

APPENDIX 'A'

GEOTECHNICAL REPORT

APPENDIX 'A' - GEOTECHNICAL REPORT

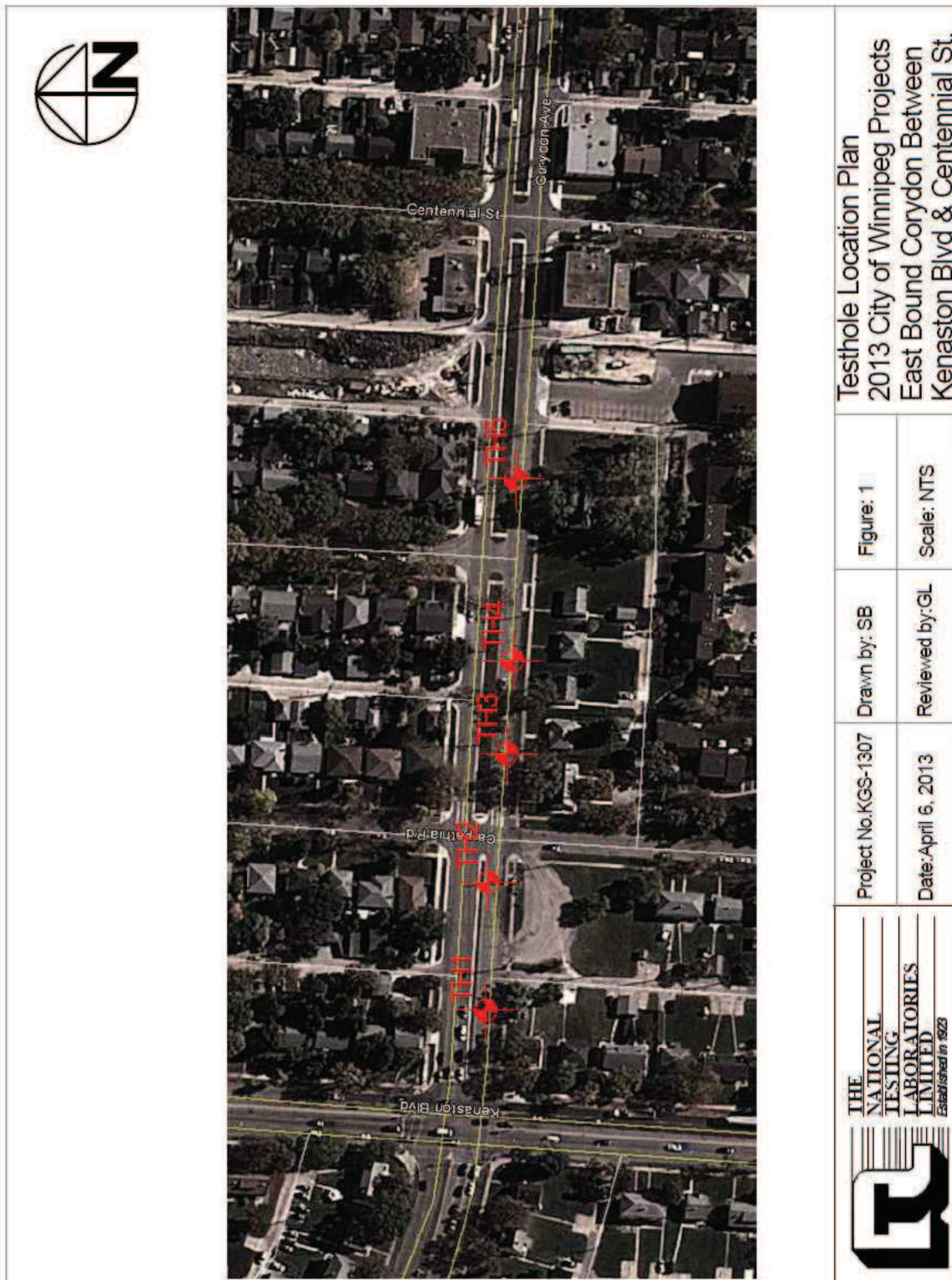
TABLE OF CONTENTS

GEOTECHNICAL REPORT FOR CORYDON AVENUE EASTBOUND	1
Test Hole Locations	1
Summary of Core Samples	2
Test Hole Log for TH1	3
Test Hole Log for TH2	4
Test Hole Log for TH3	5
Test Hole Log for TH4	6
Test Hole Log for TH5	7
Particle Size Analysis for TH1	7
Particle Size Analysis for TH3	8
Pavement Core Photos	10
Pavement Core Photos	11
Pavement Core Photos	12

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 Corydon Avenue Eastbound

Test Hole Locations



Testhole Location Plan
 2013 City of Winnipeg Projects
 East Bound Corydon Between
 Kenaston Blvd & Centennial St.

Figure: 1

Drawn by: SB

Project No. KGS-1307

THE NATIONAL TESTING LABORATORIES LIMITED
 Established in 1928



Scale: NTS

Reviewed by: GL


Date: April 6, 2013

Summary of Core Samples


TABLE 1
 2013 City of Winnipeg Projects (East Bound Corydon Ave. btw Kenaston Blvd. & Centennial St.)
 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	EB Corydon Ave. btw Kenaston Blvd. & Centennial St. 30.5 m east from southeast corner of Kenaston Blvd & Corydon Ave 1.7 m north from south curb	Asphalt	95	-	-	Silty Clay	0.6	36	0.3	9.2	42	48.5	62	18	46
		Concrete	235	-	-										
TH2	EB Corydon Ave. btw Kenaston Blvd. & Centennial St. 18.0 m west from southwest corner of Corydon Ave & Carpathia Rd. 5.2 m north from south curb	Asphalt	70	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	150	-	-										
TH3	EB Corydon Ave. btw Kenaston Blvd. & Centennial St. 27.3 m east from southeast corner of Corydon Ave & Carpathia Rd. 2.4 m north from south curb	Asphalt	45	-	-	Clayey Silt	0.9	27	0.5	9.3	62.9	27.4	28	18	12
		Concrete	255	-	-										
TH4	EB Corydon Ave. btw Kenaston Blvd. & Centennial St. 62.2 m east from southeast corner of Corydon Ave & Carpathia Rd. 1.8 m north from south curb	Asphalt	55	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	185	-	-										
TH5	EB Corydon Ave. btw Kenaston Blvd. & Centennial St. 136.7 m east from southeast corner of Corydon Ave & Carpathia Rd. 5.1 m north from south curb	Asphalt	80	-	-	-	-	-	-	-	-	-	-	-	-
		Concrete	260	-	-										

Test Hole Log for TH1

TESTHOLE TH1											
Project Name: 2013 City of Winnipeg Projects Project Location: EB Corydon Ave. btw Kenaston Blvd. & Centennial St. Client: KGS Group Inc. Drilling Contractor: Active Drilling and Piling Drilling Method: 125 mm Solid Stem Auger Testhole Location: 30,5 m E from SE corner of Kenaston Blvd & Corydon Ave, 1,7 m N from south curb		Date Drilled: March 28, 2013 Depth of Testhole: 2.0 m Logged by: Sothea Bun 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		Silty Clay - tan, soft, moist, high plasticity - some organic material	BS	0.3	9.2	42.0	48.5	38			
1.0		Silt - tan, soft, moist, low plasticity - clayey below 1.2 m	BS					41			
1.5		Clay - brown, stiff, moist, high plasticity	BS					40			
2.0		Clay - brown, stiff, moist, high plasticity	BS					41			
2.5		• No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.0 m.									

Test Hole Log for TH2

TESTHOLE TH2				
Project Name: 2013 City of Winnipeg Projects Project Location: EB Corydon Ave, btw Kenaston Blvd. & Centennial St. Client: KGS Group Inc. Drilling Contractor: Active Drilling and Piling Drilling Method: 125 mm Solid Stem Auger Testhole Location: 18,0 m W from SW corner of Corydon Ave & Carpathia Rd, 5,2 m N from south curb		Date Drilled: April 1, 2013 Depth of Testhole: 2,0 m Logged by: Sothea Bun Reviewed by: German Leal		
Depth (m)	Symbol	Description	Sample Type	● Water Content (%)
				25 50 75 100
		Asphalt		
		Concrete		
0,5		Silty Clay - brown, firm, moist, high plasticity - trace medium sand	BS	●30
		Clay - brown, firm, moist, high plasticity - some silt below 1,2 m	BS	●39
1,0			BS	●35
			BS	●40
1,5		Clayey Silt - tan, firm, moist, low plasticity	BS	●24
			BS	●25
2,0			BS	●24
		<ul style="list-style-type: none"> • No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.0 m. 		
2,5				

Test Hole Log for TH3

TESTHOLE TH3




Project Name: 2013 City of Winnipeg Projects
Project Location: EB Corydon Ave, btw Kenaston Blvd. & Centennial St.
Client: KGS Group Inc.
Drilling Contractor: Active Drilling and Piling
Drilling Method: 125 mm Solid Stem Auger
Testhole Location: 27.3 m E from SE corner of Corydon Ave & Carpathia Rd, 2.4 m N from south curb

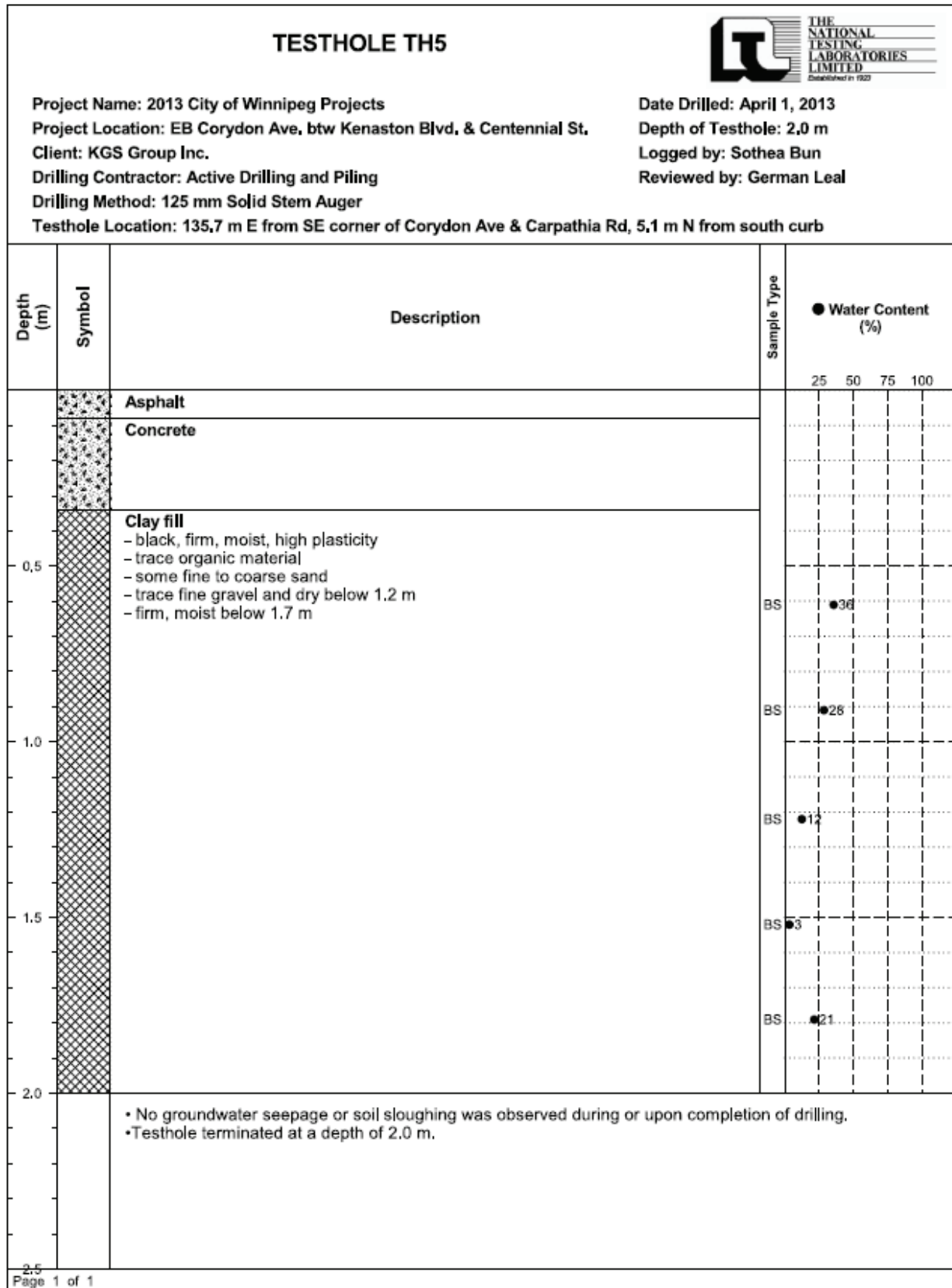
Date Drilled: March 28, 2013
Depth of Testhole: 2.0 m
Logged by: Sothea Bun
Reviewed by: German Leal

Depth (m)	Symbol	Description	Sample Type	Particle Size Distribution				Water Content (%)					
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	PL	LL				
0.0 - 0.1	[Asphalt/Concrete symbol]	Asphalt Concrete											
0.1 - 0.6	[Clayey Silt symbol]	Clayey Silt - tan, soft, moist, low plasticity - firm below 0.6 m	BS										
0.6 - 1.0	[Clayey Silt symbol]		BS										
1.0 - 1.8	[Clay symbol]	Clay - brown, firm, moist, high plasticity - some silt - stiff below 1.8 m	BS	0.5	9.3	62.8	27.4						
1.8 - 2.0	[Clay symbol]		BS										
2.0 - 2.5			BS										
		<ul style="list-style-type: none"> No groundwater seepage or soil sloughing was observed during or upon completion of drilling. Testhole terminated at a depth of 2.0 m. 											

Test Hole Log for TH4

TESTHOLE TH4							
Project Name: 2013 City of Winnipeg Projects Project Location: EB Corydon Ave, btw Kenaston Blvd. & Centennial St. Client: KGS Group Inc. Drilling Contractor: Active Drilling and Piling Drilling Method: 125 mm Solid Stem Auger Testhole Location: 62.2 m E from SE corner of Corydon Ave & Carpathia Rd, 1.8 m N from south curb		Date Drilled: March 28, 2013 Depth of Testhole: 2.0 m Logged by: Sothea Bun Reviewed by: German Leal					
Depth (m)	Symbol	Description	Sample Type	● Water Content (%)			
				25	50	75	100
	[Asphalt symbol]	Asphalt					
	[Concrete symbol]	Concrete					
0.5	[Silty Clay symbol]	Silty Clay - grey, very soft, moist, low plasticity - some organic material - trace coarse sand - trace fine gravel	BS		60		
	[Clay symbol]	Clay - grey, firm, moist, high plasticity - trace organic material - trace coarse sand - stiff below 1.2 m	BS		46		
1.0			BS		45		
1.5			BS		35		
			BS		36		
2.0			BS		44		
		• No groundwater seepage or soil sloughing was observed during or upon completion of drilling. • Testhole terminated at a depth of 2.0 m.					
2.5	Page 1 of 1						

Test Hole Log for TH5



Particle Size Analysis for TH1



PARTICLE SIZE ANALYSIS ASTM D422

KGS Group Inc.
 3rd Floor - 865 Waverly St.
 Winnipeg, MB
 R3T 5P4

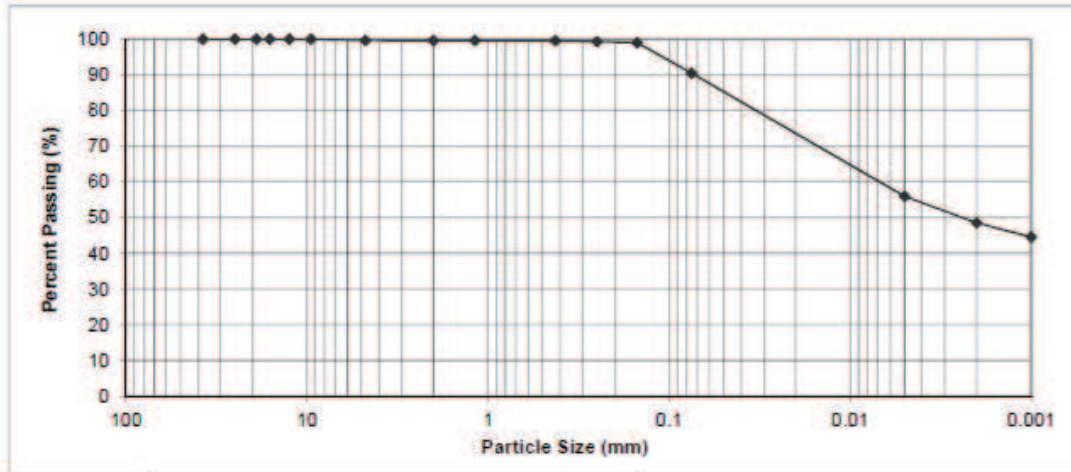
PROJECT: 2013 City of Winnipeg Projects
 East Bound Corydon Between
 Kenaston Blvd & Centennial St.

Attention: Michael Turko

PROJECT NO.: KGS-1307

SAMPLED BY: Sothea Bun
 SAMPLE ID: TH1 @ 0.61 m

DATE RECEIVED: March 28, 2013
 TESTED BY: Trevor Schellenberg



PARTICLE SIZE		PERCENT PASSING		PARTICLE SIZE		PERCENT PASSING	
37.50 mm	100.0	1.18 mm	99.6				
25.00 mm	100.0	0.425 mm	99.5				
19.00 mm	100.0	0.250 mm	99.3				
16.00 mm	100.0	0.150 mm	99.0				
12.50 mm	100.0	0.075 mm	90.5				
9.50 mm	100.0	0.005 mm	56.0				
4.75 mm	99.7	0.002 mm	48.5				
2.00 mm	99.6	0.001 mm	44.6				
Gravel, % 75 to 4.75 mm	Sand, %			Silt, % <0.075 to 0.002 mm	Clay, % <0.002 mm	Colloids, % < 0.001 mm	
0.3	Coarse <4.75 to 2.0 mm	Medium <2.0 to 0.425 mm	Fine <0.425 to 0.075 mm	42.0	48.5	44.6	

April 6, 2013

REVIEWED BY: German E. Leal, B.Sc., EIT



PARTICLE SIZE ANALYSIS ASTM D422

KGS Group Inc.
 3rd Floor - 865 Waverly St.
 Winnipeg, MB
 R3T 5P4

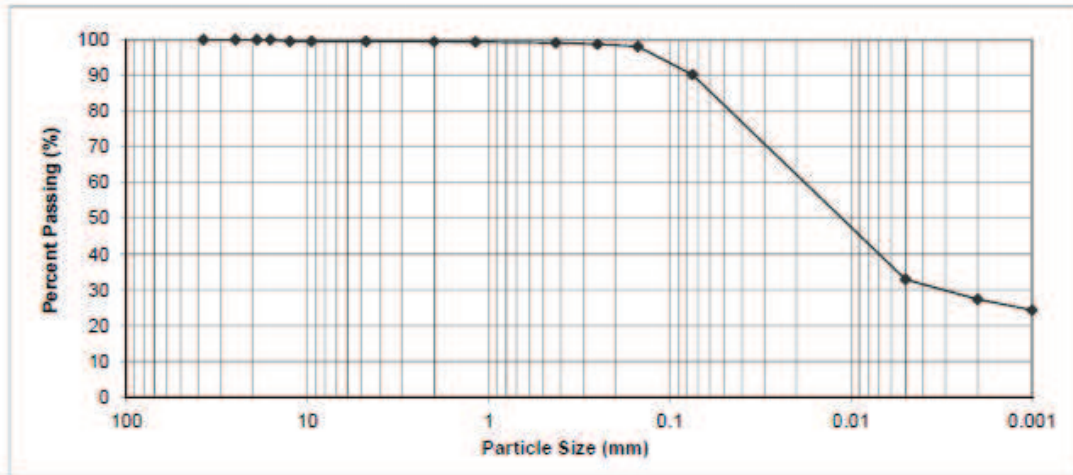
PROJECT: 2013 City of Winnipeg Projects
 East Bound Corydon Between
 Kenaston Blvd & Centennial St.

Attention: Michael Turko

PROJECT NO.: KGS-1307

SAMPLED BY: Sothea Bun
 SAMPLE ID: TH3 @ 0.91 m

DATE RECEIVED: March 28, 2013
 TESTED BY: Trevor Schellenberg



PARTICLE SIZE		PERCENT PASSING	PARTICLE SIZE		PERCENT PASSING	
37.50 mm		100.0	1.18 mm		99.4	
25.00 mm		100.0	0.425 mm		99.1	
19.00 mm		100.0	0.250 mm		98.7	
16.00 mm		100.0	0.150 mm		98.1	
12.50 mm		99.5	0.075 mm		90.2	
9.50 mm		99.5	0.005 mm		32.9	
4.75 mm		99.5	0.002 mm		27.4	
2.00 mm		99.4	0.001 mm		24.3	
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	0.1	0.3	8.9	62.8	27.4	24.3

April 6, 2013

REVIEWED BY: German E. Leal, B.Sc., EIT

Pavement Core Photos



Core sample from Testhole TH1



Core sample from Testhole TH2

Pavement Core Photos



Core sample from Testhole TH3



Core sample from Testhole TH4

Pavement Core Photos



Core sample from Testhole TH5