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APPENDIX 'A' GEOTECHNICAL REPORT

Template Version: C420080317

APPENDIX 'A' - GEOTECHNICAL REPORT

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The geotechnical report is provided to aid in the 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.



SHELLEY STREET MCBEY AVENUE TO WORDSWORTH WAY 2007 CITY OF WINNIPEG RESIDENTIAL STREET RENEWAL

Prepared for
Earth Tech (Canada) Inc.
1000 Waverley Street
Winnipeg, Manitoba
R3T 0P3

Prepared by

The National Testing Laboratories Limited

199 Henlow Bay

Winnipeg, Manitoba

R3Y 1G4

2007 City of Winnipeg Residential Street Renewal Geotechnical Investigation Shelley Street McBey Avenue to Wordsworth Way

		The state of the s					Sample	Moisture		Particle Siz	e Analysis		F	Atterberg Li	
		Pavement S	Surface	Pavement Str	ucture Material		Community (1999)		Gravel	Sand	Silt	Clay	Liquid	Plastic	Plasticity
Testhole	Testhole	Туре	Thickness (mm)	Type	Thickness (mm)	Sample Description	Depth (m)	Content (%)	(%)	(%)	(%)	(%)	Limit	Limit	Index
ID	Location	турс	\/							2			2	2	-
TH1	2.8 m N of N property line of 376 Shelley St., 1.8 m W of E side of lane	Concrete	155	Granular	25	· N/A	-	-	-	-	-	-	-		
	St., 1.6 III W of E side of land														
TH2	2.8 m N of N property line of 396 Shelley St., 2.3 m W of E side of lane	Concrete	150	Granular	40	N/A	-		-	-	-		15	-	-
	St., 2.3 III W of E side of latte					-									
тнз	3.4 m N of S property line of 418 Shelley St., 1.7 m E of W side of lane	Concrete	165	Granular	40	Clay	0.9	32.2	0	3.9	12.6	83.5	83	21	62
	St., 1.7 III E OI 11 elec of the					-			M.					A _p	
TH4	4.5 m N of S property line of 448 Shelley St., 1.7 m E of W side of lane	Concrete	155	Granular	25	N/A	Ē	2	-	•	•	-	17		-
	St., 1.7 III E OF TO SIGN OF TELES														
TH5	In line with N property line of 460 Shelley St., 1.7 m E of W side of lane	Asphalt	95	Granular	55	N/A	-	-	-		-		-		



Project Name: 2007 City of Winnipeg Residential Street Renewal

Client: Earth Tech (Canada) Inc.

Site: Shelley Street, McBey Avenue to Wordsworth Way

Testhole Location: 2.8 m N of the N property line of 375 Shelley St., 1.8 m W of the E side of the lane

Date Drilled: December 19, 2006

Depth of Testhole: 2.1 m

Logged by: Kurtis Kulchyski

		Subsurface Profile	L	abo	rator	y Tes	sting
Depth	Symbol	Description	0	Wa	ter C (%	onte 6) 60	nt 80 100
0.0		Ground Surface					
-		Concrete Granular Fill			 - - -		
and a		- 25 mm maximum aggregate size			1	1	1
0.5-		Clay - grey, moist, firm, high plasticity, some silt, trace sand and fine grained gravel on the surface - brown below 0.9 m, trace thin silt layers					
1.0-							
1.5-							
2.0				and the war the same than the .	•		
		End of testhole at 2.1 m below grade.			6 8	**************************************	
2.5-		No water seepage or soil sloughing were observed during or after the completion of drilling.		To see the see the see the			



Project Name: 2007 City of Winnipeg Residential Street Renewal

Client: Earth Tech (Canada) Inc.

Site: Shelley Street, McBey Avenue to Wordsworth Way

Testhole Location: 2.8 m N of the N property line of 396 Shelley St., 2.3 m W of the E side of the lane

Date Drilled: December 19, 2006

Depth of Testhole: 2.1 m Logged by: Kurtis Kulchyski

		Subsurface Profile	Ł	.abo	rator	у Те	sting
Depth	Symbol	Description	0	Wa	ter C (%	(o)	ent 80 100
0.0		Ground Surface					
_		Concrete		i I	i		
-	5,5,7,5,	Granular Fill - 25 mm maximum aggregate size		 		 	
0.5-		Clay - brown, moist, firm, high plasticity, some silt, trace sand and fine grained gravel on the surface - 25 mm layer of clayey silt observed at 0.8 m					
1.0-							
1.5-					•		
2.0-		End of testhole at 2.1 m below grade.					
2.5		No water seepage or soil sloughing were observed during or after the completion of drilling.		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		 	



Date Drilled: December 19, 2006

Depth of Testhole: 2.1 m

Logged by: Kurtis Kulchyski

Project Name: 2007 City of Winnipeg Residential Street Renewal

Client: Earth Tech (Canada) Inc.

Site: Shelley Street, McBey Avenue to Wordsworth Way

Testhole Location: 3.4 m N of the S property line of 418 Shelley St., 1.7 m E of the W side of the lane

		Subsurface Profile	Laboratory 1	esting)		
Depth (m)	Symbol	Description	Moisture Content (%) PLLL 0 25 50 75 100	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0	10.210.2100	Ground Surface					
0.5	0.000 000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.	Concrete Granular Fill - 25 mm maximum aggregate size Clay - black/grey, moist, firm, high plasticity, some silt, trace sand and fine grained gravel on the surface - brown below 0.8 m					
1.0-				0.0	3.9	12.6	83.5
1.5-							
2.0							
2.5		End of testhole at 2.1 m below grade. No water seepage or soil sloughing were observed during or after the completion of drilling.					



Project Name: 2007 City of Winnipeg Residential Street Renewal

Client: Earth Tech (Canada) Inc.

Site: Shelley Street, McBey Avenue to Wordsworth Way

Testhole Location: 4.5 m N of the S property line of 448 Shelley St., 1.7 m E of the W side of the lane

	THE NATIONAL TESTING LABORATORIES LIMITED Established in 1923
Date Drilled: Decem	ber 19, 2006

Depth of Testhole: 2.1 m

Logged by: Kurtis Kulchyski

		Subsurface Profile		Labo	rato	у Те	sting
Depth	Symbol	Description	0	W a	ter (%	6)	ent 80 100
0.0		Ground Surface					
0.0		Concrete		I			
		Granular Fill - 25 mm maximum aggregate size		1	1	 	
0.5-		Clay - brown, moist, firm, high plasticity, some silt, trace sand and fine grained gravel on the surface					
1.0-							
1.5-							
2.0-			_	 			
-		End of testhole at 2.1 m below grade.			1	1	
2.5		No water seepage or soil sloughing were observed during or after the completion of drilling.					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1



Project Name: 2007 City of Winnipeg Residential Street Renewal

Client: Earth Tech (Canada) Inc.

Site: Shelley Street, McBey Avenue to Wordsworth Way

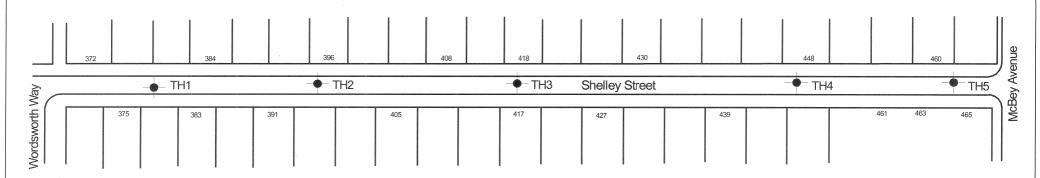
Testhole Location: In line with the N property line of 460 Shelley St., 1.7 m E of the W side of the lane

Date Drilled: December 19, 2006

Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski

		Subsurface Profile		Labo	rato	ry Te	esting
Depth	Symbol	Description	0	Wa 20	ater (° 40	Conte %) 60	e nt 80 100
0.0		Asphalt					
0.5-	AJDCS A	Granular Fill - 25 mm maximum aggregate size Clay - black/grey, moist, firm, high plasticity, some silt, trace sand and fine grained gravel on the surface - brown below 0.9 m					
1.0-							
1.5-							
2.0							-
2.5-	-	End of testhole at 2.1 m below grade. No water seepage or soil sloughing were observed during or after the completion of drilling.					





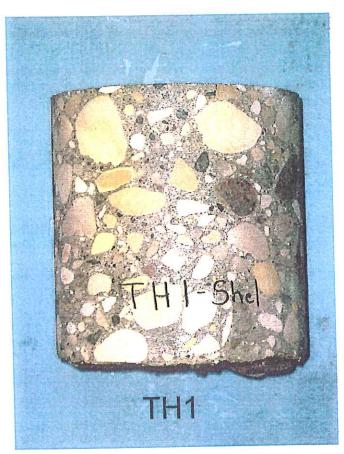
	THE NATIONAL TESTING LABORATORIES LIMITED Stablished in 1923
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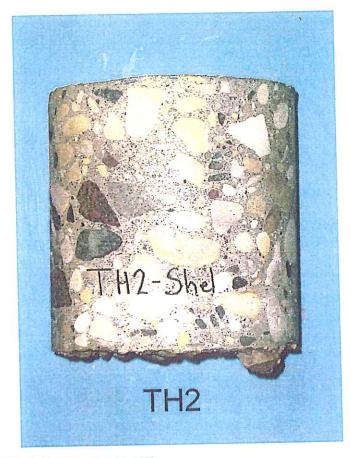
	Project No.: EAR-612	Drawn By: SD
-	Date: Jan. 2, 2007	Scale: NTS

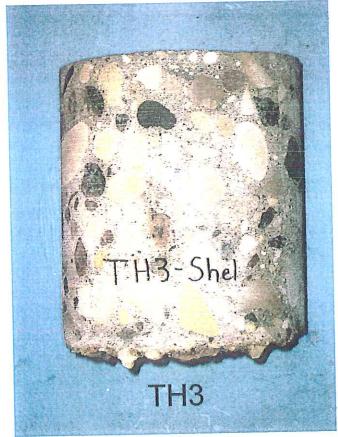
Testhole Location Plan 2007 City of Winnipeg Residential Street Renewal Shelley Street McBey Avenue to Wordsworth Way

2007 City of Winnipe Lesidential Street Renewal Shelley Street McBey Avenue to Wordsworth Way



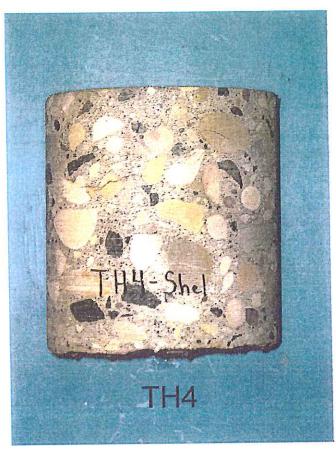


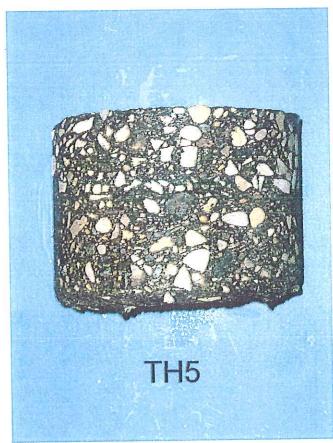




2007 City of Winnipe Residential Street Renewal Shelley Street McBey Avenue to Wordsworth Way









CONWAY STREET LODGE AVENUE TO PORTAGE AVENUE 2008 LOCAL STREETS RENEWAL PROGRAM

Prepared for
Earth Tech (Canada) Inc.
1000 Waverley Street
Winnipeg, Manitoba
R3T 0P3

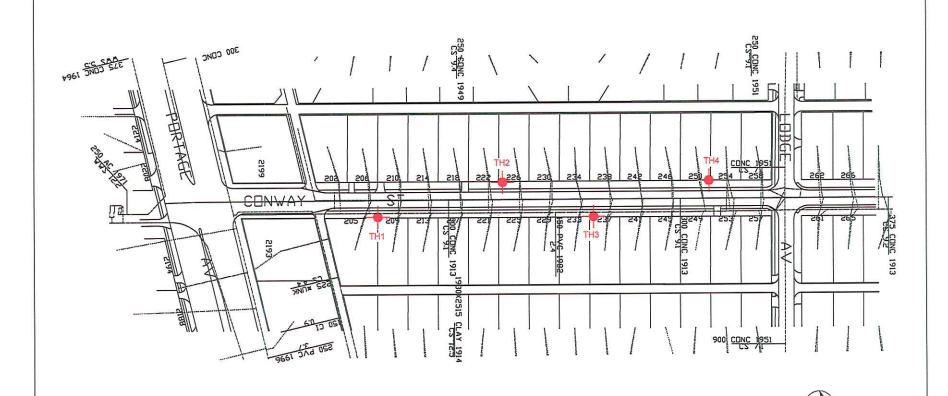
Prepared by

The National Testing Laboratories Limited
199 Henlow Bay
Winnipeg, Manitoba
R3Y 1G4

Conway Street Lodge Avenue to Portage Avenue 2008 Local Streets Renewal

		60 6	Sample	Moisture	Par	ticle Size	Analys	Atterberg Limits			
Testhole ID	Testhole Location	Sample Description	Depth (m)	Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	North property line of 205 Conway Street, 5.3 m from east curb	Clayey Silt	1.05	9.4	0.4	12.6	55.3	31.7	31	14	17
TH2	1.4 m north of north property line of 222 Conway Street, 4.5 m from west curb	N/A	N/A		-			8=8		-	
ТНЗ	2 m north of north property line of 233 Conway Street, 5.3 m from east curb	Clay	0.9	34.3	0.0	2.3	8.6	89.1	83	11	72
TH4	0.4 m south of north property line of 250 Conway Street, 3.4 m from west curb	N/A	N/A	-	-	141	(s#2	8 .4 1	-	-	-

Note: Testholes were drilled behind the curb





THE
NATIONAL
TESTING
LABORATORIES
LIMITED
Established in 1923
William Self Control C

Project No.:EAR-710	Drawn by: KK	Figure: 1
Date: Jan. 10, 2008	Reviewed by: DF	Scale: NTS

Testhole Location Plan Conway Street 2008 Local Streets Renewal



Project Name: Conway Street Renewal

Client: Earth Tech (Canada) Ltd.

Site: Conway Street between Lodge Avenue and Portage Avenue

Date Drilled: December 20, 2007

Depth of Testhole: 2.1 m Logged by: Kurtis Kulchyski

Testhole Location: North property line of 205 Conway Street, 5.3 m from east curb

Subsurface Profile			Laboratory Testing								
Depth (m)	Symbol	Description	PL 0	Wate	r Con 50	tent (%) 75	LL 110	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0-		Ground Surface	#-								
		Topsoil Clay Fill - black/brown, stiff, moist, high plasticity, trace fine gravel		24.7							
0.5-		Clay - brown, stiff, moist, high plasticity		23.3	1						
1.0-	- - - -	Clayey Silt - tan, dry/moist, very stiff, intermediate plasticity - trace layers of clay below 1.2 m	_ (21.3	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			0.4	12.6	55.3	31.7
1.5-	-	Clay - brown, stiff, moist, high plasticity, varved with layers of silt to 1.8 m, trace gypsum		26.4	.5						
2.0		• Frost present to a depth of 0.3 m.		1 2	ф.3						
2.5	-	No water seepage or soil sloughing were observed during or after the completion of drilling. Testhole was terminated at 2.1 m. Elevation at testhole location is approx. 200 mm above the pavement surface			1						

Testhole Location: 1.4 m north of north property line of 222 Conway Street, 4.5 m from west curb

THE NATIONAL LESIES LANDITATIONS LANDITATION LANDITATI

Project Name: Conway Street Renewal

Client: Earth Tech (Canada) Ltd.

Site: Conway Street between Lodge Avenue and Portage Avenue

Date Drilled: December 20, 2007

Depth of Testhole: 2.1 m

Logged by: Kurtis Kulchyski

Subsurface Profile Laboratory Testing **Water Content** Depth Symbol Description (m) 80 100 **Ground Surface** 0.0 Topsoil Clay Fill - brown/black, firm, moist, high plasticity, some sand and gravel - brown, stiff, moist, high plasticity, trace gypsum below 1.2 m • Frost present to a depth of 0.1 m. · No water seepage or soil sloughing were observed during or after the completion of drilling. Testhole was terminated at 2.1 m. · Elevation at testhole location is approx. 200 mm above the pavement surface 2.5

DHE NATIONAL LESITOR L

Project Name: Conway Street Renewal

Client: Earth Tech (Canada) Ltd.

Site: Conway Street between Lodge Avenue and Portage Avenue

Date Drilled: December 20, 2007

Depth of Testhole: 2.1 m

Logged by: Kurtis Kulchyski

Testhole Location: 2 m north of north property line of 233 Conway Street, 5.3 m from east curb

	Subsurface Profile			Laboratory Testing							
Depth (m)	Symbol	Description	PL 0	Wate	r Con 50	tent (%) 75	LL 110	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.0-		Ground Surface	1								
0.5-		Clay Fill - brown, firm/stiff, moist, high plasticity, trace fine gravel Clay - grey, stiff, moist, high plasticity - brown below 0.7 m		22.3	3						
1.0	-	- gypsum inclusions below 1.8 m	The state of the s	34	1 1 1 1			0.0	2.3	8.6	89.
1.5			,		7.8						
2.0		Frost present to a depth of 0.1 m. No water seepage or soil sloughing.	_{		44.9	1					
2.5	-	No water seepage or soil sloughing were observed during or after the completion of drilling. Testhole was terminated at 2.1 m. Elevation at testhole location is approx. 200 mm above the pavement surface		1	1						

Date Drilled: December 20, 2007

Depth of Testhole: 2.1 m

Logged by: Kurtis Kulchyski

Project Name: Conway Street Renewal

Client: Earth Tech (Canada) Ltd.

Site: Conway Street between Lodge Avenue and Portage Avenue

Testhole Location: 0.4 m south of north property line of 250 Conway Street, 3.4 m from west curb

		Laboratory Testing				
Depth (m)	Symbol	Description	Water Content (%) 0 20 40 60 80 100			
0.0		Ground Surface				
0.0-		Clay Fill - brown, firm, moist, high plasticity, some sand and gravel				
	-	- trace black organics observed at 0.5 m	39.2			
0.5-			42.9 42.5			
1.0-	-		45.6			
1.5		Clay - brown, stiff, moist, high plasticity, trace gypsum	37/3			
2.0			43.4			
2.5		 Frost present to a depth of 0.1 m. No water seepage or soil sloughing were observed during or after the completion of drilling. Testhole was terminated at 2.1 m. Elevation at testhole location is approx. 200 mm above the pavement surface 				