

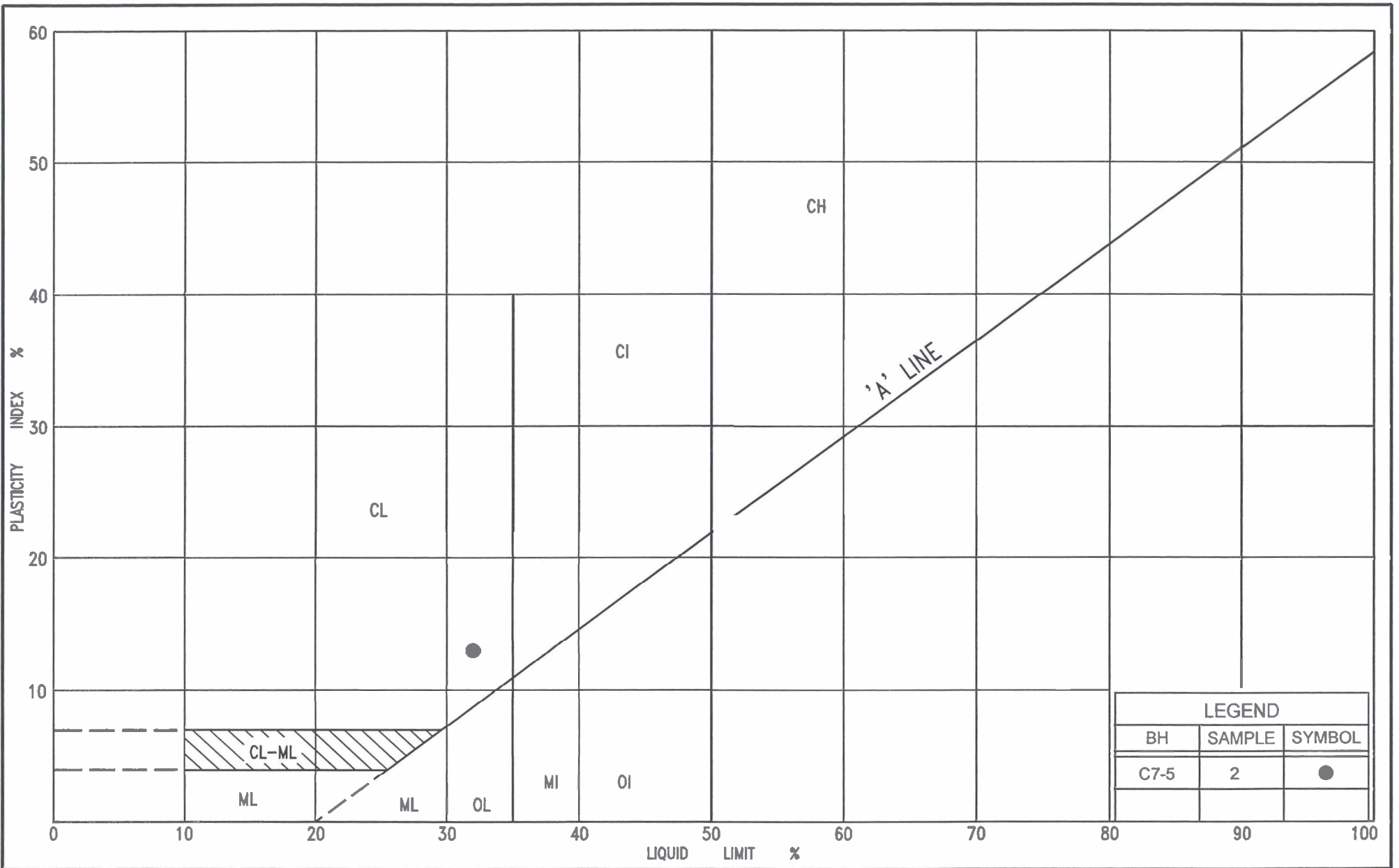
Ministry of
Transportation
Ontario

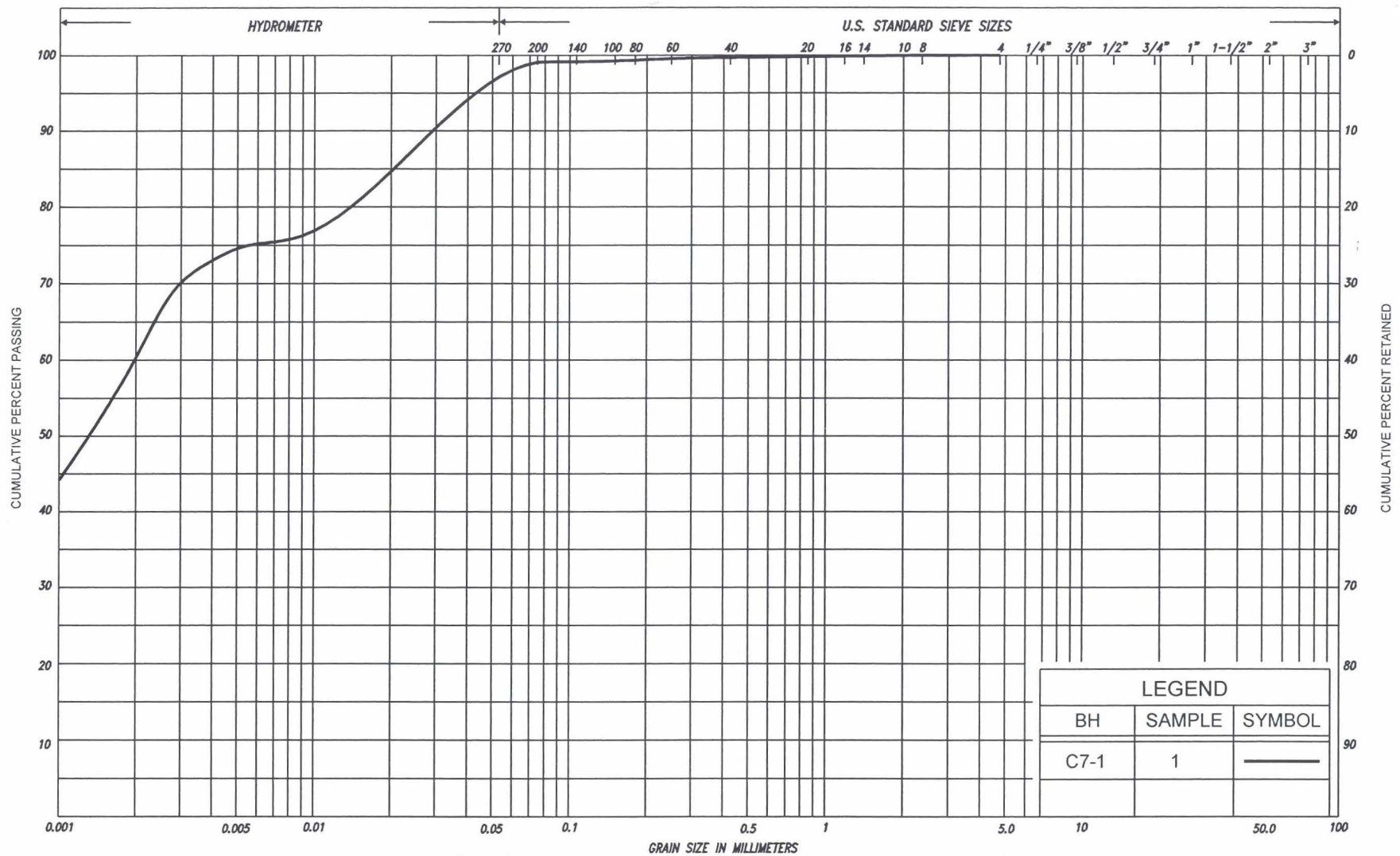
PLASTICITY CHART
SILTY CLAY, trace sand

FIG No. C7-PC-1

HWY: 69

G.W.P. No. 5379-02-00





SILT & CLAY				FINE SAND			MEDIUM SAND		COARSE SAND	GRAVEL		COBBLES	UNIFIED
CLAY	FINE SILT			MEDIUM SILT			COARSE SILT			GRAVEL		COBBLES	M.I.T.
	CLAY			SILT			SAND			GRAVEL			U.S. BUREAU

GRAIN SIZE DISTRIBUTION

SILTY CLAY, trace sand

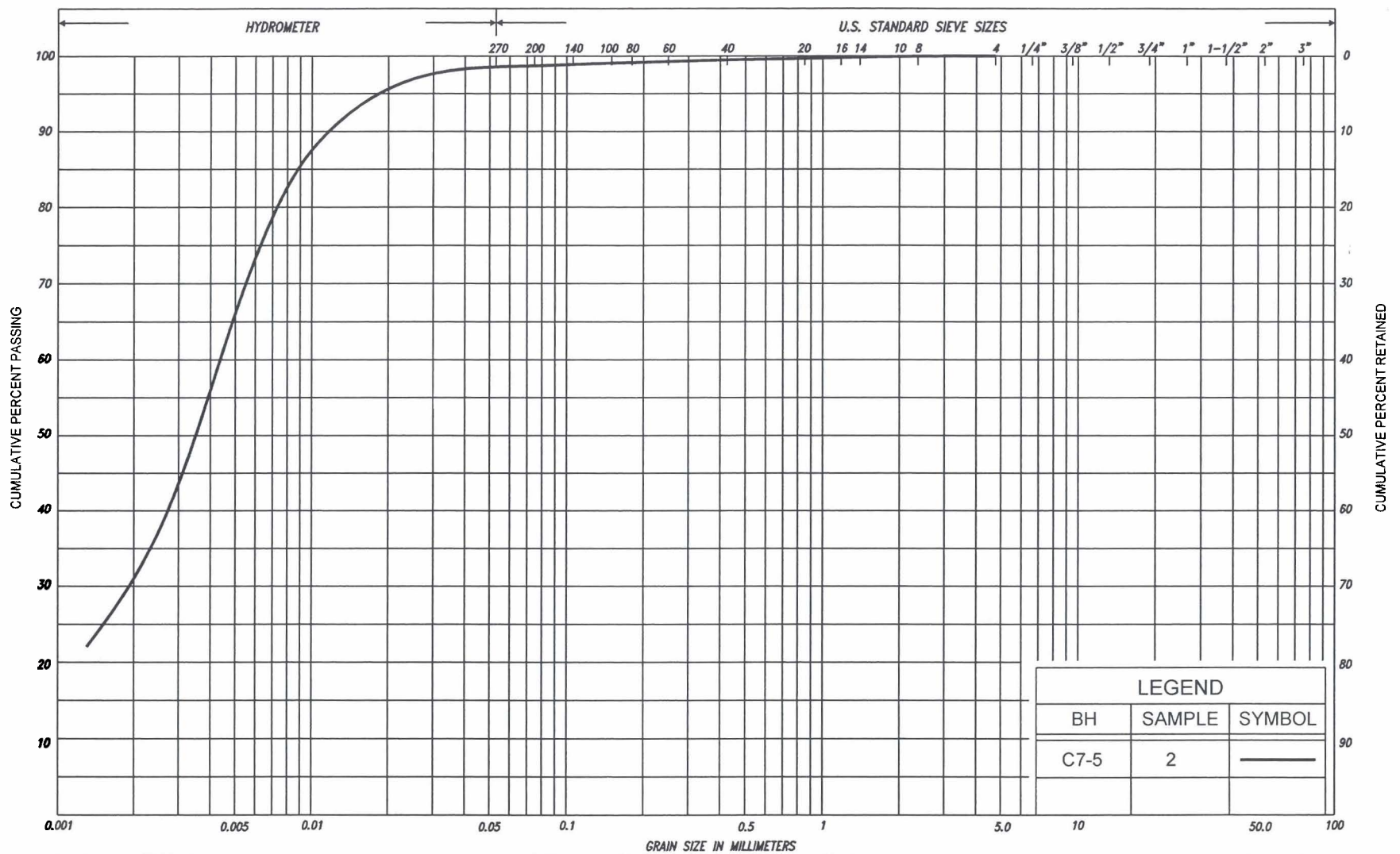
FIG No. C7-GS-1

HWY: 69

G.W.P. No. 5379-02-00



Ministry of
Transportation
Ontario



SILT & CLAY					FINE		MEDIUM		COARSE		GRAVEL			COBBLES	UNIFIED
CLAY	FINE		MEDIUM		COARSE	FINE		MEDIUM		COARSE	GRAVEL			COBBLES	M.I.T.
	SILT				SAND						GRAVEL			COBBLES	U.S. BUREAU
CLAY		SILT			V. FINE	FINE	MED.	COARSE		GRAVEL					U.S. BUREAU

RECORD OF BOREHOLE No C7-1

1 of 1

METRIC

G.W.P. 5379-02-00 LOCATION Hwy 69(New), Sta. 14+289, o/s 44.1m Lt. of CL Med ORIGINATED BY N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE C.F.S.S.A & NXL Rock Coring COMPILED BY G.D.
 DATUM Geodetic DATE March 22, 2007 CHECKED BY G.D.

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									
								○ UNCONFINED	+	FIELD VANE							
204.1	Ground Surface						20	40	60	80	100						
0.0	Topsoil																
0.2	Silty clay, trace sand organics to 0.5m																
	Firm Brown/ Wet		1	SS	13												0 1 39 60
	occ. thin layers of silt																
	Stiff Mottled Moist		2	SS	11												
	brown/grey																
201.1	Bedrock																
3.0	Granitic gneiss: medium to high, occ. low strength		3	RC NQ	REC 68%												RQD 48%
	poor becoming fair to excellent quality		4	RC NQ	REC 100%												RQD 91%
			5	RC NQ	REC 97%												RQD 65%
			6	RC NQ	REC 83%												RQD 72%
197.6	End of borehole																
6.5																	

RECORD OF BOREHOLE No C7-2										1 of 1		METRIC					
G.W.P. 5379-02-00			LOCATION Hwy 69(New), Sta. 14+291, o/s 18.8m Lt. of CL Med					ORIGINATED BY N.L.B.									
DIST 54 HWY 69			BOREHOLE TYPE Continuous Flight Solid Stem Augers					COMPILED BY G.D.									
DATUM Geodetic			DATE March 22, 2007					CHECKED BY G.D.									
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									
203.4	Ground Surface						20	40	60	80	100						
0.0	Peat																
0.2	Clayey silt some sand, trace gravel					203											
202.5	Brown Moist																
0.9	End of borehole Refusal on probable bedrock																
	* Borehole dry																

RECORD OF BOREHOLE No C7-3

1 of 1

METRIC

G.W.P. 5379-02-00 LOCATION Hwy 69(New), Sta. 14+293 CL Med ORIGINATED BY N.L.B.
DIST 54 HWY 69 BOREHOLE TYPE C.F.S.S.A & NXL Rock Coring COMPILED BY G.D.
DATUM Geodetic DATE March 22&23, 2007 CHECKED BY G.D.

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		
203.2 0.0	Ground Surface Peat, fine fibrous						20	40	60	80	100									
202.6 0.6	Dark brown Clayey silt, trace sand thin sand partings Firm to stiff Brown/ Moist grey		1	SS	5								○							
			2	SS	9								○							
200.5 2.7	Bedrock Granitic gneiss: high strength fair to good quality		3	RC NQ	REC 100%											RQD 86%				
			4	RC NQ	REC 100%											RQD 71%				
197.4 5.8	End of borehole																			

* 2007 03 23



Water level measured
after drilling

C.F.S.S.A- Denotes
Continuous Flight Solid
Stem Augers

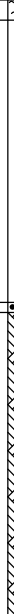

RECORD OF BOREHOLE No C7-4										1 of 1		METRIC		
G.W.P. 5379-02-00		LOCATION Hwy 69(New), Sta. 14+291, o/s 18.8m Rt. of CL Med				ORIGINATED BY N.L.B.								
DIST 54 HWY 69		BOREHOLE TYPE Continuous Flight Solid Stem Augers				COMPILED BY G.D.								
DATUM Geodetic		DATE March 23, 2007				CHECKED BY G.D.								
SOIL PROFILE			SAMPLES			DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL		
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	GROUND WATER CONDITIONS	ELEVATION SCALE	SHEAR STRENGTH kPa		W _p W W _L				
203.2	Ground Surface							20 40 60 80 100 ○ UNCONFINED + FIELD VANE ● QUICK TRIAXIAL × LAB VANE		20 40 60 WATER CONTENT (%)				
0.0	Clayey silt, organics to 0.3m						203							
202.3	Mottled Moist brown/grey													
0.9	End of borehole Refusal on probable bedrock													
	* Borehole dry													

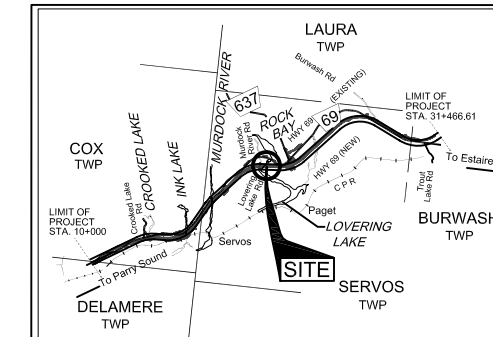
RECORD OF BOREHOLE No C7-5

1 of 1

METRIC

G.W.P. 5379-02-00 LOCATION Hwy 69(New), Sta. 14+291, o/s 45.9m Rt. of CL Med ORIGINATED BY N.L.B.
 DIST 54 HWY 69 BOREHOLE TYPE C.F.S.S.A & NXL Rock Coring COMPILED BY G.D.
 DATUM Geodetic DATE March 23, 2007 CHECKED BY G.D.

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										WATER CONTENT (%)		
								○ UNCONFINED		+ FIELD VANE								● QUICK TRIAXIAL		
203.1	Ground Surface						20	40	60	80	100						GR SA SI CL			
0.0	Topsoil																			
0.2	clayey silt, trace sand																			
	Stiff to Grey Moist firm to wet			1	SS	8														
				2	SS	5														
200.1			3	SS	2/5cm															
3.0	Sand, some silt		4	RC NQ	REC 40%												RQD 40%			
200.0	Compact Grey Wet Bedrock			5	RC NQ	REC 100%											RQD 100%			
3.1	Granitic gneiss: high strength poor becoming good to excellent quality			6	RC NQ	REC 100%											RQD 84%			
197.0	End of borehole																			
6.1																				
	* Borehole dry																			
	C.F.S.S.A- Denotes Continuous Flight Solid Stem Augers																			



KEY PLAN
SCALE
0 2 4 6 km

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 Mar 2007
- Head
- ARTESIAN WATER Encountered
- PIEZOMETER

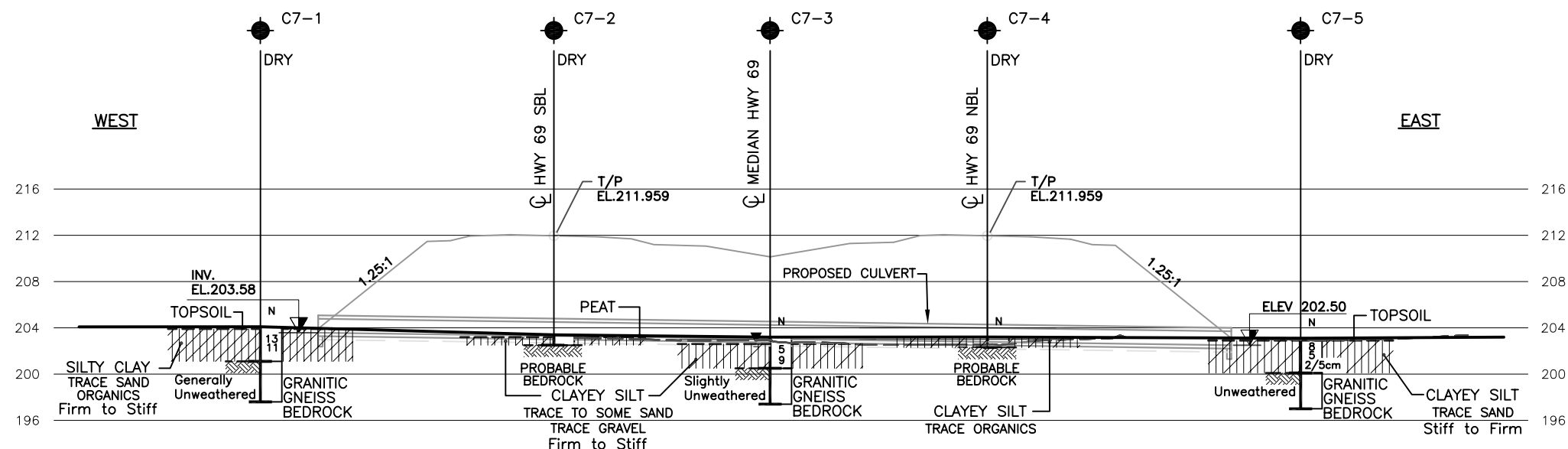
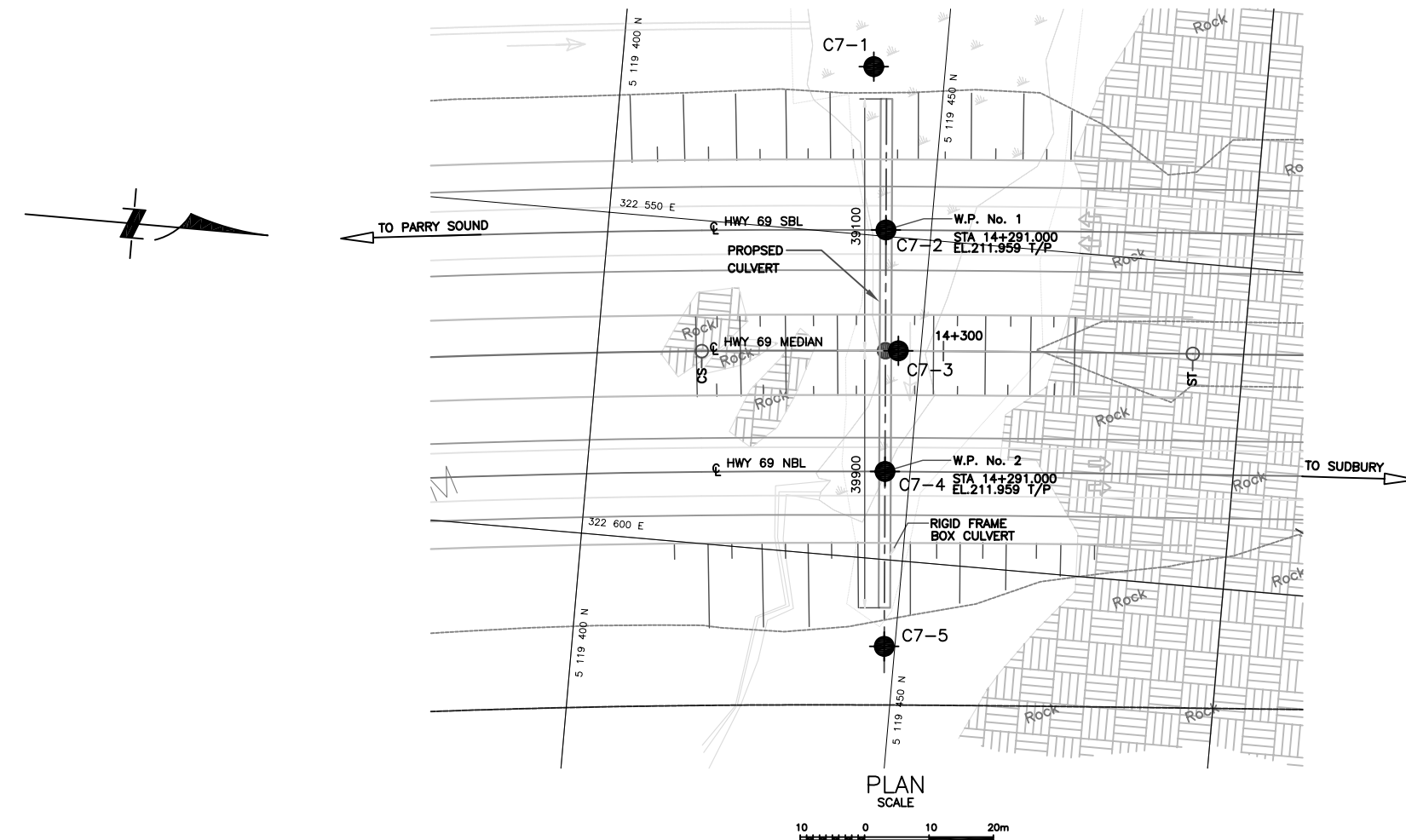
BH No	ELEVATION	STATION	OFFSET CL MEDIAN
C7-1	204.1	14+289	44.1m Lt.
C7-2	203.4	14+291	18.8m Lt.
C7-3	203.2	14+293	CL
C7-4	203.2	14+291	18.8m Rt.
C7-5	203.1	14+291	45.9m Rt.

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

REVISIONS	DATE	BY	DESCRIPTION

Geocres No. 411-218

HWY No	69	DIST	54
SUBM'D	GD	CHECKED	CN
DRAWN	NA	CHECKED	CN
DATE	OCT. 25, 2007	APPROVED	BRG
SITE		DWG	C7-1

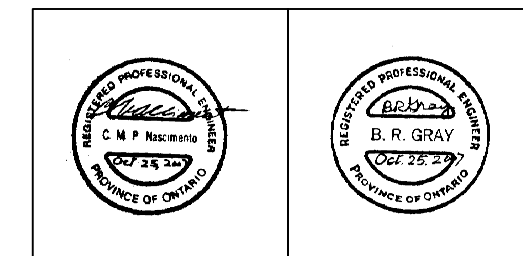


CULVERT PROFILE

SCALE
0 5 10

NOTE:

- THIS DRAWING IS FOR SUBSURFACE INFORMATION ONLY. SURFACE DETAILS AND FEATURES ARE FOR CONCEPTUAL ILLUSTRATION.



REF No TSH Drawing: HWY 69 CULV7, dated June 2007
received via email on June 19, 2007