# **APPENDIX 'A'**

# **GEOTECHNICAL REPORT**

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

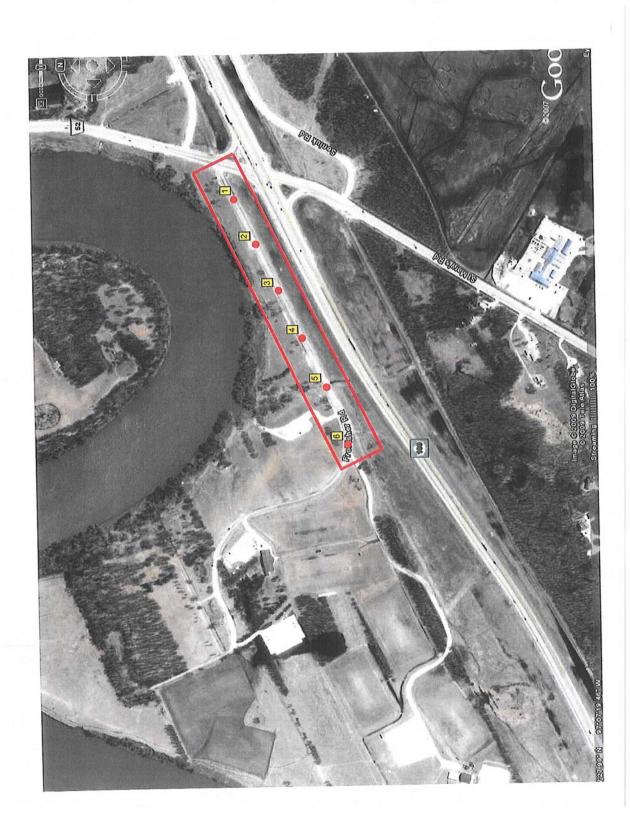
#### TABLE OF CONTENTS

1
1
2
3
4
5
6
7
8
9

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 Frobisher Road

## **Test Hole Locations**



### Test Hole Log #1 for Frobisher Road

CLI	IEN	EF. No.: 09-637 T: Dillon ECT: Geotechnical Inves TION: Frobisher Road - Winnipeg,Manitol	St M	lion	- St 's R	reet oad	Reco to ~ 6	onst 600	ruc m \	tion West	EC DI/ DA	RFAC UIPME AMETE AMETE AMETE AMETE	ENT: 9 R: 12	5 Au 5 mm nuary	iger 1 7 6		ng	
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		<b>B</b> FX: 204-63 FX: 204-63	3-6620	8			TW			m Thin Wal		SD	Side	Samp!	e			
L İ	THE OWNER	Email: tbte@	albia		- 1		1 11			crete/Aspha								PAGE 1 OF 1

### Test Hole Log #2 for Frobisher Road

CL	IEN	REF. No.: 09-637 NT: Dillon ECT: Geotechnical Inves TION: Frobisher Road - Winnipeg,Manitob	tiga St N	tion	- St	reet	Reco	nst	r	EHOL uction West	SEL		PME ETE	NT:   R: 80  0 Ja	IS An mm nuar	D v 6	s Drilling	9		
-	-	SOIL PROFILE		5	AMPL	ES	6			CPT (kPa)		>			PLASTC	NATURA MOISTUI CONTES	L LIQU	0	REMARKS	
DEVIN	ELEV.	DESCRIPTION	STRAT PLOT	% RECOVERY	TYPE	-N' VALUES	GROUND WATER CONDITIONS	DEPTH SCALE		X FIELD SH	-	kPajØ I	DCPT	(kPa)	•	ERCON	TENT (%)		GRAIN DISTRIBI (%) GR SA	NOITU )
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		CLAY - DIACK				_										•				
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		- dark greyish-black		1_	AS				ľ											
		- grey/brown						1												
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	-	CLAY & SILT - mottled	Ø		AS	1				-						°				
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		PH: 204-63 FX: 204-63 Email: tble@	3-662	20			тw			mm Thin W			SD	Side	e Samp	le			PAGE 1 OF	1
		Web: www.	tble.	a			cc		C	oncrete/Asp	nalt C	ore								

### Test Hole Log #3 for Frobisher Road

L	IEN	EF. No.: 09-637 IT: Dillon ECT: Geotechnical Invest TION: Frobisher Road - S Winnipeg,Manitoba	DC IVI	lion	- St 's R	reet oad	Reco to ~ 6	nst 600		most			TER	IT: H : 80 D Ja	IS An mm I nuar	D v 6	s Drilling	REMARKS	
-	-	SOIL PROFILE		S	SAMPL	ES	<b>٤</b> .	щ		CPT (kPa)		2	-		PLASTIC	NATLRAD MOSTUR CONTEN		GRAIN S	ZE
	ELEV.	DESCRIPTION	STRAT PLOT	% RECOVERY	TYPE	-N" VALUES	GROUND WATER CONDITIONS	DEPTH SCALE		300 600 x FIELD SHE SPT (N) 0 20 40	_	a)0 La		(kPa) r (kPa		ER CONT	A	DISTRIBUT (%) GR SA S	NON
┥	-	CLAY & GRAVEL - dark	)))		AS	-		Γ	Π										
-		brown CLAY - dark grey/brown							-										
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	-	CLAY - dark brown		8	AS	_	_		_	-			+	+	+	-		-	
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	E	PH: 204-633 FX: 204-633	3-662	20			TW			Omm Thin Wa		0	SD	Sid	e Sam	p!e		PAGE 1 OF	,
		Email: tble@ Web; www.	tble.	ca			CC			oncrete/Asph								Price 7 OF	

### Test Hole Log #4 for Frobisher Road

CL	IEN.	EF. No.: 09-637 IT: Dillon ECT: Geotechnical Inves TION: Frobisher Road - 1 Winnipeg,Manitob	tigal St M	lon	. St	reet	Reco	nst	CHOLE 4 SURFACE ELEV.: metre EQUIPMENT: HS Auger DIAMETER: 80mm ID DATE: 2010 January 6 DRILL COMPANY: Active	
			- 1		AMPL	FS			CPT (kPa)	REMARKS
סנינים	ELEV.	SOIL PROFILE	STRAT PLOT	% RECOVERY	BAY	N- VALUES	GROUND WATER CONDITIONS	DEPTH SCALE	CPT (kPa) PLASTIC FALLE   300 600 900 1200 1500   WAT Corna W W W   X FIELD SHEAR (kPa)9 Lab Shear (kPa) W W W   SPT (N) DCPT 20 40 50 100	WL DISTRIBUTION WL DISTRIBUTION (%)
		CLAY & GRAVEL - black CLAY - trace organics, black		F	AS	-				
		CLAY - dark grey			AS					
		- dark greyish brown		_	AS					0 5 17
		- trace sill, dark grey						1		
	-				AS	-	-			
	-	SILT - Clayey, brown			~					
2					AS			1		
6	-	CLAY - brown			AS	-	-			•
3		End of Borehole @ 2.5 m.								
4									-	
		TBT Engineerin 110 Paramou Winnipeg, Manitol PH: 204-63 FX: 204-63 FX: 204-63 Email: Iblo@ Web: www.	nt Ro ba Ri 3-600 3-662 0tbte.	2X 2 28 18 10 ca			AS SS TW CC		SAMPLE TYPE LECEND ger Sampte RC Rock Core ht Spoon Sampte PS Ponar Sampte mm Thin Wall Tube SD Side Sampte nerete/Asphalt Core	ENCLOSURE PAGE 1 OF 1

### Test Hole Log #5 for Frobisher Road

CL	IEN	EF. No.: 09-637 IT: Dillon ECT: Geotechnical Inves TION: Frobisher Road - 3 Winnipeg,Manitob	St M	lon ary	- St 's R	reet oad	Reco to ~ 6	nst 600	m	EQU Luction DIA	JIPM MET	E ELE ENT: I ER: 80 010 Ja OMPA	IS A mm nuar	uger D v 6		ng		
-	-	SOIL PROFILE		S	AMPL	ES	æ			CPT (kPa)	>		DAST	RATUR	WL LK	24.0	REMARKS	
DETIN	ELEV.	DESCRIPTION	STRAT PLOT	% RECOVERY	TYPE	-N- VALUES	GROUND WATER CONDITIONS	DEPTH SCALE		300 600 900 × FIELD SHEAR (kPa) ■ SPT (N) 0 20 40 60	1200 Lab S DCP1 80	(kPa) ihear (kPa	WAT	ER CO	TENT (	000 0.Mit -▲ (5)	GRAIN SIZE DISTRIBUTIO (%) GR SA SI (	N
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-		FILL - GRAVEL			AS				ŀ				•					
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		FILL - CLAY - trace gravel,		_	AS	-				-				•				
2 .		brown			-	-	-	2	2	-				•				
1					AS	-	-			-				0				
	-	End of Borehole @ 2.5 m.			1	T		T		-						5		
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		Email: tble@ Web: www.l	tble.c	a			cc			oncrete/Asphalt Core							PAGE 1 OF 1	_

### Test Hole Log #6 for Frobisher Road

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-		SOIL PROFILE		S/	MPL	ES	s		CPT (k	Pa)		2		PLASTIC	NATURAL MOISTURE CONTENT	LIQUE	REMARKS	
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ı	1992	110 Paramount Winnipeg, Manitoba	Roa	d	3		AS		iger Sar		10	RC		Core	No.	E	NCLOSURE	7
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î	and the second second	FX: 204-633-0 Email: lble@lb		3			TW			in Wall Asphalt		SD	Side	Samp!	U		PAGE 1 OF 1	

#### Atterberg Limits for Frobisher Road



TBT Engineering Limited 110 Paramount Road Winnipeg, MB R3X 2W3 PH: (204) 633-6008 Fax (204) 633-6620 E-Mail: hmanalo@tbte.ca

To: Dillon Con	sulting Limited	Atterberg L		oject No.: 09-637	
895 Wave Winnipeg, Atto: Jeff Short	rly Street, Suite 200 Manitoba R3T 5P4 EIT			mple No.: 10-03	
Project: Geotechn Erobisher	ical Investigation - Stre Street, Winnipeg, Mar	et Reconstructio	n	Date: 17-Feb-10	
Tibbisher		iquid Limit Deter	mination		
sh No.:	14	17	31		Liquid Limit
et Soil + Dish:	29.42	30.33	29.25		25 Blows
ry Soil + Dish:	22.06	22.32	21.66		
oisture:	7.36	8.01	7.59		
sh:	13.42	13.17	13.21		
ry Soil:	8.64	9.15	8.45		
Moisture:	85.19	87.54	89.82		
o, of Blows:	32	23	18		87
92.00 91.00 90.00 88.00 87.00 86.00 85.00 84.00 83.00 82.00 10	No. of Blows, N	100		B.H./T.P. No.: Sample No.: Depth: Liquid Limit, %: Plastic Limit, %: Plasticity Index:	TH 6 N/A 4 ft 87 28 59
	Plastic L	imit Determination	on		
Dish No.:	24	6			
Net Soil + Dish:	30.37	28.59	and a second		
Dry Soil + Dish:	29.29	27.8		- Aller and a second	
Moisture:	1.08	0.79			
Dish:	25.47	24.97			-
Dry Soil:	3.82	2.83			
% Moisture:	28.27	27.92			28
Average:					20
Test Method : ASTM: TBTE Technician: Ele	D4318, D2216 ena Oberez dium plastic clay			REVIEWED BY:	fmars rmie Manalo

### Particle Size Analysis for Frobisher Road

COL	้รบ	LTING	GRO	UP										H: (204)			(204) 633-662 nanalo@tbte.
		P	artic	le Si	ze	An	alys	sis	of	S							
To: Dil	on C	onsulting	Limite	ed									Projec			-637	
Wi Attention: Je Project: Ge	nnipe if Sho otech	nnical Inv	oba R3 estiga	BT 5P4	treet	Reco	onstru	ictio	'n		I	Lab	Sampl	le No.	10	0-03	
		er Street,	Winn				06-	lan	10		Siev	A A	nalysis		ŀ	lydromet	er Analysis
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epth		1.2m									4.75			0.0		09397 06712	93.5
specific Grav	ity of	Material:		2.65							2 0.841			0.0		047932	91.6
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		Soi	Class	sification	n								Grav	/el		D30	-
											0.8		San	d	-	D60	
			Cla	ay						H	10.2		Silt Clay		-	Cu Cc	-
Test Metho TBT Techn	d: AS	TM D422	, D22	16, D43	18, [	0248	7	-	-	-	09.0		Joidy			1/1	rand