

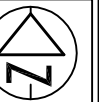
METRIC

DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES UNLESS
OTHERWISE SHOWN. STATIONS
IN KILOMETRES + METRES

CONT No 2007-3043

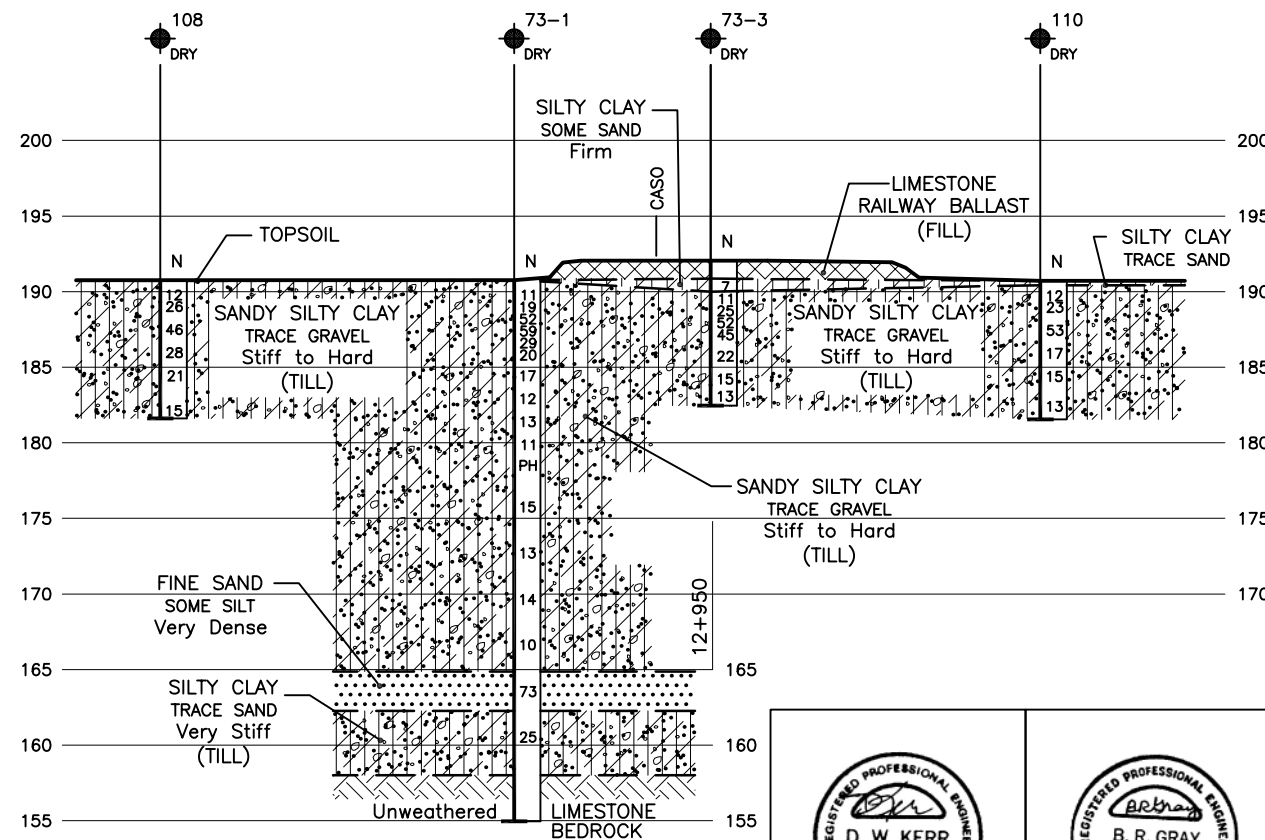
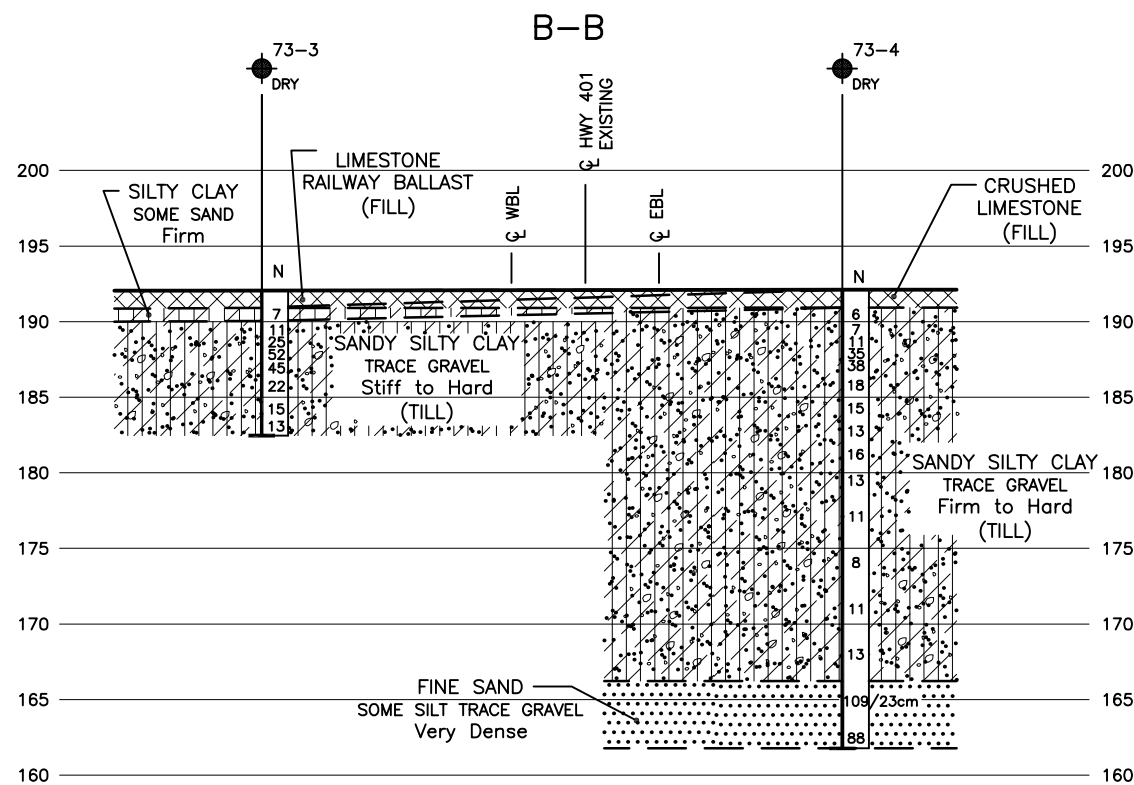
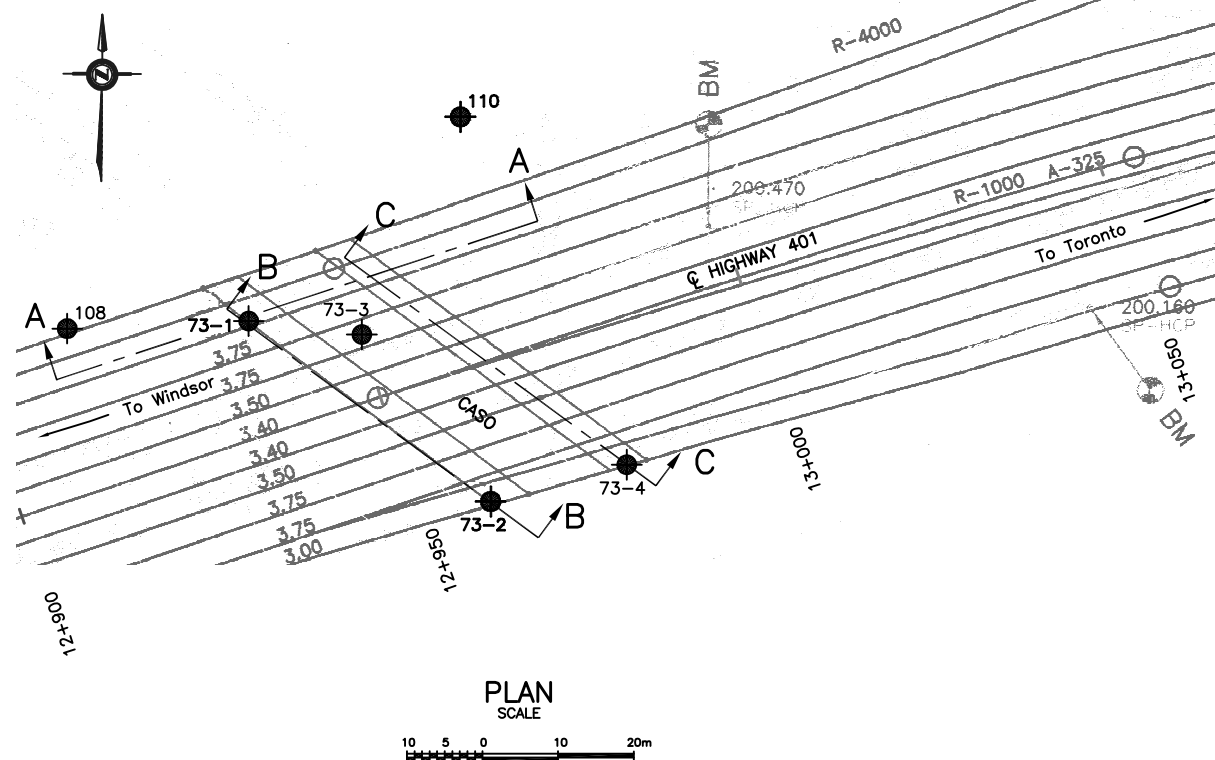
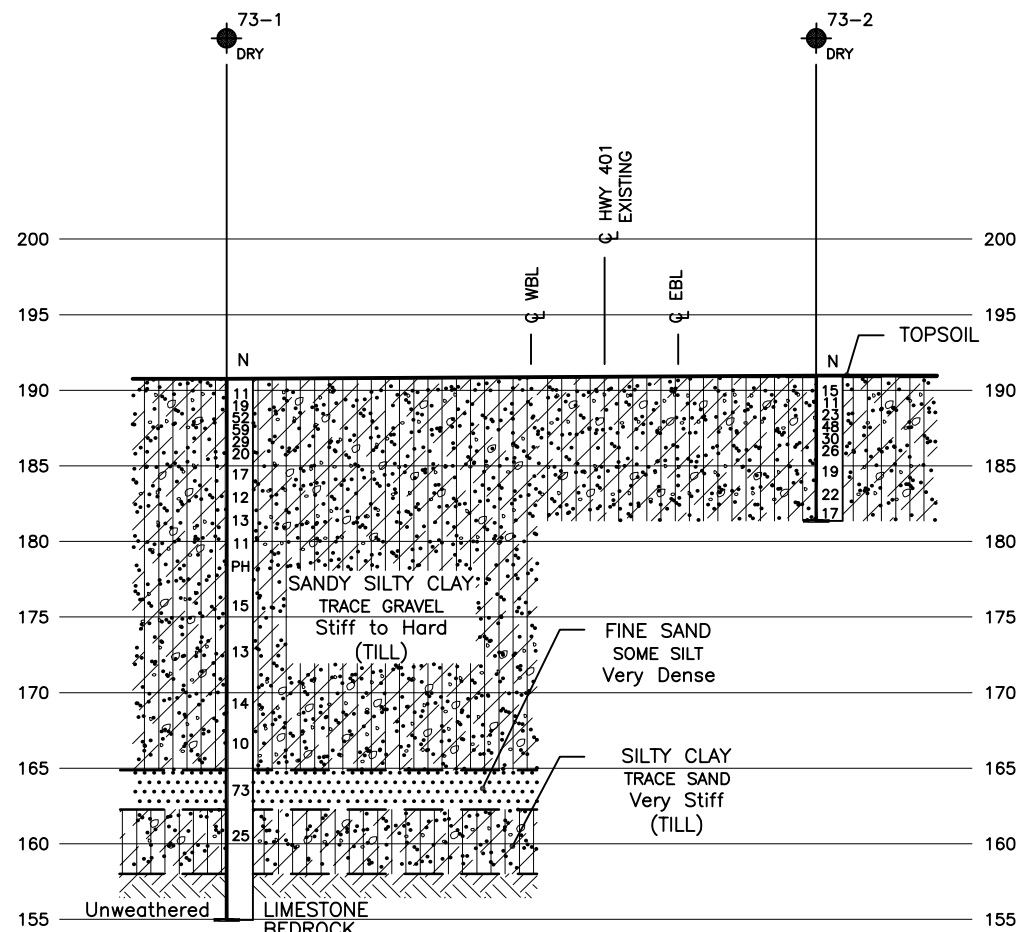
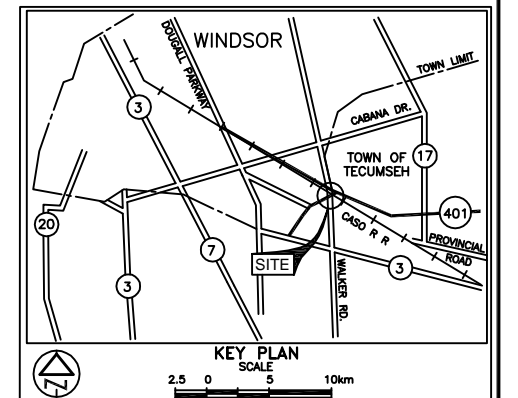
WP No 64-00-04

HIGHWAY 401
CASO OVERHEAD
BOREHOLE LOCATIONS & SOIL STRATA



SHEET
491

PMI Peto MacCallum Ltd.
CONSULTING ENGINEER



LEGEND			
	Borehole		
	Dynamic Cone Penetration Test (Cone)		
	Borehole & Cone		
N	Blows/0.3m (Std. Pen Test, 475 J / blow)		
CONE	Blows/0.3m (60° Cone, 475 J / blow)		
	W L at time of investigation Feb 2002		
	Head		
	ARTESIAN WATER		
	Encountered		
BH No	ELEVATION	HWY 401 STA.	o/s CL MED
73-1	190.76	12+937	15.0m Lt.
73-2	190.96	12+959	18.0m Rt.
73-3	192.06	12+950	8.4m Lt.
73-4	192.12	12+978	19.0m Rt.
108	190.76	12+914	21.6m Lt.
110	190.71	12+972	31.6m Lt.

— NOTE —
The boundaries between soil strata have been established only at Borehole locations. Between Boreholes the boundaries are assumed from geological evidence.

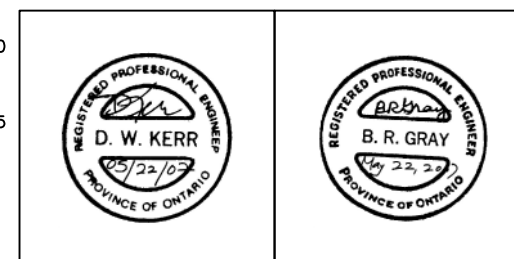
NOTE:

SECTIONS ARE PROVIDED SOLELY FOR ILLUSTRATIVE PURPOSES. REFER TO RECORD OF BOREHOLES FOR DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS, IN-SITU TEST DATA AND LABORATORY TEST RESULTS.

SECTIONS
SCALE



REF No Survey Plan 2001 Site # 6-73, entitled Proposed Bridge Site at Conrail Railway and Highway 401, Prepared by Planning and Design Section, MTO.



REVISIONS	DATE	BY	DESCRIPTION
MAY22/07	CN		CHANGED FOR CONTRACT DOCUMENTS AS PER EMAIL DATED APRIL 27, 2007, FROM DILLON CONSULTING LIMITED
FEB.15/07	CN		ADJUSTED BOREHOLE LOCATION 73-3 AS PER MTO REQUEST

Geocres No. 40J2-47			
HWY No 401	CHECKED MRA	DATE SEP 18, 2002	DIST 31
SUBM'D GD	APPROVED BRG		SITE 6-73
DRAWN MM/NA	CHECKED DWK		DWG 2

RECORD OF BOREHOLE No 73-1

1 of 3

METRIC

W.P. 64-00-04 LOCATION Hwy 401 Sta. 12+937, o/s 15.0m Lt. of CL median ORIGINATED BY MR
DIST 31 HWY 401 BOREHOLE TYPE C.F.H.S.A., Mud Rotary and NQ Rock Coring COMPILED BY MRA
DATUM Geodetic DATE February 20, 2002 CHECKED BY DWK

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS *	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT				PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									WATER CONTENT (%)		
								○ UNCONFINED	+ FIELD VANE	● QUICK TRIAXIAL	× LAB VANE								
190.76 0.00	Ground Level							20	40	60	80	100	20	40	60				
	Sandy silty clay, trace of gravel, with bluish grey fissures and oxidized stains																		
	Stiff to Very Stiff		1	SS	11		190						○						
	Brown (Till)		2	SS	19		189						○						
	Hard		3	SS	52		188						○	—			3 30 40 27		
	with inclusions of rusty brown silt		4	SS	59		187						○						
	Very Stiff to Stiff		5	SS	29		186						○						
	Grey		6	SS	20		185						○						
			7	SS	17		184						○						
			8	SS	12		183						○	—			3 29 35 33		
			9	SS	13		182						○						
			10	SS	11		181						○						
			11	TW	PH		180						○						
							179						○						
							178												
							177												
							176												
	Cont'd																		

Cont'd

METRIC

20
15 — 5 (%) STRAIN AT FAILURE
10

RECORD OF BOREHOLE No 108

1 of 1

METRIC

W.P. 64-00-04 LOCATION Hwy 401 Sta. 12+914, o/s 21.6m Lt. of CL median ORIGINATED BY MR
 DIST 31 HWY 401 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY GD
 DATUM Geodetic DATE February 22, 2002 CHECKED BY MRA

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS *	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)				
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					w _p	w	w _L		GR	SA	SI	CL	
								○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE													WATER CONTENT (%)
190.76	Ground Level							20	40	60	80	100		20	40	60	kN/m ³	GR	SA	SI	CL
0.89	Topsoil																				
	Sandy silty clay, trace of gravel																				
	Stiff to Hard		1	SS	12		190														
	Brown																				
	(Till)		2	SS	26		189														
							188														
			3	SS	46		187														
	Very Stiff						186														
	Grey		4	SS	28		185														
							184														
			5	SS	21		183														
							182														
181.61			6	SS	15																
9.15	End of Borehole																				
	Borehole dry on completion of drilling																				
	■ Penetrometer Test																				

RECORD OF BOREHOLE No 110

1 of 1

METRIC

W.P. 64-00-04 LOCATION Hwy 401 Sta. 12+972, o/s 31.6m Lt. of CL median ORIGINATED BY MR
DIST 31 HWY 401 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY GD
DATUM Geodetic DATE February 15, 2002 CHECKED BY MRA

SOIL PROFILE			SAMPLES			GROUND WATER * CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ kN/m³	REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					w _p	w	w _L					
190.71	Ground Level						20	40	60	80	100									
0.00	Silty clay, trace of sand Dark Brown																			
0.28	Sandy silty clay, trace of gravel																			
	Stiff Brown (Till)		1	SS	12															
	Very Stiff																			
			2	SS	23															
	Hard																			
			3	SS	53															
	Very Stiff Grey																			
			4	SS	17															
	Stiff		5	SS	15															

RECORD OF BOREHOLE No 73-1

3 of 3

METRIC

W.P. 64-00-04 LOCATION Hwy 401 Sta. 12+937, o/s 15.0m Lt. of CL median ORIGINATED BY MR
DIST 31 HWY 401 BOREHOLE TYPE C.F.H.S.A., Mud Rotary and NQ Rock Coring COMPILED BY MRA
DATUM Geodetic DATE February 20, 2002 CHECKED BY DWK

SOIL PROFILE			SAMPLES			GROUND WATER * CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									
160.76			17	SS	25												0 5 46 49
158.01							160										
158.75	Bedrock Unweathered, strong limestone Light Grey		18	RC	REC 95%		159										
	100% drill water return						158										
							157										RQD = 85%
							156										
154.96							155										
35.80	End of Borehole																
	Borehole dry on completion of drilling																
	■ Penetrometer Test																

RECORD OF BOREHOLE No 73-2

1 of 1

METRIC

W.P. 64-00-04 LOCATION Hwy 401 Sta. 12+959, o/s 18.0m Rt. of CL median ORIGINATED BY MR
DIST 31 HWY 401 BOREHOLE TYPE Continuous Flight Solid Stem Augers COMPILED BY MRA
DATUM Geodetic DATE February 22, 2002 CHECKED BY DWK

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS *	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									
								○ UNCONFINED		+ FIELD VANE		● QUICK TRIAXIAL					
190.96 0.08	Ground Level Topsoil						20	40	60	80	100						
	Sandy silty clay, trace of gravel, with bluish grey fissures and oxidized stains		1	SS	15												
	Stiff Brown (Till)		2	SS	11												
			3	SS	23												
	Hard		4	SS	48												
	Very Stiff Grey		5	SS	30												
			6	SS	26												
			7	SS	19												
			8	SS	22												
			9	SS	17												
181.36 9.60	End of Borehole																
	Borehole dry on completion of drilling																
	■ Penetrometer Test																

RECORD OF BOREHOLE No 73-3

1 of 1

METRIC

W.P. 64-00-04 LOCATION Hwy 401 Sta. 12+950, o/s 8.4m Lt. of CL median ORIGINATED BY MR
DIST 31 HWY 401 BOREHOLE TYPE Continuous Flight Hollow Stem Augers COMPILED BY MRA
DATUM Geodetic DATE February 19, 2002 CHECKED BY DWK
























SOIL PROFILE			SAMPLES			GROUND WATER * CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									
								○ UNCONFINED		+ FIELD VANE		● QUICK TRIAXIAL					
192.06 0.00	Ground Level						20	40	60	80	100						
190.86 1.20 189.96 2.10	Limestone, railway ballast (Fill)															* No recovery	
	Silty clay, some sand																
	Firm Black to Brown		1	SS	7*												
	Sandy silty clay, trace of gravel, with bluish grey fissures and oxidized stains		2	SS	11												
	Stiff to Very Stiff		3	SS	25												
	Brown (Till)																
	Hard		4	SS	52												
			5	SS	45												
	Very Stiff to Stiff																
	Grey		6	SS	22												
182.46 9.60	End of Borehole		8	SS	13												
	Borehole dry on completion of drilling																
	■ Penetrometer Test																

RECORD OF BOREHOLE No 73-4

1 of 3

METRIC

W.P. 64-00-04 LOCATION Hwy 401 Sta. 12+978, o/s 19.0m Rt. of CL median ORIGINATED BY MR
DIST 31 HWY 401 BOREHOLE TYPE C.F.H.S.A. and Mud Rotary COMPILED BY MRA
DATUM Geodetic DATE February 19, 2002 CHECKED BY DWK

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS *	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT					PLASTIC LIMIT NATURAL LIQUID LIMIT MOISTURE LIMIT CONTENT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					WATER CONTENT (%)							
								○ UNCONFINED + FIELD VANE					w _p w w _L							
							20	40	60	80	100									
192.12	Ground Level						192													
0.00	Crushed limestone (Fill)																			
190.92							191													
1.20	Sandy silty clay, trace of gravel, with bluish grey fissures		1	SS	6										○					
	Firm to Stiff						190								○					
	Olive Brown to Brown		2	SS	7															
	(Till)						189													
			3	SS	11															
	Hard						188								○					
			4	SS	35															
							187													
			5	SS	38										○					
							186													
			6	SS	18										○					
							185													
			7	SS	15		184				■				○					
							183													
			8	SS	13						■				○					
							182													
			9	SS	16*		181													
							180								○					
			10	SS	13		179													
							178													
177.12	Cont'd																			

* No
recovery

RECORD OF BOREHOLE No 73-4

2 of 3

METRIC

W.P. 64-00-04 LOCATION Hwy 401 Sta. 12+978, o/s 19.0m Rt. of CL median ORIGINATED BY MR
DIST 31 HWY 401 BOREHOLE TYPE C.F.H.S.A. and Mud Rotary COMPILED BY MRA
DATUM Geodetic DATE February 19, 2002 CHECKED BY DWK

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT			PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa								WATER CONTENT (%)		
								○ UNCONFINED ● QUICK TRIAXIAL	+ FIELD VANE × LAB VANE									
177.1 15.00	Sandy silty clay, trace of gravel, with bluish grey fissures (Till)		11	SS	11*									* No recovery				
			12	SS	8													
				FV				1.4										
			13	SS	11													

RECORD OF BOREHOLE No 73-4

3 of 3

METRIC

W.P. 64-00-04 LOCATION Hwy 401 Sta. 12+978, o/s 19.0m Rt. of CL median ORIGINATED BY MR
DIST 31 HWY 401 BOREHOLE TYPE C.F.H.S.A. and Mud Rotary COMPILED BY MRA
DATUM Geodetic DATE February 19, 2002 CHECKED BY DWK

SOIL PROFILE			SAMPLES			GROUND WATER * CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT							PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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