

# **APPENDIX 'A'**

## **GEOTECHNICAL REPORT (PART E)**

## APPENDIX 'A' - GEOTECHNICAL REPORT

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The geotechnical report is provided to aid in the Contractor's evaluation of the existing pavement structure and 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 Part E – Charles Street Reconstruction

### Test Hole Locations



**Test Hole Log for Test Hole #1**

**LOG OF BOREHOLE 1**

SOIL PROFILE		SAMPLES		GROUND WATER CONDITIONS	DEPTH SCALE	CPT (kPa)		FLASTIC LIQ. LIMIT (W <sub>p</sub> )	NATURAL MOISTURE CONTENT (W)	LIQ. LIMIT (W <sub>L</sub> )	REMARKS
DEPTH	ELEV.	STRAT. PLOT	% RECOVERY			TYPE	"N" VALUES				
		ASPHALT									
		CONCRETE									
		FILL - GRAVEL & CLAY									
		CLAY - dark brown		AS							
1				AS							
		SILT - Clayey, brown/black		AS							0 2 61 37
2				AS							
		CLAY - brown		AS							
		End of Borehole @ 2.7 m.		AS							
3											
4											

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 Winnipeg, Manitoba R2X 2W3  
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**SAMPLE TYPE LEGEND**

- AS Auger Sample
- SS Split Spoon Sample
- TW 70mm Thin Wall Tube
- CC Concrete/Asphalt Core
- RC Rock Core
- PS Ponar Sample
- SD Side Sample

**ENCLOSURE 1**

**Test Hole Log for Test Hole #2**

**LOG OF BOREHOLE 2**

SOIL PROFILE				SAMPLES		CPT (kPa)				REMARKS				
DEPTH	ELEV.	DESCRIPTION	STRAT. PLOT	% RECOVERY	TYPE	T <sub>N</sub> VALUES	GROUND WATER CONDITIONS	DEPTH SCALE	CPT (kPa)				GRAIN SIZE DISTRIBUTION (%)	
									FIELD SHEAR (kPa)	SPT (N)	Lab Shear (kPa)	DCPT		PLASTIC MOISTURE CONTENT (W <sub>p</sub> )
		ASPHALT												
		CONCRETE												
		FILL - GRAVEL & SAND - trace clay												
		CLAY - black			AS									
1		-----			AS									
		- dark brown			AS									
					AS									
					AS									
2		SILT - Clayey			AS									
					AS									
					AS									
		CLAY - Silty, brown			AS									
		End of Borehole @ 2.7 m.												
3														
4														

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**SAMPLE TYPE LEGEND**

- |    |                       |    |              |
|----|-----------------------|----|--------------|
| AS | Auger Sample          | RC | Rock Core    |
| SS | Spl't Spoon Sample    | PS | Ponar Sample |
| TW | 70mm Thin Well Tube   | SD | Side Sample  |
| CC | Concrete/Asphalt Core |    |              |

**ENCLOSURE 2**

**Atterberg Limits**



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 E-Mail: hmanalo@tbte.ca

Atterberg Limits					
To: Dillon Consulting Limited 895 Waverly Street, Suite 200 Winnipeg, Manitoba R3T 5P4 Attn: Jeff Short, EIT Project: Geotechnical Investigation - Street Reconstruction Charles Street			TBT Project No.: 09-637 Lab Sample No.: 10-03 Date: 17-Feb-10		
Liquid Limit Determination					
Dish No.:	28	3	1		Liquid Limit 25 Blows
Wet Soil + Dish:	28.28	32.54	29.68		
Dry Soil + Dish:	22.44	24.91	23.08		
Moisture:	5.84	7.63	6.6		
Dish:	13.06	13.11	13.14		
Dry Soil:	9.38	11.8	9.94		
% Moisture:	62.26	64.66	66.40		
No. of Blows:	35	26	20		
				<b>Material Identification:</b> Date Received: 04-Jan-10 Date Tested: 20-Jan-10 B.H./T.P. No.: TH 10 Sample No.: N/A Depth: 2 ft  Liquid Limit, %: 67 Plastic Limit, %: 26 Plasticity Index: 41	
Plastic Limit Determination					
Dish No.:	22	6			
Wet Soil + Dish:	30.39	30.95			
Dry Soil + Dish:	29.31	29.86			
Moisture:	1.08	1.09			
Dish:	24.92	25.38			
Dry Soil:	4.39	4.48			
% Moisture:	24.60	24.33			
Average:					24
Test Method : ASTM: D4318, D2216 TBTE Technician: Elena Oberez Remarks: CL, Medium plastic clay					
				REVIEWED BY:  Hermie Manalo	

**Particle Size Analysis**



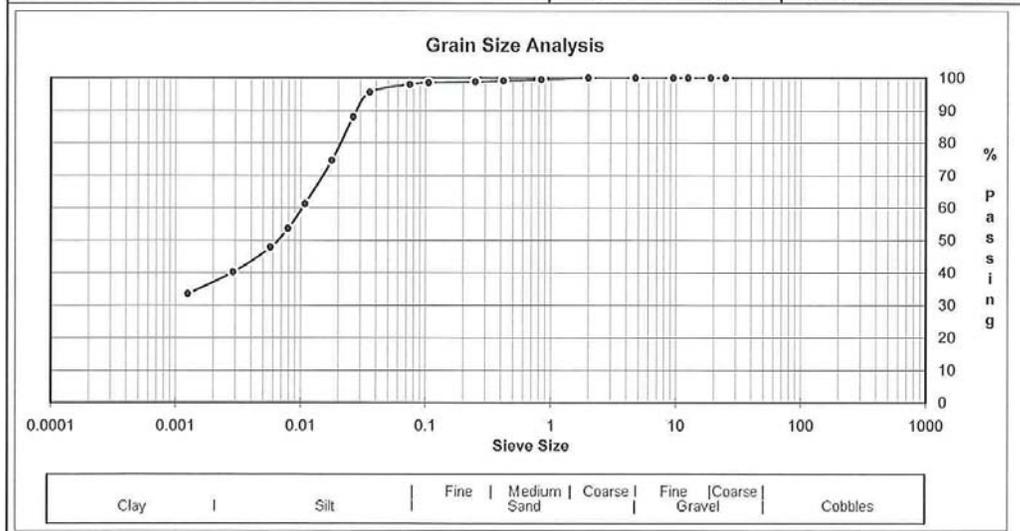
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 E-Mail: hmanalo@tbt.ca

**Particle Size Analysis of Soils Test Report**

To: Dillon Consulting Limited  
 895 Waverly Street, Suite 200  
 Winnipeg, Manitoba R3T 5P4  
 Attention: Jeff Short, EIT  
 Project: Geotechnical Investigation - Street Reconstruction  
 Charles Street, Winnipeg, Manitoba

TBTE Project No.: 09-637  
 Lab Sample No. 10-03

Date Sampled:	Date Received:	Sieve Analysis		Hydrometer Analysis	
Sampled By:	Date Tested:	Sieve(mm)	% Passing	Diameter	% Finer
-	06-Jan-10	37.5	100.0	0.106	98.5
EO-TBTE	15-Feb-10	25	100.0	0.075	98.0
<b>Material Identification</b>		19	100.0	0.035821	95.6
B.H./T.H. No.	TH 1	12.5	100.0	0.0263611	88.0
Sample No.	-	9.5	100.0	0.0177567	74.6
Depth	5 ft	4.75	100.0	0.0108419	61.2
Specific Gravity of Material:	2.65	2	100.0	0.0079391	53.5
		0.841	99.4	0.0057327	47.8
		0.42	99.1	0.0028842	40.2
		0.25	98.8	0.0012572	33.5



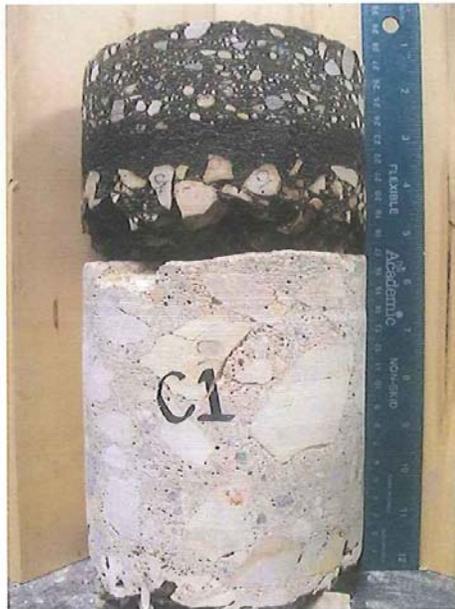
Soil Classification	% Composition		D10	-
		Gravel	D30	-
	Silt	Sand	D60	0.0110
		Silt	Cu	-
	Clay	Cc	-	

Test Method: ASTM D422, D2216, D4318, D2487  
 TBT Technician: Elena Oberez  
 REVIEWED BY: *Hermano* Hermie Manalo

## Pavement Core Photos

**Project: CHARLES AVENUE PAVEMENT INVESTIGATION**

**Project No.: 09-637**



Charles Street TH #1

0 mm to 40 mm Asphalt (newer)

40 mm to 85 mm Asphalt (older)

85 mm to 230 mm Concrete

**Project: CHARLES AVENUE PAVEMENT INVESTIGATION**

**Project No.: 09-637**



Charles Street TH #2

0 mm to 35 mm Asphalt (newer)

35 mm to 80 mm Asphalt (older)

80 mm to 240 mm Concrete