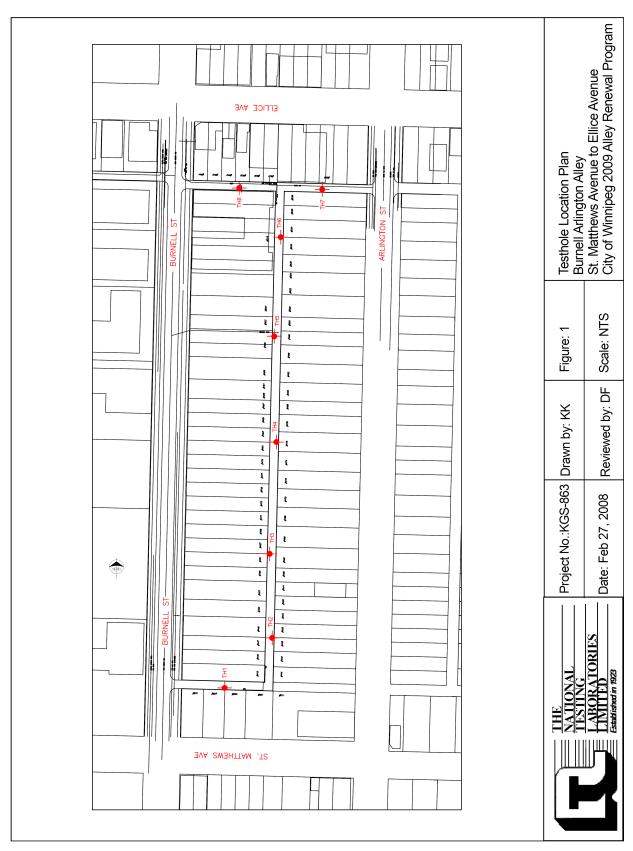
**Testhole TH2** 



**Testhole TH3** 

# Geotechnical Report for Burnell / Arlington Alley

#### **Test Hole Locations**



# Burnell Arlington Alley St. Matthews Avenue to Ellice Avenue City of Winnipeg 2009 Alley Renewal Program

Summary of	of	Cor	e Sam	ples						
	mits	Plasticity Index	48				11	ı	ı	
	Atterberg Limits	Plastic Limit	16	-	-	-	15	1	-	1
	Ä	Liquid Limit	64	-	-	-	56	-	-	-
	s	Clay (%)	1.73	-	-	-	23.3	-	-	-
	e Analysi	Silt (%)	35.2			-	64.0			-
	Particle Size Analysis	Sand (%)	7.7	-		-	12.7	1	-	Eastbound lane, 3 m east of the property Concrete 155 Cranular and line between 840 and 838 Ellice Ave.
	٩	Gravel (%)	0	-	1	,	0	1	-	
Ē	Moisture	Content (%)	33	-	-	-	26	1	-	1
/enue Progra	Sample	Depth (m)	6.0	-	-	-	6.0	1	-	1
ton Alley to Ellice Av y Renewal		Sample Description	Silty Clay	-	-	-	Clayey Silt	ı	-	
Burnell Arlington Alley St. Matthews Avenue to Ellice Avenue City of Winnipeg 2009 Alley Renewal Program	Pavement Structure Material	Thickness (mm)	350	350	100	580	115	135	350	009
Et. Mattl	Pavement Sti	Туре	Granular and clay fill	Granular and clay fill	Granular and clay fill	Granular and clay fill	Granular base	Granular base	Granular and clay fill	Granular and clay fill
J	Pavement Surface	Thickness (mm)	152	35 / 120	22 / 175	20 / 160	187	135	160	155
	Pavemer	Туре	Concrete	Asphalt / Concrete	Asphalt / Concrete	Asphalt / Concrete	Concrete	Concrete	Concrete	Concrete
		Testhole Location	Westbound lane, at the property line between 827 and 825 St. Matthews Ave.	Northbound lane, at the property line between 447 and 449 Burnell St.	Southbound lane, at the property line between 461 and 467 Burnell St.	Northbound lane, at the property line between 481 and 483 Burnell St.	Southbound lane, 4 m south of the property line between 499 and 503 Burnell St.	Northbound lane, at the property line between 532 and 534 Arlington St.	Eastbound lane, 26 m east of the east property line of 834 Ellice Ave.	Eastbound lane, 3 m east of the property line between 840 and 838 Ellice Ave.
		Testhole ID	TH1	ТН2	ТНЗ	ТН4	ТН5	ТН6	ТН7	ТН8

# Test Hole #1 for Burnell / Arlington Alley

# **TESTHOLE TH1**

THE NATIONAL IESTING LABORATORIES LIMITED

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m Logged by: Kurtis Kulchyski

Date Drilled: January 23, 2009

 ${\bf Site: Burnell\ Arlington\ Alley,\ St.\ Matthews\ Ave.\ to\ Ellice\ Ave.}$ 

Testhole Location: Westbound lane, In line with propertly line of 827 / 825 St. Matthews Ave.

		Subsurface Profile	Laboratory Testing	
Depth (m)	Symbol	Description	Water Content (%) PL	Clay (%)
0.0-		Ground Surface		
- 0.0		Concrete		
-		Fill - brown, firm, moist, high plasticity clay, some sand and fine gravel	46	
0.5-		Silty Clay - black, stiff, moist, high plasticity - layers of silt between 0.8 to 1.1 m - brown below 1.2 m - layer of silt between 1.5 to 1.8 m	338 0 7.7 35.2	57.1
1.0- - - -			26	
1.5- - - -			29	
2.0-			28	
- - 2.5-		<ul> <li>Frost present to a depth of 1.4 m</li> <li>No water seepage or sloughing were observed during or upon completion of drillling</li> <li>Testhole was terminated at 2.1 m</li> </ul>		

# Test Hole #2 for Burnell / Arlington Alley

#### **TESTHOLE TH2**

THE NATIONAL TESTING LABORATORIES LIMITED DESCRIPTION OF THE PROPERTY OF THE P

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Date Drilled: January 23 , 2009 Depth of Testhole: 2.1 m

Site: Burnell Arlington Alley, St. Matthews Ave. to Ellice Ave.

Logged by: Kurtis Kulchyski

Testhole Location: Northbound lane, In line with propertly line of 447 / 449 Burnell St.

		Subsurface Profile		Laboratory Testing
Depth (m)	Symbol	Description	O_L	Water Content (%) 20 40 60 80 10
0.0-		Ground Surface		
0.0-		Asphalt		
-		Concrete		
- - -		Fill - mixture of granular material and clay - brown, firm, moist, high plasticity clay fill below 0.3 m		36
0.5- - - -		Clay - black, stiff, moist, high plasticity - layers of silt below 1.1 m		46
1.0- - -				35
1.5- - -		Silt - tan, firm, moist, low plasticity		19
2.0-		Clay - brown, stiff, moist, high plasticity		29 31
- - -		<ul> <li>Frost present to a depth of 1.4 m</li> <li>No water seepage or sloughing were observed during or upon completion of drillling</li> <li>Testhole was terminated at 2.1 m</li> </ul>		
2.5-	]			

# Test Hole #3 for Burnell / Arlington Alley

#### **TESTHOLE TH3**

THE NATIONAL TESTING LABORATORIES LIMITED LABORATORIES LIMITED

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m

Site: Burnell Arlington Alley, St. Matthews Ave. to Ellice Ave.

Logged by: Kurtis Kulchyski

Date Drilled: January 23, 2009

Testhole Location: Southbound lane, In line with propertly line of 461 / 467 Burnell St.

		Subsurface Profile		Laboratory Testing
Depth (m)	Symbol	Description	0	Water Content (%) 20 40 60 80 100
		Ground Surface	$^{+}$	
0.0-	W 500-700 F00	Asphalt	7	
-		Concrete		
-		Fill		49
-		- mixture of clay and granular material		7
0.5-	-	Silt - grey, firm, moist, low to intermediate plasticity, with layers of clay to 0.5 m - tan, low plasticity below 0.5 m		
- -		Clay - brown, stiff, moist, high plasticity with layers of silt to 0.7 m - layers of silt below 1.2 m, increasing with depth		38
- 1.0-				38
- 1.0				
-				30
-				
1.5-				2/1
-			_	
-	- -	Silt - tan, firm, moist, high plasticity - layers of clay below 2.0 m		22
2.0-	-			20
-	-	<ul> <li>Frost present to a depth of 1.4 m</li> <li>No water seepage or sloughing were observed during or upon completion of drillling</li> <li>Testhole was terminated at 2.1 m</li> </ul>		
2.5-				i i i i

# Test Hole #4 for Burnell / Arlington Alley

#### **TESTHOLE TH4**

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Date Drilled: January 23, 2009 Depth of Testhole: 2.1 m Logged by: Kurtis Kulchyski

Site: Burnell Arlington Alley, St. Matthews Ave. to Ellice Ave.

Testhole Location: Southbound lane, In line with propertly line of 481 / 483 Burnell St.

		Subsurface Profile		Laboratory Te	esting
Depth (m)	Symbol	Description	0	Water Con (%) 20 40 60	80 100
0.0-		Ground Surface			
0.0-		Asphalt	70		
-		Concrete			
- 0.5		Fill - mixture of clay and granular material - brown, firm, moist, high plasticity clay fill below 0.3 m		36	
- - -		Silt - tan, firm, moist, low plasticity		36	
1.0- -	-	Clay		29	
1.5-		- brown, stiff, moist, high plasticity with layers of silt to 1.7 m		311	
				28	
2.0- - - -		Frost present to a depth of 1.7 m     No water seepage or sloughing were observed during or upon completion of drillling     Testhole was terminated at 2.1 m		29	

# Test Hole #5 for Burnell / Arlington Alley

#### **TESTHOLE TH5**

THE NATIONAL TESTING LABORATORIES LIMITED LABORATORIES LIMITED

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m

Site: Burnell Arlington Alley, St. Matthews Ave. to Ellice Ave.

Logged by: Kurtis Kulchyski

Date Drilled: January 23, 2009

Testhole Location: Southbound lane, 4 m south of the property line of 499 / 503 Burnell St.

		Subsurface Profile			I	Labora	tory <sup>-</sup>	Γestin	g		
Depth (m)	Symbol	Description	PL O	<b>Water</b>	* <b>Conte</b>	ent (%)  75	LL 100	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0-		Ground Surface	1								
0.0-		Concrete									
		Granular Base - 20 mm maximum aggregate size		33							
0.5- - -		Clay - brown, stiff, moist, high plasticity, with layers of silt, with fine gravel to a depth of 0.4 m  Clayey Silt - tan, firm, moist, low plasticity		30							
1.0-	-			26				0	12.7	64.0	23.3
1.5- - -		Clay - brown, stiff, moist, high plasticity with layers of silt to 1.4 m		30							
2.0- 2.0-				33							
- - 2.5-	-	<ul> <li>Frost present to a depth of 1.4 m</li> <li>No water seepage or sloughing were observed during or upon completion of drillling</li> <li>Testhole was terminated at 2.1 m</li> </ul>									

# Test Hole #6 for Burnell / Arlington Alley

#### **TESTHOLE TH6**

THE NATIONAL TESTING TABORATORIES LABORATORIES LAMITED

**Project Name: City of Winnipeg 2009 Alley Renewal Program Client: KGS Group Inc.** 

Site: Burnell Arlington Alley, St. Matthews Ave. to Ellice Ave.

Depth of Testhole: 2.1 m Logged by: Kurtis Kulchyski

Date Drilled: January 23, 2009

Testhole Location: Northbound lane, In line with property line of 532 / 534 Arlington St.

		Subsurface Profile	Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 10
0.0-		Ground Surface Concrete	
- -	70270 20500 30500	Granular Base - 20 mm maximum aggregate size Clay	28
0.5-		<ul> <li>brown, stiff, moist, high plasticity, with fine gravel to a depth of 0.4 m</li> <li>layers of silt below 0.5 m</li> </ul>	37
1.0- - - -	- - - - - - - -	Silt - tan, firm, moist, low plasticity	24
1.5- - -	-	Clay - brown, stiff, moist, high plasticity	23
2.0-			36
-	-	Frost present to a depth of 1.4 m     No water seepage or sloughing were observed during or upon completion of drillling     Testhole was terminated at 2.1 m	

# Test Hole #7 for Burnell / Arlington Alley

#### **TESTHOLE TH7**

THE NATIONAL IESTING LABORATORIES LAMITED COMMITTED

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m

Site: Burnell Arlington Alley, St. Matthews Ave. to Ellice Ave.

Logged by: Kurtis Kulchyski

Date Drilled: January 23, 2009

Testhole Location: Eastbound lane, 26 m E of the east property line of 834 Ellice Ave.

		Subsurface Profile	l	_aboratory Testin	g
Depth (m)	Symbol	Description	O	Water Content (%) 20 40 60 80	) 10(
		Ground Surface	$\dashv$		
0.0- - - -		Fill brown, firm, moist, high plasticity clay, some sand and fine gravel		28	
- 0.5- - -		Clay - black, stiff, moist, high plasticity - brown, with layers of silt below 0.8 m		37	
1.0- - - -		Silt - tan, firm, moist, low plasticity		25	
- 1.5- - -		Clay - brown, stiff, moist, high plasticity		23	
2.0- - - -		<ul> <li>Frost present to a depth of 1.5 m</li> <li>No water seepage or sloughing were observed during or upon completion of drillling</li> <li>Testhole was terminated at 2.1 m</li> </ul>		36	
2.5-					

# Test Hole #8 for Burnell / Arlington alley

# **TESTHOLE TH8**

IHE NATIONAL IESTING LABORATORIES LIMITED DO LIMITED DO

**Project Name: City of Winnipeg 2009 Alley Renewal Program Client: KGS Group Inc.** 

Site: Burnell Arlington Alley, St. Matthews Ave. to Ellice Ave.

Date Drilled: January 23 , 2009 Depth of Testhole: 2.1 m Logged by: Kurtis Kulchyski

Testhole Location: Eastbound lane, 3 m E of the property line of 840 / 838 Ellice Ave.

O.0 Ground Surface  Concrete  Fill - mixture of granular material and clay - brown, firm, moist, high plasticity clay fill with sand and fine gravel below 0.5 m  O.5  Clay - black, stiff, moist, high plasticity with layers of silt  Silt - tan, firm, moist, low plasticity Clay - brown, stiff, moist, high plasticity  1.5  Frost present to a depth of 1.5 m			Subsurface Profile		Labor	atory Te	sting
Concrete  Fill - mixture of granular material and clay - brown, firm, moist, high plasticity clay fill with sand and fine gravel below 0.5 m  Clay - black, stiff, moist, high plasticity with layers of silt  Silt - tan, firm, moist, low plasticity  Clay - brown, stiff, moist, high plasticity  1.5-  Prost present to a depth of 1.5 m	Depth (m)	Symbol	Description	O_		ter Cont (%) 40 60	<b>ent</b> 80 100
Concrete  Fill - mixture of granular material and clay - brown, firm, moist, high plasticity clay fill with sand and fine gravel below 0.5 m  Clay - black, stiff, moist, high plasticity with layers of silt  Silt - tan, firm, moist, low plasticity  Clay - brown, stiff, moist, high plasticity  1.5-  - Frost present to a depth of 1.5 m	0.0		Ground Surface	+F			
- mixture of granular material and clay - brown, firm, moist, high plasticity clay fill with sand and fine gravel below 0.5 m  Clay - black, stiff, moist, high plasticity with layers of silt  Silt - tan, firm, moist, low plasticity  Clay - brown, stiff, moist, high plasticity  1.5-  1.5-  *Frost present to a depth of 1.5 m	0.0-						
Clay - black, stiff, moist, high plasticity with layers of silt  Silt - tan, firm, moist, low plasticity  Clay - brown, stiff, moist, high plasticity  1.5-  * Frost present to a depth of 1.5 m	- - -	-	<ul> <li>mixture of granular material and clay</li> <li>brown, firm, moist, high plasticity clay fill with sand and fine gravel</li> </ul>		30		
- black, stiff, moist, high plasticity with layers of silt  Silt - tan, firm, moist, low plasticity  Clay - brown, stiff, moist, high plasticity  1.5-  Prost present to a depth of 1.5 m	0.5- - -				3	2	
- tan, firm, moist, low plasticity  Clay - brown, stiff, moist, high plasticity  1.5							
- brown, stiff, moist, high plasticity  1.5	1.0-	-			24		
2.0-  • Frost present to a depth of 1.5 m	-				29		
2.0- • Frost present to a depth of 1.5 m	1.5- - -				26	1	
	2.0-					<b>4</b> p	
No water seepage or sloughing were observed during or upon completion of drillling     Testhole was terminated at 2.1 m	-	- - -	<ul> <li>No water seepage or sloughing were observed during or upon completion of drillling</li> </ul>				

# **Pavement Core Photos**



Testhole TH1



ω

**Testhole TH3** 



**Testhole TH2** 



**Testhole TH4** 

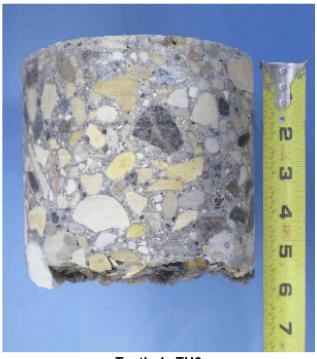
# **Pavement Core Photos**



**Testhole TH5** 



**Testhole TH7** 



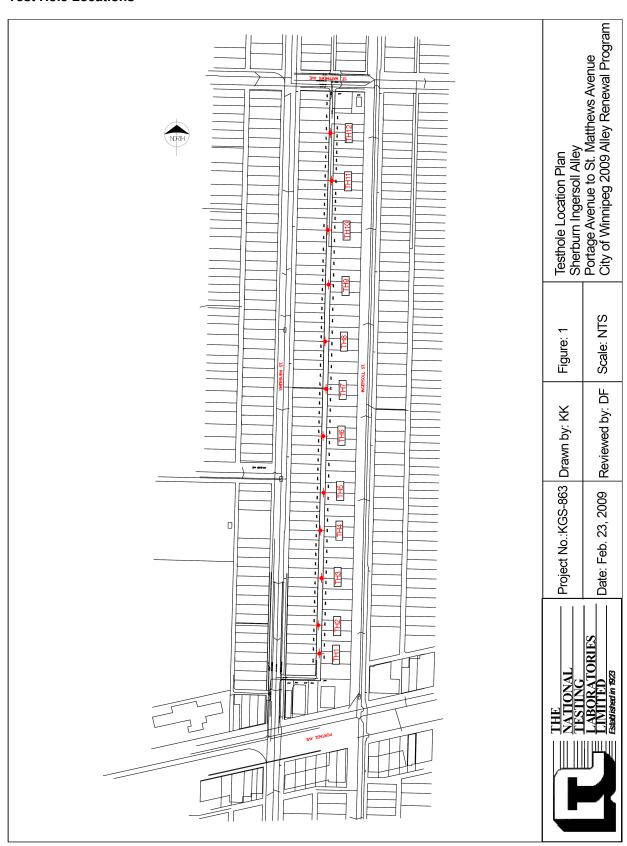
**Testhole TH6** 



**Testhole TH8** 

# Geotechnical Report for Sherburn / Ingersoll Alley

#### **Test Hole Locations**



**Summary of Core Samples** 

Template Version: C420081212 - RW

# Sherburn Ingersoll Alley Portage Avenue to St. Matthews Avenue City of Winnipeg 2009 Alley Renewal Program

Teathele		Pavemer	Pavement Surface	Pavement Stri	Pavement Structure Material	-1	Sample	Moisture	Pai	Particle Size Analysis	Analysis		Att	Atterberg Limits	nits
OII	Testhole Location	Туре	Thickness (mm)	Туре	Thickness (mm)	Sample Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	Northbound lane, at the property line between 515 and 517 Sherburn Street	Concrete	190	Granular and clay fill	270	1	-		1	-	-	,	ı	ı	ı
TH2	Southbound lane, at the property line between 521 and 523 Sherburn Street	Concrete	230	Granular Base/ Granular and clay fill	50 / 520	1	1	-	1	1	-	-	ı		
ТНЗ	Northbound lane, at the property line between 531 and 533 Sherburn Street	Asphalt / Concrete	50 / 212	Granular Base/ Granular and clay fill	40 / 400	-	1		1	-	-	-	1	-	
ТН4	Southbound lane, at the property line between 541 and 547 Sherburn Street	Concrete	228	Granular Base/ Granular and clay fill	20 / 200	-	1	-	1	,	,	,	1	1	
TH5	Northbound lane, at the property line between 553 and 555 Sherburn Street	Concrete	215	Granular and clay fill	140		1		1				1		1
ТН6	Southbound lane, at the property line between 565 and 567 Sherburn Street	Concrete	220	Granular and clay fill	390		1		1		-	-	1		
TH7	Northbound lane, at the property line between 575 and 577 Sherburn Street	Asphalt / Concrete	120 / 245	Granular and clay fill	140		1		1		-		1	1	1
ТН8	Southbound lane, at the property line between 587 and 589 Sherburn Street	Asphalt / Concrete	15/210	Granular and clay fill	240	-	1	-	ı	,	'	-	1	1	
ТН9	Northbound lane, at the property line between 599 and 601 Sherburn Street	Concrete	190	Granular and clay fill	270	-	1	,	1	'	-	,	1	1	
TH10	Southbound lane, at the property line between 611 and 615 Sherburn Street	Concrete	200	Granular and clay fill	260				1	,	-	,	1	1	
TH11	Northbound lane, at the property line between 631 and 633 Sherburn Street	Concrete	198	Granular and clay fill	260	Clayey Silt	1.2	25	0	8.8	64.2	29.0	29	17	12
TH12	Southbound lane, at the property line between 641 and 643 Sherburn Street	Concrete	210	Granular Base/ Granular and clay fill	20 / 200	Clay	6.0	37	0	5.6	27.7	2.99	93	29	64

# Test Hole Log #1 for Sherburn / Ingersoll Alley

# **TESTHOLE TH1**

THE NATIONAL IESTING LABORATORIES LIMITED

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m

Date Drilled: January 22, 2009

Site: Sherburn Ingersoll Alley, Portage to St. Matthews Ave.

Logged by: Kurtis Kulchyski

Testhole Location: Northbound lane, In line with property line of 515 and 517 Sherburn Street

		Subsurface Profile	Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 10
		Ground Surface	
0.0-		Concrete	
- -		Fill - black, firm, moist, intermediate to high plasticity clay, with sand and fine gravel	44
0.5- - -			41
-		Clay - brown, stiff, moist, high plasticity, with layers of silt to 1.1 m	38
1.0- - - -			32
1.5- - -			29
2.0-			30
- - -		Frost present to a depth of 1.4 m     Testhole was terminated at 2.1 m     No water seepage or sloughing were observed during or upon completion of drilling	

# Test Hole Log #2 for Sherburn / Ingersoll Alley

#### **TESTHOLE TH2**

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Date Drilled: January 22, 2009 Depth of Testhole: 2.1 m Logged by: Kurtis Kulchyski

Site: Sherburn Ingersoll Alley, Portage to St. Matthews Ave.

Testhole Location: Southbound lane, In line with property line of 521 and 523 Sherburn Street

		Subsurface Profile		Laboratory Testing
Depth (m)	Symbol	Description	o_	Water Content (%) 20 40 60 80 100
		Ground Surface	+	
0.0- - -		Concrete		
_	8000800	Granular Base	41	38
- 0.5- - -		<b>Fill</b> - black, firm, moist, intermediate to high plasticity clay, with sand and fine gravel		77
- 1.0- - -		Clayey Silt - tan, firm, moist, low to intermediate plasticity, with layers of clay to 1.0 m		26
- 1.5– - -		Clay - brown, stiff, moist, high plasticity, with layers of silt to 2.0 m		23
- 2.0- -		• Frost present to a depth of 1.4 m		40
- - -2.5		<ul> <li>Frost present to a depth of 1.4 m</li> <li>Testhole was terminated at 2.1 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling</li> </ul>		

# Test Hole Log #3 for Sherburn / Ingersoll Alley

#### **TESTHOLE TH3**

THE NATIONAL TESTING LABORATORIES LIMITED LIMITED

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m

Site: Sherburn Ingersoll Alley, Portage to St. Matthews Ave.

Logged by: Kurtis Kulchyski

Date Drilled: January 22, 2009

Testhole Location: Northbound lane, In line with property line of 531 and 533 Sherburn Street

		Subsurface Profile		Lab	orator	y Te	sting
Depth (m)	Symbol	Description	(	<b>V</b>	/ater 0 (% 40		ent 80 100
0.0-		Ground Surface					
0.0-	FACTOR A	Asphalt					[]
-		Concrete					
-	200220	Granular Base			41	-	
0.5- -		Fill - black, firm, moist, intermediate to high plasticity clay, with sand and fine gravel			44		
-		Clay - black, stiff, moist, high plasticity, with layers of silt below 0.9 m			3/7		
1.0-							
- - - 1.5-		Clayey Silt - tan, firm, moist, low to intermediate plasticity		2	27		
- - 2.0-		Clay - brown, stiff, moist, high plasticity			32		
- - 2.5		<ul> <li>Frost present to a depth of 1.4 m</li> <li>Testhole was terminated at 2.1 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling</li> </ul>					

# Test Hole Log #4 for Sherburn / Ingersoll Alley

#### **TESTHOLE TH4**

THE NATIONAL TESTING LABORATORIES LIMITED LABORATORIES LIMITED

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m

Site: Sherburn Ingersoll Alley, Portage to St. Matthews Ave.

Logged by: Kurtis Kulchyski

Date Drilled: January 22, 2009

Testhole Location: Southbound lane, In line with property line of 541 and 547 Sherburn Street

		Subsurface Profile		Labo	ratory	/ Tes	sting
Depth (m)	Symbol	Description	0 L	<b>W</b> a	ater C (% 40	)	ent 80 100
0.0-	N. S.	Ground Surface	╬			<u>-</u>	
-		Concrete					
-		Granular Base	11	-	<b>4</b> 3	-	-
- 0.5–		Fill - black, firm, moist, intermediate to high plasticity clay, with sand and fine gravel					
- - -		Silty Clay - black, stiff, moist, intermediate to high plasticity, with layers of silt between 0.7 to 1.1 m - brown below 0.8 m - layers of silt below 1.5 m		23	3/7		
1.0- - - -				26	5		
- 1.5- -				25	5		
- - 2.0-		Clayey Silt - tan, firm, moist, low to intermediate plasticity		24			
- - - 2.5		<ul> <li>Frost present to a depth of 1.4 m</li> <li>Testhole was terminated at 2.1 m</li> <li>No water seepage was observed during or upon completion of drilling</li> <li>Sloughing observed below 2.0 m upon completion of drilling</li> </ul>					

# Test Hole Log #5 for Sherburn / Ingersoll Alley

#### **TESTHOLE TH5**

THE NATIONAL IESTING LABORATORIES LAMITED COMMITTED

**Project Name: City of Winnipeg 2009 Alley Renewal Program** 

Client: KGS Group Inc.

Date Drilled: January 22, 2009 Depth of Testhole: 2.1 m

Site: Sherburn Ingersoll Alley, Portage to St. Matthews Ave.

Logged by: Kurtis Kulchyski

Testhole Location: Northbound lane, In line with property line of 553 and 555 Sherburn Street

		Subsurface Profile		Labo	ratory Te	sting
Depth (m)	Symbol	Description	   	<b>W</b> a	(%) 40 60	ent 80 100
0.0-		Ground Surface  Concrete				
- - 0.5- - -		Fill - black mixture of compact, fine to coarse grained sand with some clay, trace fine gravel  Clay - black, stiff, moist, high plasticity, with sand and fine gravel to 0.5 m - grey, with layers of silt below 0.8 m - brown below 1.0 m			40	
- 1.0- - -					37	
1.5- - - -		Clayey Silt - tan, firm, moist, low to intermediate plasticity - saturated below 1.7 m		23		
2.0- - - - 2.5-		Frost present to a depth of 1.4 m     Testhole was terminated at 2.1 m     No water seepage was observed during or upon completion of drilling     Sloughing observed below 2.0 m upon completion of drilling		24		

# Test Hole Log #6 for Sherburn / Ingersoll Alley

#### **TESTHOLE TH6**

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m Logged by: Kurtis Kulchyski

Date Drilled: January 22, 2009

Site: Sherburn Ingersoll Alley, Portage to St. Matthews Ave.

Testhole Location: Southbound lane, In line with property line of 565 and 567 Sherburn Street

		Laboratory Testing	
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100
0.0		Ground Surface	
-0.0 - -		Concrete	
-		Fill - black, firm, moist, intermediate to high plasticity clay, with sand, trace fine gravel	36
0.5 <b>-</b>		Silty Clay	
- -		- grey, stiff, moist, intermediate plasticity, with layers of silt	34
1.0-			
- - -	- -	Clayey Silt - tan, firm, moist, intermediate plasticity	31
- 1.5- -		Clay - brown, stiff, moist, high plasticity, with layers of silt	35
-			33
2.0-			37
-		<ul> <li>Frost present to a depth of 1.4 m</li> <li>Testhole was terminated at 2.1 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling</li> </ul>	
2.5-			

# Test Hole Log #7 for Sherburn / Ingersoll Alley

#### **TESTHOLE TH7**

THE NATIONAL IESTING LABORATORIES LIMITED

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m

Site: Sherburn Ingersoll Alley, Portage to St. Matthews Ave.

Logged by: Kurtis Kulchyski

Date Drilled: January 22, 2009

Testhole Location: Northbound lane, In line with property line of 575 and 577 Sherburn Street

Subsurface Profile					Laboratory Testing				
Depth (m)	Symbol	Description	O L	<b>W</b> a	(%)		nt 80 100		
0.0		Ground Surface	$\top\!$						
0.0-		Asphalt							
-		Concrete							
0.5-		Fill - brown/grey, firm, moist, intermediate to high plasticity clay, with sand and fine gravel		3	35 35				
-		Clay - brown, stiff, moist, high plasticity			34				
1.0-				3	1				
1.5- - - -					35				
2.0-					37				
- - 2.5–		<ul> <li>Frost present to a depth of 1.4 m</li> <li>Testhole was terminated at 2.1 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling</li> <li>Testhole was located 1.0 m from an existing catch basin</li> </ul>							

# Test Hole Log #8 for Sherburn / Ingersoll Alley

### **TESTHOLE TH8**

THE NATIONAL IESTING LABORATORIES LAMITED COMMITTED

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m

Site: Sherburn Ingersoll Alley, Portage to St. Matthews Ave.

Logged by: Kurtis Kulchyski

Date Drilled: January 22, 2009

Testhole Location: Southbound lane, In line with property line of 587 and 589 Sherburn Street

		Subsurface Profile		Labo	ratory Te	sting
Depth (m)	Symbol	Description	0		(%) 40 60	
0.0-		Ground Surface	丗			
0.0-		Asphalt	7[			
-		Concrete				
-		Fill - black mixture of fine to coarse grained sand, some clay, trace fine gravel				
0.5- - - -		Clay - black, stiff, moist, high plasticity, with trace fine gravel to 0.6 m - grey below 0.7 m - brown below 1.4 m - layers of silt below 1.7 m			49	
- 1.0- - -					50	
- 1.5- - -					36	
2.0-					42	
- - -		<ul> <li>Frost present to a depth of 1.4 m</li> <li>Testhole was terminated at 2.1 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling</li> </ul>				

# Test Hole Log #9 for Sherburn / Ingersoll Alley

### **TESTHOLE TH9**

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m Logged by: Kurtis Kulchyski

Date Drilled: January 22, 2009

Site: Sherburn Ingersoll Alley, Portage to St. Matthews Ave.

Testhole Location: Northbound lane, In line with property line of 599 and 601 Sherburn Street

		Subsurface Profile	Laborate	ory Testing
Depth (m)	Symbol	Description		Content (%) 60 80 10
0.0		Ground Surface		
-0.0		Concrete		
-		Fill - black mixture of fine to coarse grained sand, some clay, trace fine gravel		
0.5- - -		Clay - black, stiff, moist, high plasticity, with trace fine gravel to 0.6 m - grey, with layers of silt below 0.8 m, increasing with depth - brown below 1.1 m		48
1.0- - - -			32	
1.5- -		Silt - tan, firm, moist, low plasticity	29	
-		Clay - brown, stiff, moist, high plasticity	32	
2.0- - - -		<ul> <li>Frost present to a depth of 1.4 m</li> <li>Testhole was terminated at 2.1 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling</li> </ul>		

# Test Hole Log #10 for Sherburn / Ingersoll Alley

### **TESTHOLE TH10**

THE NATIONAL TESTING LABORATORIES LIMITED

**Project Name: City of Winnipeg 2009 Alley Renewal Program Client: KGS Group Inc.** 

Site: Sherburn Ingersoll Alley, Portage to St. Matthews Ave.

Date Drilled: January 22, 2009 Depth of Testhole: 2.1 m Logged by: Kurtis Kulchyski

Testhole Location: Southbound lane, In line with property line of 611 and 615 Sherburn Street

		Subsurface Profile		Laboratory Testing
Depth (m)	Symbol	Description	e_	Water Content (%) 20 40 60 80 10
		Ground Surface	+	
-0.0		Concrete		
-		Fill - mixture of black/brown, firm, high plasticity clay with fine to coarse grained sand, trace fine gravel		37
0.5- - - -		Clay - black, stiff, moist, high plasticity - grey below 0.8 m - brown below 1.0 m - layers of silt between 1.0 to 1.7 m		51
1.0- - -				38
1.5- - -				33
2.0-				44
-		<ul> <li>Frost present to a depth of 1.4 m</li> <li>Testhole was terminated at 2.1 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling</li> </ul>		
2.5-	-			i i i i

# Test Hole Log #11 for Sherburn / Ingersoll Alley

### **TESTHOLE TH11**

THE NATIONAL IESTING LABORATORIES LAMITED LAMI

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m

Site: Sherburn Ingersoll Alley, Portage to St. Matthews Ave.

Logged by: Kurtis Kulchyski

Date Drilled: January 22, 2009

Testhole Location: Northbound lane, In line with property line of 631 and 633 Sherburn Street

		Subsurface Profile				Labora	tory	Testin	g		
Depth (m)	Symbol	Description	PL - 0	<b>Wate</b>	r <b>Cont</b> e	ent (%) 75	LL 100	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0-		Ground Surface	<u>                                     </u>								
-		Concrete									
- -0.5 -		Fill - mixture of black/brown clay with fine to coarse grained sand, trace fine gravel		3)	37 •						
- - 1.0-		Clay - black, firm, moist, high plasticity, with layers of silt, increasing with depth		3	7						
- - -	- -	Clayey Silt - tan, firm, moist, low to intermediate plasticity, with layers of clay		25				0	6.8	64.2	29.0
1.5- - - -		Clay - brown, stiff, moist, high plasticity		26 31							
2.0- -					9						
- - 2.5-	-	<ul> <li>Frost present to a depth of 1.4 m</li> <li>Testhole was terminated at 2.1 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling</li> </ul>									

# Test Hole Log #12 for Sherburn / Ingersoll Alley

### **TESTHOLE TH12**

IHE NATIONAL IESTING LABORATORIES LIMITED DO LIMITED DO

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m

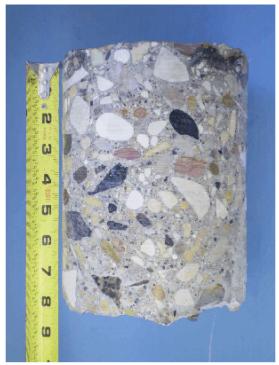
Site: Sherburn Ingersoll Alley, Portage to St. Matthews Ave.

Logged by: Kurtis Kulchyski

Date Drilled: January 22, 2009

Testhole Location: Southbound lane, In line with property line of 641 and 643 Sherburn Street

		Subsurface Profile			ļ	Labora	tory 1	Γestin	g		
Depth (m)	Symbol	Description	PL - 0	<b>Water</b> 25	Conte	ent (%)  75	LL 100	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0-	9708970	Ground Surface Concrete Granular Base		34							
- 0.5- -		Fill - mixture of black/brown, firm, moist, high plasticity clay with fine to coarse grained sand, trace fine gravel		34	2						
- - 1.0-		Clay - black, firm, moist, high plasticity - grey below 0.9 m  Clayey Silt		3	7	 	—	0	5.6	27.7	66.7
- - 1.5- -		- tan, firm, moist, low to intermediate plasticity, with layers of clay to 1.4 m - layers of clay below 1.8 m		22	1						
- - 2.0-	-			28							
- - 2.5-	-	Prost present to a depth of 1.4 m Testhole was terminated at 2.1 m No water seepage was observed during or upon completion of drilling Sloughing observed below 1.8 m upon completion of drilling									



Testhole TH1



**Testhole TH2** 



Testhole TH3



**Testhole TH4** 



**Testhole TH5** 



Testhole TH7



**Testhole TH6** 



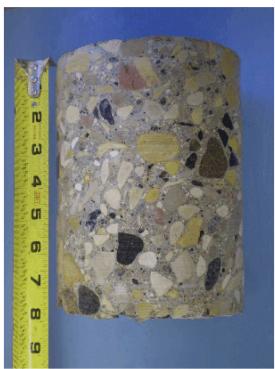
Testhole TH8



**Testhole TH9** 



**Testhole TH10** 



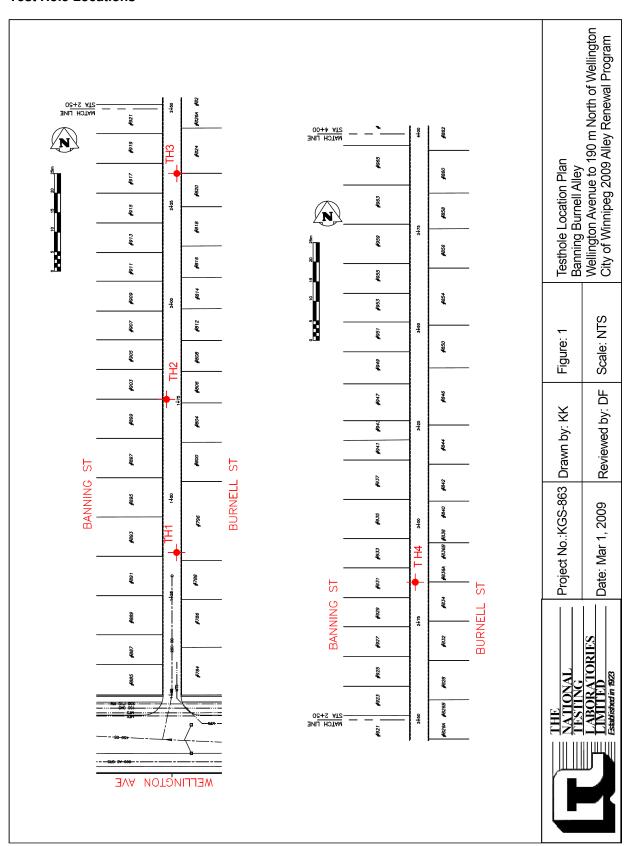
Testhole TH11



Testhole TH12

# **Geotechnical Report for Banning / Burnell Alley**

### **Test Hole Locations**



**Summary of Core Samples** 

# Banning Burnell Alley Wellington Avenue to 190 m North of Wellington City of Winnipeg 2009 Alley Renewal Program

		Paveme	Pavement Surface	Pavement Stru	Pavement Structure Material	Sample	Sample	Sample   Moisture	Pa	Particle Size Analysis	Analysis		At	Atterberg Limits	nits
Testhole Location Type Thickness (mm)		Thick (m)	ness n)	Туре	Thickness (mm)	Sample	Depth (m)	Content Gravel (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Liquid Plastic Plasticity Limit Limit Index
Northbound lane, 2 m north of the property Asphalt / 50 / 185 line between 788 and 796 Burnell Street	Asphalt / 5.	50 / 18	55	Granular and clay fill	530	Clayey Silt	1.2	34	0.1	1.7	52.2	46.0	38	18	20
Southbound lane, at the property line Asphalt / Southbound lane, at the property line Asphalt / Southbound lane, at the property line Asphalt / Southbound lane, at the property line and 804 and 806 Burnell Street	ē.	30 / 170		Granular and clay fill	300	-		-	-	-	1	-	1	-	-
Northbound lane, at the property line of 820 Asphalt / 45 / 240 and 824 Burnell Street	Asphalt / Concrete	45 / 240		Granular and clay fill	520	Clay	1.2	33	0	2.9	20.7	73.4	92	20	56
Southbound lane, at the property line of 834 Concrete 225	Concrete	225		Crushed Limestone	970	,	ı		1	1	,		i	1	1

# Test Hole #1 for Fort Banning / Burnell Alley

### **TESTHOLE TH1**

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m Logged by: Jeff Brant

Date Drilled: January 21, 2009

Site: Banning / Burnell Alley, Wellington Ave. to 190 m North

Testhole Location: Northbound lane, 2 m north of the property line of 788 / 796 Burnell Street

		Subsurface Profile				Labora	tory	Γestin	g		
Depth (m)	Symbol	Description	PL - 0	<b>Water</b>	* <b>Conte</b>	ent (%) 75	LL 100	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0-		Ground Surface									
0.0-	1400	Asphalt	7["								
		Concrete									
0.5-		Fill - mixture of black high plasticity silty clay with sand and fine gravel		35	43						
1.0-	-	Clay - brown, stiff, moist, high plasticity		32							
1.5-	-	Clayey Silt - grey, firm, moist, low to intermediate plasticity - tan, low plasticity below 1.4 m - layers of clay below 2.0 m		2/	1			0.1	1.7	52.2	46.0
2.0-	- - - -			23	8						
2.5-	- - -	<ul> <li>Frost to a depth of 1.5 m</li> <li>Testhole terminated at 2.1 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling</li> </ul>									

# Test Hole #2 for Banning / Burnell Alley

### **TESTHOLE TH2**

THE NATIONAL IESTING LABORATORIES LAMITED COMMITTED

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Date Drilled: January 21, 2009 Depth of Testhole: 2.1 m

Site: Banning / Burnell Alley, Wellington Ave. to 190 m North

Logged by: Jeff Brant

Testhole Location: Southbound lane, In line with the property line of 804 / 806 Burnell Street

		Subsurface Profile	Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100
0.0-		Ground Surface	
0.0-	*******	Asphalt	
		Concrete	
		Fill - black / brown, stiff, intermediate to high plasticity clay, with sand and fine gravel	30
0.5-		Clay - grey, stiff, moist, high plasticity - brown below 0.9 m - layers of silt below 1.7, increasing with depth	32
1.0-			331
1.5 <b>-</b>			32
2.0-	-	Silt - tan, firm, moist, low plastcity	
2.5-		<ul> <li>Frost to a depth of 1.5 m</li> <li>Testhole terminated at 2.1 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling</li> </ul>	

# Test Hole #3 for Banning / Burnell Alley

### **TESTHOLE TH3**

THE NATIONAL LESTING LABORATORIES LIMITED LABORATORIES

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Depth of Testhole: 2.1 m

Date Drilled: January 21, 2009

Site: Banning / Burnell Alley, Wellington Ave. to 190 m North

Logged by: Jeff Brant

Testhole Location: Northbound lane, In line with the property line of 820 / 824 Burnell Street

		Subsurface Profile			I	Labora	tory	Γestin	g		
Depth (m)	Symbol	Description	PL - 0	<b>Wate</b> 1	Conte	ent (%) 75	LL 100	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0-		Ground Surface Asphalt	#	<u>-</u>	<u>-</u>						
- - - 0.5		Fill - mixture of black, high plasticity silty clay with sand and fine gravel		21/	49						
- - - 1.0-		Clay - grey, stiff, moist, high plasticity - brown below 1.0 m		27							
- - 1.5 -		Silt - tan, firm, moist, low plastcity, some clay	_	26				0	2.9	20.7	73.4
- - 2.0-	-			25							
- - 2.5-	- - -	Frost to a depth of 1.5 m     Testhole terminated at 2.1 m     No water seepage or sloughing were observed during or upon completion of drilling									

# Test Hole #4 for Banning / Burnell Alley

### **TESTHOLE TH4**

Date Drilled: January 21, 2009

Depth of Testhole: 2.1 m

Logged by: Jeff Brant

Project Name: City of Winnipeg 2009 Alley Renewal Program

Client: KGS Group Inc.

Site: Banning / Burnell St., Wellington Ave. to 190 m North

Testhole Location: Southbound lane, In line with the property line of 834 / 836 Burnell Street

		Subsurface Profile	Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100
0.0		Ground Surface	
0.0- - -		Concrete	
- - 0.5	3 7 0 5 2 1 2 7 0 5 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	Crushed Limestone Base - 20 mm maximum aggregate size - 50 mm maximum aggregate size below 0.6 m	
- - - -			4
1.0 <b>-</b>	27 9 2 4 4 9 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9		
- - 1.5- -		Silt - tan, firm, moist, low to intermediate plasticity, some clay	22
- 2.0-			22
- - -		<ul> <li>Frost to a depth of 1.5 m</li> <li>Testhole terminated at 2.1 m</li> <li>No water seepage or sloughing were observed during or upon completion of drilling</li> </ul>	



**Testhole TH1** 



**Testhole TH2** 



Testhole TH3



**Testhole TH4**