

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:
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April 15, 2014
Project No. 123301329

APPENDIX 'A' – GEOTECHNICAL REPORT

TABLE OF CONTENTS

GEOTECHNICAL REPORT FOR GARFIELD AND SHERBURN ALLEY FROM YARWOOD TO GRUNDY	1
Test Hole Locations	2
Summary Table	3
Test Hole Logs	4
Pavement Core Photos	8
Particle Size Analysis	10
GEOTECHNICAL REPORT FOR INGERSOLL AND LIPTON ALLEY FROM SARGENT TO WELLINGTON	12
Test Hole Locations	13
Summary Table	14
Test Hole Logs	15
Pavement Core Photos	23
Particle Size Analysis	27
GEOTECHNICAL REPORT FOR BANNING AND BURNELL ALLEY FROM ELLICE TO SARGENT	30
Test Hole Locations	31
Summary Table	32
Test Hole Logs	33
Pavement Core Photos	40
Particle Size Analysis	44
GEOTECHNICAL REPORT FOR YOUNG AND SPENCE ALLEY FROM ELLICE TO SARGENT	47
Test Hole Locations	48
Summary Table	49
Test Hole Logs	50
Pavement Core Photos	59
Particle Size Analysis	64

GEOTECHNICAL REPORT FOR JEFFERSON NORTH ALLEY FROM POWERS TO SALTER	66
Test Hole Locations	67
Summary Table	68
Test Hole Logs	69
Pavement Core Photos	73
Particle Size Analysis	75
GEOTECHNICAL REPORT FOR MATHESON AND McADAM ALLEY FROM MAIN TO COCHRANE	77
Test Hole Locations	78
Summary Table	79
Test Hole Logs	80
Pavement Core Photos	87
Particle Size Analysis	91

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**

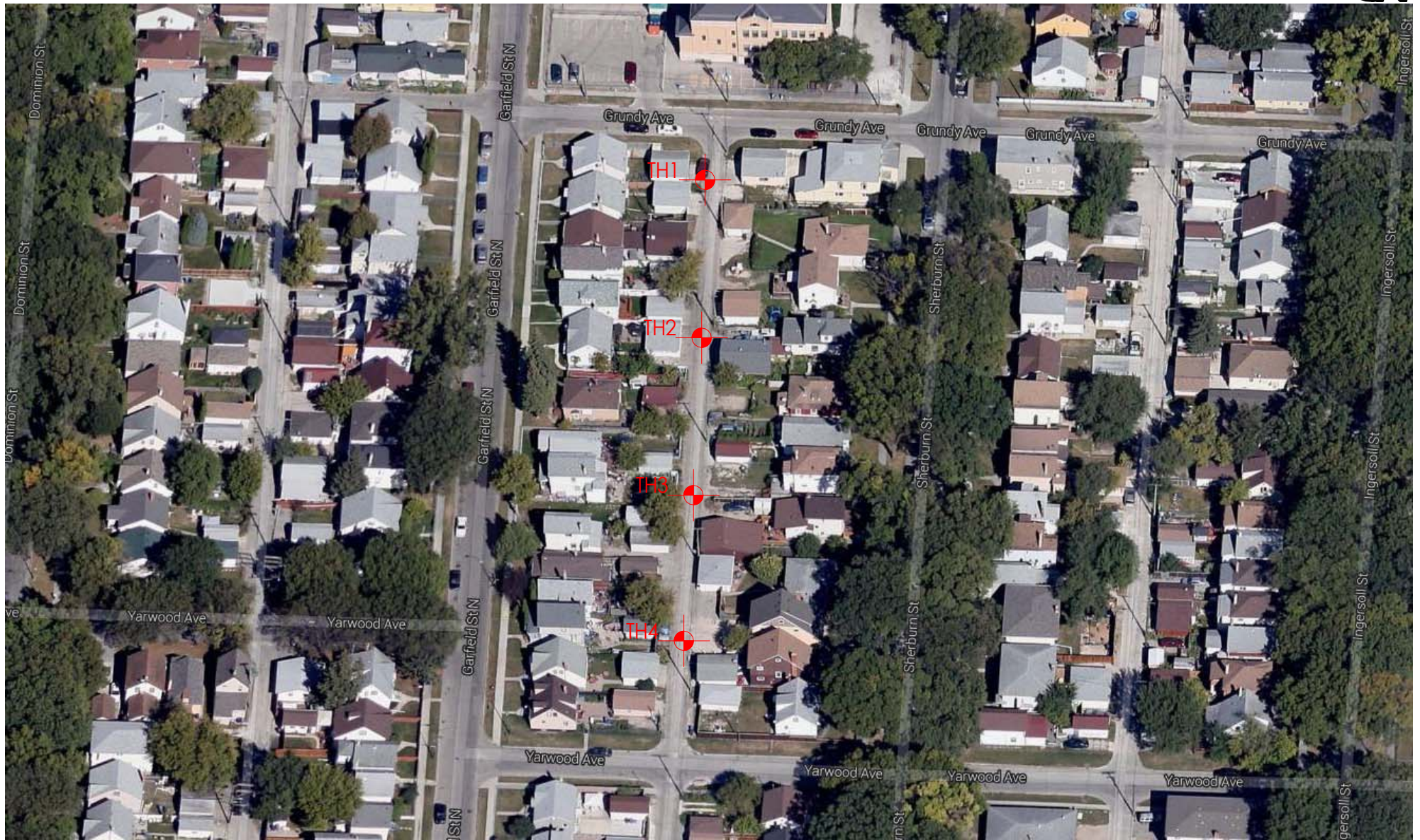
GEOTECHNICAL INVESTIGATION



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February 26, 2014
Project No. 123301330



Project No. 123301330

Drawn by: NB

Figure: 1

Testhole Location Plan
2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
Garfield St N & Sherburn St Alley between
Yarwood Ave & Grundy Ave

Date: Feb 26, 2014

Reviewed by: GL

Scale: NTS

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 ID	Testhole Location	Pavement Surface		Pavement Structure Material		Sample Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	UTM Coordinates: 14U 631035 m East, 5529538 m North	Asphalt	40	-	-	-	-	-	-	-	-	-	-	-	-
		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
		Concrete	200												
TH3	UTM Coordinates: 14U 631034 m East, 5529456 m North	Asphalt	25	-	-	Silty Clay	0.9	27	0.5	4.6	31.7	63.2	76	22	54
		Concrete	205												
TH4	UTM Coordinates: 14U 631034 m East, 5529421 m North	Asphalt	30	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	185												

TESTHOLE TH1



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 631035.0 m E, 5529538.0 m N

Date Drilled: January 24, 2014
Depth of Testhole: 2.1 m
Logged by: Nestor Abarca
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
		Asphalt					
		Concrete					
0.5		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS	●17			
			BS	●20			
			BS	●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			
			BS	●35			
1.5		Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS	●21			
			BS	●22			
2.0			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.

TESTHOLE TH2



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

Date Drilled: January 24, 2014
Depth of Testhole: 2.1 m
Logged by: Nestor Abarca
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Particle Size Distribution				● Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
		Asphalt							
		Concrete							
0.5		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS					●36	
			BS					●31	
			BS	0.2	2.7	39.2	57.9	—●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	
			BS					●30	
1.5		Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS					●23	
			BS					●23	
2.0			BS					●25	

- 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.

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

Date Drilled: January 24, 2014
Depth of Testhole: 2.1 m
Logged by: Nestor Abarca
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Particle Size Distribution				● Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
		Asphalt							
		Concrete							
0.5		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS					●27	
			BS					●25	
			BS					●25	
1.0		Silty Clay - 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	
			BS					●28	
1.5		Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS					●23	
			BS					●21	
2.0			BS					●21	

- 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.

TESTHOLE TH4



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, 5529421.0 m N

Date Drilled: January 24, 2014
Depth of Testhole: 2.1 m
Logged by: Nestor Abarca
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
		Asphalt					
		Concrete					
0.5		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS		47		
			BS		27		
			BS		26		
1.0		Silty Clay - grey, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel - brown below 1.1 m	BS		27		
			BS		29		
1.5			BS		29		
2.0		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 completion of drilling.
- 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.
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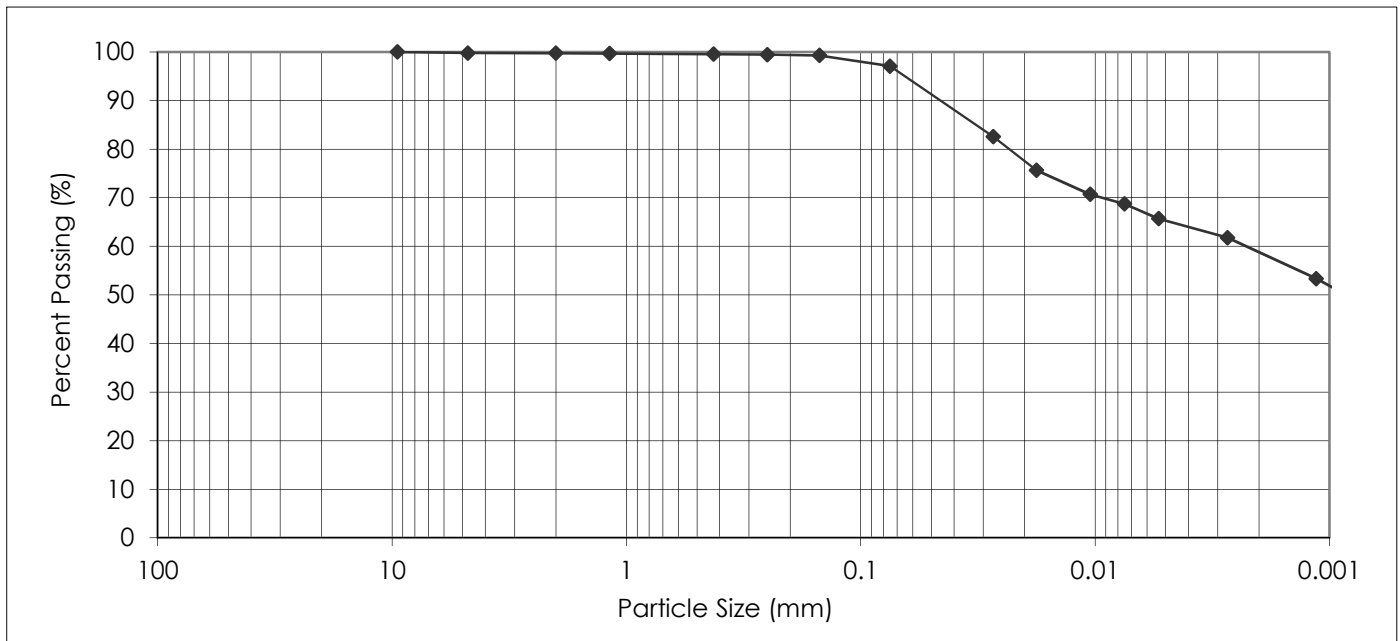
PROJECT: 2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
Garfield St N & Sherburn St Alley
between Yarwood Ave & Grundy Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH2 @ 0.6 m

DATE RECEIVED: January 24, 2014
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	99.8
2.00 mm	99.7

PARTICLE SIZE	PERCENT PASSING
1.18 mm	99.7
0.425 mm	99.6
0.250 mm	99.5
0.150 mm	99.3
0.075 mm	97.1
0.005 mm	65.2
0.002 mm	57.9
0.001 mm	51.7

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.2	0.1	0.1	2.5	39.2	57.9	51.7

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
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R3T 5P4

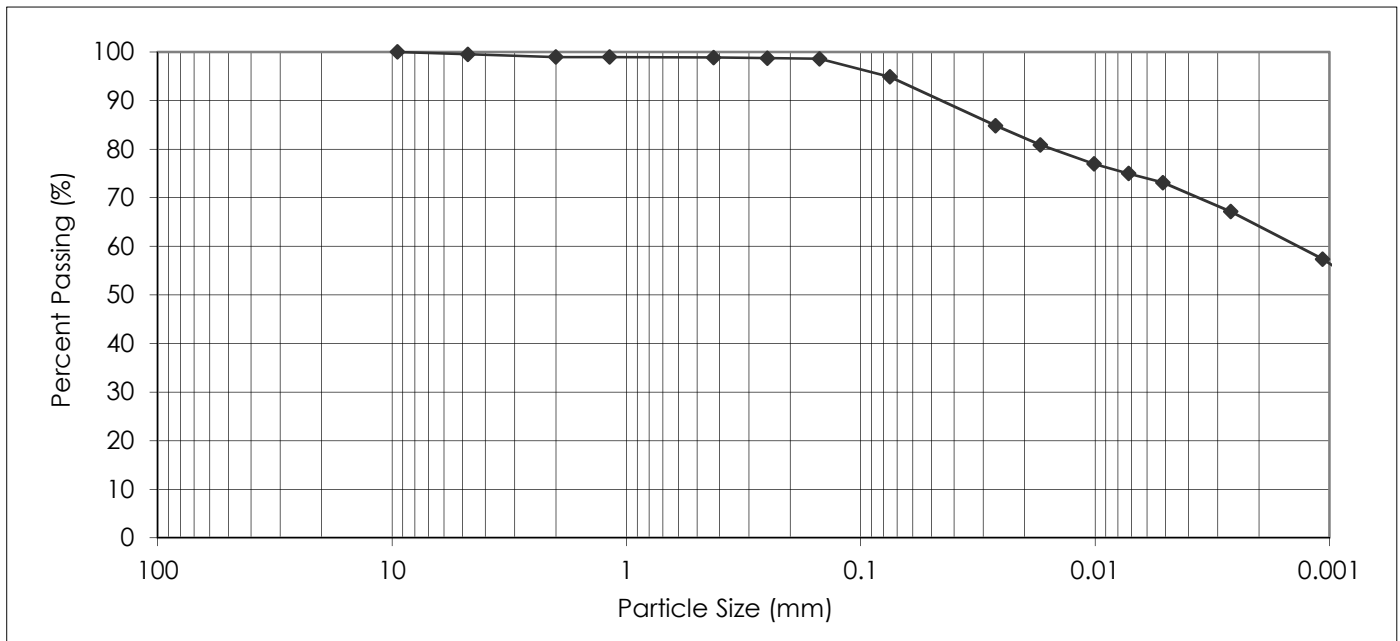
PROJECT: 2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
Garfield St N & Sherburn St Alley
between Yarwood Ave & Grundy Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH3 @ 0.9 m

DATE RECEIVED: January 24, 2014
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	99.5
2.00 mm	99.0

PARTICLE SIZE	PERCENT PASSING
1.18 mm	98.9
0.425 mm	98.9
0.250 mm	98.7
0.150 mm	98.6
0.075 mm	94.9
0.005 mm	72.8
0.002 mm	63.2
0.001 mm	56.3

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.5	0.5	0.1	4.0	31.7	63.2	56.3

February 19, 2014

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

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

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

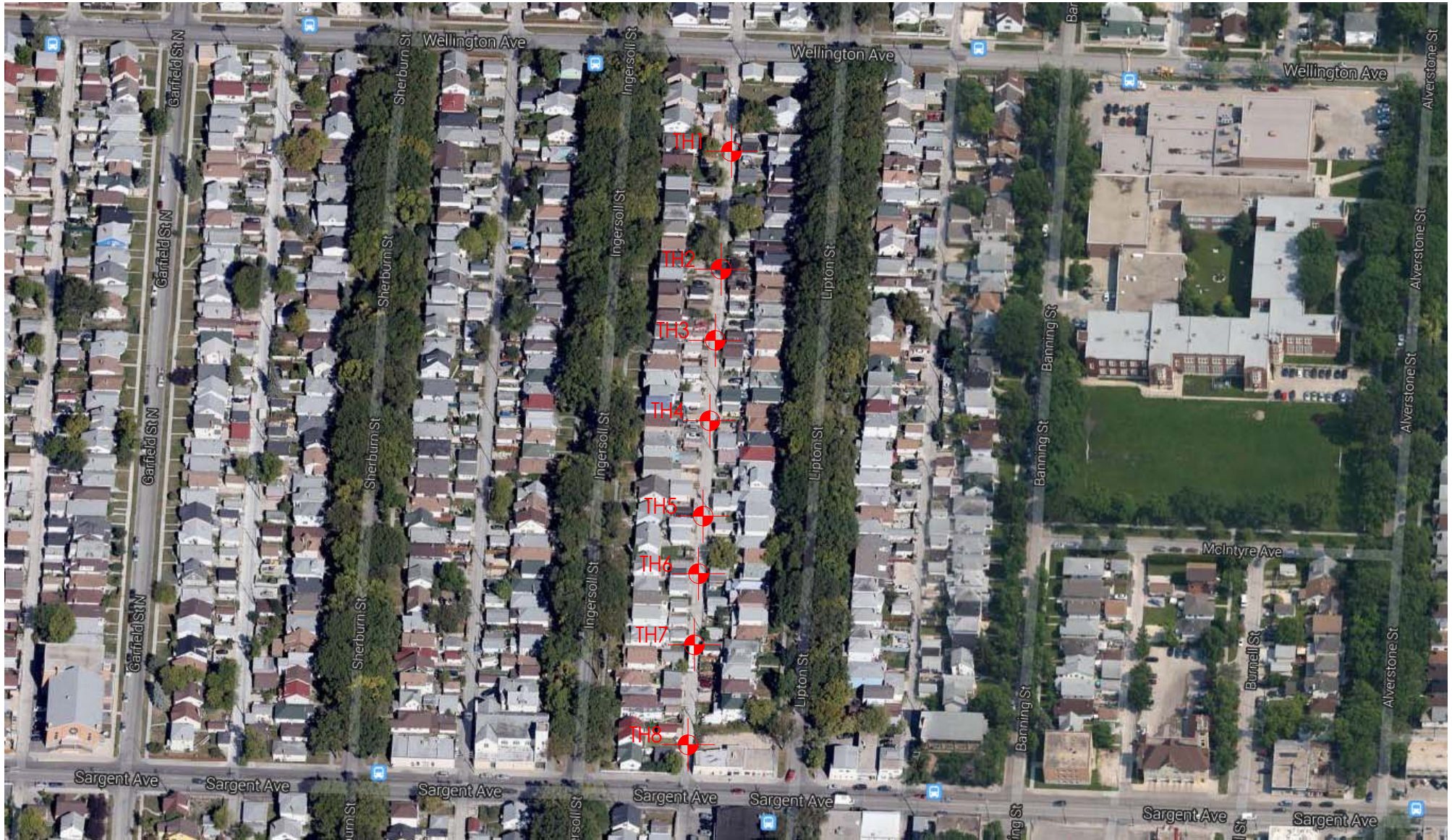
GEOTECHNICAL INVESTIGATION



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R3Y 1G4

February 27, 2014
Project No. 123301330



Project No. 123301330

Drawn by: NB

Figure: 1

Date: Feb 26, 2014

Reviewed by: GL

Scale: NTS

Testhole Location Plan
2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
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 ID	Testhole Location	Pavement Surface		Pavement Structure Material		Sample Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				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	-	-	-	-	-	-	-	-	-	-	-	-
TH3	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 TH1



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

Date Drilled: January 24, 2014
Depth of Testhole: 2.1 m
Logged by: Nestor Abarca
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
0.0 - 0.1		Concrete					
0.1 - 0.8		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS		59		
0.8 - 1.3		Clay - brown, stiff, moist, high plasticity - some silt - some fine to coarse sand - firm below 1.1 m	BS	24			
1.3 - 1.6		Clay - brown, stiff, moist, high plasticity - some silt - some fine to coarse sand - firm below 1.1 m	BS		34		
1.6 - 2.1		Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS	27			
			BS		28		
			BS	25			
			BS	20			
			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.

TESTHOLE TH2



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

Date Drilled: January 24, 2014
Depth of Testhole: 2.1 m
Logged by: Nestor Abarca
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
		Concrete					
		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS		53		
0.5			BS		37		
		Clay - brown, firm, moist, high plasticity - some silt - some fine to coarse sand	BS		21		
1.0			BS		33		
		Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS		34		
1.5			BS		24		
			BS		25		
2.0			BS		23		

- 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.

TESTHOLE TH3



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 631185.0 m E, 5529009.0 m N

Date Drilled: January 24, 2014
Depth of Testhole: 2.1 m
Logged by: Nestor Abarca
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
0.0 - 0.1	[Concrete symbol]	Concrete					
0.1 - 1.1	[Clay Fill symbol]	Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS		●43		
			BS		●23		
			BS		●46		
			BS		●44		
1.1 - 1.3	[Clayey Silt symbol]	Clayey Silt - brown, firm, moist, medium plasticity - trace fine to medium sand	BS		●31		
1.3 - 2.0	[Silt symbol]	Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS		●21		
			BS		●23		
2.0 - 2.1	[Clay symbol]	Clay - brown, firm, moist, high plasticity - some silt - trace fine to coarse sand	BS		●33		

- 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.

TESTHOLE TH4



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 631184.0 m E, 5528969.0 m N

Date Drilled: January 24, 2014
Depth of Testhole: 2.1 m
Logged by: Nestor Abarca
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
0.0 - 0.1		Concrete					
0.1 - 0.8		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS		47		
			BS		35		
0.8 - 1.3		Clay - brown, firm, moist, high plasticity - some silt - some fine to coarse sand	BS		27		
1.3 - 1.6			BS		45		
1.6 - 2.1		Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS		45		
			BS		25		
			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 completion of drilling.
- Testhole terminate at a depth of 2.1 m.

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

Date Drilled: January 24, 2014
Depth of Testhole: 2.1 m
Logged by: Nestor Abarca
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Particle Size Distribution				Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
		Concrete							
		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS						●31
0.5			BS						●29
		Clay - brown, firm, moist, high plasticity - some silt - some fine to coarse sand	BS	0.0	11.5	28.1	60.4		●32
1.0			BS						●35
1.5		Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS						●30
2.0			BS						●24
			BS						●28

- 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.

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

Date Drilled: January 24, 2014
Depth of Testhole: 2.1 m
Logged by: Nestor Abarca
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Particle Size Distribution				● Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
		Concrete							
		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS					28	
			BS					43	
0.5			BS	0.2	18.2	40.7	40.9	33	
		Clayey Silt - tan, firm, moist, medium plasticity - trace fine to medium sand	BS					51	
			BS					33	
1.5		Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS					22	
		Clay - brown, firm, moist, high plasticity - some silt - trace fine to coarse sand	BS					30	
2.0			BS					33	

- 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.

TESTHOLE TH7



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 631181.0 m E, 5528853.0 m N

Date Drilled: January 24, 2014
Depth of Testhole: 2.1 m
Logged by: Nestor Abarca
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
0.0 - 0.1		Concrete					
0.1 - 1.0		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS	●33			
			BS	●26			
			BS	●23			
			BS	●41			
1.0 - 1.4		Clay - brown, firm, moist, high plasticity - some silt - some fine to coarse sand	BS	●41			
1.4 - 2.0		Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS	●22			
			BS	●24			
2.0 - 2.1		Clay - brown, firm, moist, high plasticity - some silt - trace fine to coarse sand	BS	●34			

- 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.

TESTHOLE TH8



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 631180.0 m E, 5528801.0 m N

Date Drilled: January 24, 2014
Depth of Testhole: 2.1 m
Logged by: Nestor Abarca
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Particle Size Distribution				Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
		Asphalt							
		Concrete							
		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS					28	
			BS					32	
0.5			BS					56	
		Clayey Silt - tan, firm, moist, medium plasticity - trace fine to medium sand	BS	0.0	5.9	65.9	28.2	32	
1.0			BS					26	
		Silt - tan, soft, moist, low plasticity - some clay - trace fine to medium sand	BS					23	
1.5			BS					22	
2.0		Clay - brown, firm, moist, high plasticity - some silt - trace fine to coarse sand	BS					41	

- 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.



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



PARTICLE SIZE ANALYSIS ASTM D422

KGS Group Inc.
3rd Floor - 865 Waverley Street
Winnipeg, MB
R3T 5P4

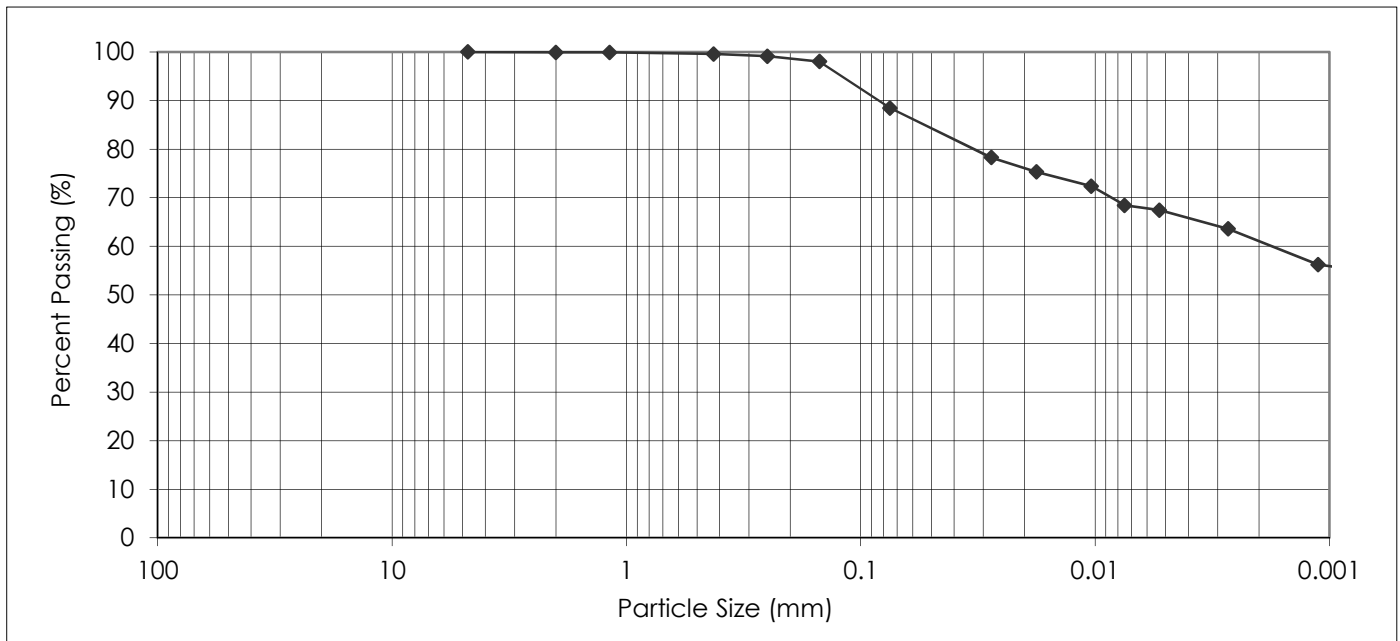
PROJECT: 2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
Ingersoll St & Lipton St Alley
between Sargent Ave & Wellington Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH5 @ 0.9 m

DATE RECEIVED: January 27, 2014
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	100.0
2.00 mm	99.9

PARTICLE SIZE	PERCENT PASSING
1.18 mm	99.9
0.425 mm	99.6
0.250 mm	99.1
0.150 mm	98.0
0.075 mm	88.5
0.005 mm	67.0
0.002 mm	60.4
0.001 mm	55.9

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	0.1	0.3	11.1	28.1	60.4	55.9

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

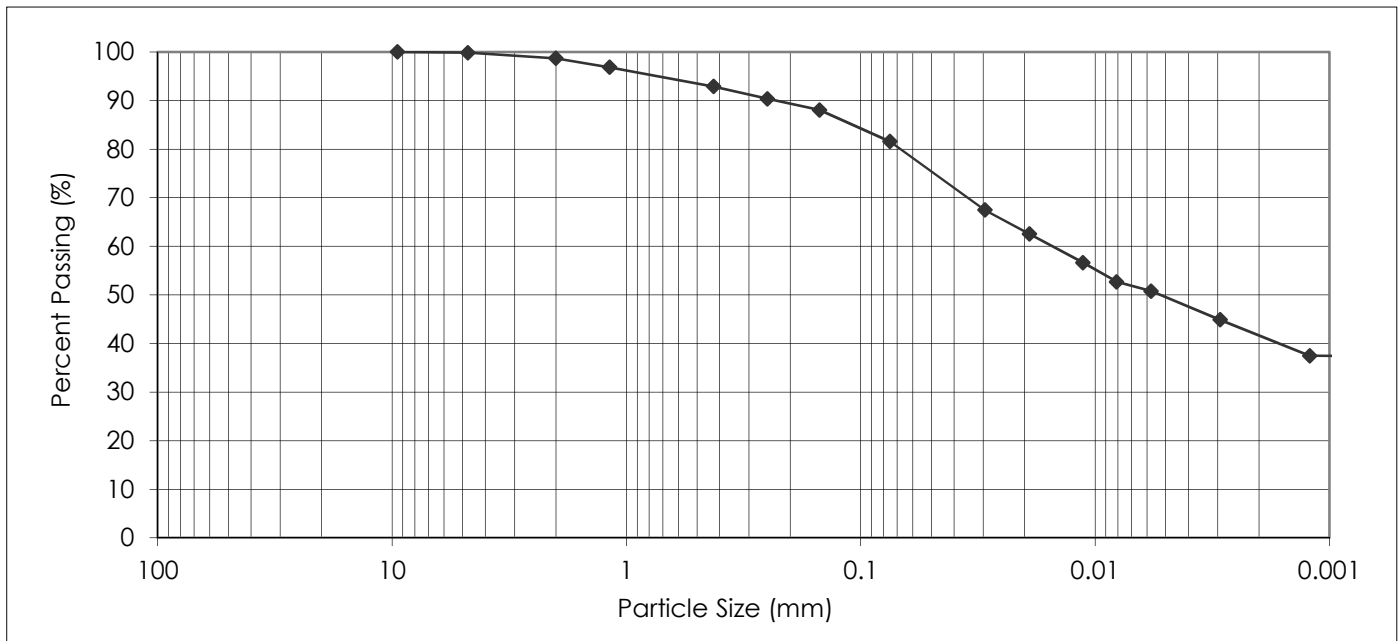
PROJECT: 2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
Ingersoll St & Lipton St Alley
between Sargent Ave & Wellington Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH6 @ 0.6 m

DATE RECEIVED: January 27, 2014
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	99.8
2.00 mm	98.7

PARTICLE SIZE	PERCENT PASSING
1.18 mm	96.8
0.425 mm	92.9
0.250 mm	90.4
0.150 mm	88.1
0.075 mm	81.6
0.005 mm	49.2
0.002 mm	40.9
0.001 mm	37.5

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.2	1.1	5.8	11.3	40.7	40.9	37.5

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

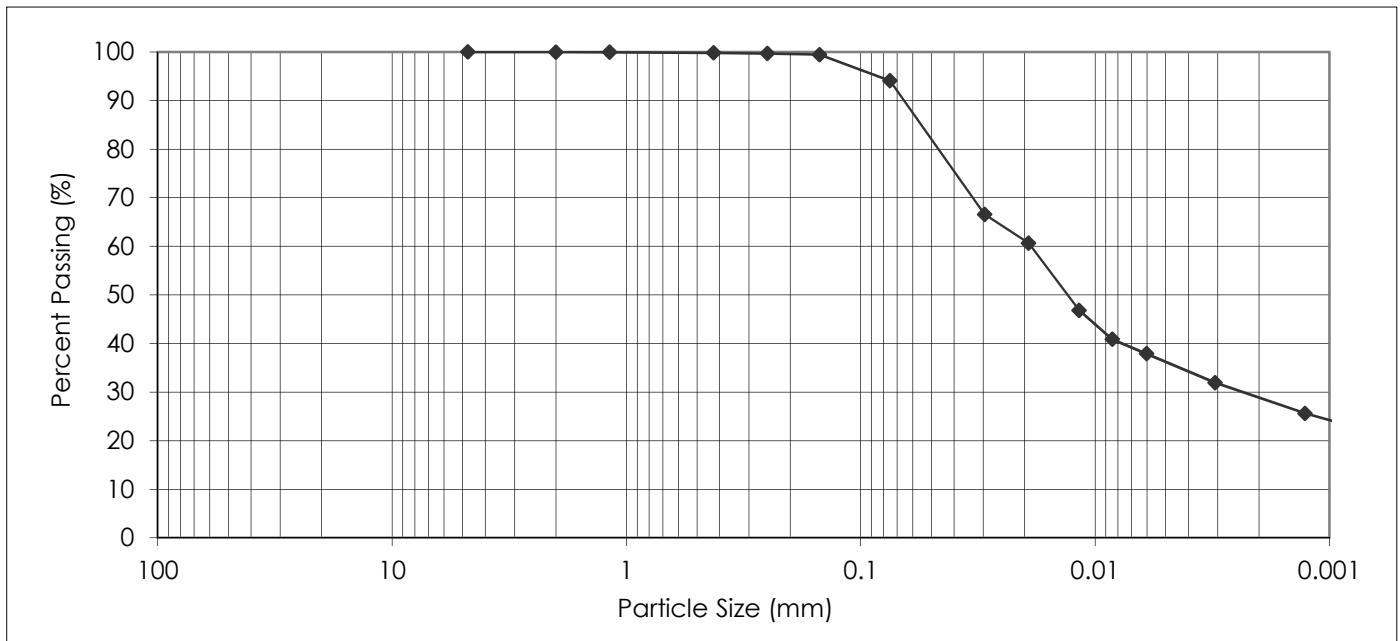
PROJECT: 2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
Ingersoll St & Lipton St Alley
between Sargent Ave & Wellington Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH8 @ 0.9 m

DATE RECEIVED: January 27, 2014
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	100.0
2.00 mm	100.0

PARTICLE SIZE	PERCENT PASSING
1.18 mm	100.0
0.425 mm	99.8
0.250 mm	99.7
0.150 mm	99.5
0.075 mm	94.1
0.005 mm	35.8
0.002 mm	28.2
0.001 mm	24.2

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	0.0	0.2	5.7	65.9	28.2	24.2

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**

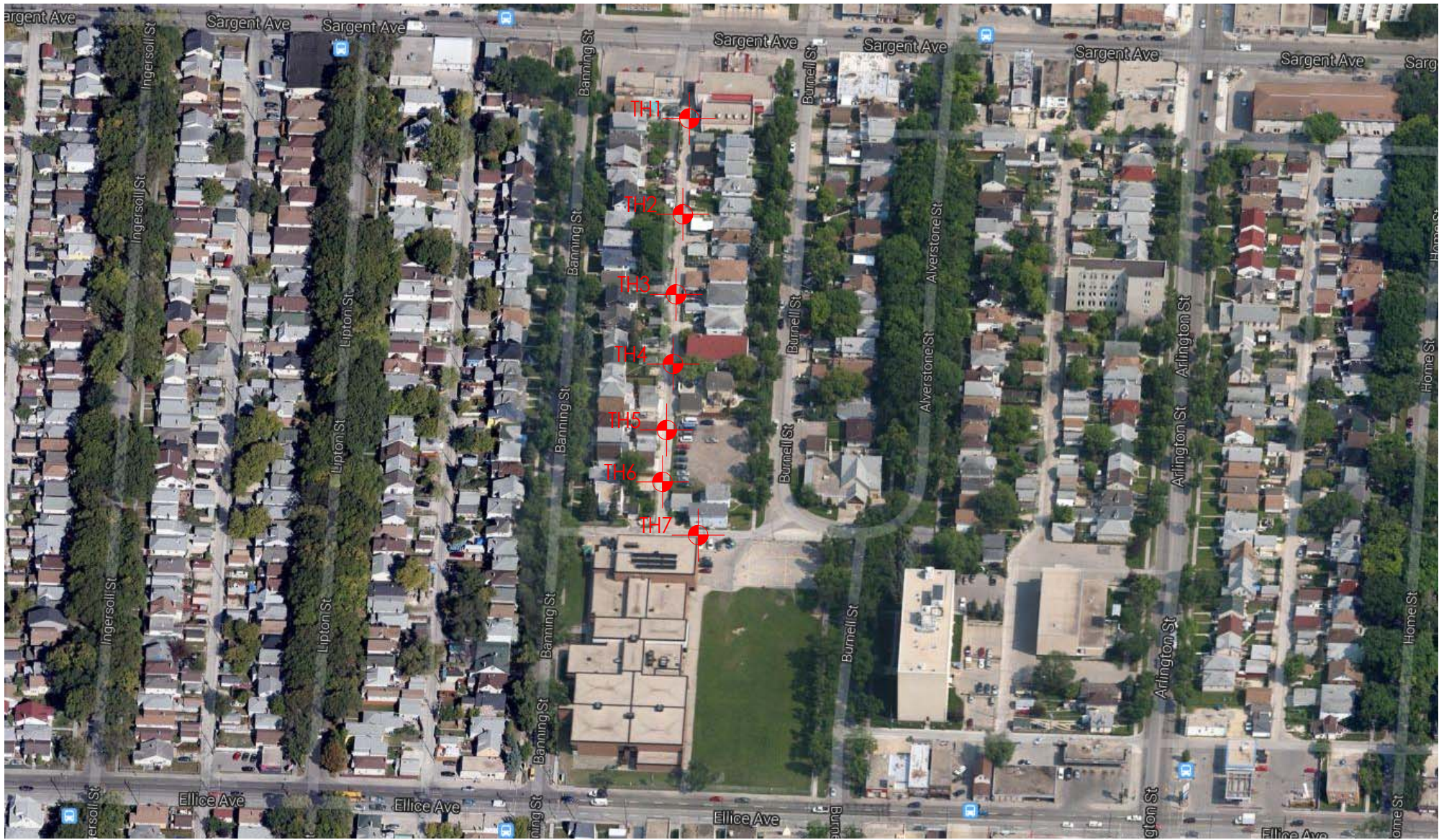
GEOTECHNICAL INVESTIGATION



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



Project No. 123301330

Drawn by: NB

Figure: 1

Date: Feb 25, 2014

Reviewed by: GL

Scale: NTS

Testhole Location Plan
2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
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 Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				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	Particle Size Distribution				● Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
		Concrete							
		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS						15
			BS						28
0.5			BS	0.1	13.3	34.0	52.6		40
		Silty Clay - brown, firm, moist, high plasticity - trace fine to medium sand	BS						33
1.0			BS						33
1.5			BS						30
		Silt - tan, soft, moist, low plasticity - some clay - some fine to coarse sand	BS						25
2.0			BS						21

- 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.

TESTHOLE TH2



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 631338.0 m E, 5528683.0 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	● Water Content (%)			
				25	50	75	100
0.0 - 0.1		Concrete					
0.1 - 1.1		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS	●27			
			BS	●31			
			BS	●35			
			BS	●46			
1.1 - 1.4		Silty Clay - brown, firm, moist, high plasticity - trace fine to medium sand	BS	●30			
1.4 - 2.0		Silt - tan, firm, moist, low plasticity - some clay - some fine to coarse sand	BS	●21			
			BS	●22			
2.0 - 2.1		Clay - brown, stiff, moist, high plasticity - trace silt - trace fine to medium sand	BS	●32			

- 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.

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	Particle Size Distribution				● Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
		Concrete							
0.5		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS						●38
			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		●21
			BS						●26
1.5			BS						●23
			BS						●22
2.0		Clay - brown, stiff, moist, high plasticity - trace silt - trace fine to medium sand	BS						●41

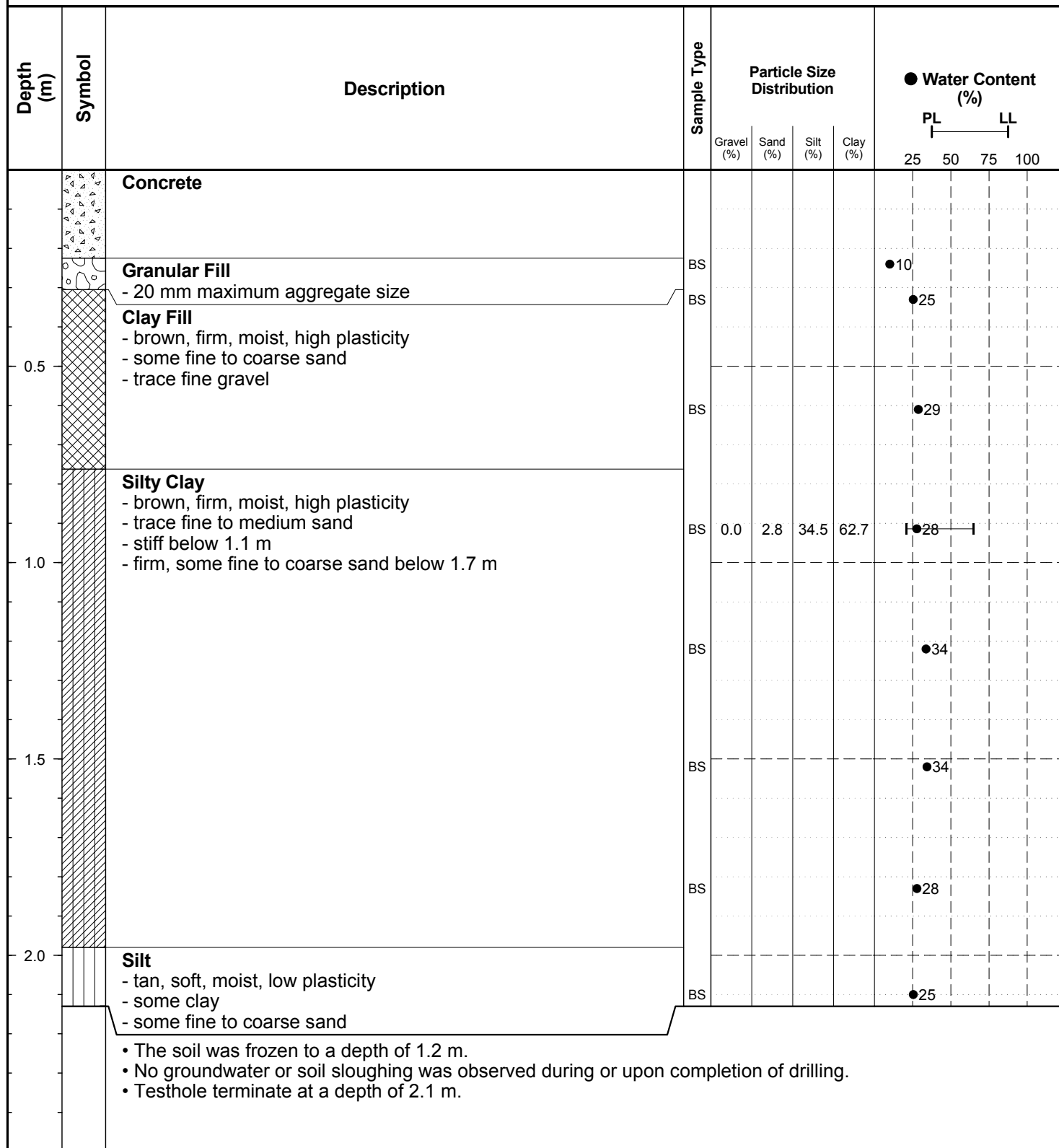
- The soil was frozen to a depth of 1.2 m.
- No groundwater or soil sloughing was observed during or upon completion of drilling.
- Testhole terminate at a depth of 2.1 m.

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



TESTHOLE TH5



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, 5528570.0 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	● Water Content (%)			
				25	50	75	100
0.0 - 0.1		Concrete					
0.1 - 1.2		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS	●15			
			BS	●31			
			BS	●30			
			BS	●28			
1.2 - 1.8		Silty Clay - brown, firm, moist, high plasticity - trace fine to medium sand	BS	●30			
			BS	●31			
1.8 - 2.1		Silt - tan, soft, moist, low plasticity - some clay - some fine to coarse sand	BS	●22			
			BS	●24			
<ul style="list-style-type: none"> • 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. 							

TESTHOLE TH6



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 631336.0 m E, 5528543.0 m N

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

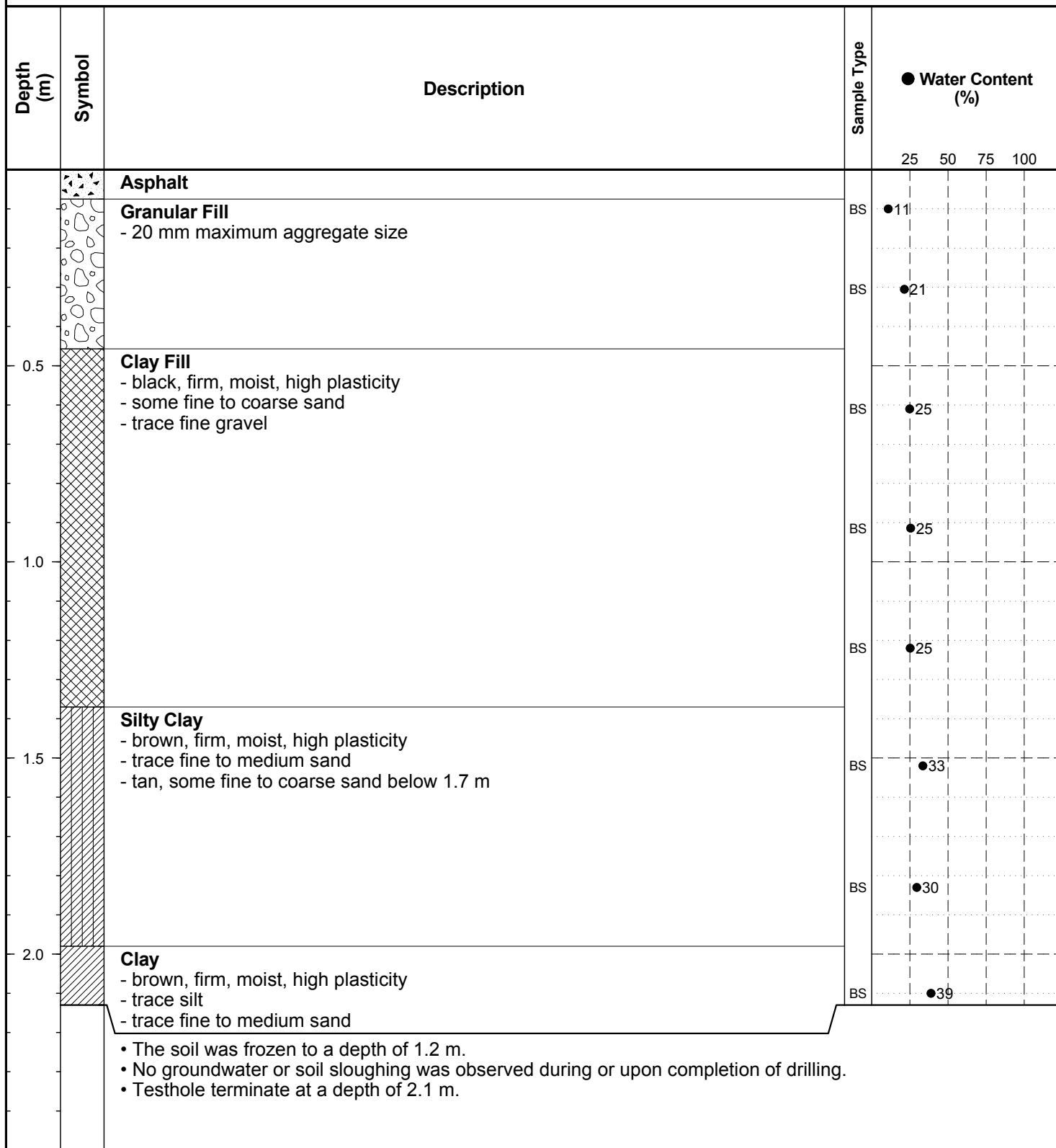
Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
		Concrete					
0.5		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS		●38		
1.0		Silt - tan, firm, moist, low plasticity - some clay - some fine to coarse sand	BS		●47		
1.5		Clay - brown, firm, moist, high plasticity - some silt - trace fine to medium sand - stiff, trace silt below 1.7 m	BS		●36		
2.0			BS		●24		
			BS		●31		
			BS		●39		
			BS		●43		
<ul style="list-style-type: none"> • 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. 							

TESTHOLE TH7



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 631350.0 m E, 5528518.0 m N

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





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

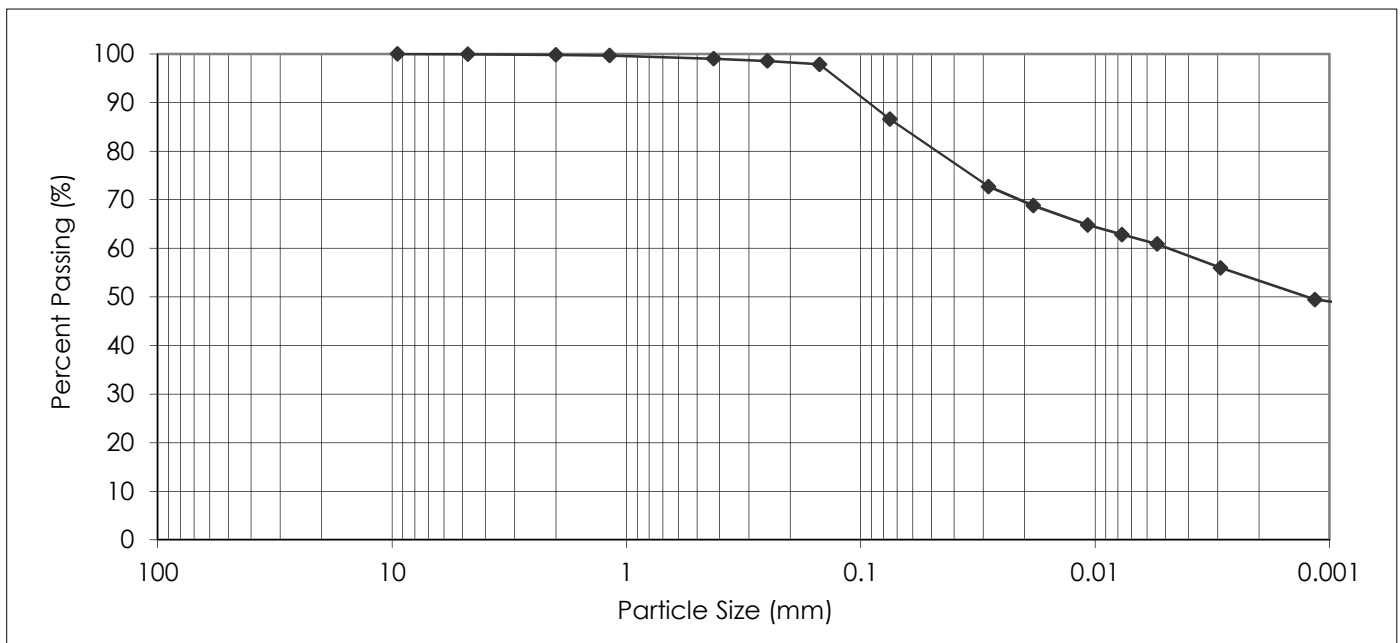
PROJECT: 2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
Banning St & Burnell St Alley
between Ellice Ave & Sargent Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH1 @ 0.6 m

DATE RECEIVED: January 29, 2014
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING	PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0	1.18 mm	99.7
25.00 mm	100.0	0.425 mm	99.0
19.00 mm	100.0	0.250 mm	98.6
16.00 mm	100.0	0.150 mm	97.9
12.50 mm	100.0	0.075 mm	86.6
9.50 mm	100.0	0.005 mm	60.1
4.75 mm	99.9	0.002 mm	52.6
2.00 mm	99.8	0.001 mm	49.0

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.1	0.1	0.8	12.4	34.0	52.6	49.0

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

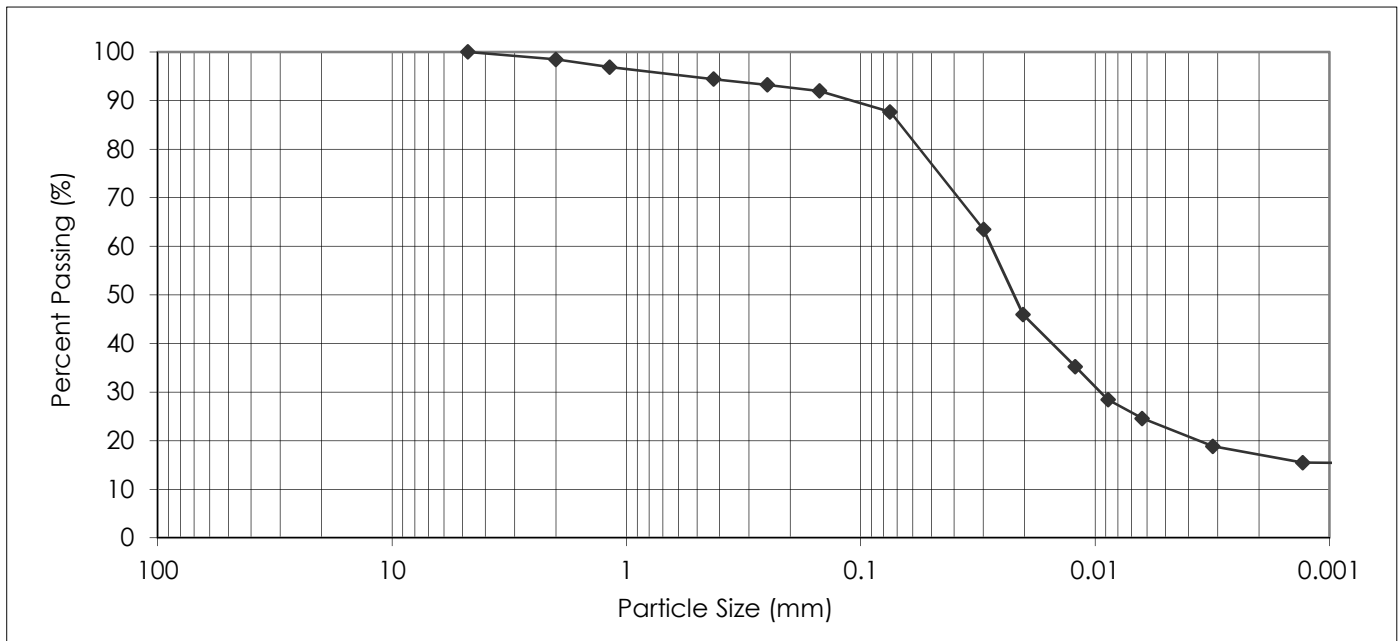
PROJECT: 2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
Banning St & Burnell St Alley
between Ellice Ave & Sargent Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH3 @ 0.9 m

DATE RECEIVED: January 29, 2014
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	100.0
2.00 mm	98.5

PARTICLE SIZE	PERCENT PASSING
1.18 mm	96.9
0.425 mm	94.4
0.250 mm	93.2
0.150 mm	92.0
0.075 mm	87.7
0.005 mm	22.2
0.002 mm	16.8
0.001 mm	15.5

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	1.5	4.1	6.7	70.9	16.8	15.5

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

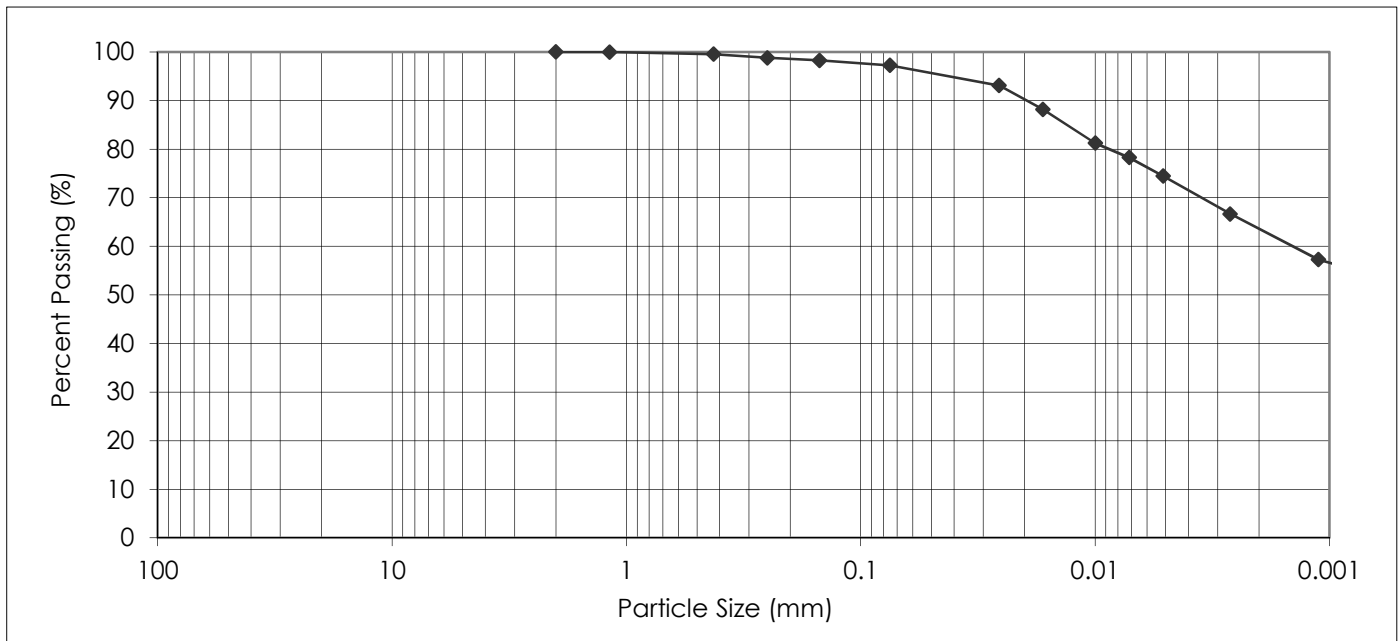
PROJECT: 2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
Banning St & Burnell St Alley
between Ellice Ave & Sargent Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH4 @ 0.9 m

DATE RECEIVED: January 29, 2014
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING	PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0	1.18 mm	100.0
25.00 mm	100.0	0.425 mm	99.6
19.00 mm	100.0	0.250 mm	98.8
16.00 mm	100.0	0.150 mm	98.3
12.50 mm	100.0	0.075 mm	97.2
9.50 mm	100.0	0.005 mm	74.1
4.75 mm	100.0	0.002 mm	62.7
2.00 mm	100.0	0.001 mm	56.6

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	0.0	0.4	2.4	34.5	62.7	56.6

February 19, 2014

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

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

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

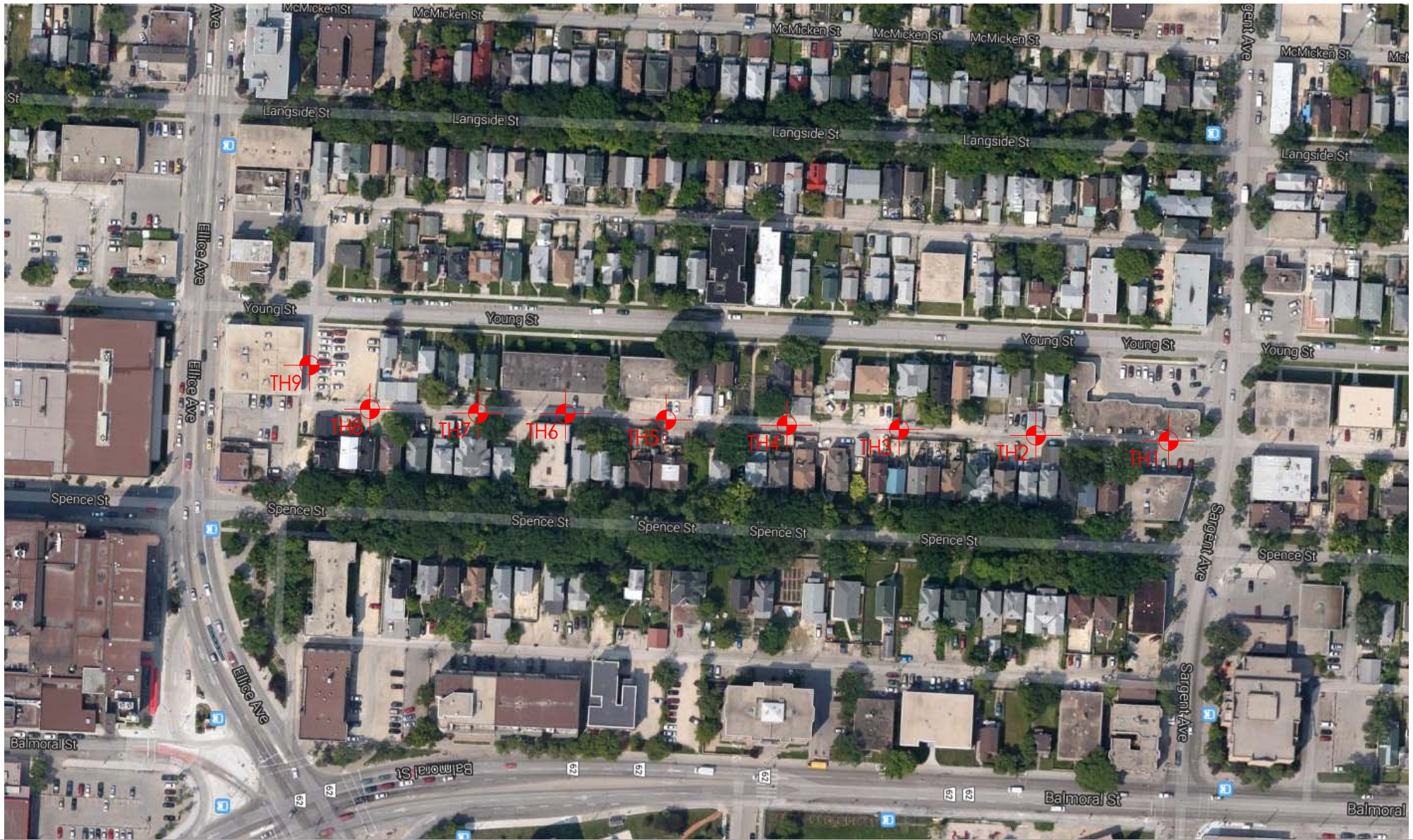
GEOTECHNICAL INVESTIGATION



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



Project No. 123301330

Drawn by: NB

Figure: 1

Testhole Location Plan
 2014 City of Winnipeg Alley Package
 Contract 2 (14-RL-02)
 Young St & Spence St Alley between
 Ellice Ave & Sargent Ave

Date: Feb 27, 2014

Reviewed by: GL

Scale: NTS

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 ID	Testhole Location	Pavement Surface		Pavement Structure Material		Sample Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				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
		Concrete	165												
TH2	UTM Coordinates: 14U 632561 m East, 5528670 m North	Concrete	190	Granular Fill	115	-	-	-	-	-	-	-	-	-	-
TH3	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
		Concrete	225												
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	-	-	-	-	-	-	-	-	-	-	-	-
		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	-	-	-	-	-	-	-	-	-	-
		Concrete	255												

TESTHOLE TH1



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Project Location: Young and Spence 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 632563.0 m E, 5528721.0 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	Particle Size Distribution				Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
		Asphalt							
		Concrete							
		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS						24
			BS						34
0.5			BS						34
		Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand - trace fine gravel	BS						32
1.0			BS	1.0	9.1	75.3	14.6		23
		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS						26
1.5			BS						
		Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand - trace fine gravel	BS						22
2.0			BS						23

- 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.

TESTHOLE TH2



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Project Location: Young and Spence 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 632561.0 m E, 5528670.0 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	● Water Content (%)			
				25	50	75	100
		Concrete					
		Granular Fill - 20 mm maximum aggregate size	BS	●8			
		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS	●27			
0.5			BS			●31	
1.0			BS			●31	
		Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand - trace fine gravel	BS			●26	
1.5			BS			●24	
		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS			●29	
2.0			BS				●42

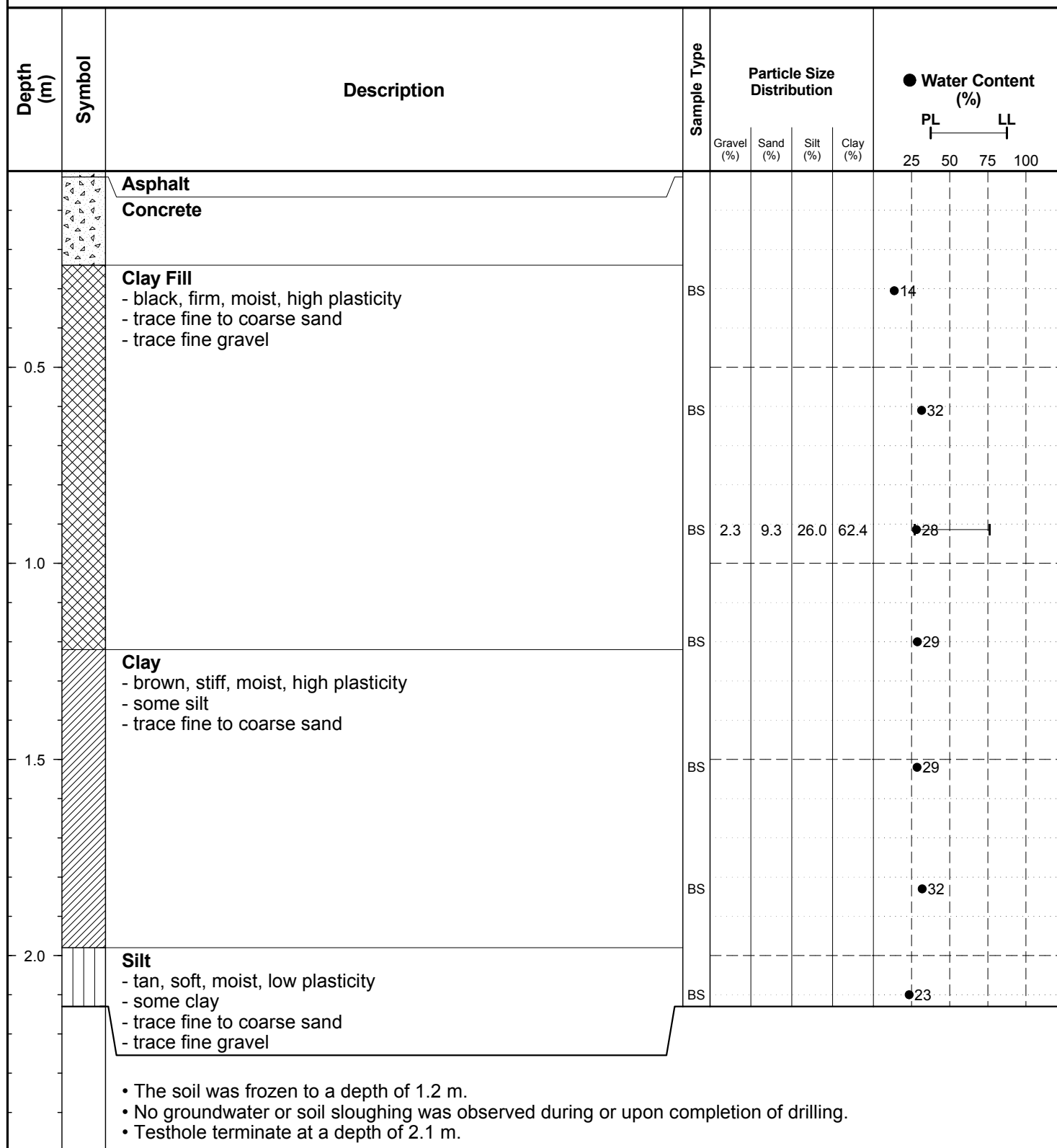
- The soil was frozen to a depth of 1.2 m.
- No groundwater or soil sloughing was observed during or upon completion of drilling.
- Testhole terminate at a depth of 2.1 m.

TESTHOLE TH4



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Project Location: Young and Spence 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 632559.0 m E, 5528574.0 m N

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



- 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.

TESTHOLE TH5



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Project Location: Young and Spence 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 632558.0 m E, 5528528.0 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	● Water Content (%)			
				25	50	75	100
0.0 - 0.1		Asphalt					
0.1 - 0.2		Concrete					
0.2 - 1.5		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS	●26			
			BS	●29			
			BS	●35			
			BS	●35			
1.5 - 2.1		Clay - black, firm, moist, high plasticity - some organic material - some silt - trace fine to coarse sand	BS	●46			
			BS	●39			
			BS	●41			
<ul style="list-style-type: none"> • 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. 							

TESTHOLE TH6



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Project Location: Young and Spence 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 632557.0 m E, 5528489.0 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	● Water Content (%)			
				25	50	75	100
		Concrete					
0.5		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS	●13			
1.0		Clay - brown, firm, moist, high plasticity - some silt - trace fine to coarse sand	BS	●25			
1.5		Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand - trace fine gravel	BS	●28			
2.0		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS	●41			
			BS	●20			
			BS	●31			
			BS	●32			
<ul style="list-style-type: none"> • 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. 							

TESTHOLE TH7



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Project Location: Young and Spence 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 632557.0 m E, 5528454.0 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	● Water Content (%)			
				25	50	75	100
		Asphalt					
		Concrete					
0.5		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS		●26		
			BS		●30		
1.0			BS		●45		
			BS		●27		
1.5		Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand - trace fine gravel	BS		●21		
2.0		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS		●26		
			BS		●38		
<ul style="list-style-type: none"> • 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. 							

TESTHOLE TH8



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Project Location: Young and Spence 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 632556.0 m E, 5528412.0 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	● Water Content (%)			
				25	50	75	100
		Concrete					
0.5		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS		●27		
			BS		●32		
1.0			BS		●43		
1.5		Clay - black, firm, moist, high plasticity - some organic material - some silt - trace fine to coarse sand - brown, stiff below 1.7 m	BS		●36		
			BS		●27		
2.0			BS		●32		
			BS		●34		

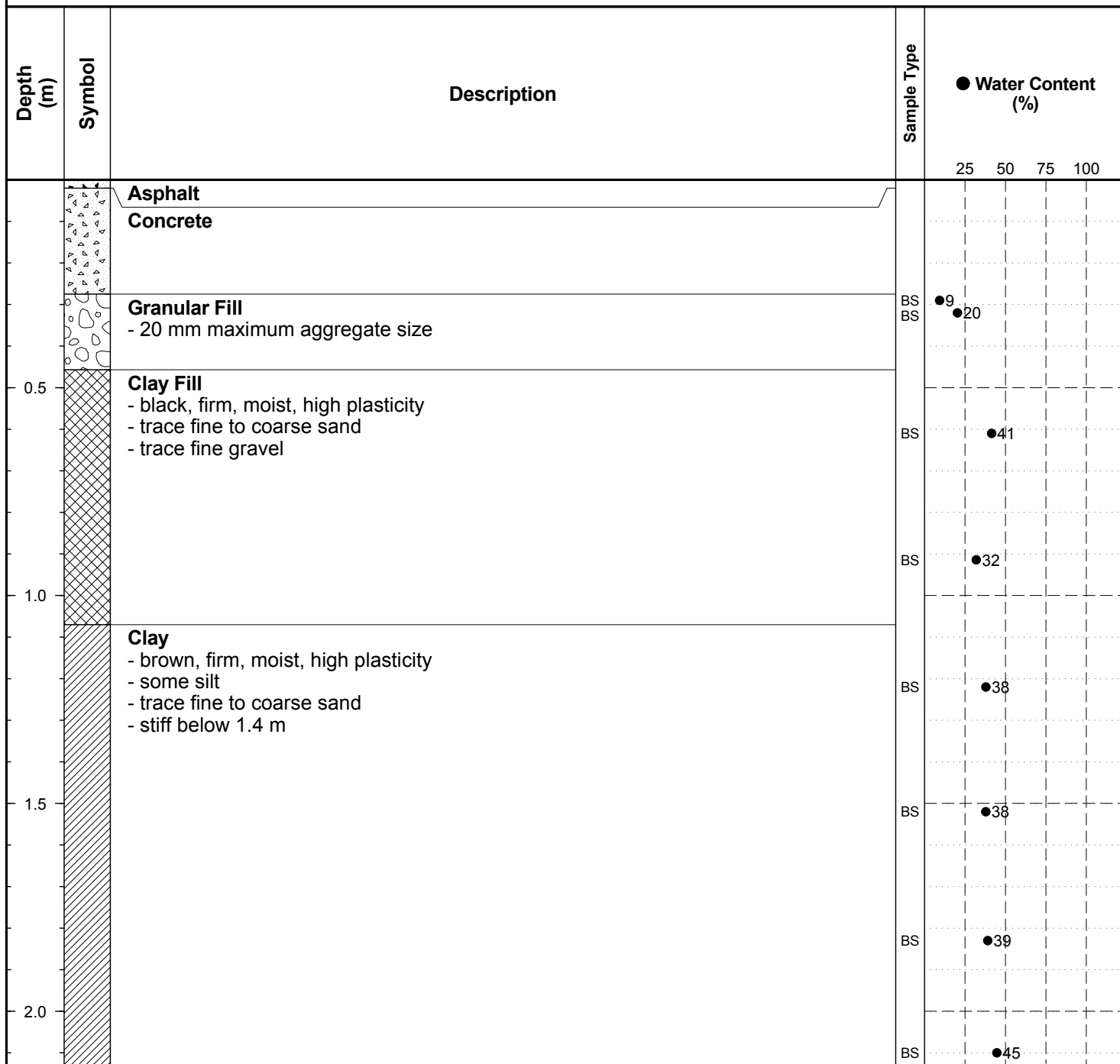
- The soil was frozen to a depth of 1.2 m.
- No groundwater or soil sloughing was observed during or upon completion of drilling.
- Testhole terminate at a depth of 2.1 m.

TESTHOLE TH9



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Project Location: Young and Spence 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 632539.0 m E, 5528389.0 m N

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



- 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.



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



PARTICLE SIZE ANALYSIS ASTM D422

KGS Group Inc.
3rd Floor - 865 Waverley Street
Winnipeg, MB
R3T 5P4

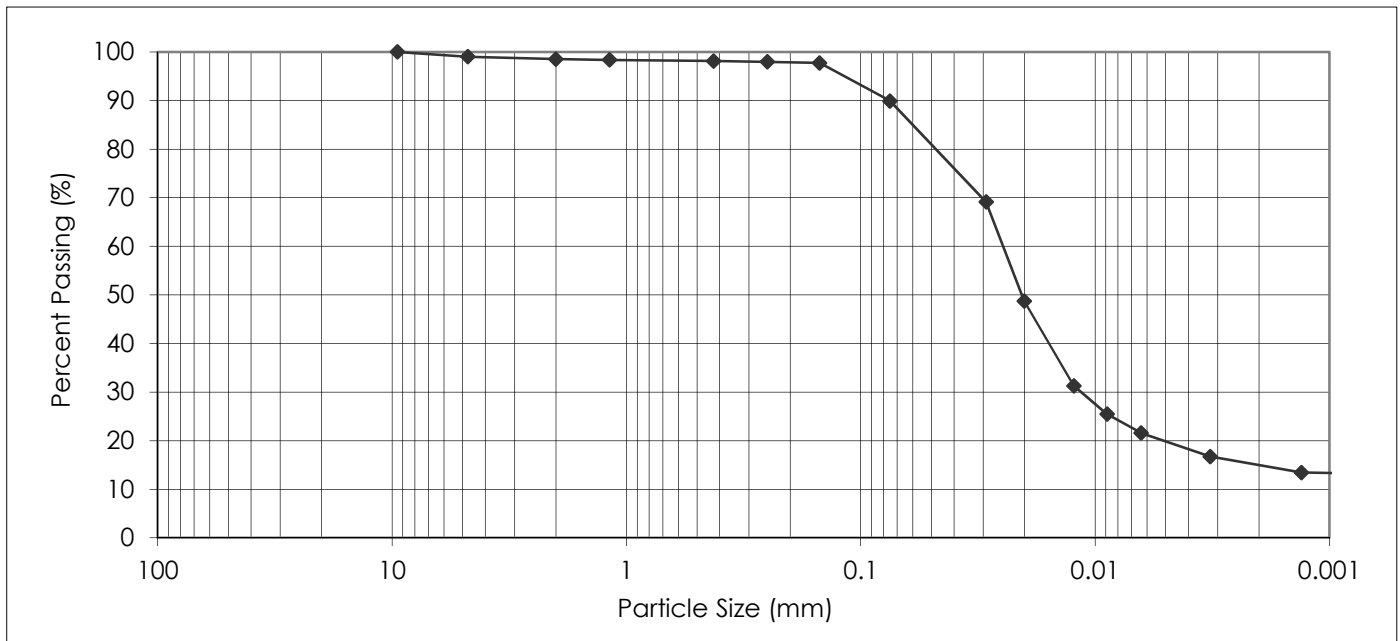
PROJECT: 2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
Young St & Spence St Alley
between Ellice Ave & Sargent Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH1 @ 1.2 m

DATE RECEIVED: January 27, 2014
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	99.0
2.00 mm	98.5

PARTICLE SIZE	PERCENT PASSING
1.18 mm	98.4
0.425 mm	98.1
0.250 mm	98.0
0.150 mm	97.8
0.075 mm	89.9
0.005 mm	19.5
0.002 mm	14.6
0.001 mm	13.4

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
1.0	0.5	0.4	8.2	75.3	14.6	13.4

February 19, 2014

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



PARTICLE SIZE ANALYSIS ASTM D422

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Winnipeg, MB
R3T 5P4

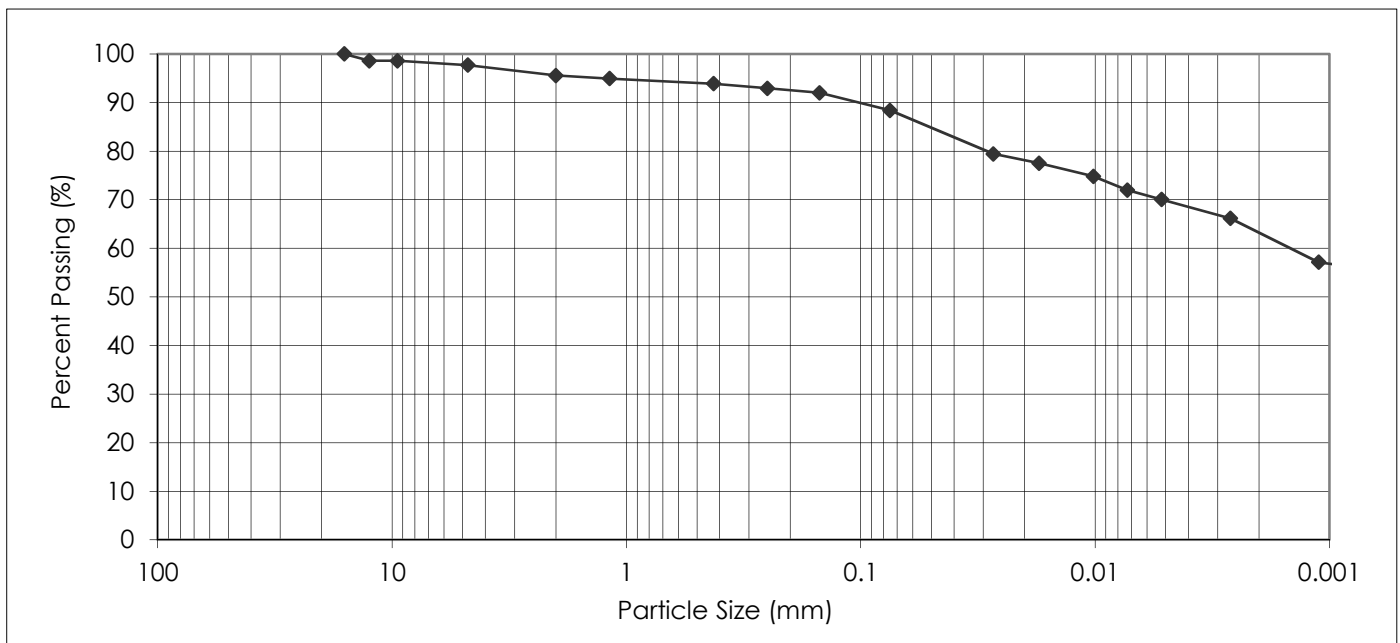
PROJECT: 2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
Young St & Spence St Alley
between Ellice Ave & Sargent Ave

Attention: Craig Rowbotham

PROJECT NO.: 123301330

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH4 @ 0.9 m

DATE RECEIVED: January 29, 2014
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING	PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0	1.18 mm	95.0
25.00 mm	100.0	0.425 mm	93.9
19.00 mm	100.0	0.250 mm	92.9
16.00 mm	100.0	0.150 mm	92.0
12.50 mm	98.6	0.075 mm	88.4
9.50 mm	98.6	0.005 mm	69.7
4.75 mm	97.7	0.002 mm	62.4
2.00 mm	95.6	0.001 mm	56.8

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
2.3	2.1	1.7	5.5	26.0	62.4	56.8

February 19, 2014

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

**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



Project No. 123301330

Drawn by: NB

Figure: 1

Testhole Location Plan
2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
Jefferson Ave North Alley between
Powers St & Salter St

Date: Feb 25, 2014

Reviewed by: GL

Scale: NTS

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	Pavement Surface		Pavement Structure Material		Sample Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				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
TH3	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



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 634406.0 m E, 5533261.0 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	● Water Content (%)			
				25	50	75	100
		Concrete					
		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS		●44		
0.5			BS		●33		
		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS		●40		
1.0			BS		●34		
		Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand	BS		●33		
1.5			BS		●34		
2.0		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS		●22		
			BS		●36		
<ul style="list-style-type: none"> 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. 							

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	Sample Type	Particle Size Distribution				● Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
		Asphalt							
		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS					●32	
0.5			BS					●37	
		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS					●38	
1.0			BS	0.0	4.4	25.2	70.4	●41	
		Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand	BS					●35	
1.5			BS					●22	
			BS					●22	
2.0			BS					●21	

- 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.

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	Particle Size Distribution				Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
		Concrete							
		Clay Fill - black, firm, moist, high plasticity - some fine to coarse sand - trace fine gravel	BS						37
0.5			BS						24
			BS	1.4	14.2	23.8	60.6		37
		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS						41
1.0			BS						40
1.5		Silt - tan, soft, moist, low plasticity - some clay - trace fine to coarse sand	BS						19
			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 completion of drilling.
- 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: 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

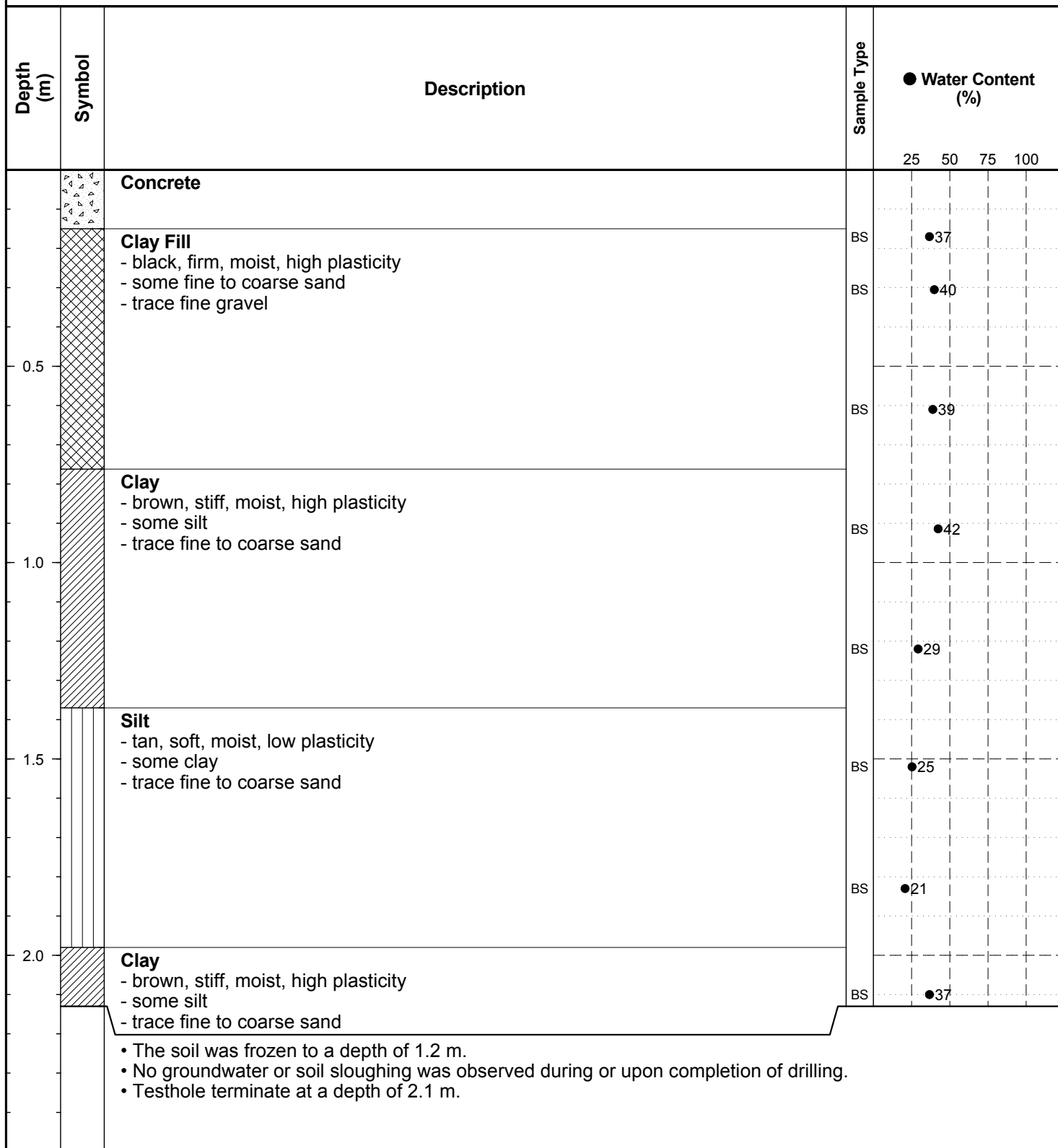
UTM Coordinates: 14U 634523.0 m E, 5533208.0 m N

Date Drilled: January 28, 2014

Depth of Testhole: 2.1 m

Logged by: Nestor Abarca

Reviewed by: German Leal





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

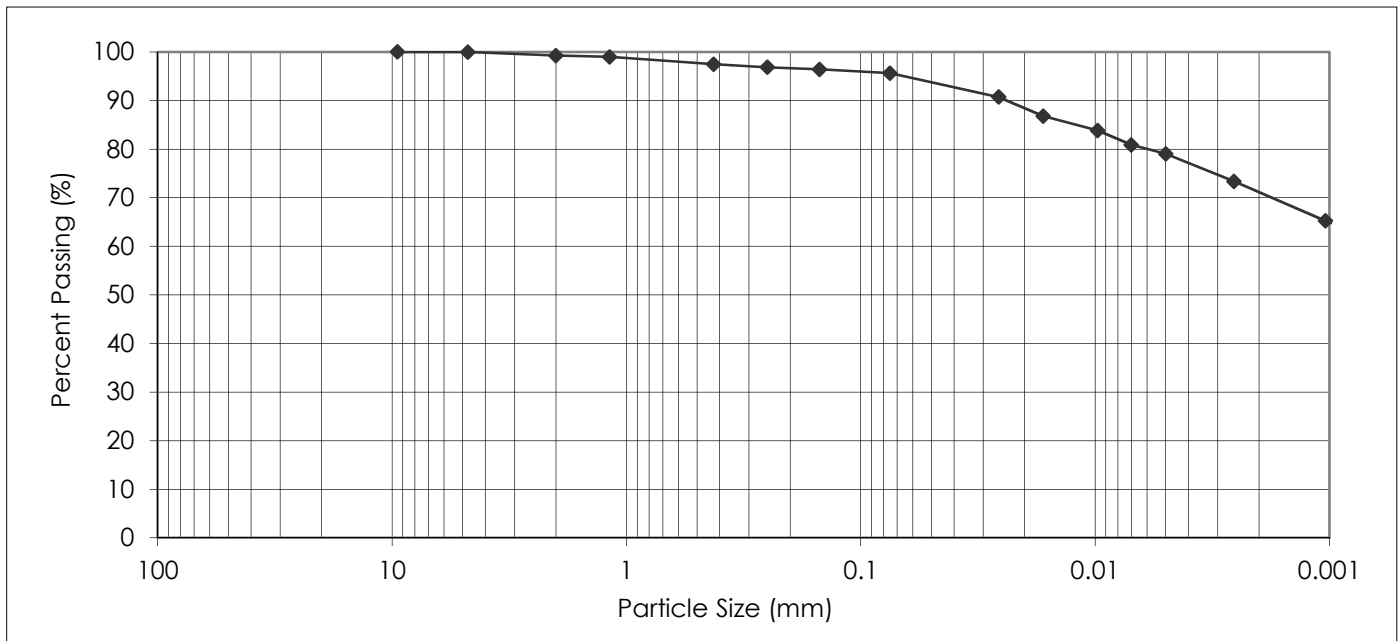
PROJECT: 2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
Jefferson Ave North Alley
between Powers St & Salter St

Attention: Craig Rowbotham

PROJECT NO.: 123301330

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH2 @ 0.9 m

DATE RECEIVED: January 29, 2014
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	100.0
2.00 mm	99.3

PARTICLE SIZE	PERCENT PASSING
1.18 mm	99.0
0.425 mm	97.5
0.250 mm	96.8
0.150 mm	96.4
0.075 mm	95.6
0.005 mm	79.1
0.002 mm	70.4
0.001 mm	64.9

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.0	0.7	1.8	1.9	25.2	70.4	64.9

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

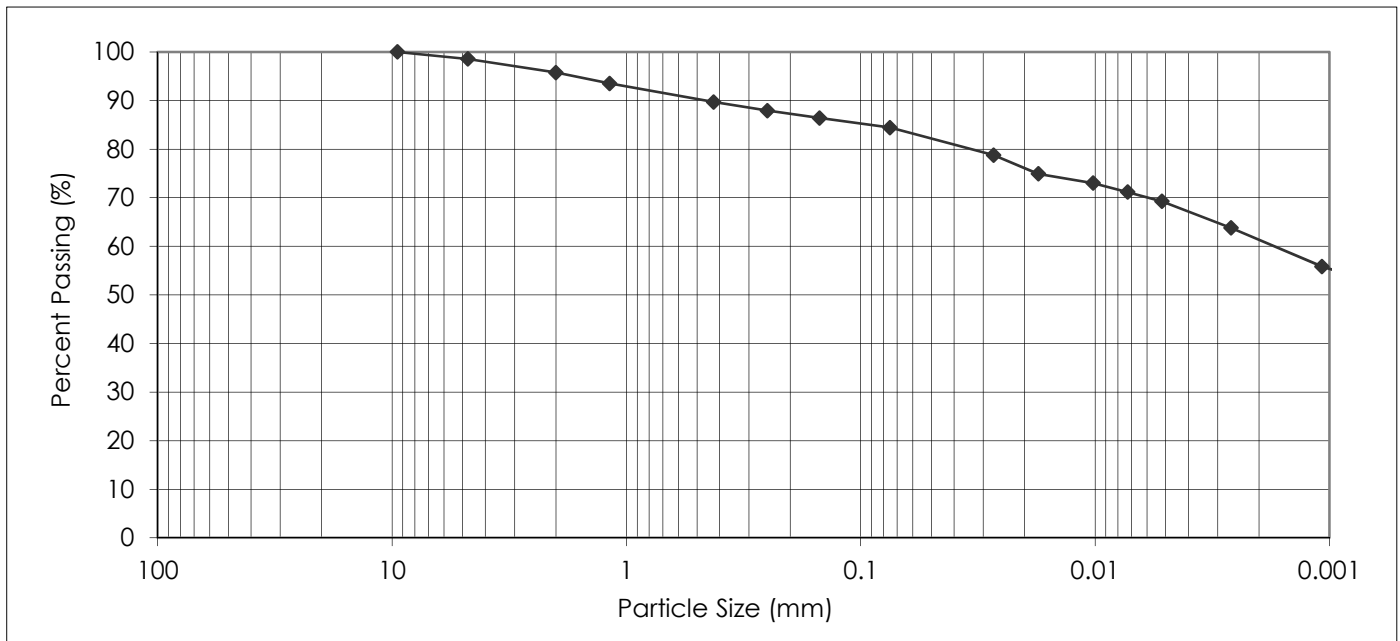
PROJECT: 2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
Jefferson Ave North Alley
between Powers St & Salter St

Attention: Craig Rowbotham

PROJECT NO.: 123301330

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH3 @ 0.6 m

DATE RECEIVED: January 29, 2014
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	98.6
2.00 mm	95.8

PARTICLE SIZE	PERCENT PASSING
1.18 mm	93.5
0.425 mm	89.7
0.250 mm	87.9
0.150 mm	86.4
0.075 mm	84.4
0.005 mm	68.9
0.002 mm	60.6
0.001 mm	55.3

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
1.4	2.8	6.1	5.3	23.8	60.6	55.3

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**

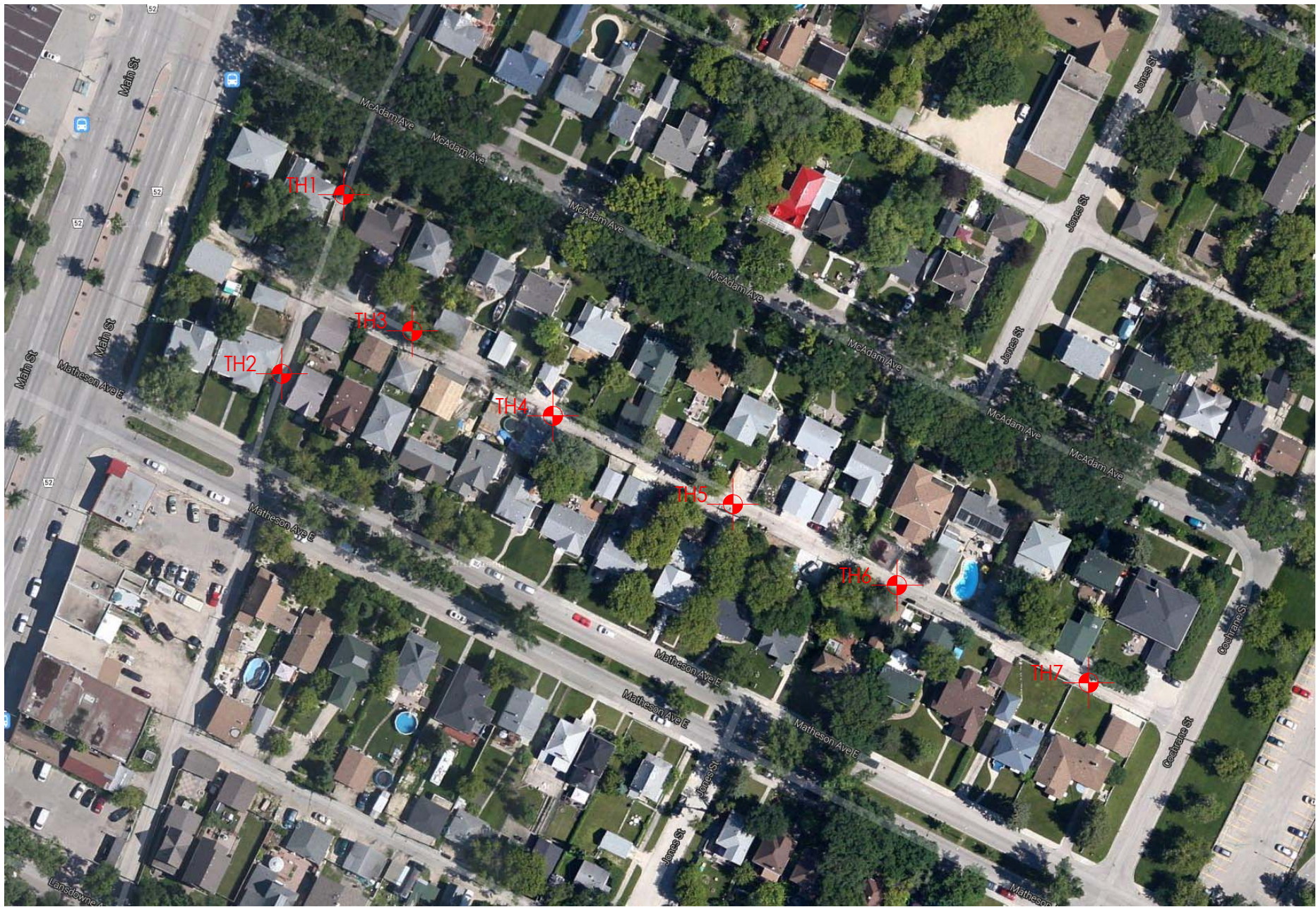
GEOTECHNICAL INVESTIGATION



Prepared for:
KGS Group Inc.
3rd Floor – 865 Waverley Street
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March 12, 2014
Project No. 123301330



Project No. 123301330

Drawn by: NB

Figure: 1

Testhole Location Plan
2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
Matheson Ave E & McAdam Ave Alley
between Main St & Cochrane St

Date: Feb 26, 2014

Reviewed by: GL

Scale: NTS

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	Pavement Surface		Pavement Structure Material		Sample Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	UTM Coordinates: 14U 634777 m East, 5532497 m North	Asphalt	85	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	100												
TH2	UTM Coordinates: 14U 634763 m East, 5532457 m North	Asphalt	25	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	155												
TH3	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
		Concrete	155												
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



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Project Location: Matheson and McAdam Alley from Main to Cochrane
Client: KGS Group Inc.
Drilling Contractor: Active Drilling and Piling
Drilling Method: 100 mm Solid Stem Auger
UTM Coordinates: 14U 634777.0 m E, 5532497.0 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	● Water Content (%)			
				25	50	75	100
0.0 - 0.05		Asphalt					
0.05 - 0.1		Concrete					
0.1 - 1.0		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS	●29			
0.5 - 0.6			BS	●30			
0.6 - 0.9			BS	●26			
0.9 - 1.3		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS	●25			
1.3 - 1.9		Silt - tan, soft, moist, low plasticity - trace fine to medium sand - trace clay	BS	●25			
1.9 - 2.1		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS	●20			
2.0 - 2.1			BS	●30			

- 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.

TESTHOLE TH2



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Project Location: Matheson and McAdam Alley from Main to Cochrane
Client: KGS Group Inc.
Drilling Contractor: Active Drilling and Piling
Drilling Method: 100 mm Solid Stem Auger
UTM Coordinates: 14U 634763.0 m E, 5532457.0 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	● Water Content (%)			
				25	50	75	100
0.0 - 0.1		Asphalt					
0.1 - 0.2		Concrete					
0.2 - 1.1		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS		●36		
0.5			BS		●36		
1.0			BS		●22		
1.1 - 1.6		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS		●32		
1.5			BS		●27		
1.6 - 2.1		Silt - tan, soft, moist, low plasticity - trace fine to medium sand - trace clay	BS		●22		
2.0			BS		●23		

- 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.

TESTHOLE TH3



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Project Location: Matheson and McAdam Alley from Main to Cochrane
Client: KGS Group Inc.
Drilling Contractor: Active Drilling and Piling
Drilling Method: 100 mm Solid Stem Auger
UTM Coordinates: 14U 634793.0 m E, 5532463.0 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	● Water Content (%)			
				25	50	75	100
		Concrete					
		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS		●32		
0.5			BS		●27		
			BS		●26		
1.0			BS		●25		
		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS		●28		
1.5			BS		●24		
		Silt - tan, soft, moist, low plasticity - trace fine to medium sand - trace clay	BS		●22		
2.0			BS		●24		

- 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.

TESTHOLE TH4



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Project Location: Matheson and McAdam Alley from Main to Cochrane
Client: KGS Group Inc.
Drilling Contractor: Active Drilling and Piling
Drilling Method: 100 mm Solid Stem Auger
UTM Coordinates: 14U 634830.0 m E, 5532444.0 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	● Water Content (%)			
				25	50	75	100
		Concrete					
0.5		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS		●32		
			BS		●34		
1.0			BS		●35		
		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		●21		
2.0			BS		●21		

- 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.

TESTHOLE TH5



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Project Location: Matheson and McAdam Alley from Main to Cochrane
Client: KGS Group Inc.
Drilling Contractor: Active Drilling and Piling
Drilling Method: 100 mm Solid Stem Auger
UTM Coordinates: 14U 634875.0 m E, 5532424.0 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	Particle Size Distribution				Water Content (%)	
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL
		Asphalt							
		Concrete							
		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	34	
1.0			BS					18	
		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS					25	
1.5			BS					23	
			BS					28	
2.0			BS					26	

- 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.

TESTHOLE TH6



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Project Location: Matheson and McAdam Alley from Main to Cochrane
Client: KGS Group Inc.
Drilling Contractor: Active Drilling and Piling
Drilling Method: 100 mm Solid Stem Auger
UTM Coordinates: 14U 634916.0 m E, 5532405.0 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	● Water Content (%)			
				25	50	75	100
0.0 - 0.1		Concrete					
0.1 - 1.2		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS	●25			
0.5			BS	●36			
1.0			BS	●37			
1.2 - 2.1		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS	●35			
1.5			BS	●36			
2.0			BS	●31			
2.1			BS	●34			
<ul style="list-style-type: none"> • 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. 							

TESTHOLE TH7



Project Name: 2014 City of Winnipeg Alley Package Contract 2 (14-RL-02)
Project Location: Matheson and McAdam Alley from Main to Cochrane
Client: KGS Group Inc.
Drilling Contractor: Active Drilling and Piling
Drilling Method: 100 mm Solid Stem Auger
UTM Coordinates: 14U 634964.0 m E, 5532382.0 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	● Water Content (%)			
				25	50	75	100
		Concrete					
		Clay Fill - black, firm, moist, high plasticity - trace fine to coarse sand - trace fine gravel	BS	●27			
0.5			BS	●30			
		Clay - brown, stiff, moist, high plasticity - some silt - trace fine to coarse sand	BS	●31			
1.0			BS	●31			
		Silt - tan, soft, moist, low plasticity - trace fine to medium sand - trace clay	BS	●29			
1.5			BS	●28			
			BS	●24			
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 completion of drilling.
- 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



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
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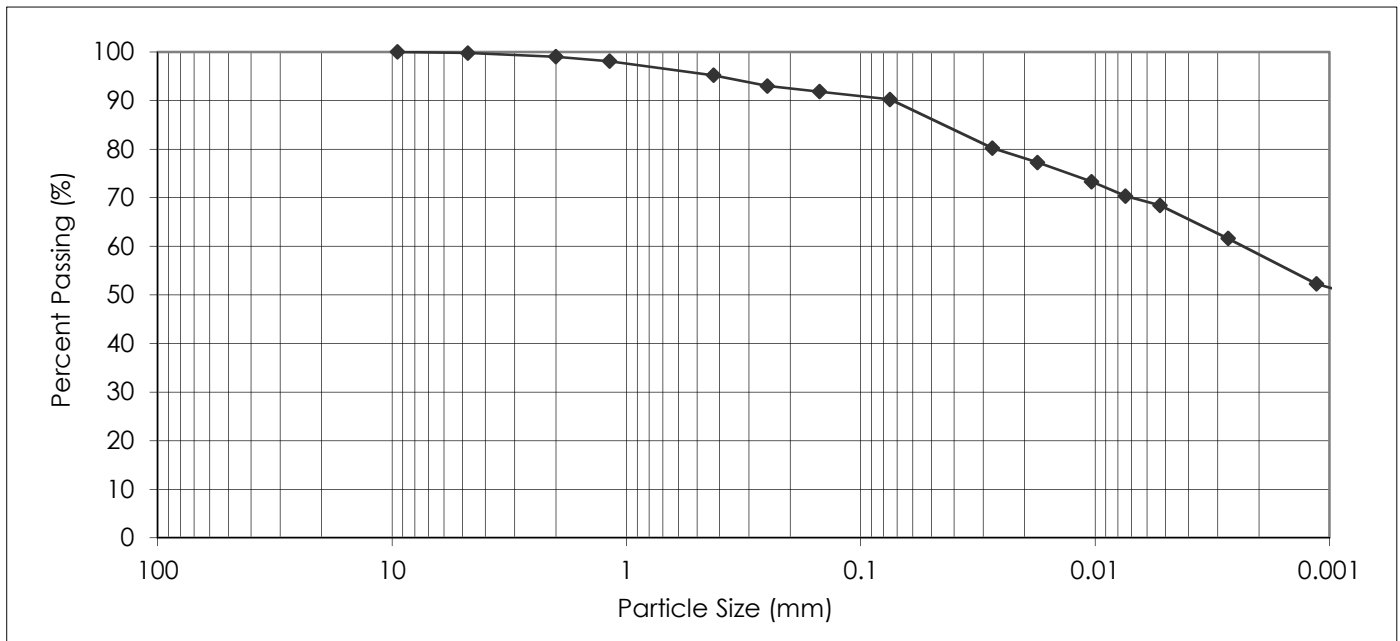
PROJECT: 2014 City of Winnipeg Alley Package
Contract 2 (14-RL-02)
Matheson Ave E & McAdam Ave Alley
between Main St and Cochrane St

Attention: Craig Rowbotham

PROJECT NO.: 123301330

SAMPLED BY: Nestor Abarca
SAMPLE ID: TH5 @ 0.6 m

DATE RECEIVED: January 27, 2014
TESTED BY: Nestor Abarca



PARTICLE SIZE	PERCENT PASSING
37.50 mm	100.0
25.00 mm	100.0
19.00 mm	100.0
16.00 mm	100.0
12.50 mm	100.0
9.50 mm	100.0
4.75 mm	99.8
2.00 mm	99.0

PARTICLE SIZE	PERCENT PASSING
1.18 mm	98.1
0.425 mm	95.2
0.250 mm	93.0
0.150 mm	91.8
0.075 mm	90.2
0.005 mm	67.7
0.002 mm	57.4
0.001 mm	51.4

Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm
	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm			
0.2	0.8	3.8	5.0	32.8	57.4	51.4

February 19, 2014

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