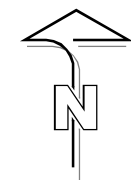
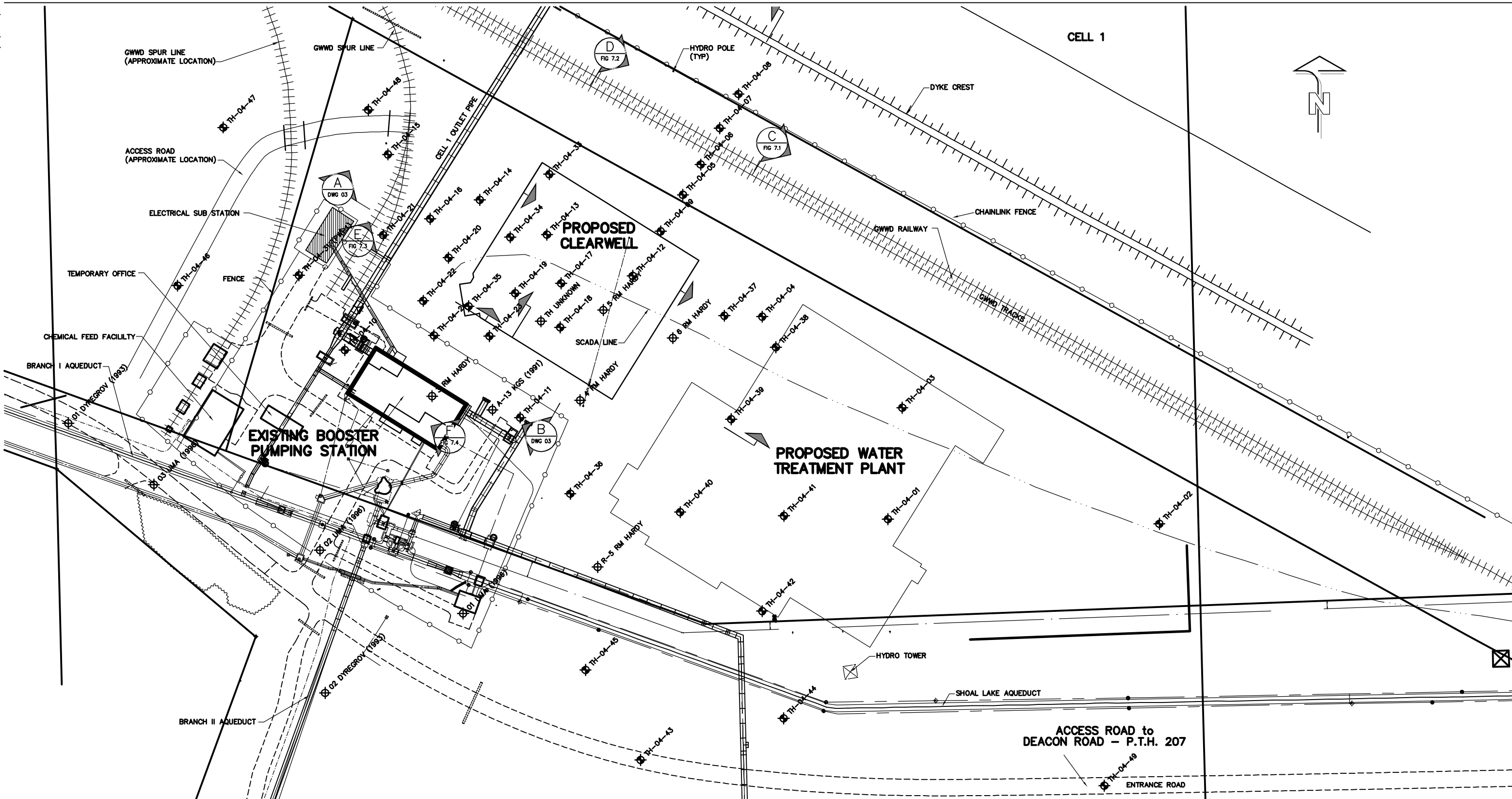
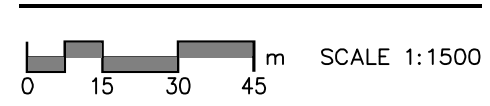


**Appendix A**  
**(Revised Addendum 1)**

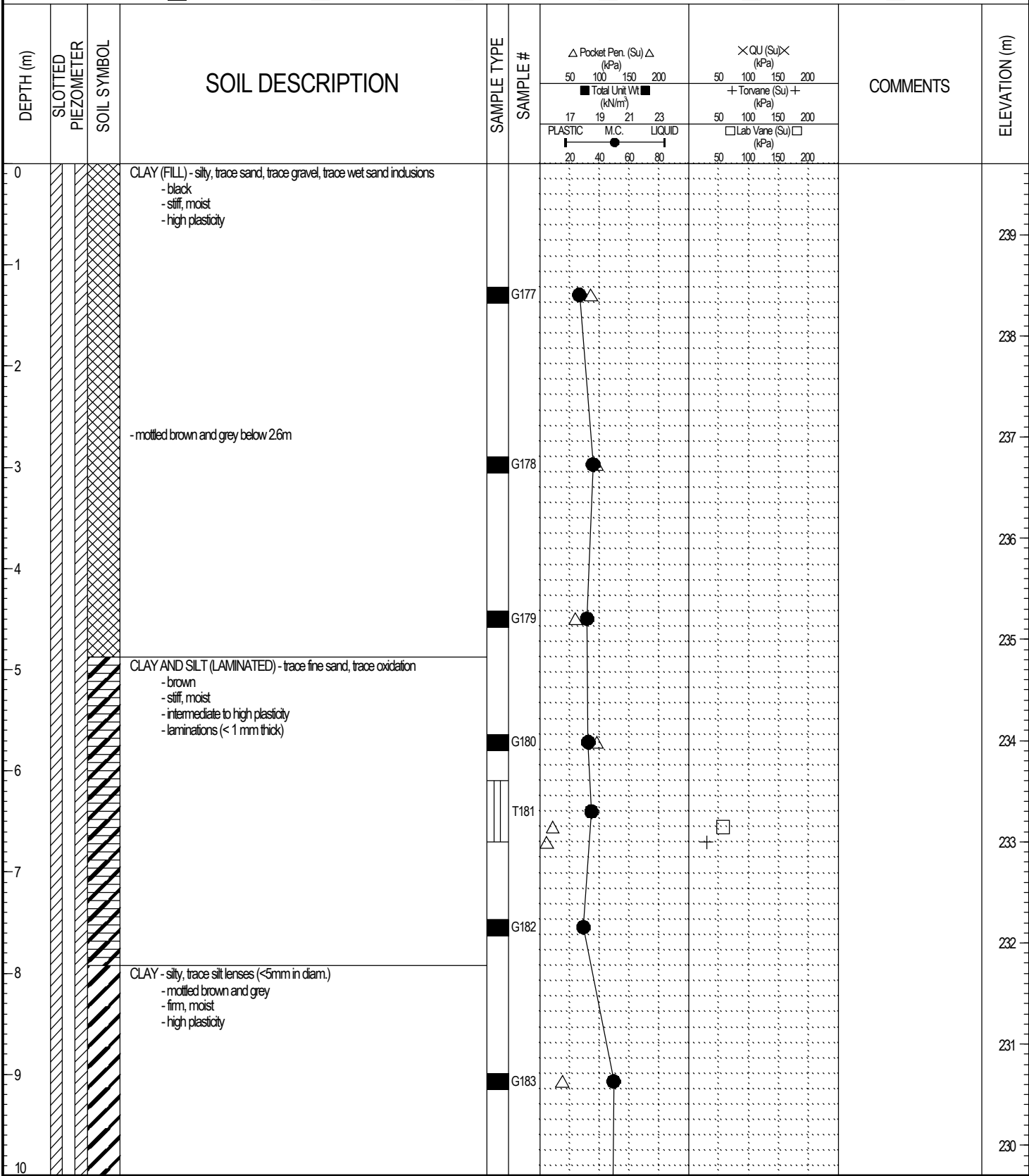
**Test Hole Logs**



- ⊕ TESTHOLES
- ⊕ TESTHOLES BY OTHERS

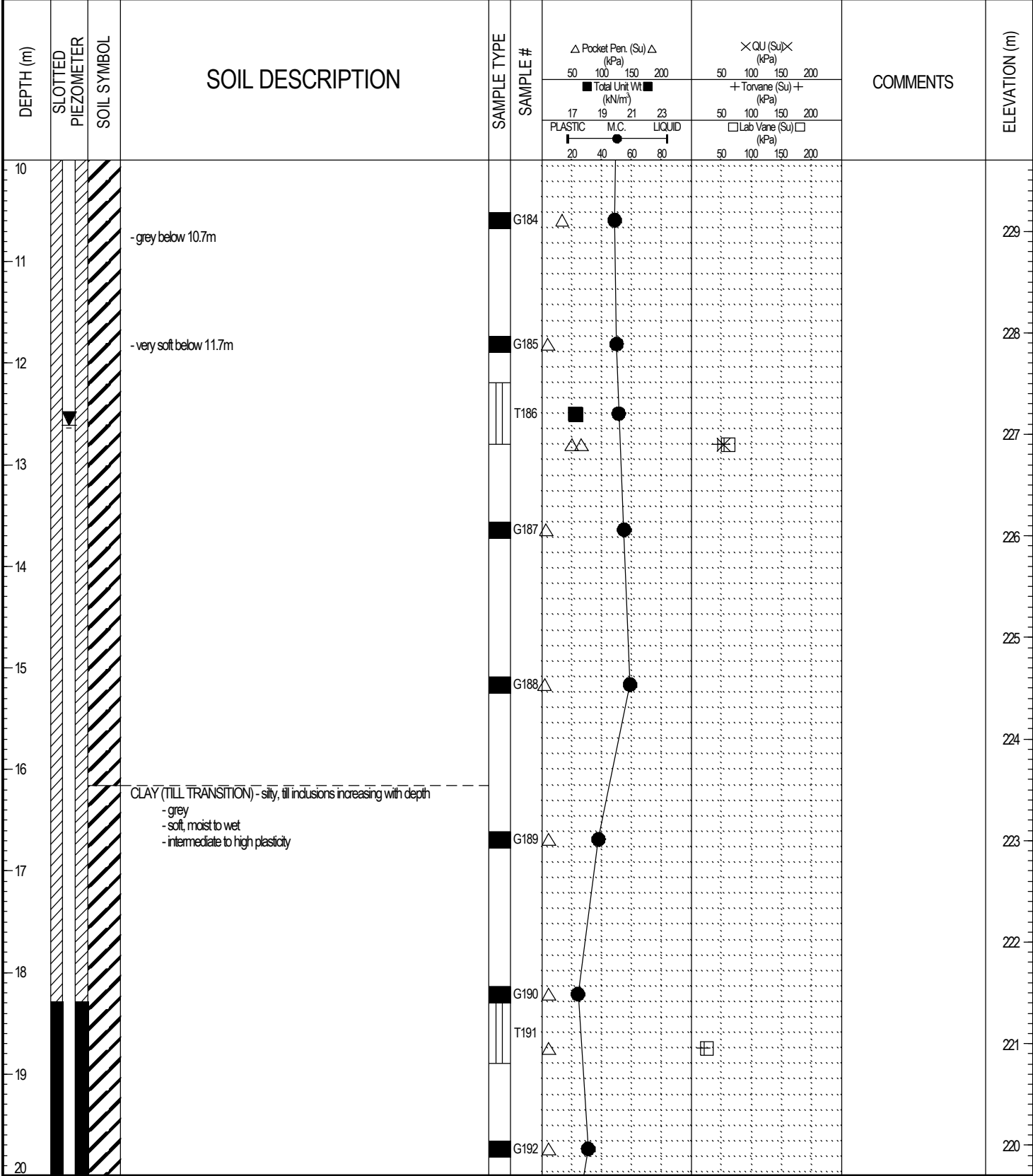


PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-01		
LOCATION: WTP - N 5524018.031 E 647939.000				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: RM 30 - 125 mm Solid Stem Augers		ELEVATION (m): 239.7	
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



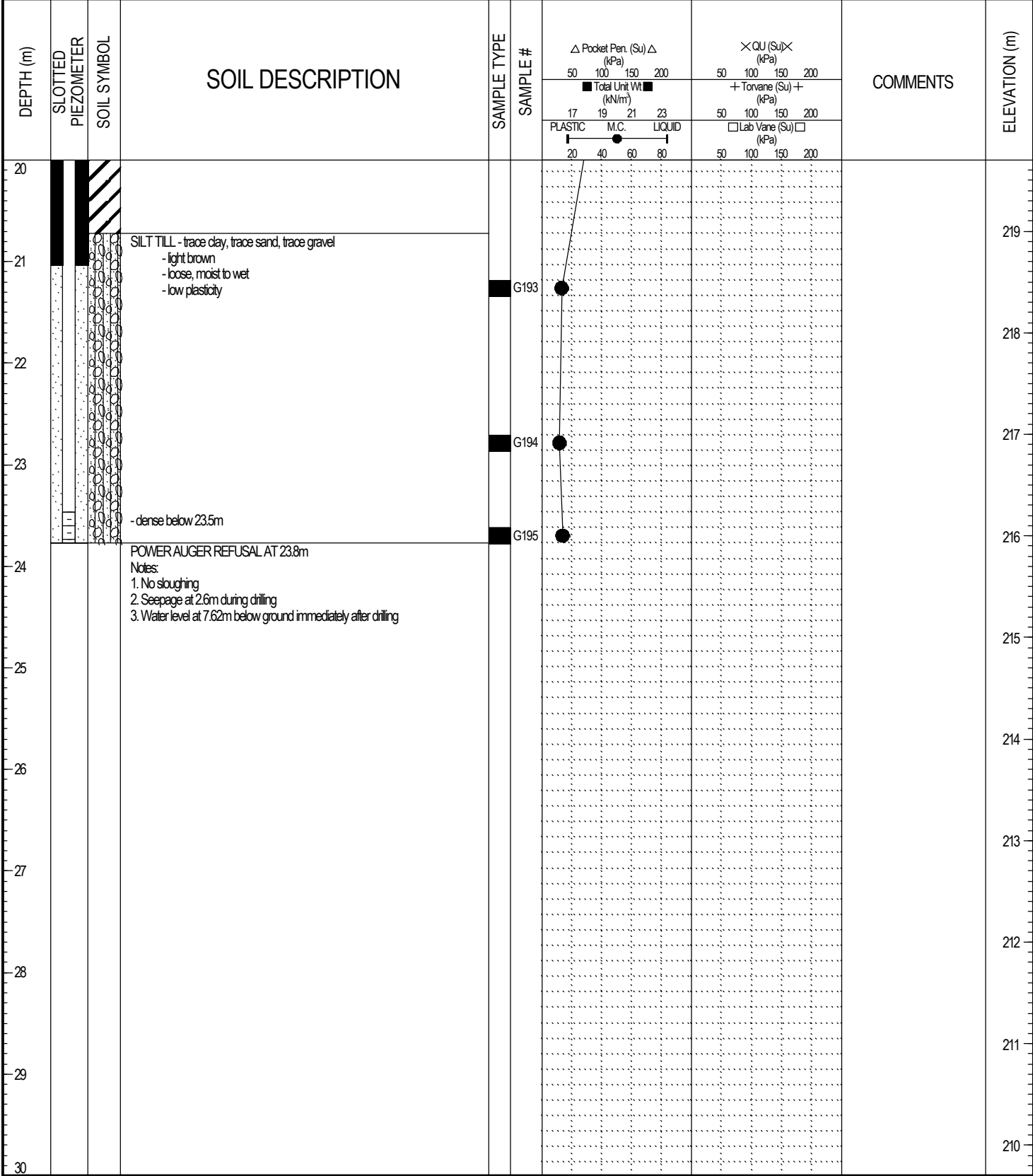
LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-01		
LOCATION: WTP - N 5524018.031 E 647939.000				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: RM 30 - 125 mm Solid Stem Augers		ELEVATION (m): 239.7	
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



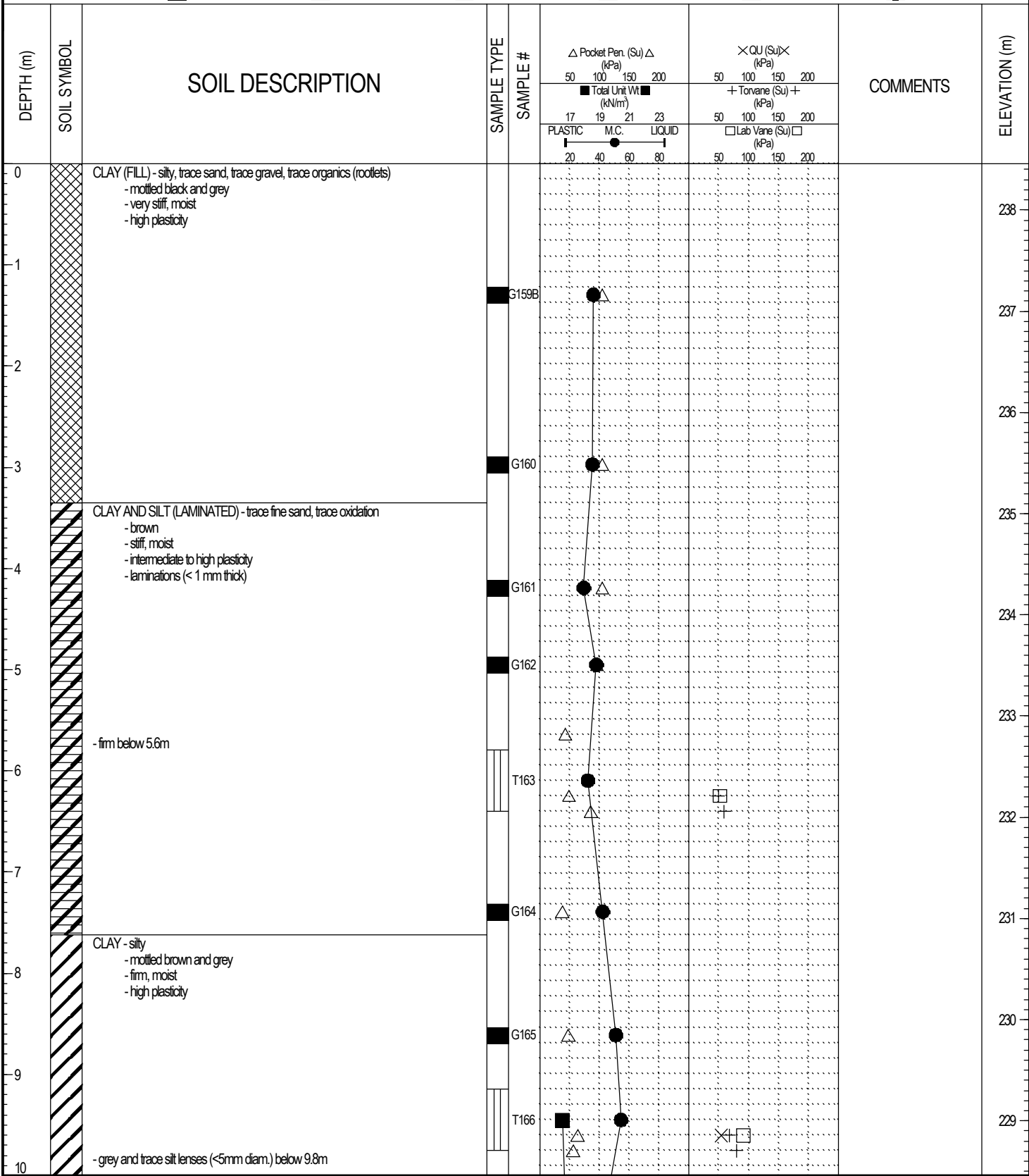
LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-01		
LOCATION: WTP - N 5524018.031 E 647939.000				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: RM 30 - 125 mm Solid Stem Augers		ELEVATION (m): 239.7	
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-02
LOCATION: WTP - N 5524039.025 E 648058.040		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 238.458
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

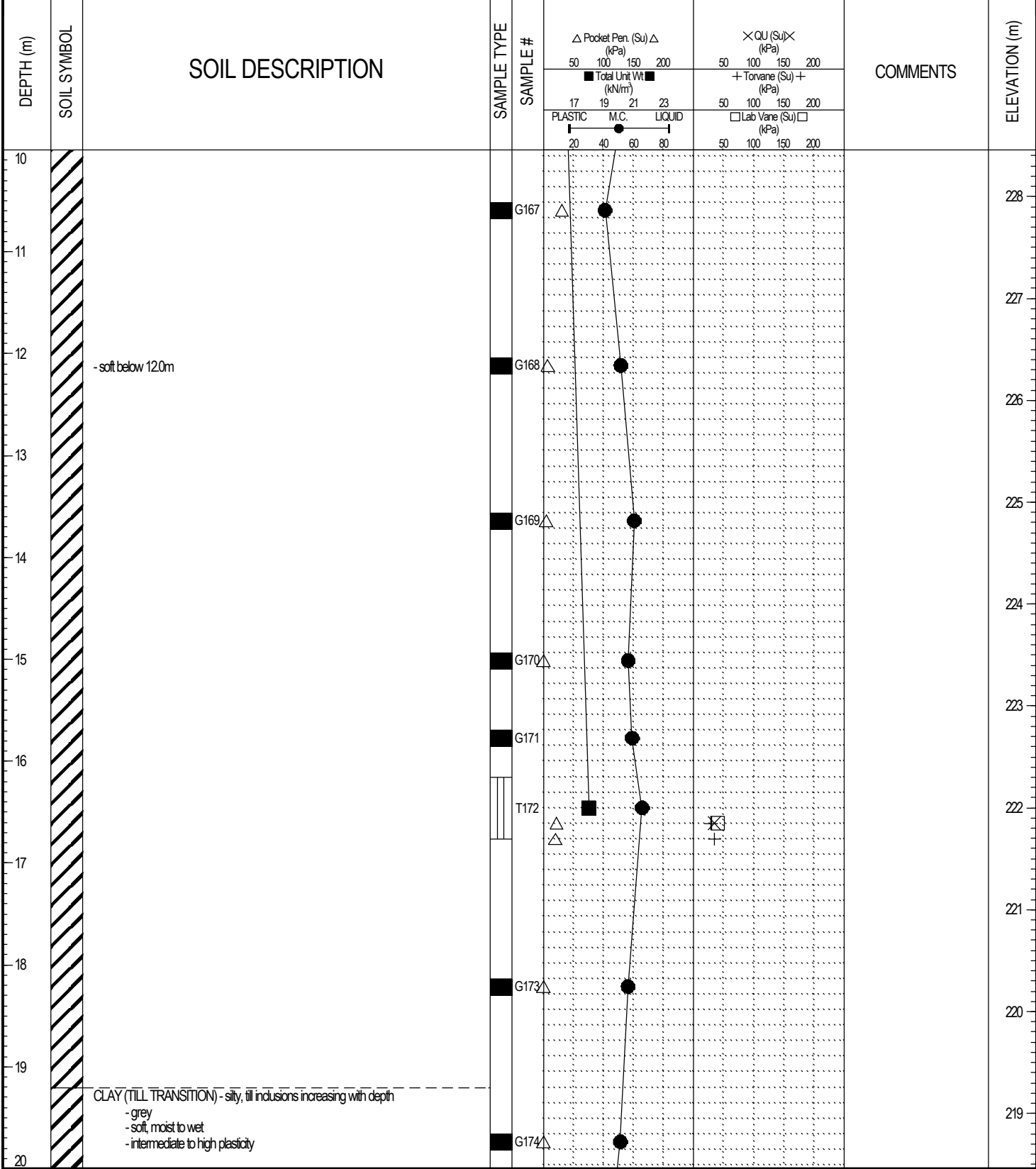


LOGGED BY: Kate Franklin	COMPLETION DEPTH: 22.86 m
REVIEWED BY:	COMPLETION DATE: 4/10/04
PROJECT ENGINEER: Ken Skafffeld	



PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-02
LOCATION: WTP - N 5524039.025 E 648058.040		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 238.458

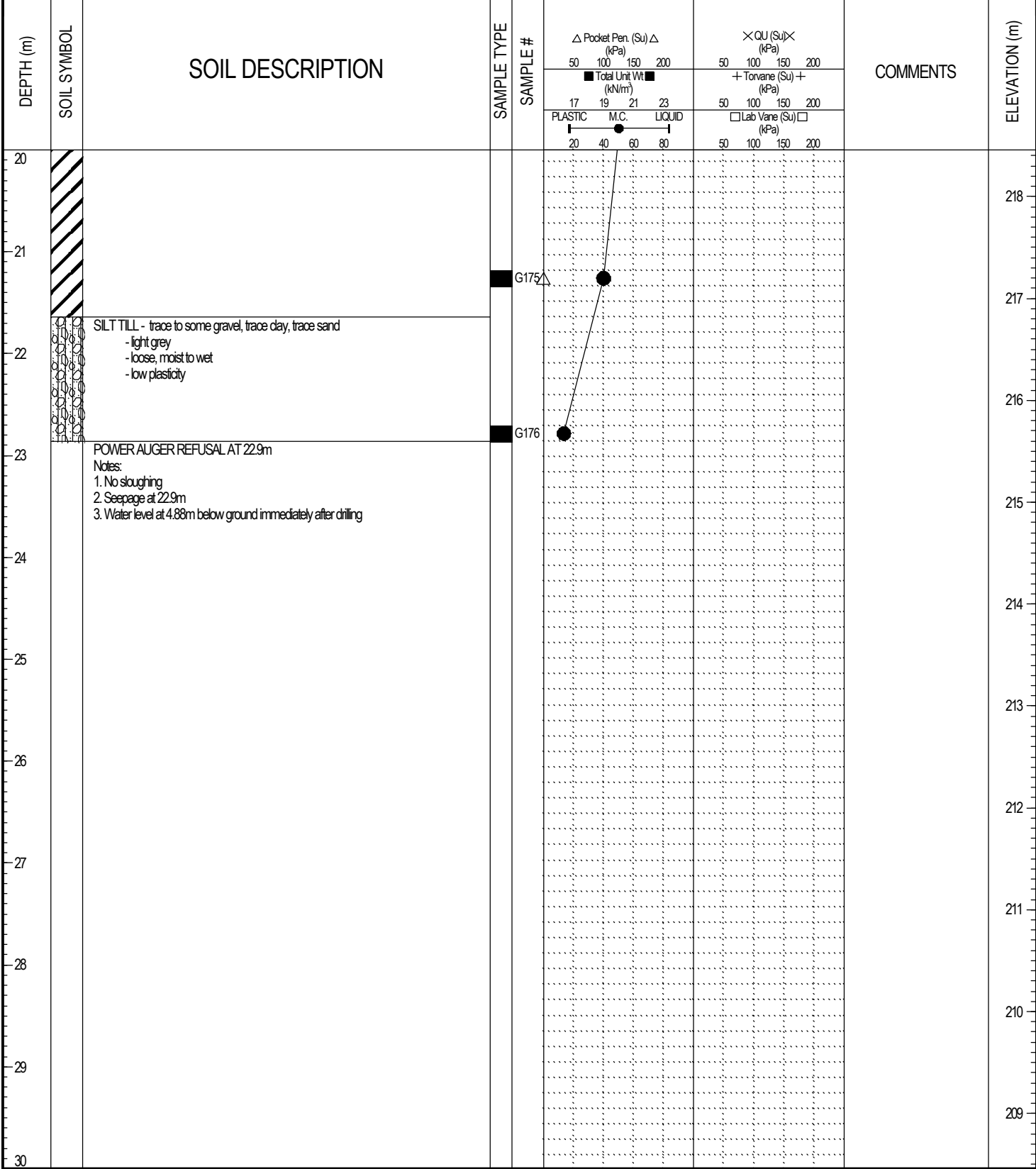
SAMPLE TYPE     GRAB     SHELBY TUBE     SPLIT SPOON     BULK     NO RECOVERY     CORE



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant      CLIENT: City of Winnipeg (Earth Tech Can Ltd)      TESTHOLE NO: 04-02  
 LOCATION: WTP - N 5524039.025 E 648058.040      PROJECT NO.: 3398-055-00-01  
 CONTRACTOR: Paddock Drilling Ltd.      METHOD: RM 30 - 125 mm Solid Stem Augers      ELEVATION (m): 238.458

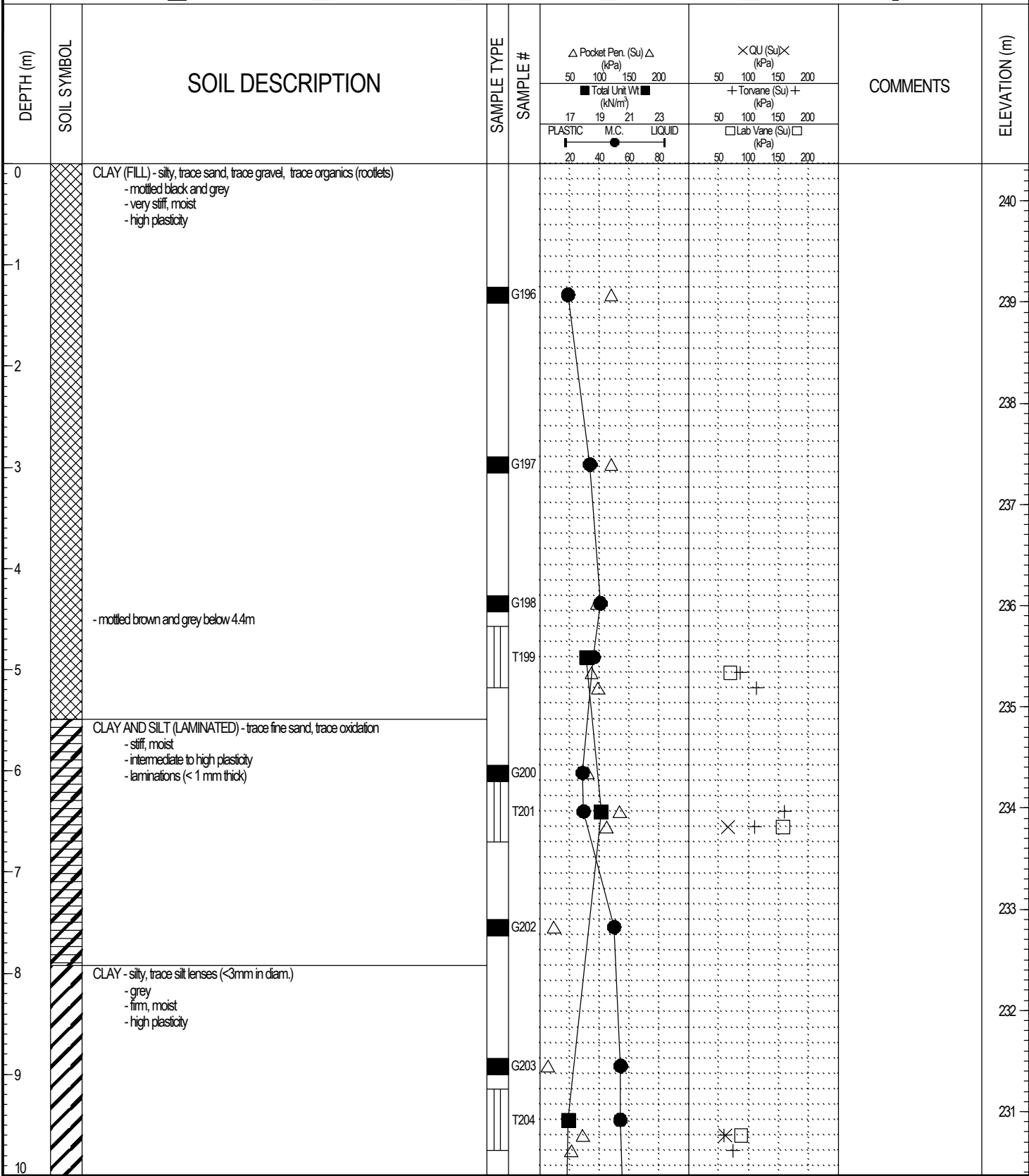
SAMPLE TYPE     GRAB     SHELBY TUBE     SPLIT SPOON     BULK     NO RECOVERY     CORE



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

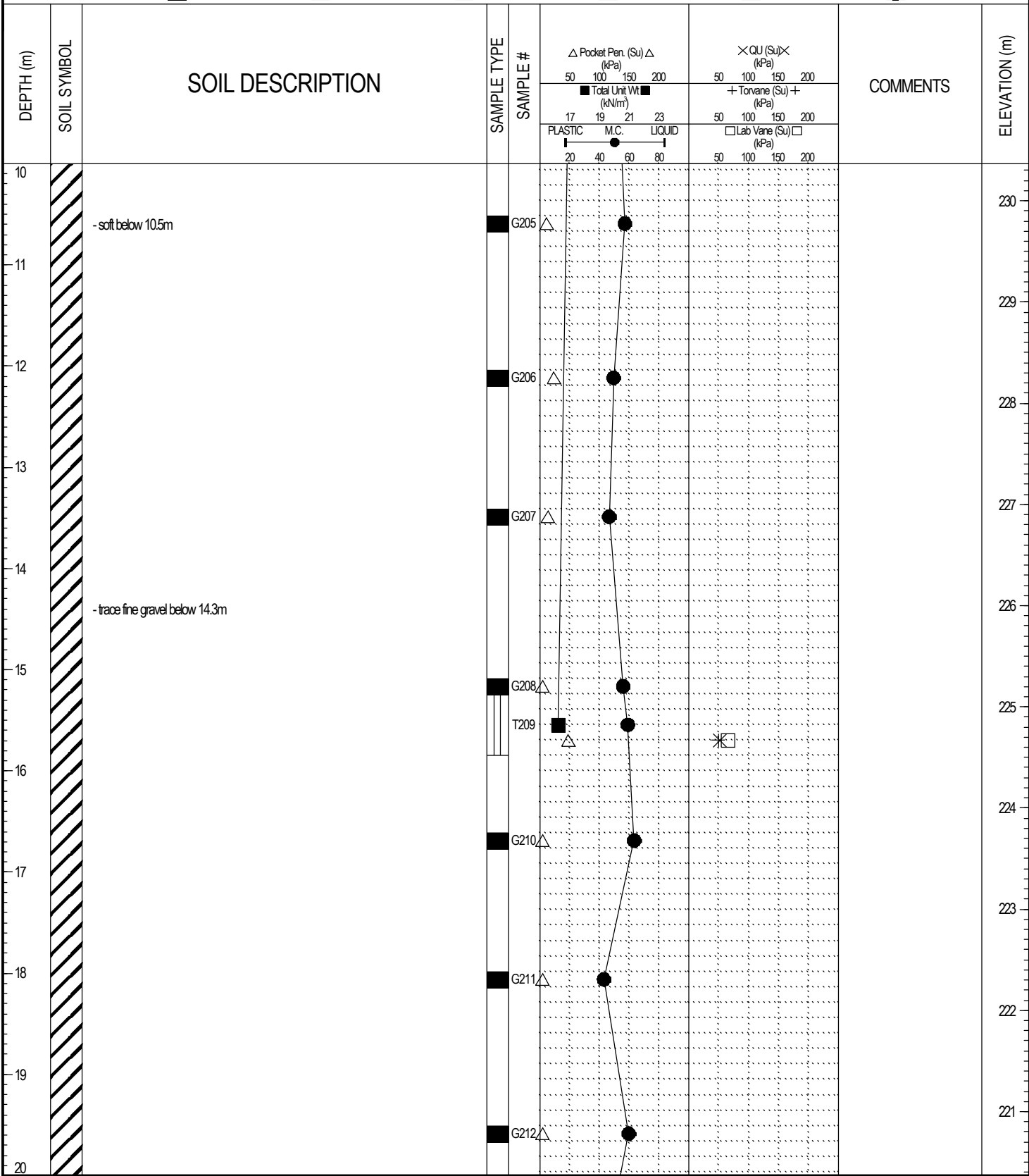


PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-03
LOCATION: WTP - N 5524091.980 E 647959.997		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 240.367
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

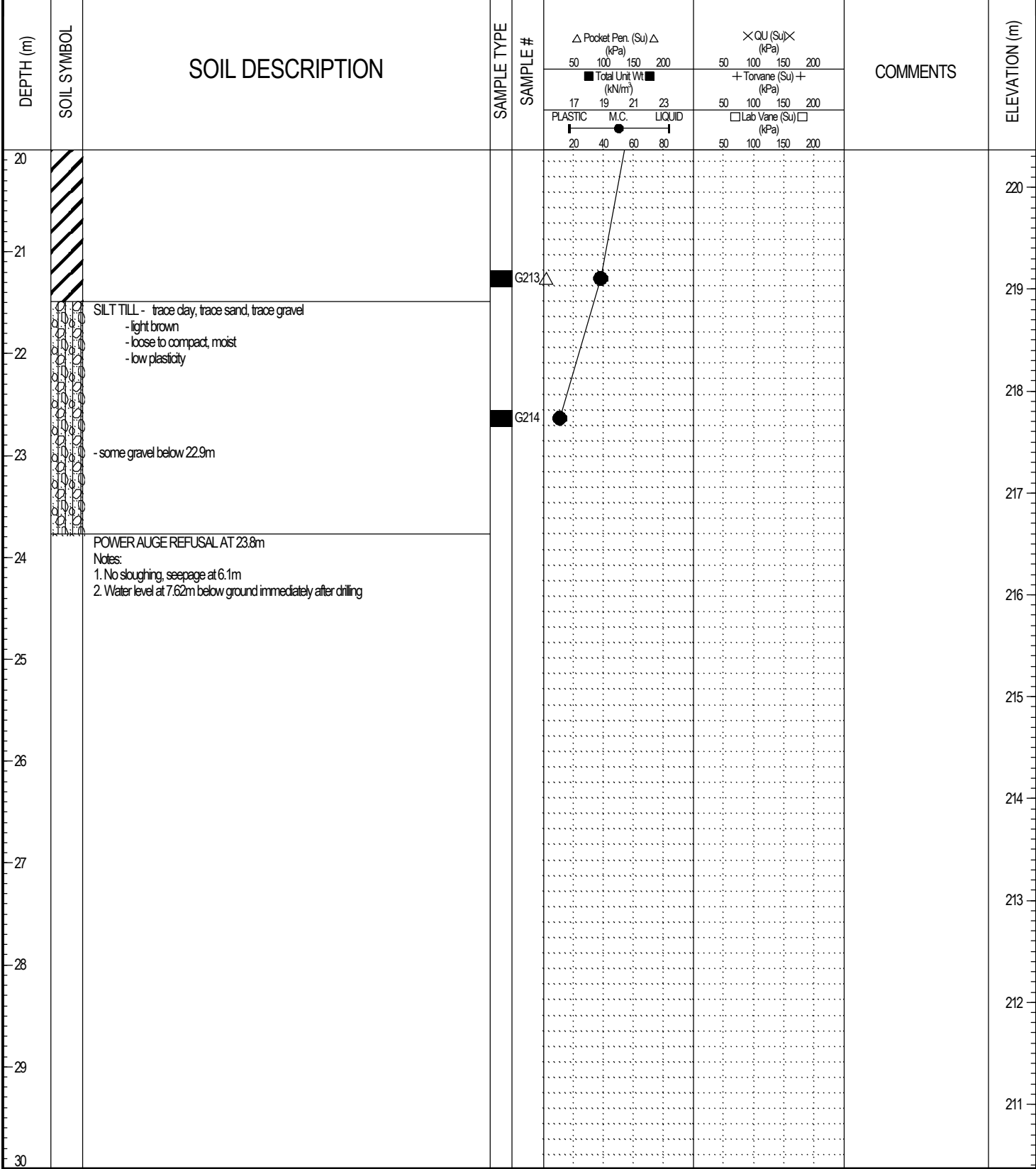
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-03
LOCATION: WTP - N 5524091.980 E 647959.997		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 240.367
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

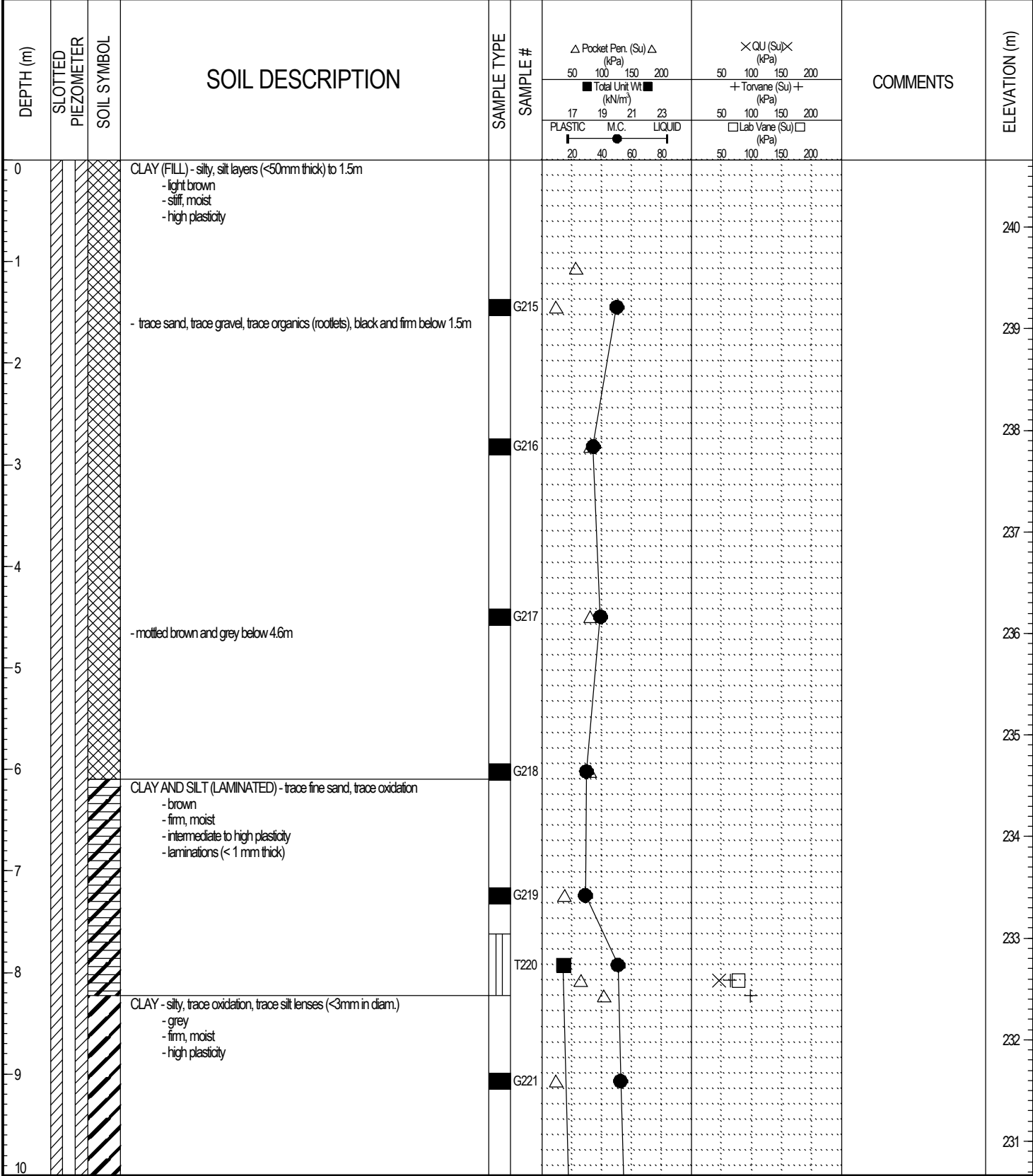
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-03
LOCATION: WTP - N 5524091.980 E 647959.997		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 240.367

SAMPLE TYPE  GRAB  SHELBY TUBE  SPLIT SPOON  BULK  NO RECOVERY  CORE



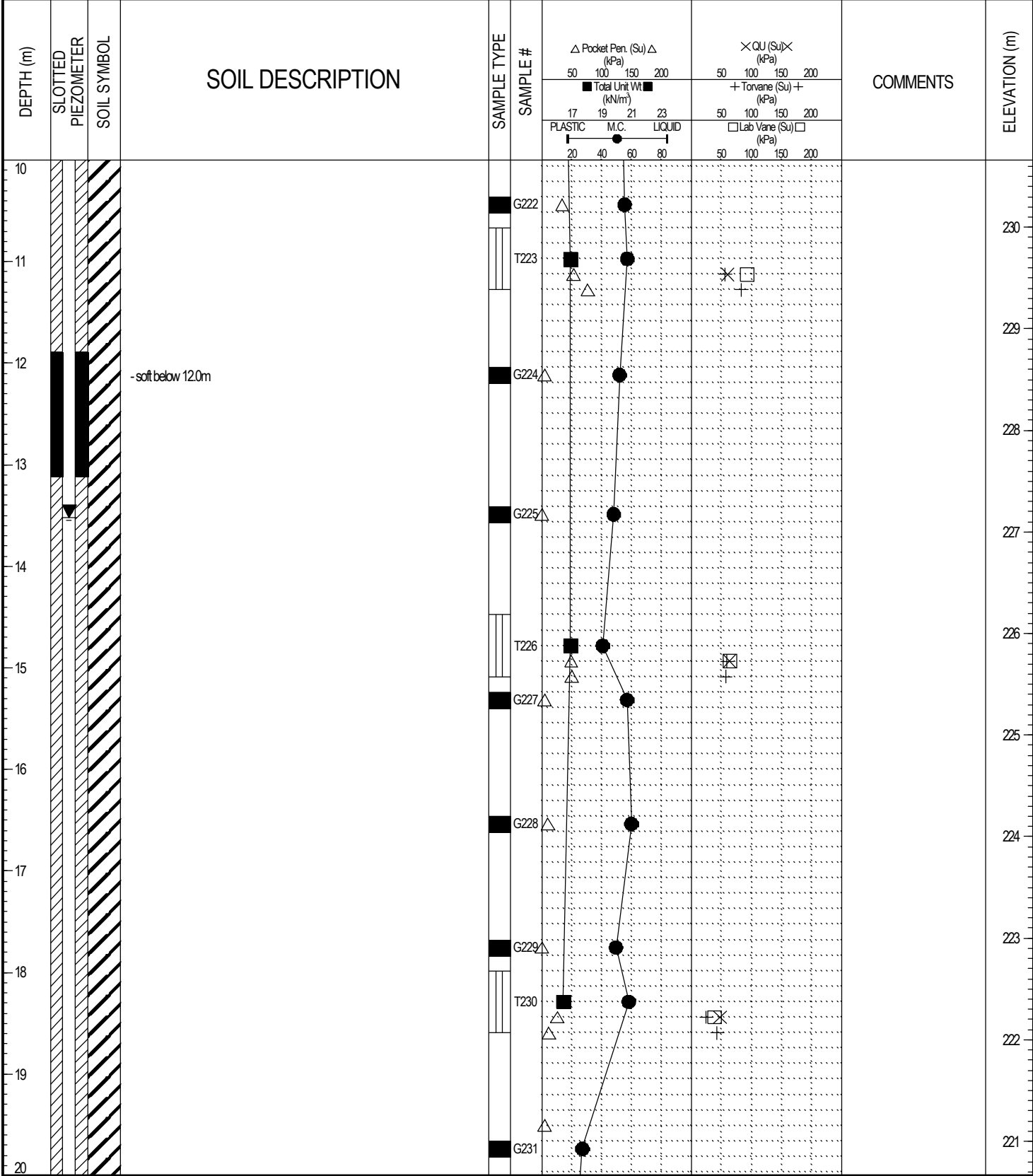
LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-04		
LOCATION: WTP - N 5524124.018 E 647902.002				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: RM 30 - 125 mm Solid Stem Augers		ELEVATION (m): 240.662	
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



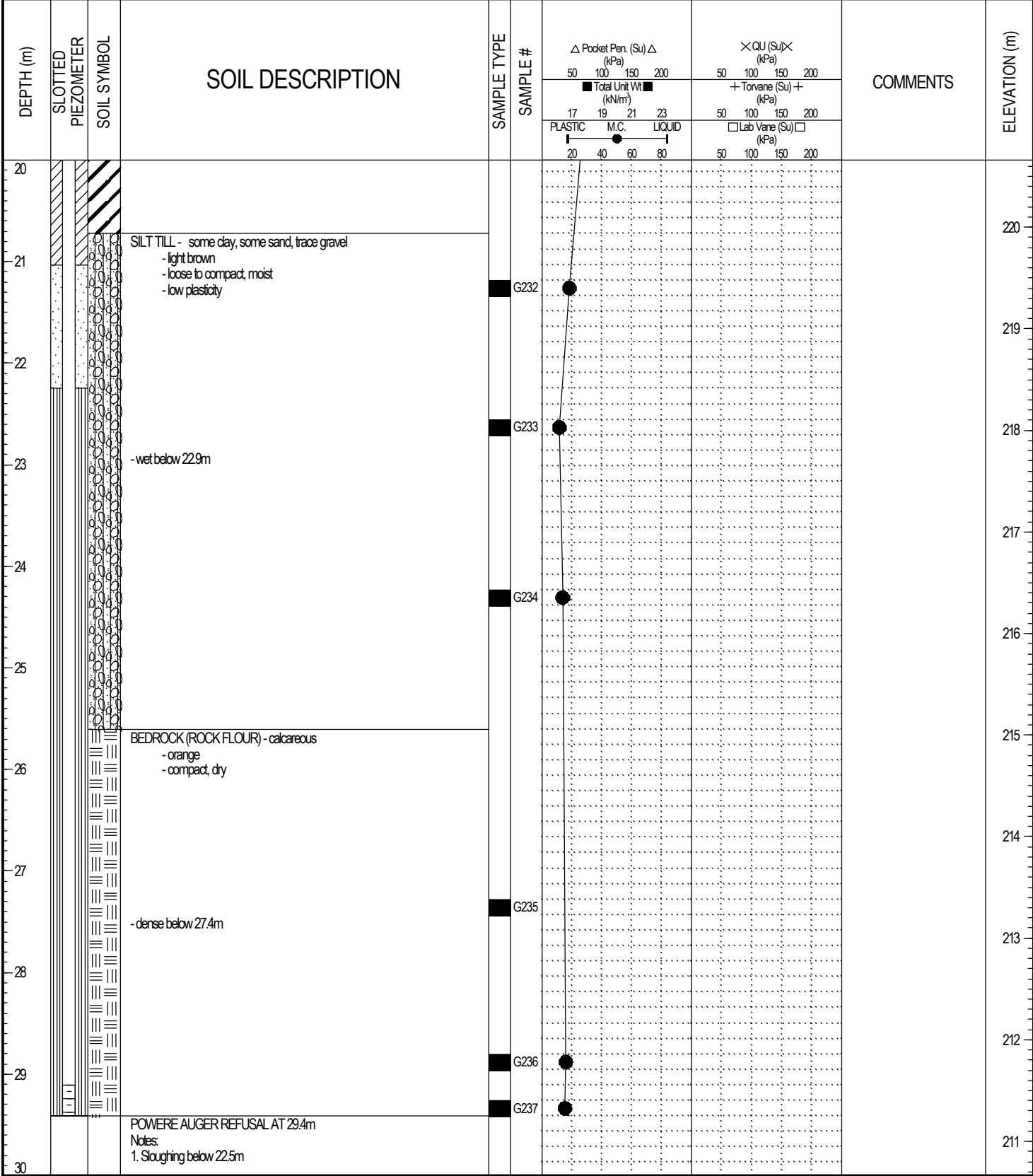
LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-04		
LOCATION: WTP - N 5524124.018 E 647902.002				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: RM 30 - 125 mm Solid Stem Augers		ELEVATION (m): 240.662	
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-04		
LOCATION: WTP - N 5524124.018 E 647902.002				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: RM 30 - 125 mm Solid Stem Augers		ELEVATION (m): 240.662	
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: <b>04-04</b>
LOCATION: WTP - N 5524124.018 E 647902.002		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 240.662
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE <input type="checkbox"/> GRAVEL <input type="checkbox"/> SLOUGH <input type="checkbox"/> GROUT <input type="checkbox"/> CUTTINGS <input type="checkbox"/> SAND	

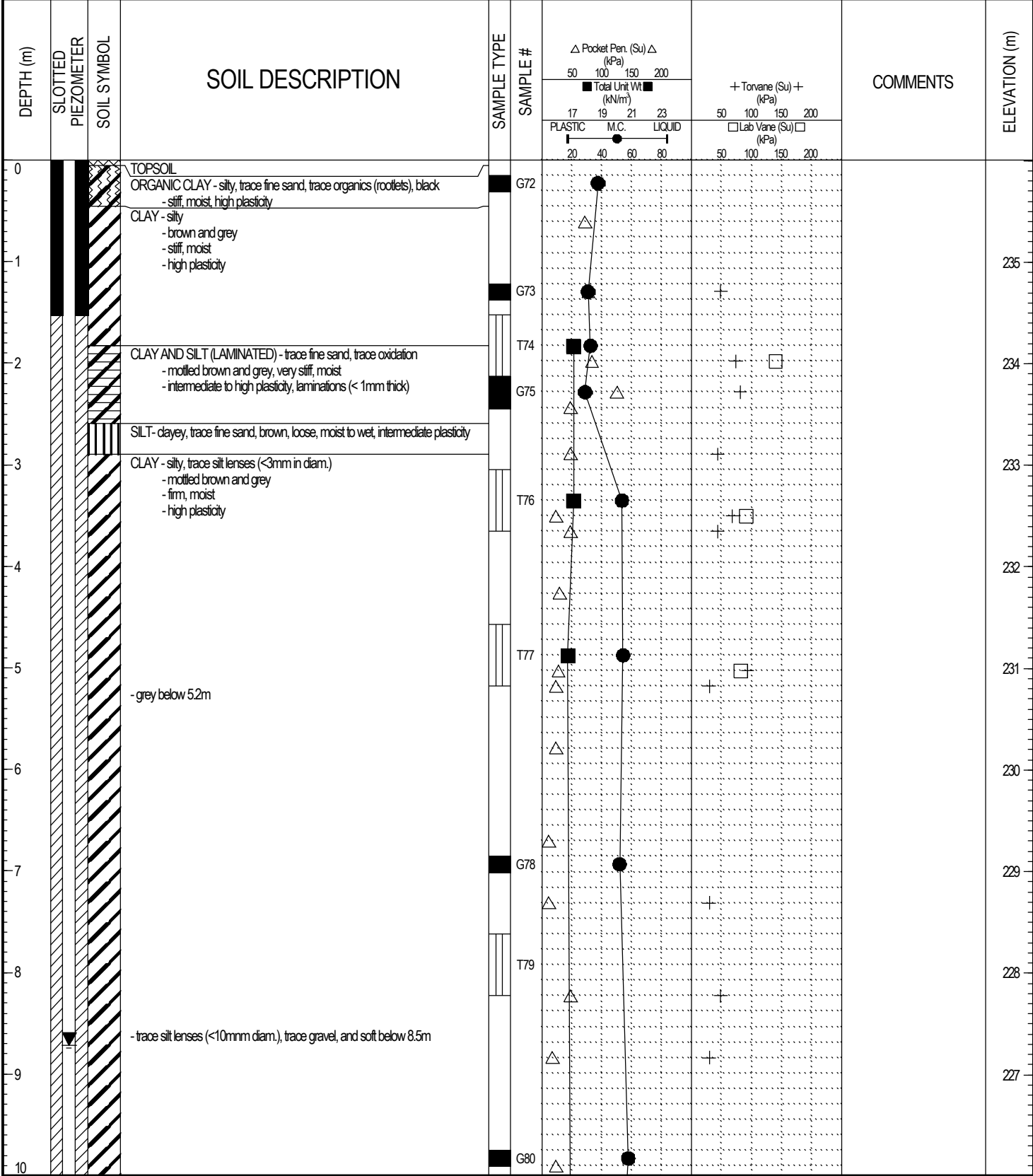
DEPTH (m)	SLOTTED PIEZOMETER	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	Δ Pocket Pen. (Su) Δ (kPa) 50 100 150 200 <input checked="" type="checkbox"/> Total Unit Wt (kN/m³) 17 19 21 23 PLASTIC M.C. LIQUID 20 40 60 80	× QU (Su) × (kPa) 50 100 150 200 + Torvane (Su) + (kPa) 50 100 150 200 <input type="checkbox"/> Lab Vane (Su) <input type="checkbox"/> (kPa)	COMMENTS	ELEVATION (m)
30			2. Seepage at 3.1m 3. Water level at 11.89m below ground immediately after drilling						240
31									239
32									238
33									237
34									236
35									235
36									234
37									233
38									232
39									231
40									230

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



LOGGED BY: Kate Franklin	COMPLETION DEPTH: 29.41 m
REVIEWED BY:	COMPLETION DATE: 6/10/04
PROJECT ENGINEER: Ken Skaffeld	Page 4 of 4

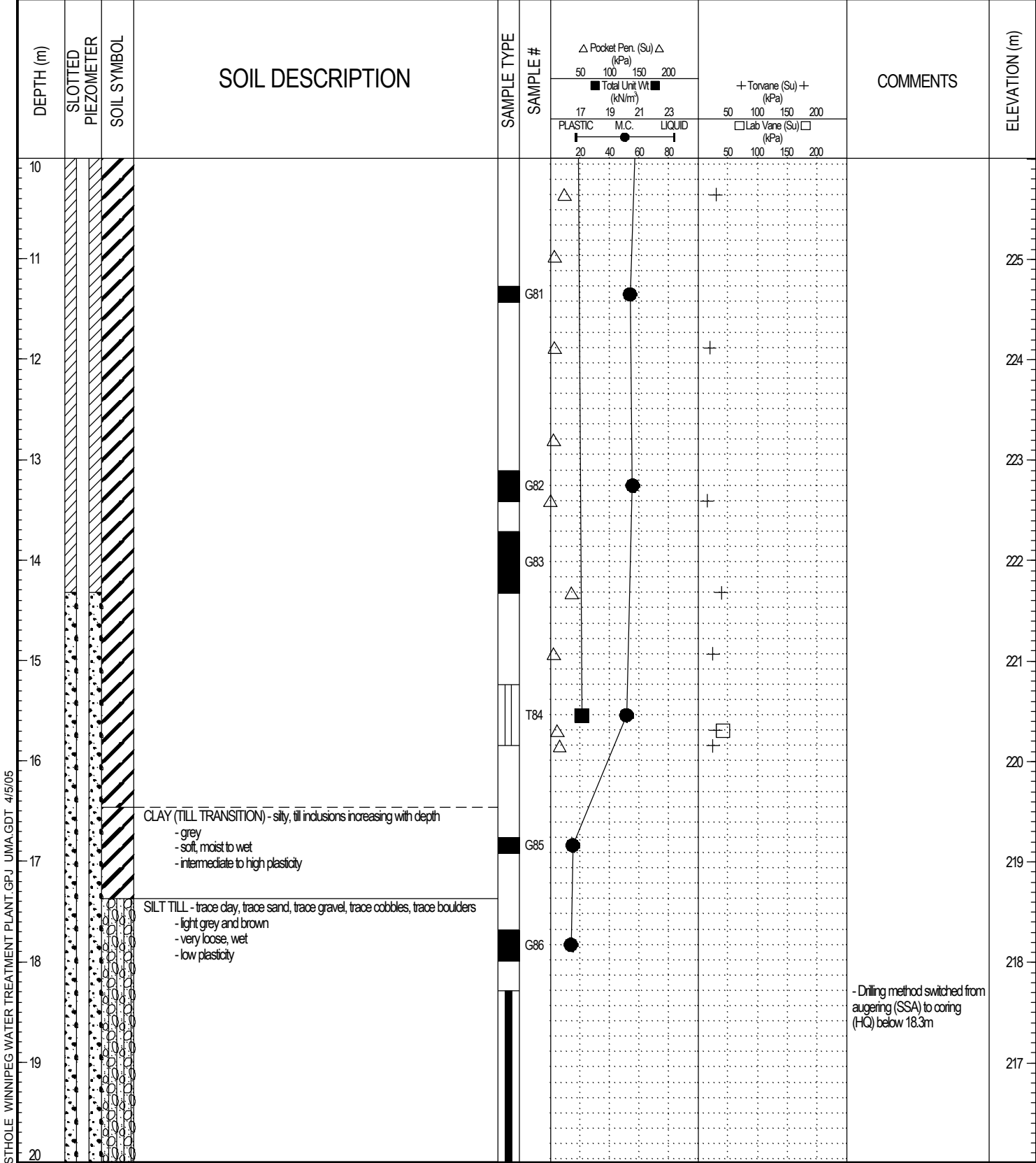
PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO.: 04-05		
LOCATION: WTP - N 5524149.497 E 647855.683				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: Nodwell-125 mm Solid Stem Augers		ELEVATION (m): 236.006	
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-05		
LOCATION: WTP - N 5524149.497 E 647855.683				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: Nodwell-125 mm Solid Stem Augers		ELEVATION (m): 236.006	
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND

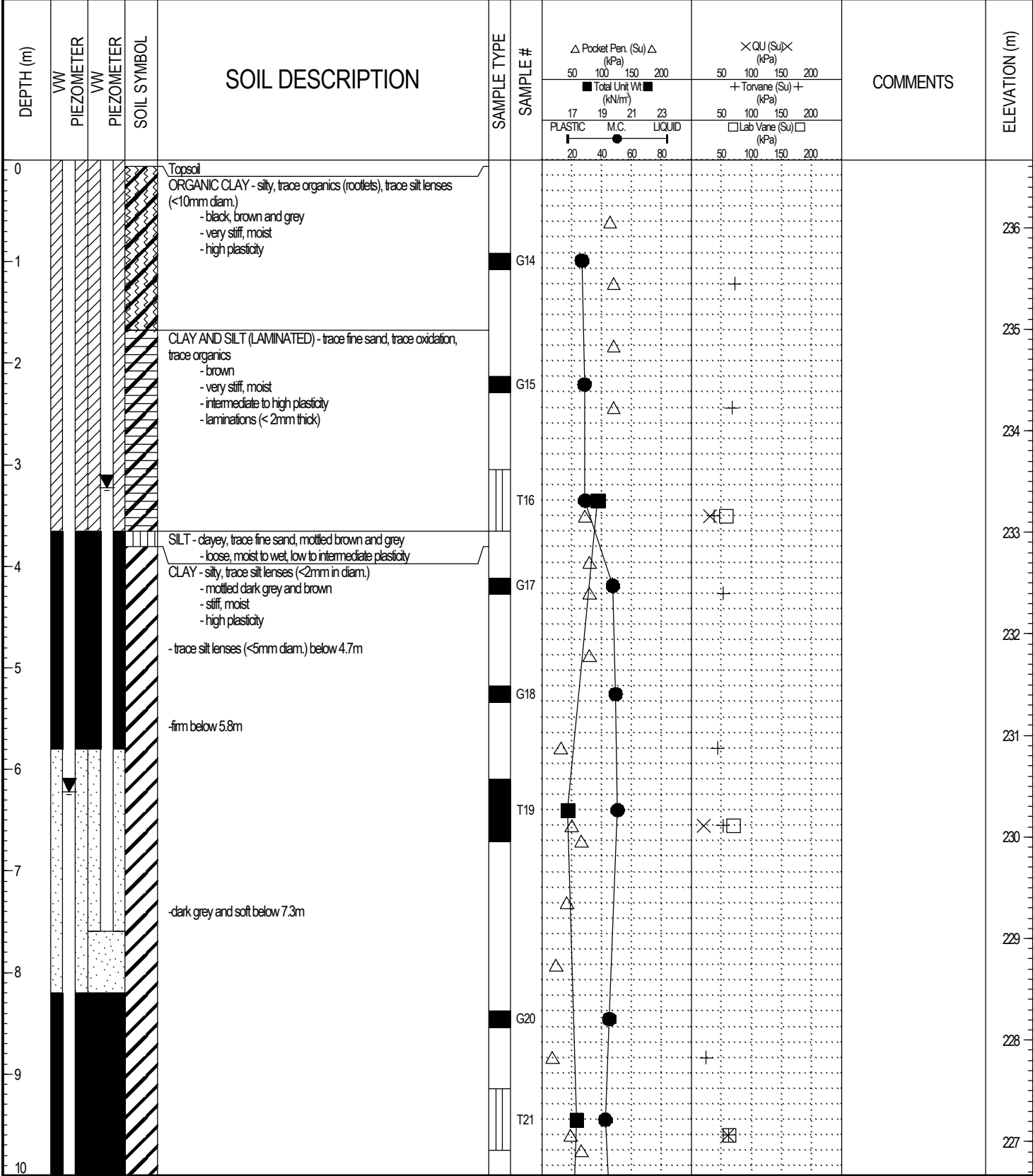


PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-05		
LOCATION: WTP - N 5524149.497 E 647855.683				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: Nodwell-125 mm Solid Stem Augers		ELEVATION (m): 236.006	
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> SPLIT SPOON	<input type="checkbox"/> BULK	<input type="checkbox"/> NO RECOVERY	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> CUTTINGS	<input type="checkbox"/> SAND

DEPTH (m)	SLOTTED PIEZOMETER	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	Pocket Pen. (Su) Δ (kPa)		+ Torvane (Su) + (kPa)		COMMENTS	ELEVATION (m)
						50	100	150	200		
20			LIMESTONE BEDROCK -150mm fracture at 20.4m								
21											215
22											214
23			END OF TEST HOLE AT 22.7m in LIMESTONE BEDROCK Notes: 1. No sloughing 2. Seepage at 2.61m 3. Standpipe SP-5 installed - Tip for SP-5 at Elevation 213.31m								213
24											212
25											211
26											210
27											209
28											208
29											207
30											

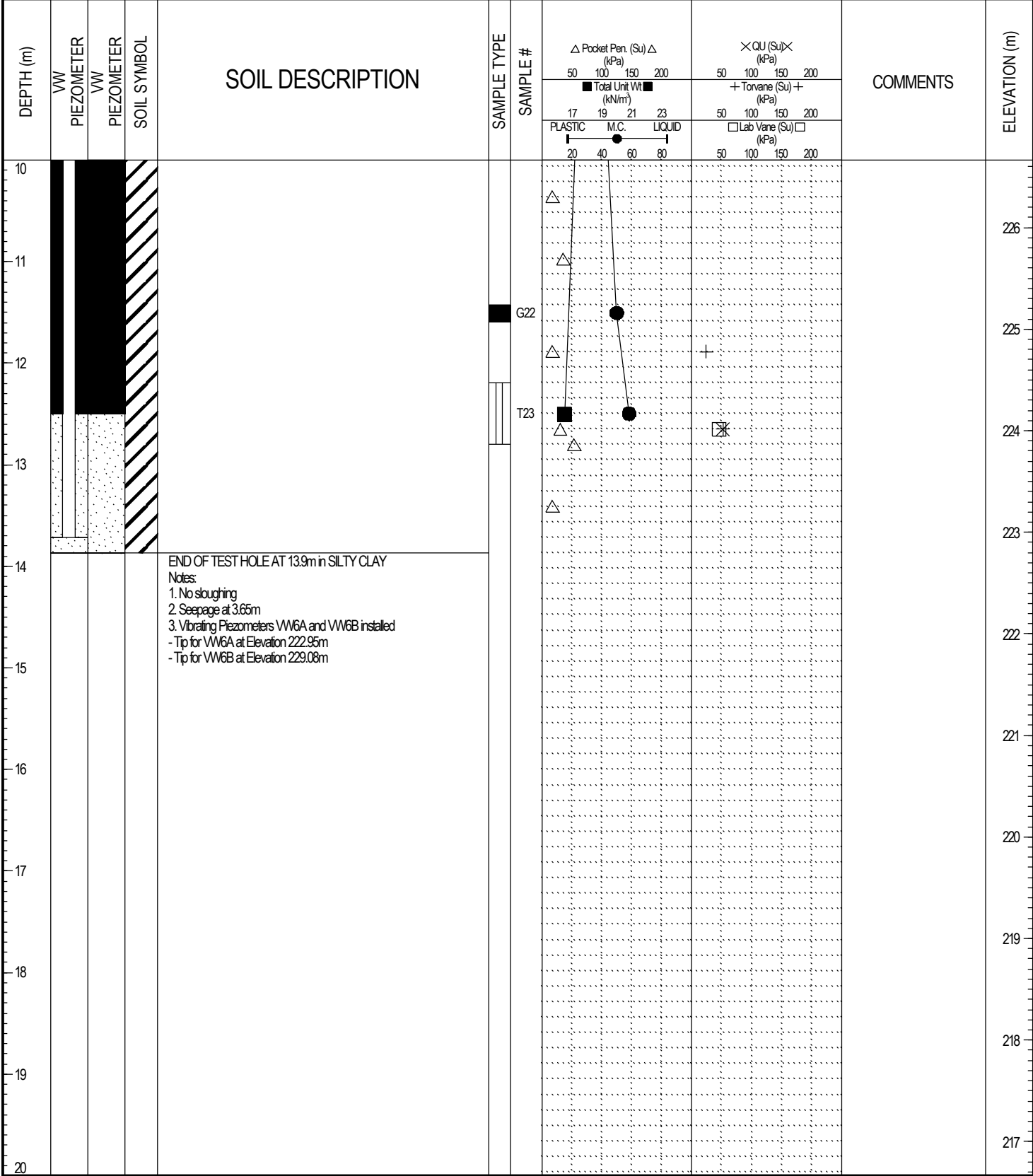
LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-06			
LOCATION: WTP - N 5524161.864 E 647862.951				PROJECT NO.: 3398-055-00-01			
CONTRACTOR: Paddock Drilling Ltd.			METHOD: Acker - RM 5 - 125 mm Solid Stem Augers				
ELEVATION (m): 236.665							
SAMPLE TYPE		GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE		BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



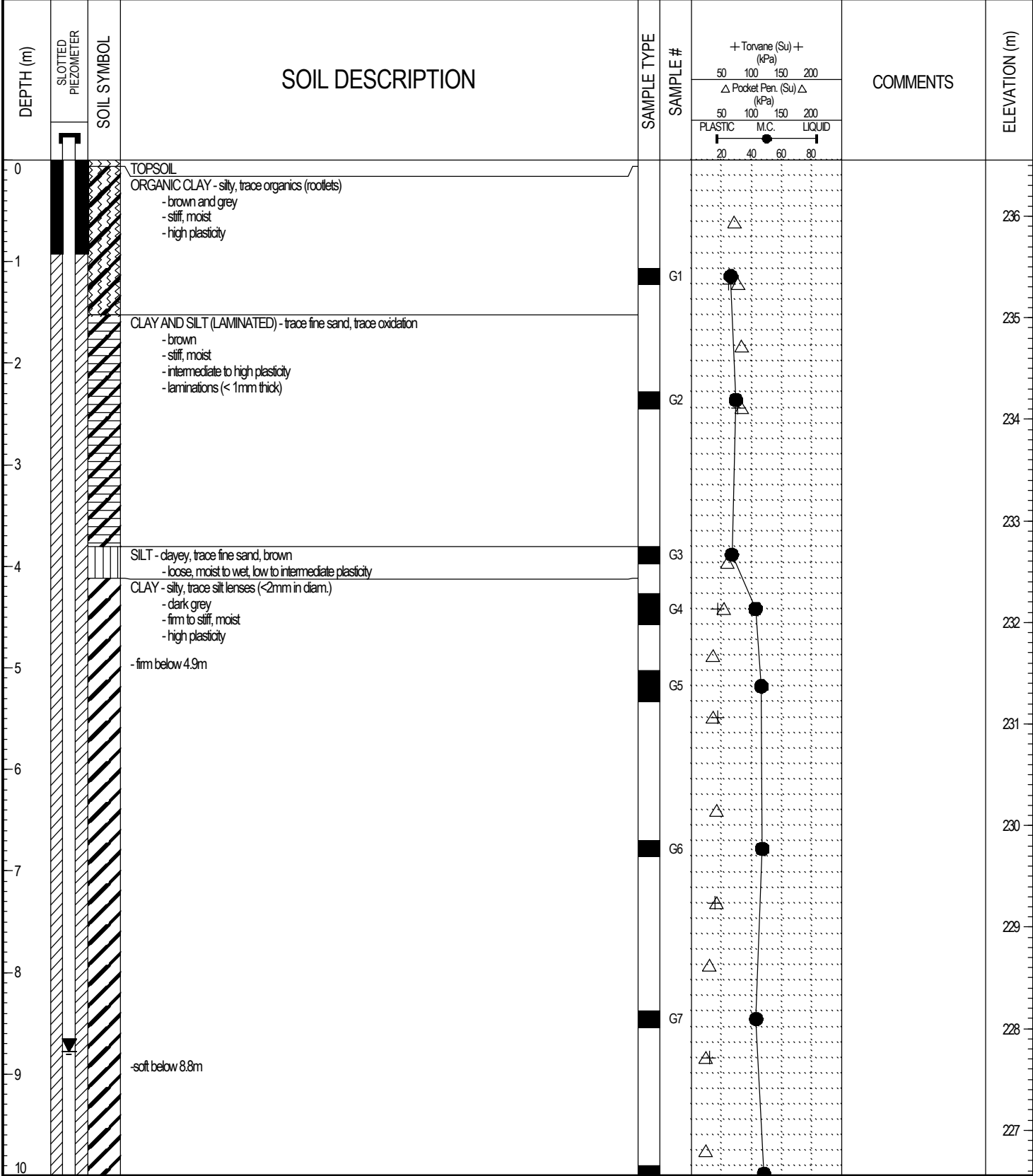
LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-06	
LOCATION: WTP - N 5524161.864 E 647862.951				PROJECT NO.: 3398-055-00-01	
CONTRACTOR: Paddock Drilling Ltd.			METHOD: Acker - RM 5 - 125 mm Solid Stem Augers		
SAMPLE TYPE		GRAB	SHELBY TUBE	SPLIT SPOON	BULK
BACKFILL TYPE		BENTONITE	GRAVEL	SLOUGH	GROUT
				NO RECOVERY	CORE
				CUTTINGS	SAND

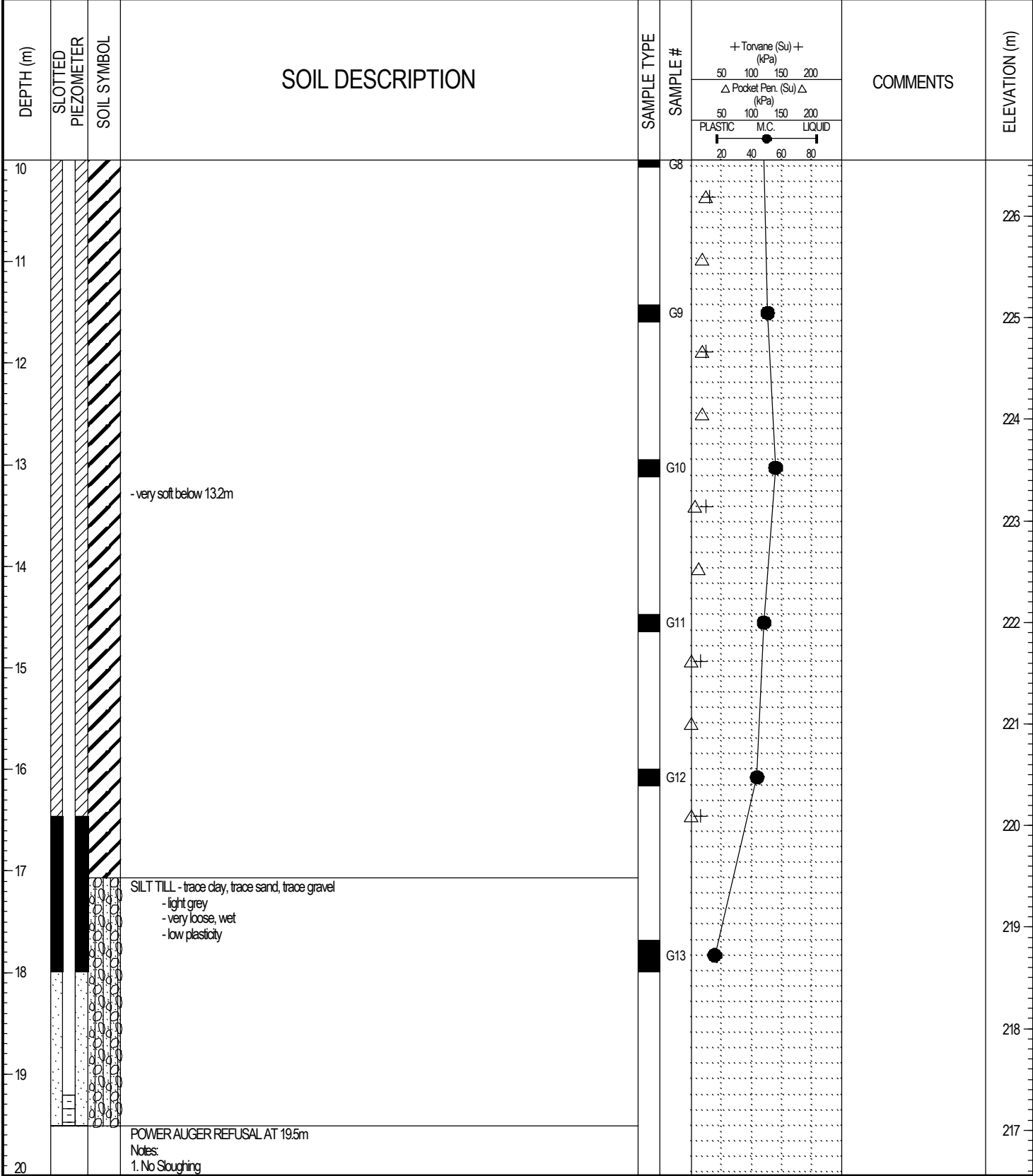


LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-07		
LOCATION: WTP - N 5524176.733 E 647870.72				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: Acker - RM 5 - 125 mm Solid Stem Auger			
ELEVATION (m): 236.552						
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-07		
LOCATION: WTP - N 5524176.733 E 647870.72				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: Acker - RM 5 - 125 mm Solid Stem Auger			
ELEVATION (m): 236.552						
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-07		
LOCATION: WTP - N 5524176.733 E 647870.72				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: Acker - RM 5 - 125 mm Solid Stem Augers			
ELEVATION (m): 236.552						
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> SPLIT SPOON	<input type="checkbox"/> BULK	<input type="checkbox"/> NO RECOVERY	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> CUTTINGS	<input type="checkbox"/> SAND

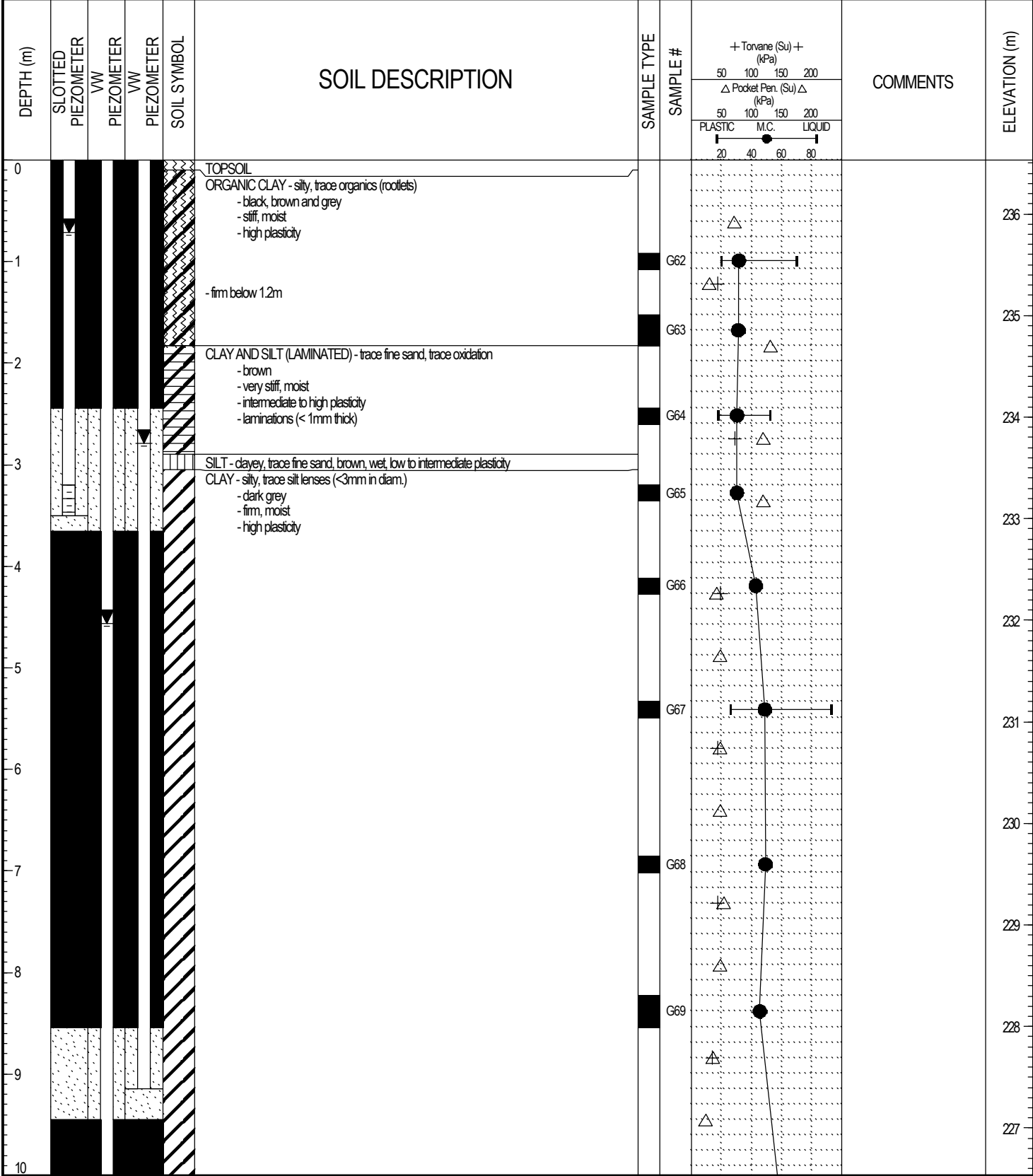
DEPTH (m)	SLOTTED PIEZOMETER	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	+ Tonvane (Su) + (kPa)		COMMENTS	ELEVATION (m)	
						50	100			150
						△ Pocket Pen. (Su) △ (kPa)				
						PLASTIC M.C. LIQUID				
						20	40	60	80	
20			2. Seepage at 3.80m and 17.10m below ground 3. Water level at 7.90m below ground immediately after drilling 4. Standpipe SP-7 installed at Elevation 217.05m							216
21										215
22										214
23										213
24										212
25										211
26										210
27										209
28										208
29										207
30										207

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



LOGGED BY: Nelson Ferreira	COMPLETION DEPTH: 19.51 m
REVIEWED BY:	COMPLETION DATE: 8/9/04
PROJECT ENGINEER: Ken Skafffeld	Page 3 of 3

PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-08		
LOCATION: WTP - N 5524190.678 E 647878.442				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: Acker - RM 5 - 125 mm Solid Stem Augers			
ELEVATION (m): 236.531						
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



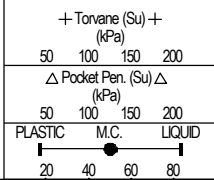
LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



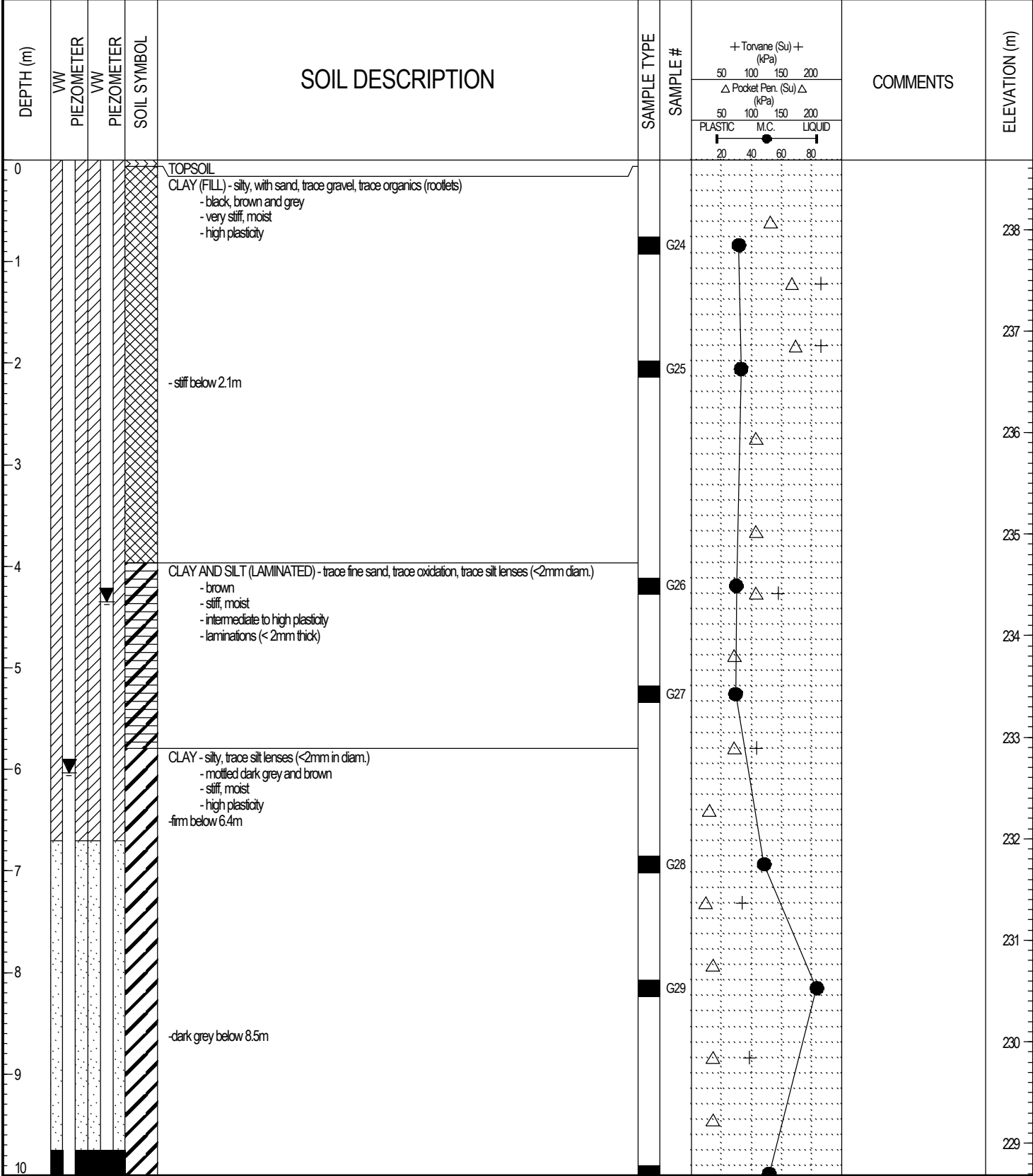
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-08
LOCATION: WTP - N 5524190.678 E 647878.442	PROJECT NO.: 3398-055-00-01	
CONTRACTOR: Paddock Drilling Ltd.	METHOD: Acker - RM 5 - 125 mm Solid Stem Augers	ELEVATION (m): 236.531
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE <input type="checkbox"/> GRAVEL <input type="checkbox"/> SLOUGH <input type="checkbox"/> GROUT <input type="checkbox"/> CUTTINGS <input type="checkbox"/> SAND	

DEPTH (m)	SLOTTED PIEZOMETER	VW PIEZOMETER	VW PIEZOMETER	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	+ Tonvane (Su) + (kPa)		COMMENTS	ELEVATION (m)
								50	100		
10											26
11											
12											
13					END OF TEST HOLE AT 12.2m in SILTY CLAY Notes: 1. No sloughing 2. Seepage at 3.10m 3. Standpipe SP-8 and Vibrating Piezometers VW8A and VW8B installed - Tip for SP-8 at Elevation 233.02m - Tip for VW8A at Elevation 224.49m - Tip for VW8B at Elevation 227.39m						
14											
15											
16											
17											
18											
19											
20											

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

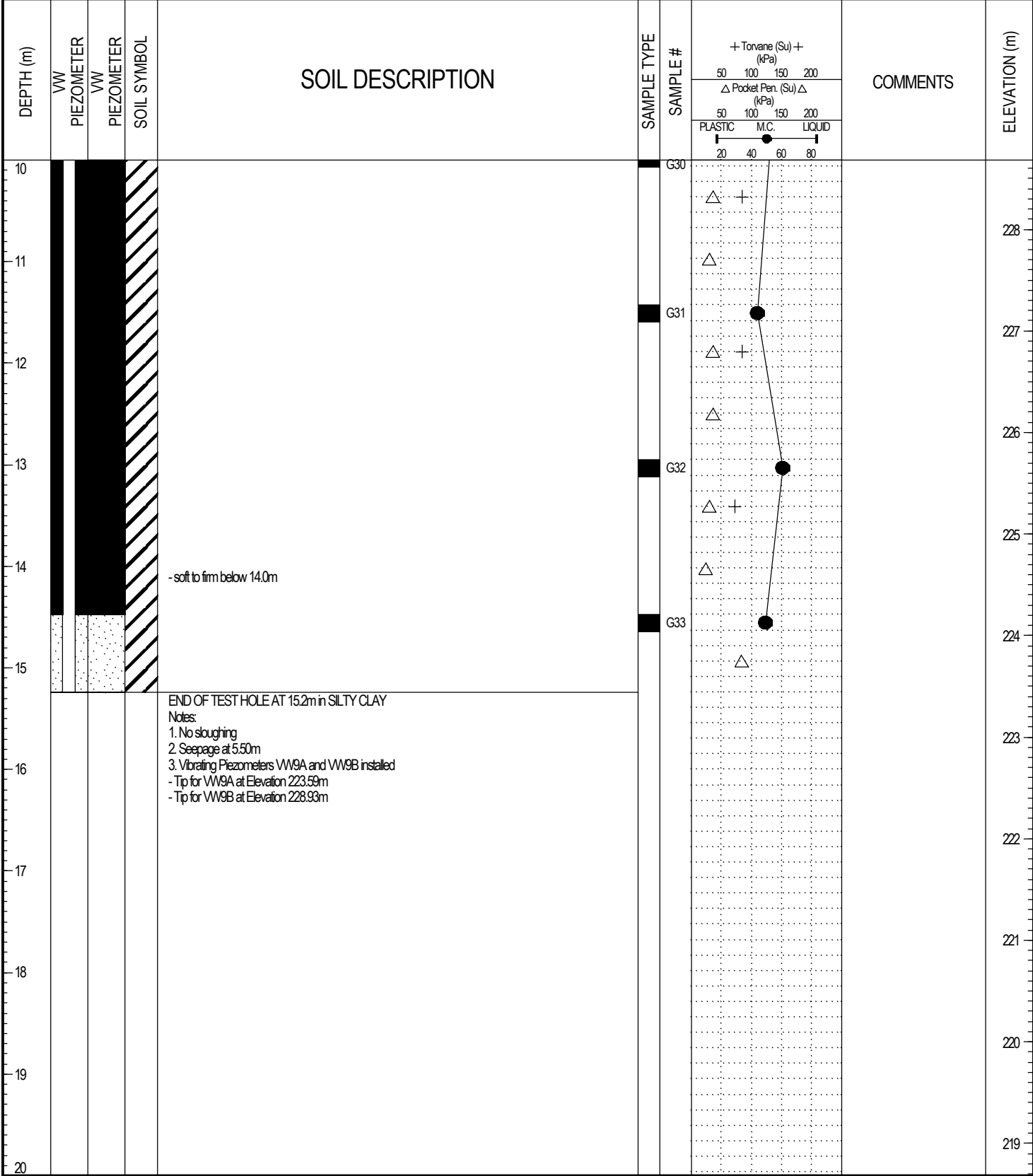


PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-09		
LOCATION: WTP - N 5524134.541 E 647846.631				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: Acker - RM 5 - 125 mm Solid Stem Auger			
ELEVATION (m): 238.682						
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



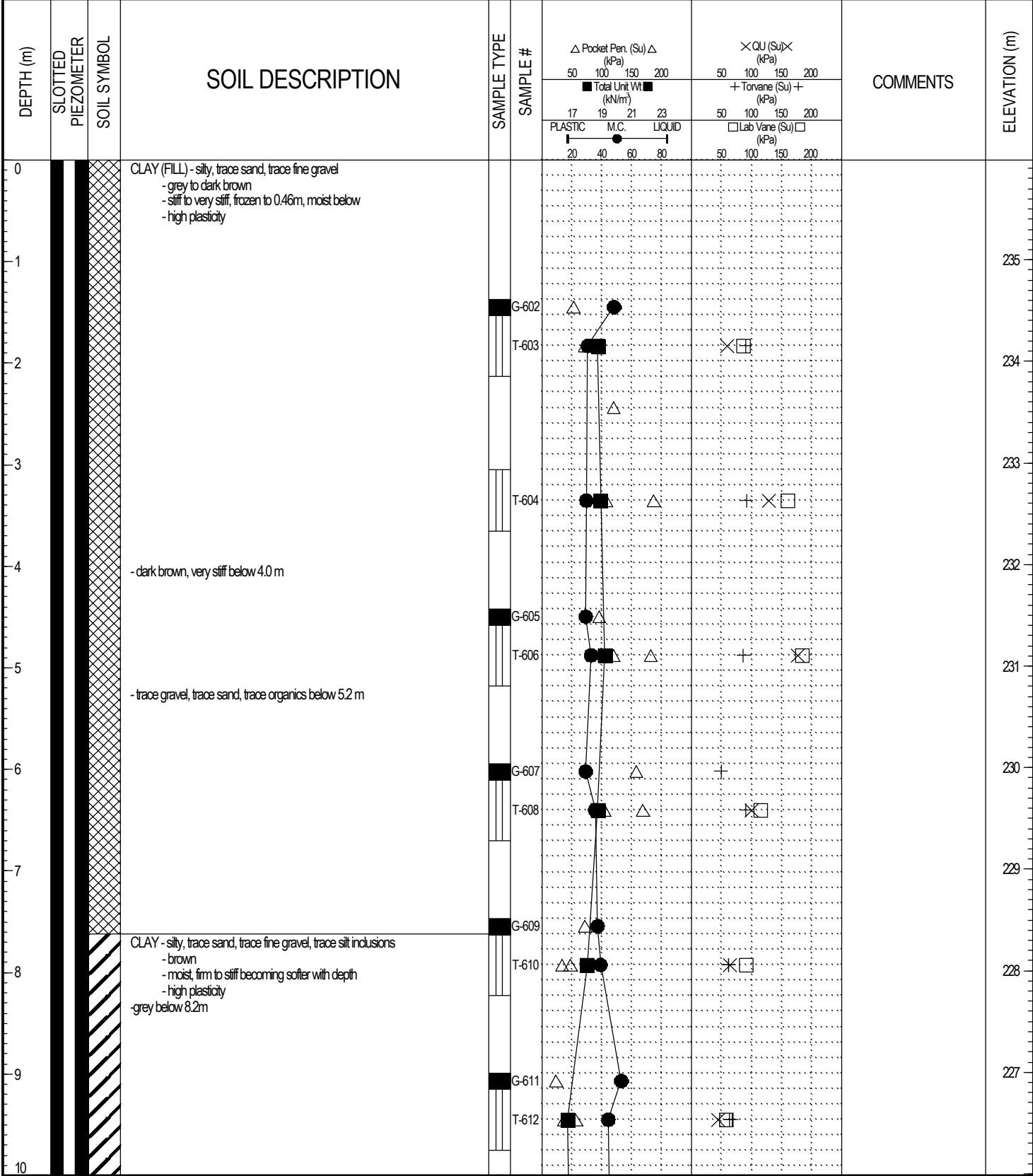
LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-09
LOCATION: WTP - N 5524134.541 E 647846.631	PROJECT NO.: 3398-055-00-01	
CONTRACTOR: Paddock Drilling Ltd.	METHOD: Acker - RM 5 - 125 mm Solid Stem Auger	ELEVATION (m): 238.682
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE <input type="checkbox"/> GRAVEL <input type="checkbox"/> SLOUGH <input type="checkbox"/> GROUT <input type="checkbox"/> CUTTINGS <input type="checkbox"/> SAND	



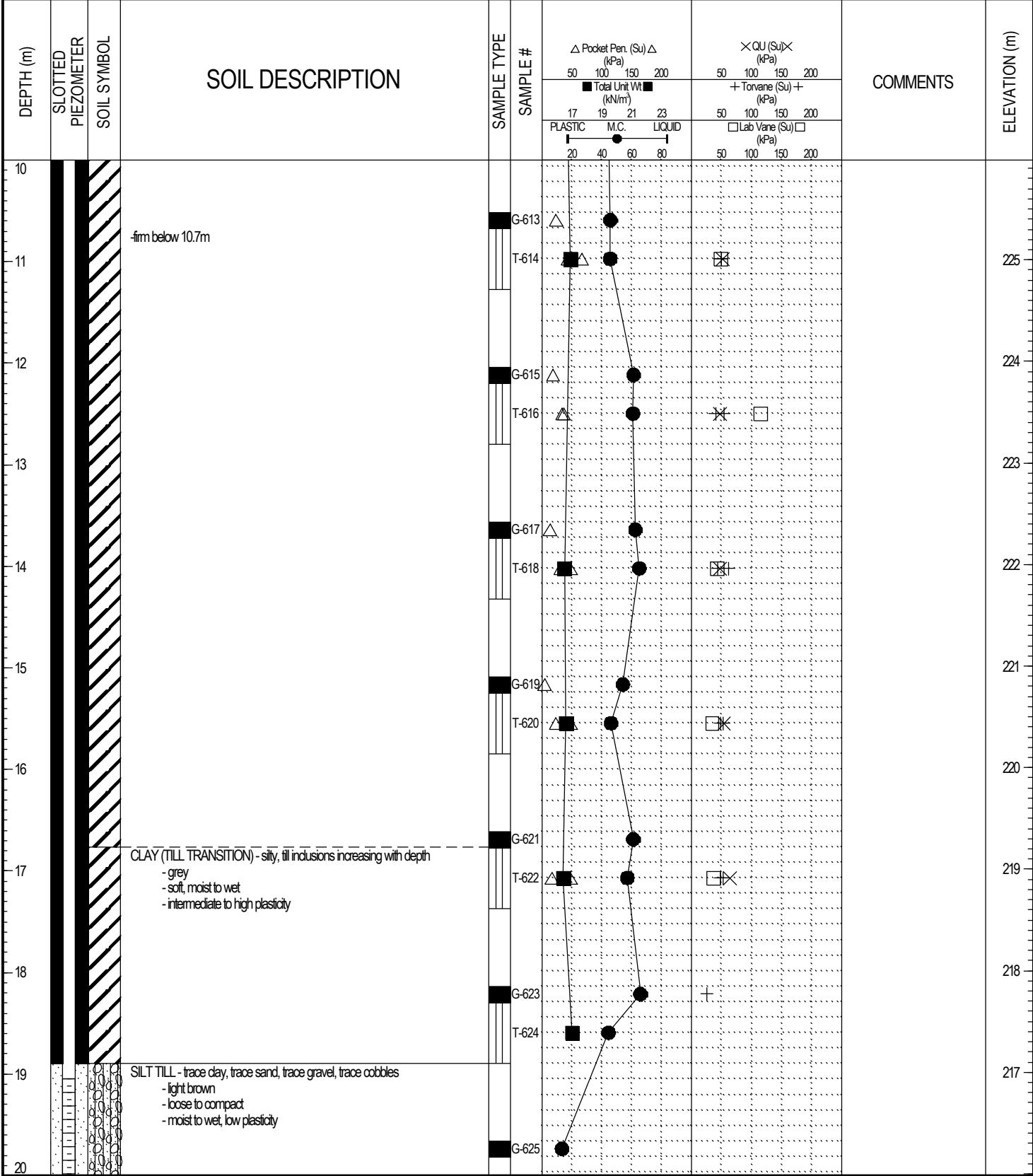
LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-10		
LOCATION: WTP - N 5524085.998 E 647717.370				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Maple Leaf Drilling			METHOD: DR 150 - 125 mm Solid Stem Auger		ELEVATION (m): 235.982	
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-10		
LOCATION: WTP - N 5524085.998 E 647717.370				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Maple Leaf Drilling			METHOD: DR 150 - 125 mm Solid Stem Auger		ELEVATION (m): 235.982	
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



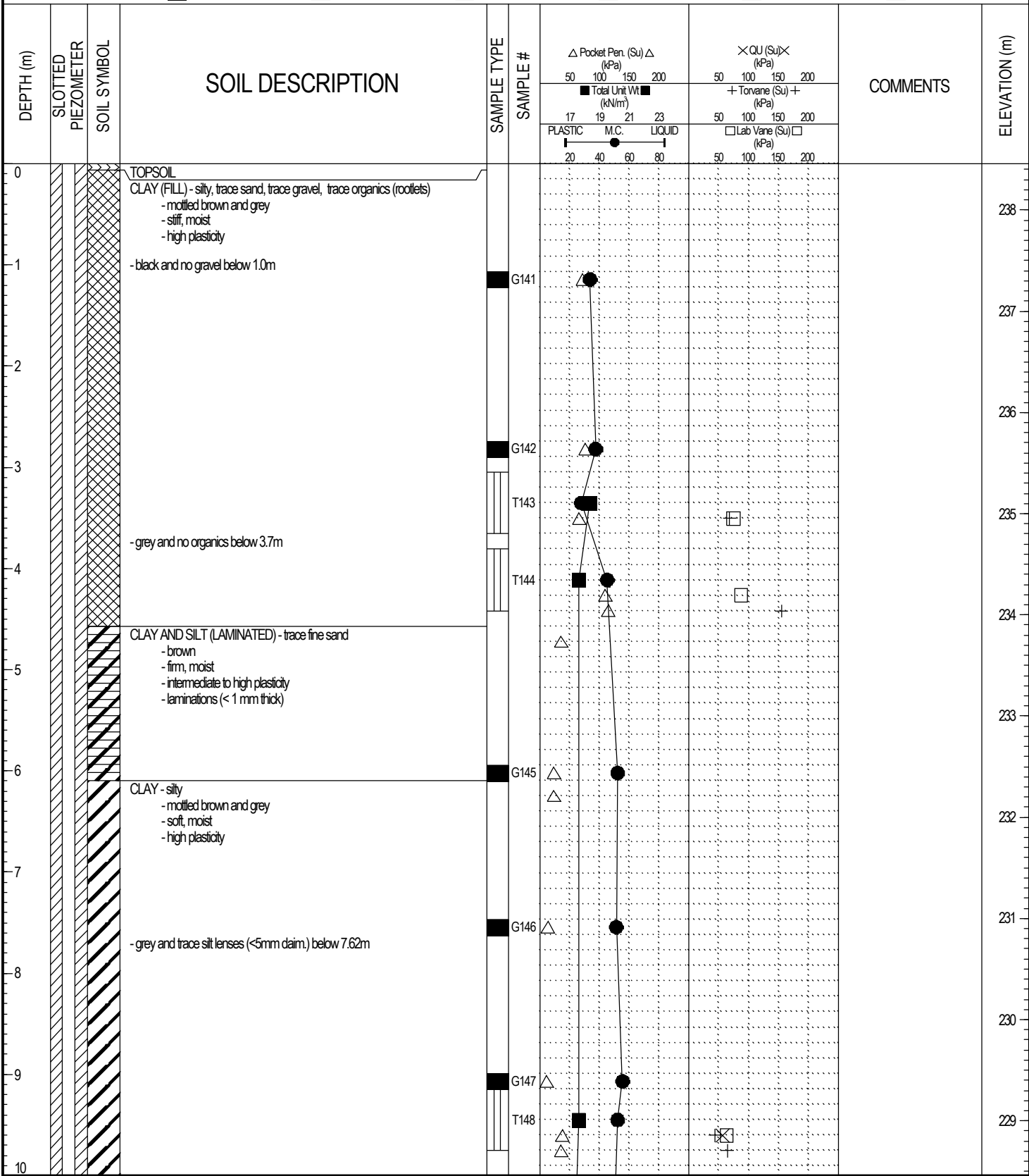
LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-10		
LOCATION: WTP - N 5524085.998 E 647717.370				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Maple Leaf Drilling			METHOD: DR 150 - 125 mm Solid Stem Auger		ELEVATION (m): 235.982	
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB	<input type="checkbox"/> SHELBY TUBE	<input checked="" type="checkbox"/> SPLIT SPOON	<input type="checkbox"/> BULK	<input type="checkbox"/> NO RECOVERY	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> CUTTINGS	<input type="checkbox"/> SAND

DEPTH (m)	SLOTTED PIEZOMETER	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	Pocket Pen. (Su) Δ (kPa)		QU (Su) X (kPa)		COMMENTS	ELEVATION (m)
						50 100 150 200	50 100 150 200	50 100 150 200	50 100 150 200		
20			POWER AUGER REFUSAL AT 20.6 m Notes: 1. Sloughing below 18.9m 2. Seepage at 20.5m 3. Water level at 8.5m 4. Standpipe (SP-10) installed at Elevation 215.82m	<input checked="" type="checkbox"/>	G-626	Total Unit Wt (kN/m³) 17 19 21 23 PLASTIC M.C. LIQUID 20 40 60 80		+ Torvane (Su) + (kPa) 50 100 150 200 Lab Vane (Su) (kPa) 50 100 150 200			235.982
21											
22											214
23											213
24											212
25											211
26											210
27											209
28											208
29											207
30											206

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

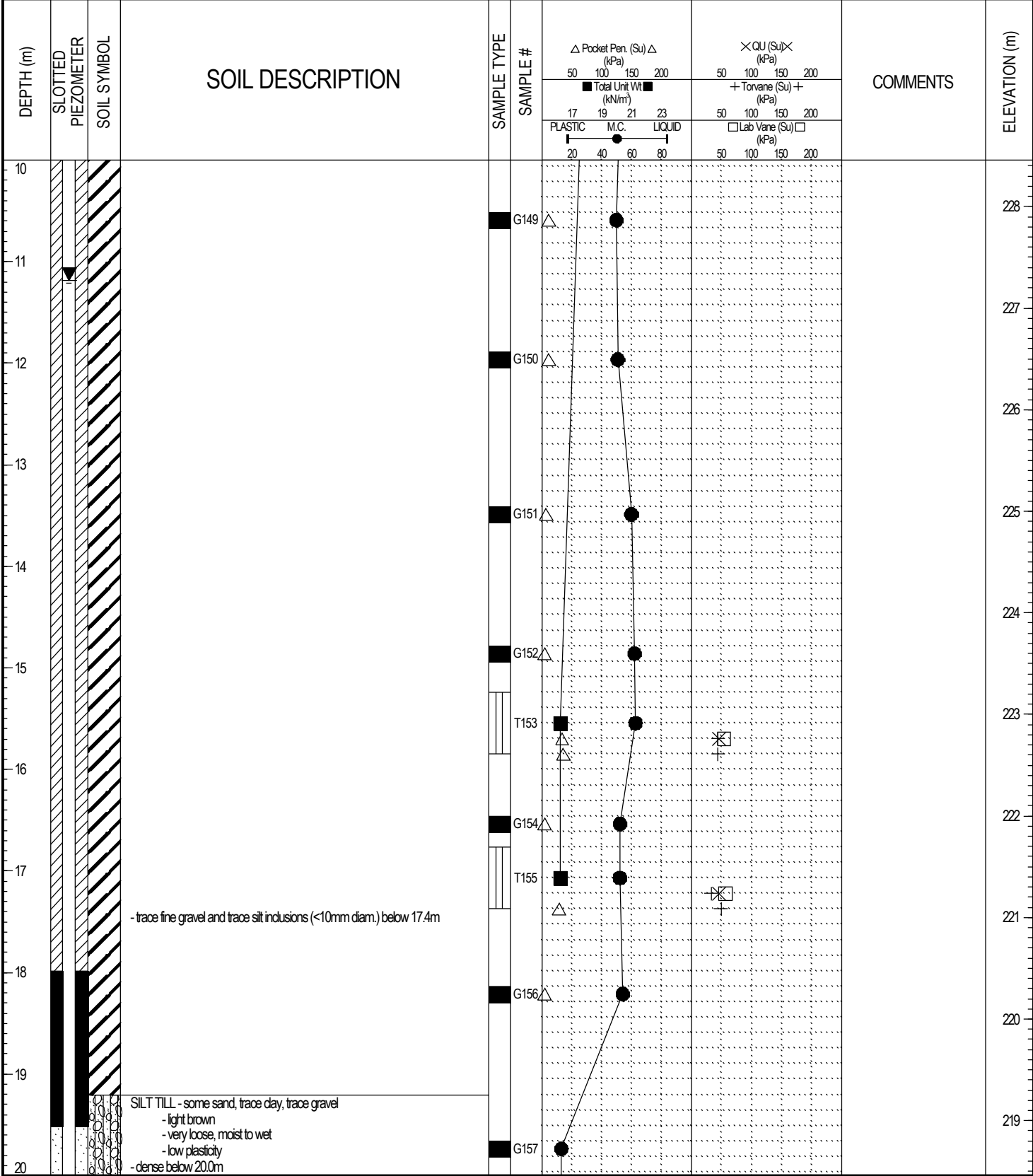
PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-12		
LOCATION: WTP - N 5524116.025 E 647832.961				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: RM 30 - 125 mm Solid Stem Augers		ELEVATION (m): 238.458	
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



LOGGED BY: Kate Franklin	COMPLETION DEPTH: 22.86 m
REVIEWED BY:	COMPLETION DATE: 4/10/04
PROJECT ENGINEER: Ken Skaffeld	



PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-12		
LOCATION: WTP - N 5524116.025 E 647832.961				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: RM 30 - 125 mm Solid Stem Augers		ELEVATION (m): 238.458	
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-12		
LOCATION: WTP - N 5524116.025 E 647832.961				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Paddock Drilling Ltd.			METHOD: RM 30 - 125 mm Solid Stem Augers		ELEVATION (m): 238.458	
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> SPLIT SPOON	<input type="checkbox"/> BULK	<input type="checkbox"/> NO RECOVERY	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> CUTTINGS	<input type="checkbox"/> SAND

DEPTH (m)	SLOTTED PIEZOMETER	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	Pocket Pen. (Su) Δ (kPa)		QU (Su) × (kPa)		COMMENTS	ELEVATION (m)
						50 100 150 200	50 100 150 200	50 100 150 200	50 100 150 200		
20											218
21					G158						217
22					G159						216
23			POWER AUGER REFUSAL AT 22.9m Notes: 1. No sloughing 2. Seepage at 22.9m 3. Standpipe SP-12 installed - Tip for SP-12 at Elevation 215.60m								215
24											214
25											213
26											212
27											211
28											210
29											209
30											209

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-13
LOCATION: WTP - N 5524133.038 E 647799.960		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 237.271
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

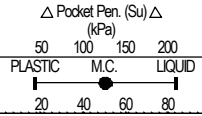
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	△ Pocket Pen. (Su) △ (kPa) 50 100 150 200 PLASTIC M.C. LIQUID 20 40 60 80	COMMENTS	ELEVATION (m)
0		CLAY (FILL) - silty, trace fine sand, trace gravel, trace organics - black, brown and grey - stiff, moist - high plasticity					237
1		- some organics (topsoil) at 1.2m - black and brown and no gravel below 1.5m	<input checked="" type="checkbox"/>	G105			236
2							235
3		CLAY AND SILT (LAMINATED) - brown - firm to stiff, moist - intermediate to high plasticity - laminations (< 1 mm thick)	<input checked="" type="checkbox"/>	G106			234
3			<input checked="" type="checkbox"/>	G107			234
4							233
4		CLAY - silty, mottled brown and grey, firm, moist, high plasticity	<input checked="" type="checkbox"/>	G108			233
5		END OF TEST HOLE AT 4.6m IN SILTY CLAY Notes: 1. No seepage or sloughing					232
6							231
7							230
8							229
9							228

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-14
LOCATION: WTP - N 5524147.035 E 647773.020		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 236.317
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK	<input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE

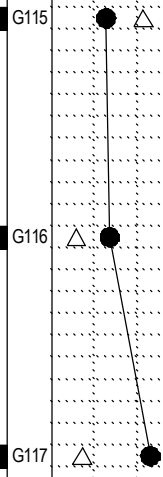
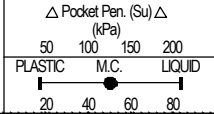
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0		CLAY (FILL) - silty, trace fine sand, trace gravel, trace organics - black, brown and grey - stiff, moist - high plasticity				236
1		CLAY AND SILT (LAMINATED) - mottled brown and grey - firm to stiff, moist - intermediate to high plasticity - laminations (< 1 mm thick)	<input checked="" type="checkbox"/>	G102		235
2			<input checked="" type="checkbox"/>	G103		234
3		END OF TEST HOLE AT 3.0m IN SILTY CLAY Notes: 1. No seepage or sloughing	<input checked="" type="checkbox"/>	G104		233
4						232
5						231
6						230
7						229
8						228
9						227
10						227

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



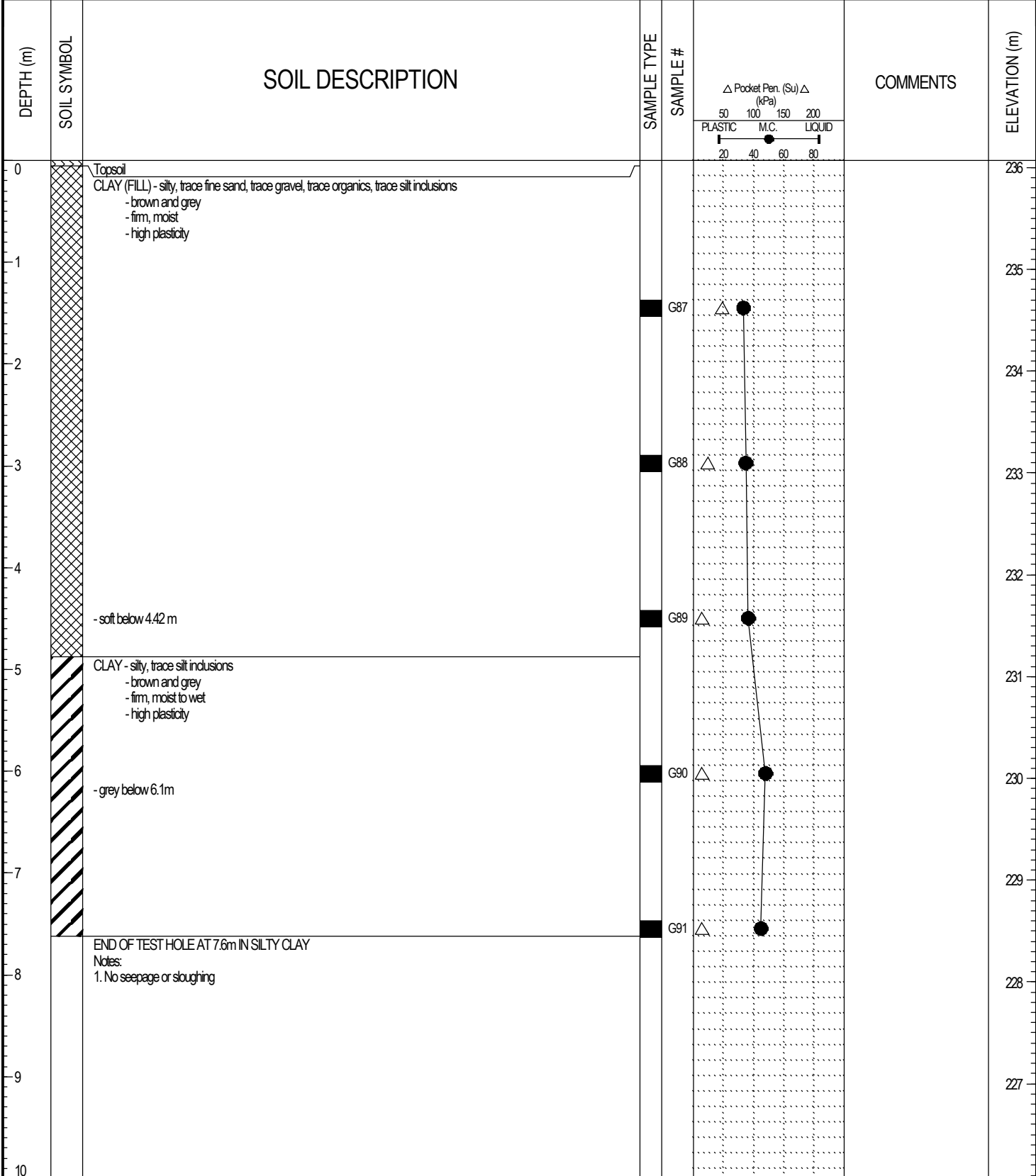
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-15
LOCATION: WTP - N 5524166.008 E 647735.023		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 236.299
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK	<input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0		CLAY (FILL) - silty, trace fine sand, trace gravel, trace organics - black, brown and grey - stiff, moist - high plasticity				236
1						235
2		CLAY AND SILT (LAMINATED) - brown - firm, moist - intermediate to high plasticity - laminations (< 1 mm thick)				234
3						233
4		CLAY - silty, mottled brown and grey, firm, moist, high plasticity				232
5		END OF TEST HOLE AT 4.6m IN SILTY CLAY Notes: 1. No seepage or sloughing				231
6						230
7						229
8						228
9						227
10						227



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-16
LOCATION: WTP - N 5524139.981 E 647752.000		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 236.069
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

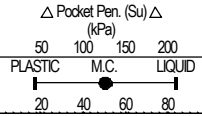


LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-17
LOCATION: WTP - N 5524113.008 E 647806.004		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 237.339
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0		CLAY (FILL) - silty, trace fine sand, trace gravel, trace organics - black, brown and grey - firm to stiff, moist - high plasticity				237
1		- some organics (topsoil) at 1.2 m - brown and no gravel below 1.5m				236
2						235
3		CLAY AND SILT (LAMINATED) - brown - stiff, moist - intermediate to high plasticity - laminations (< 1 mm thick)				234
4		CLAY - silty, mottled brown and grey, firm, moist, high plasticity - firm, mottled brown and grey below 4.3m				233
5		END OF TEST HOLE AT 4.6m IN SILTY CLAY Notes: 1. No seepage or sloughing				232
6						231
7						230
8						229
9						228
10						228

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



G109

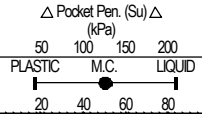
G110

G111

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-18
LOCATION: WTP - N 5524094.878 E 647805.042		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 237.027
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK	<input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE

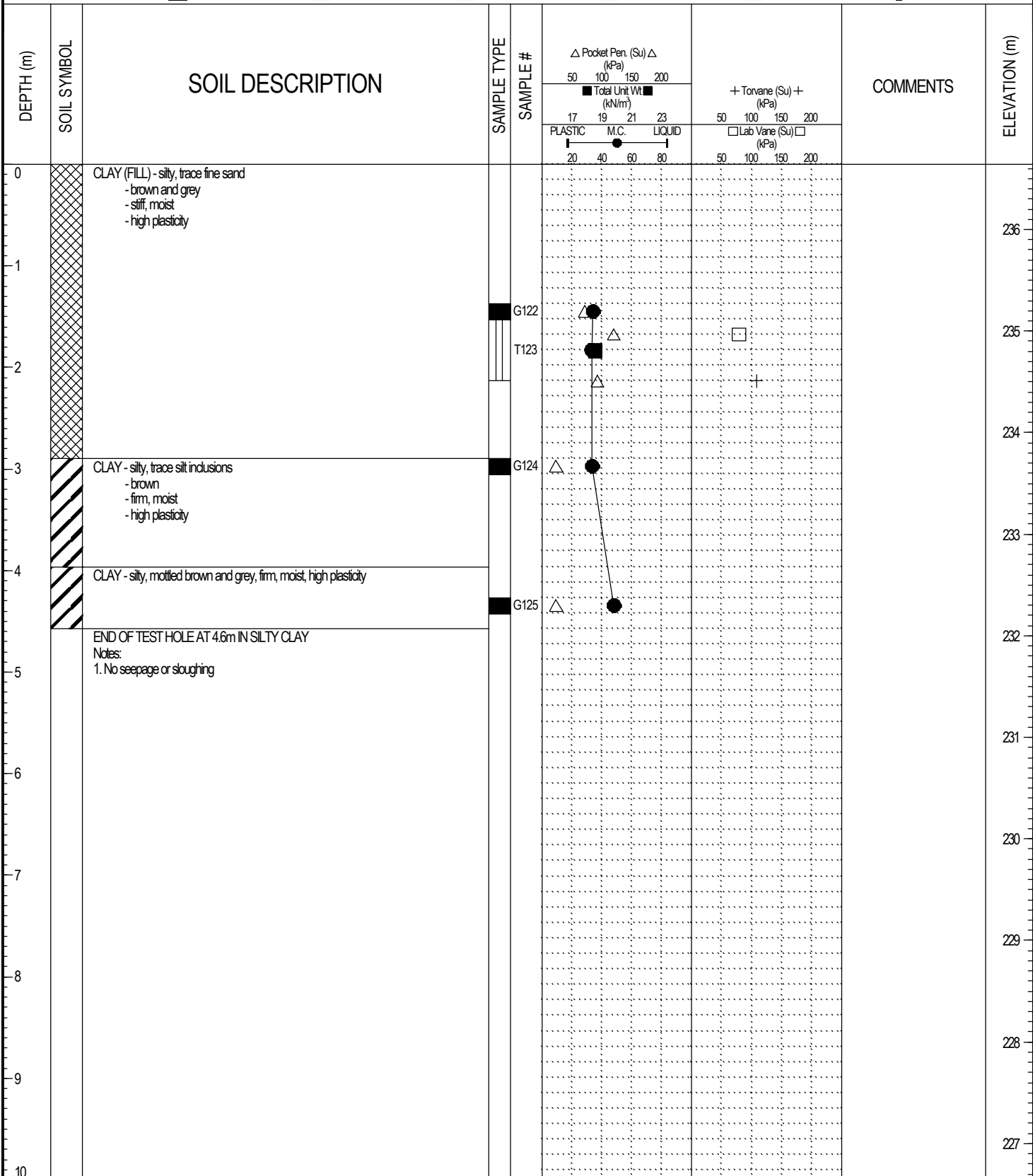
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0		CLAY (FILL) - silty, trace fine sand, trace gravel, trace organics - black, brown and grey - stiff, moist - high plasticity				236
1						
2						235
3						234
4		CLAY AND SILT (LAMINATED) - brown - firm, moist - intermediate to high plasticity - laminations (< 1 mm thick) CLAY - silty, mottled brown and grey, firm, moist, high plasticity				233
5		END OF TEST HOLE AT 4.6m IN SILTY CLAY Notes: 1. No seepage or sloughing				232
6						231
7						230
8						229
9						228
10						

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



G112  
G113  
G114

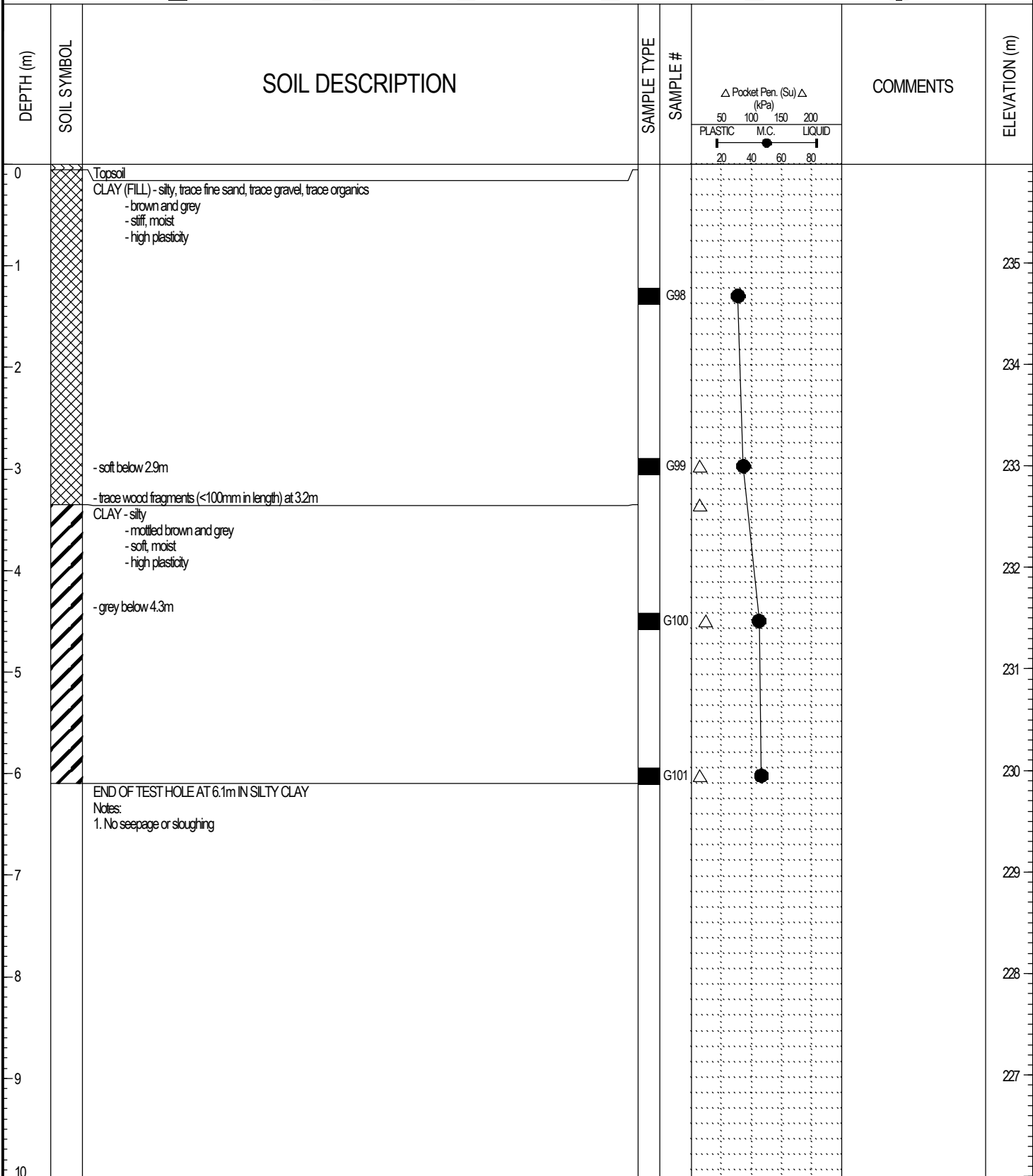
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-19
LOCATION: WTP - N 5524110.001 E 647787.020		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 236.642
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-20
LOCATION: WTP - N 5524123.005 E 647759.997		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 235.968
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

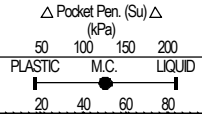


LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

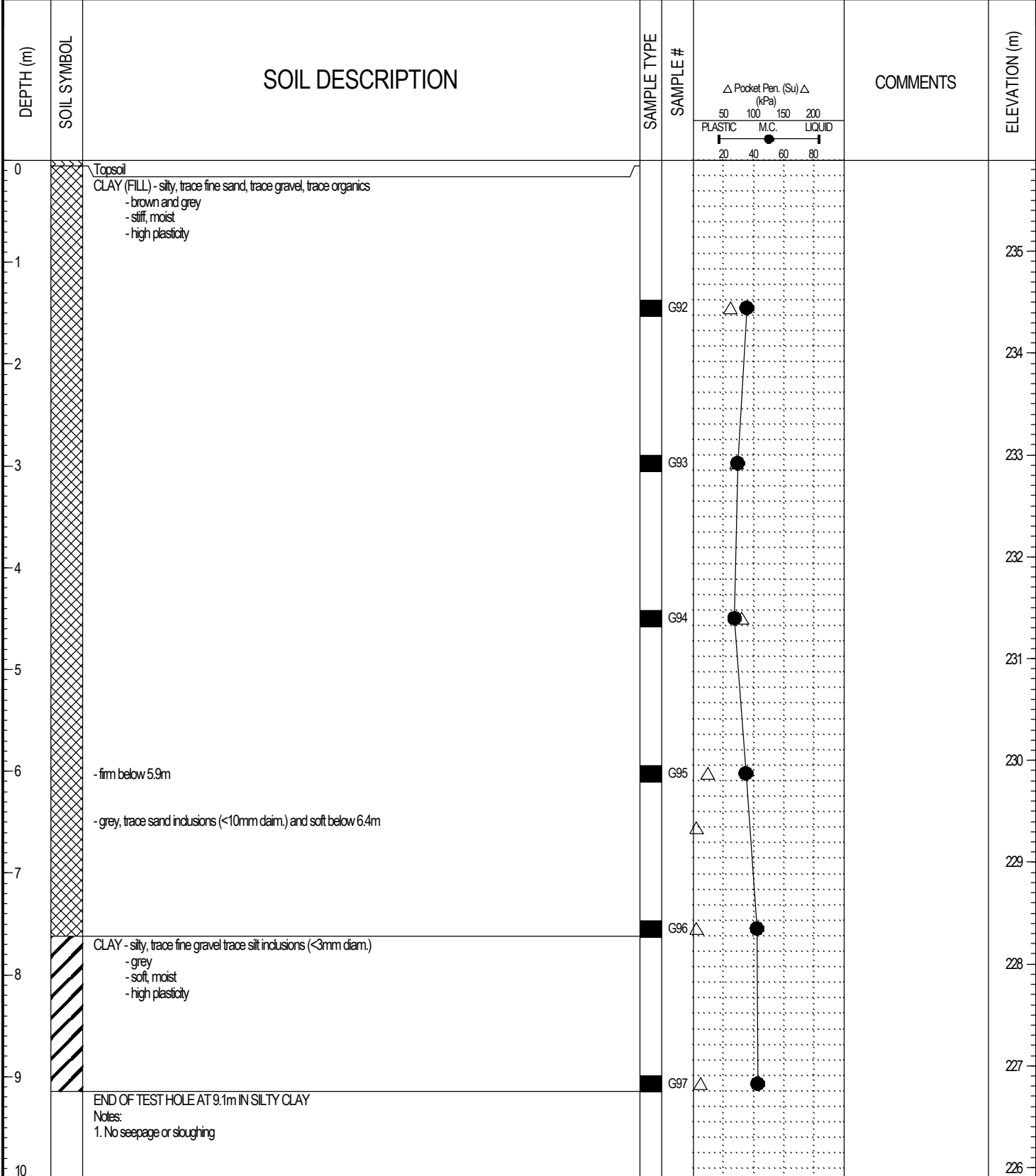
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-21
LOCATION: WTP - N 5524133.016 E 647733.030		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 236.892
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0		SAND & GRAVEL FILL (BALLAST) - light brown - compact, moist to dry - sub-angular				
1		CLAY (FILL) - silty, trace fine sand, trace gravel, trace organics - black, brown and grey - very stiff, moist - high plasticity				236
2						235
3		- firm below 2.9m				234
4		- grey below 3.7m				233
5		CLAY - silty, trace silt inclusions (<2mm diam.) - grey - firm, moist - high plasticity				232
6		- soft below 5.9m				231
7		END OF TEST HOLE AT 6.1m IN SILTY CLAY Notes: 1. No seepage or sloughing				230
8						229
9						228
10						227

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

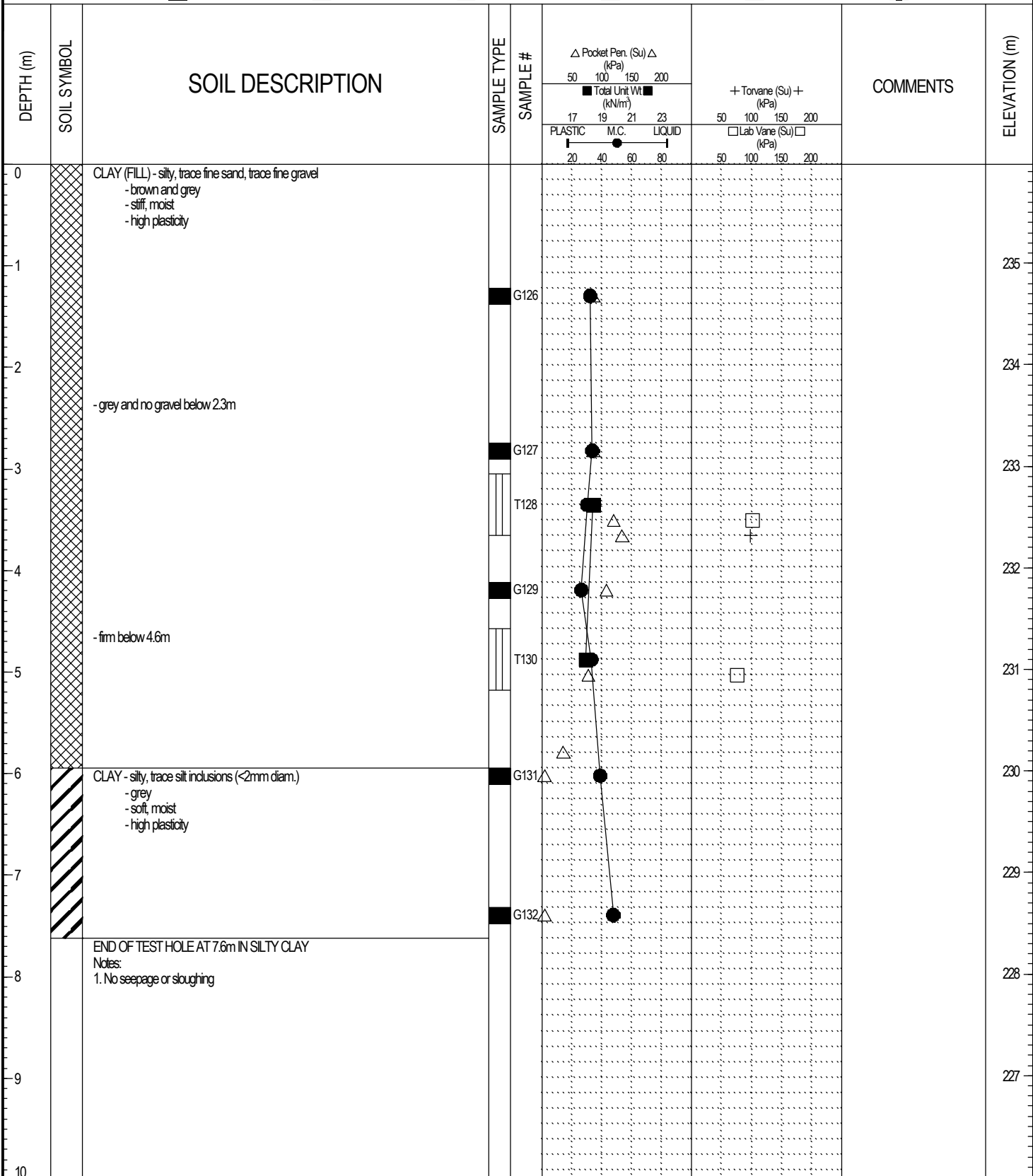


PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-22
LOCATION: WTP - N 5524106.018 E 647749.981		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 235.893
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



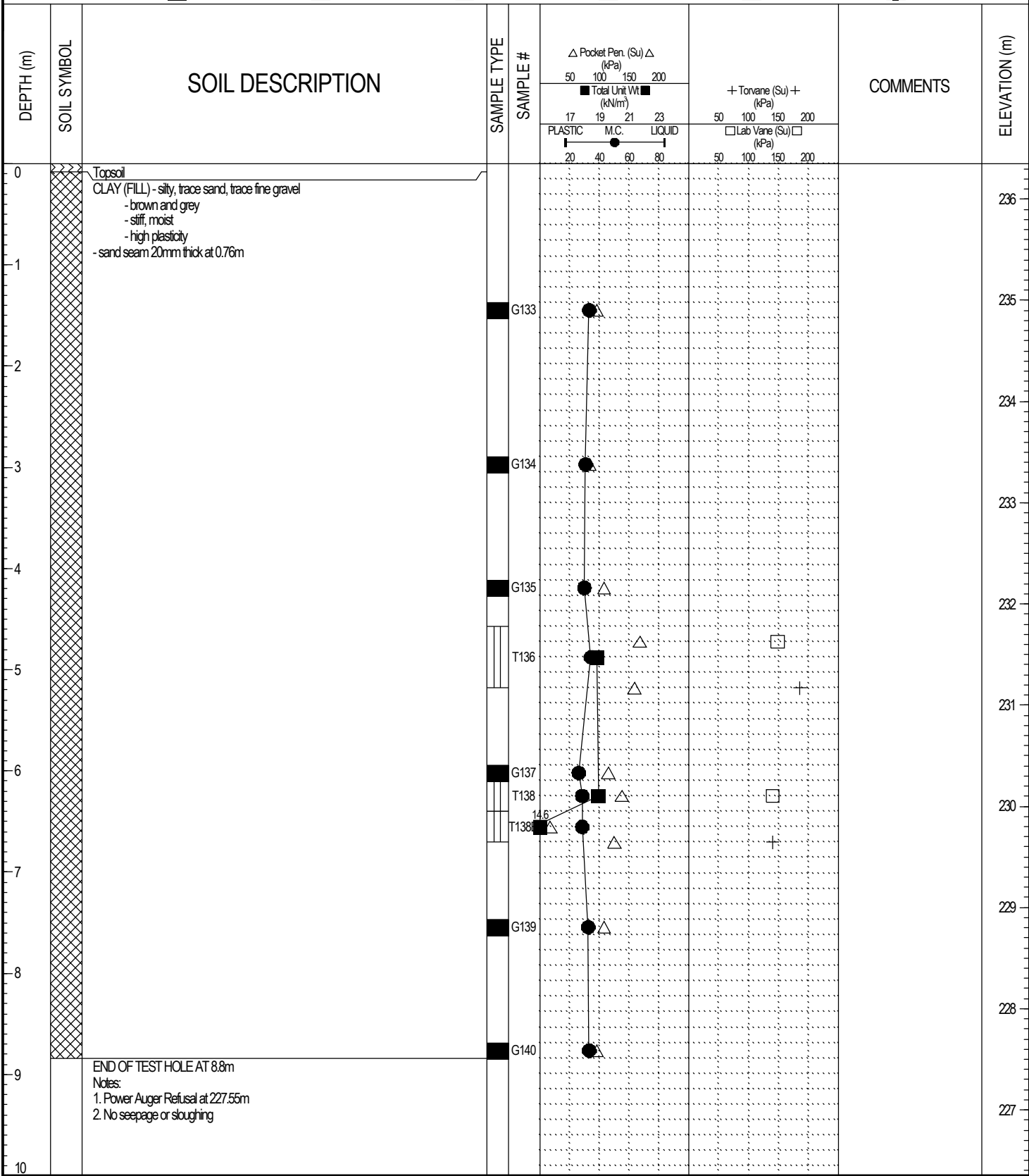
LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-23
LOCATION: WTP - N 5524091.975 E 647777.015		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 235.973
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

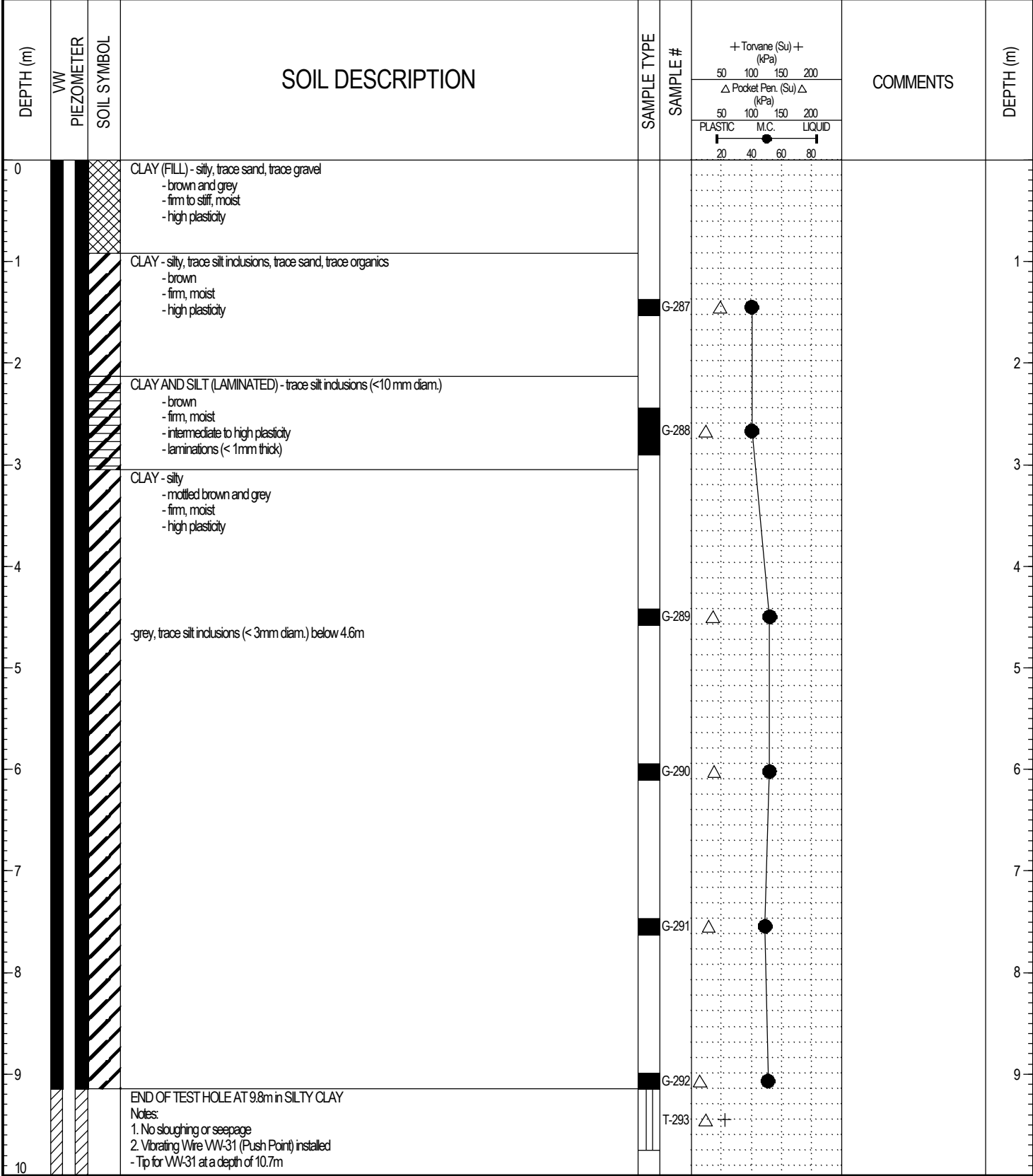
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-24
LOCATION: WTP - N 5524089.009 E 647752.003		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM 30 - 125 mm Solid Stem Augers	ELEVATION (m): 236.35
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



END OF TEST HOLE AT 8.8m  
Notes:  
1. Power Auger Refusal at 227.55m  
2. No seepage or sloughing

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-31		
LOCATION: At Pumping Well PW-1				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Maple Leaf Drilling			METHOD: B-40 - 125 mm Solid Stem Augers		ELEVATION (m):	
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

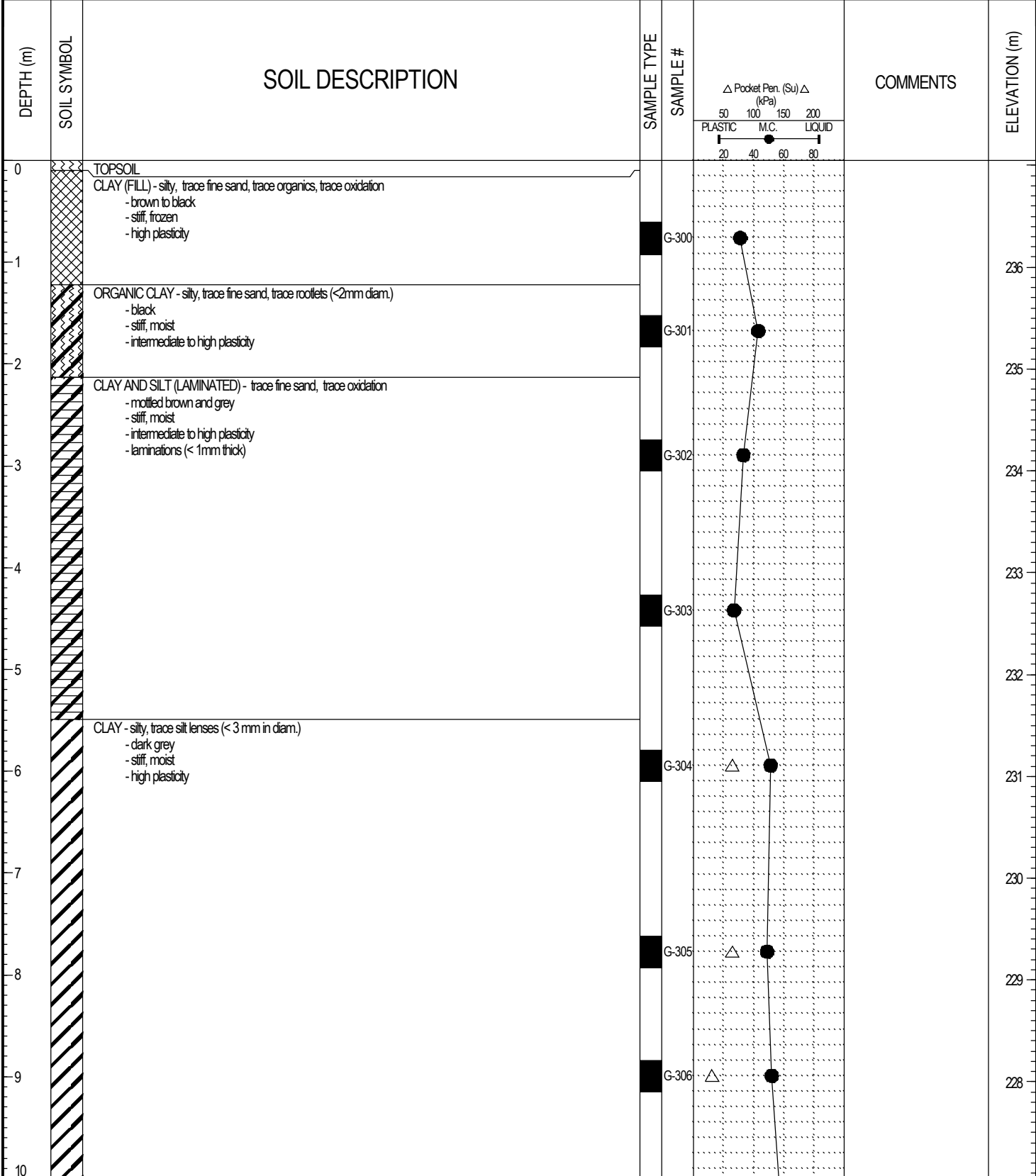
PROJECT: Winnipeg Water Treatment Plant		CLIENT: City of Winnipeg (Earth Tech Can Ltd)		TESTHOLE NO: 04-31		
LOCATION: At Pumping Well PW-1				PROJECT NO.: 3398-055-00-01		
CONTRACTOR: Maple Leaf Driling			METHOD: B-40 - 125 mm Solid Stem Augers		ELEVATION (m):	
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> SPLIT SPOON	<input type="checkbox"/> BULK	<input type="checkbox"/> NO RECOVERY	<input type="checkbox"/> CORE
BACKFILL TYPE	<input checked="" type="checkbox"/> BENTONITE	<input type="checkbox"/> GRAVEL	<input type="checkbox"/> SLOUGH	<input type="checkbox"/> GROUT	<input type="checkbox"/> CUTTINGS	<input type="checkbox"/> SAND

DEPTH (m)	VW PIEZOMETER	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	+ Tonvane (Su) + (kPa)		COMMENTS	DEPTH (m)
						50	100		
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

	LOGGED BY: Kate Franklin	COMPLETION DEPTH: 9.75 m
	REVIEWED BY:	COMPLETION DATE: 12/10/04
	PROJECT ENGINEER: Ken Skafffeld	Page 2 of 2

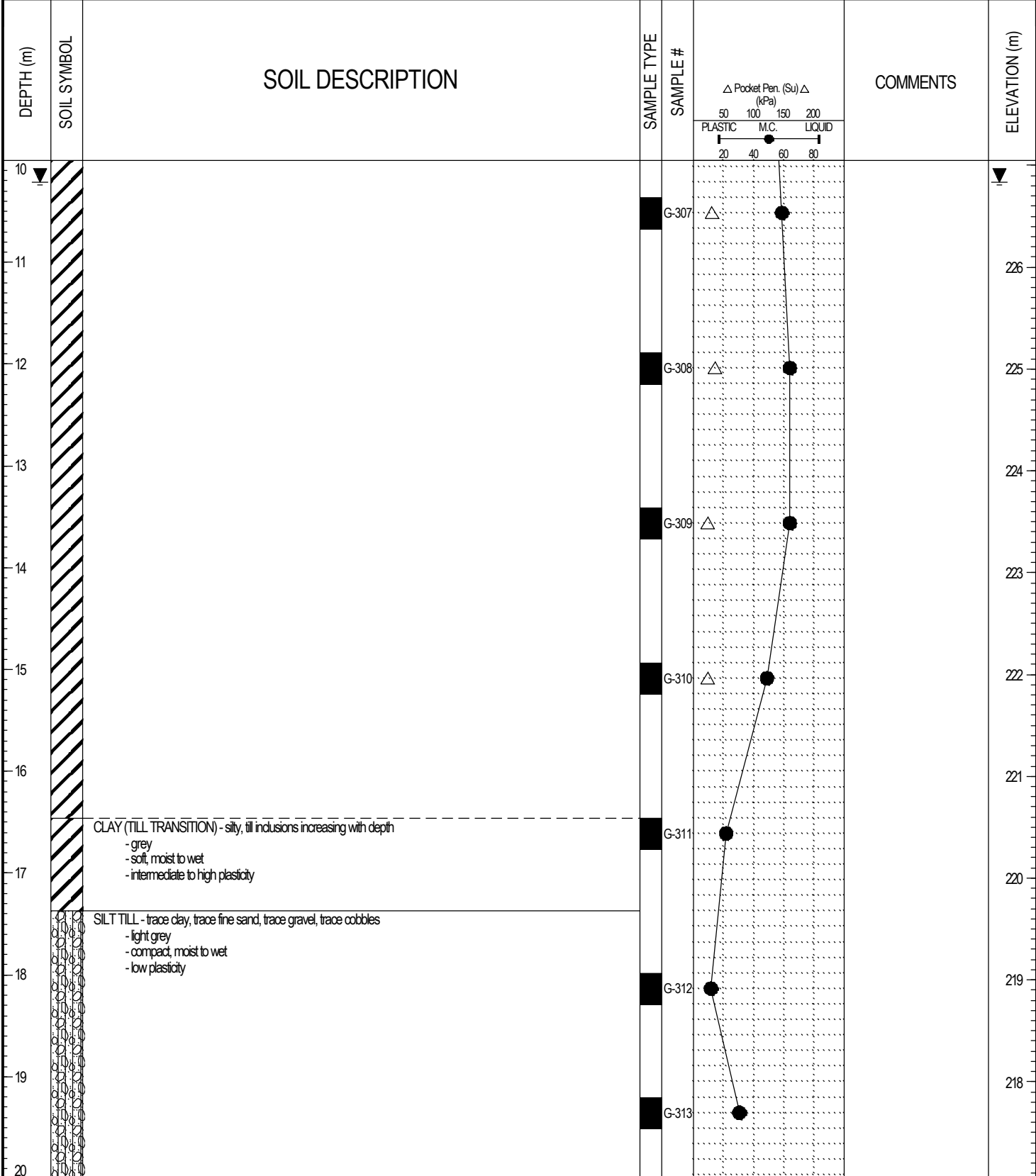
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-33
LOCATION: WTP - N 5524157.897 E 647801.041		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 450mm Auger	ELEVATION (m): 237.049
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-33
LOCATION: WTP - N 5524157.897 E 647801.041		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 450mm Auger	ELEVATION (m): 237.049
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



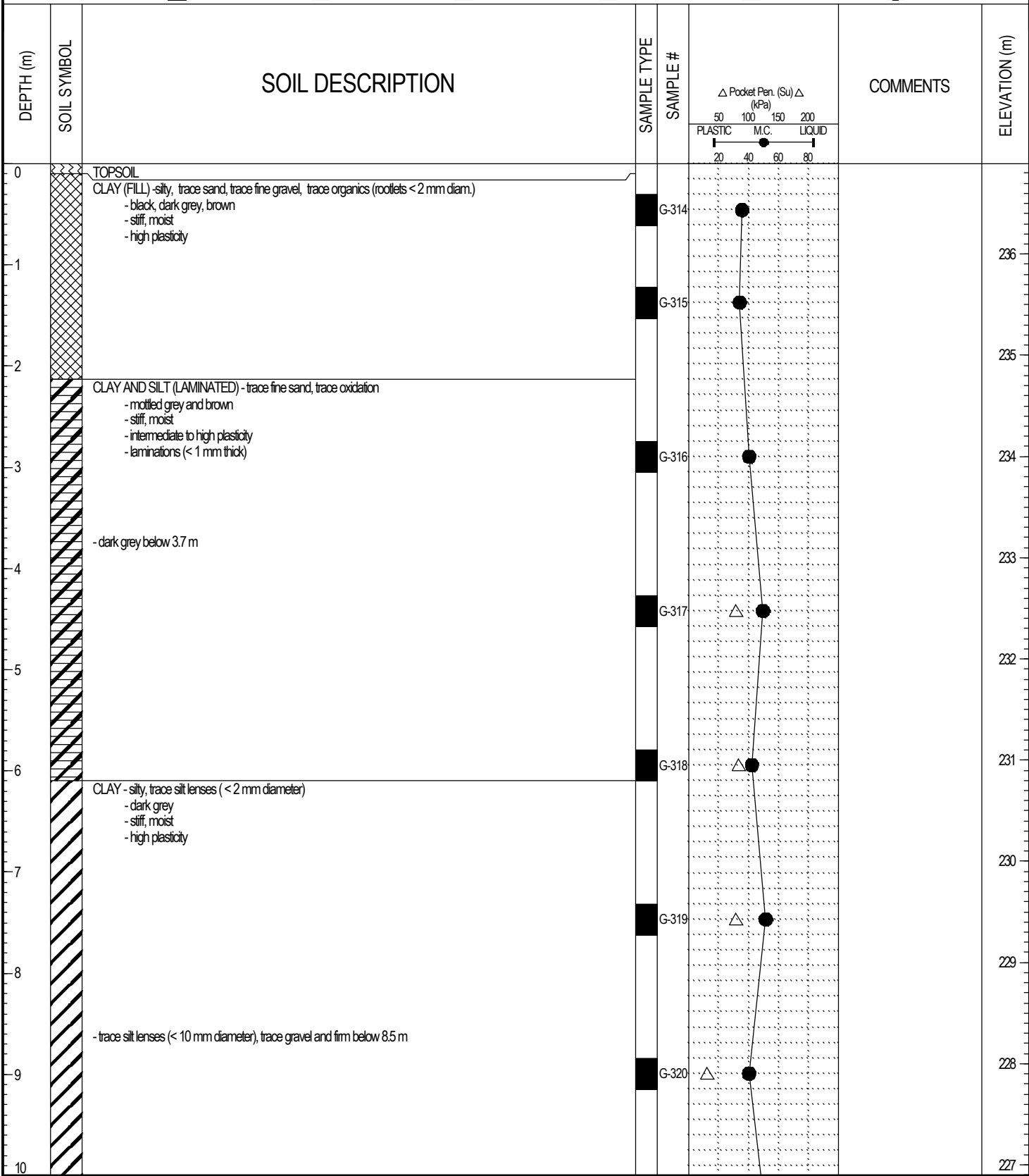
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-33
LOCATION: WTP - N 5524157.897 E 647801.041		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 450mm Auger	ELEVATION (m): 237.049
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK	<input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
20						
21						
22		POWER AUGER REFUSAL AT 21.3m Notes: 1. Sloughing below 17.4m 2. Seepage at 19.8m 4. Water level at 10.2m below ground surface 3 hours after completion of drilling 5. Test hole grouted to 3.7m below ground surface and backfilled with cuttings to surface		G-314		
23						
24						
25						
26						
27						
28						
29						
30						

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

	LOGGED BY: Nelson Ferreira	COMPLETION DEPTH: 21.34 m
	REVIEWED BY:	COMPLETION DATE: 13/12/04
	PROJECT ENGINEER: Ken Skafffeld	Page 3 of 3

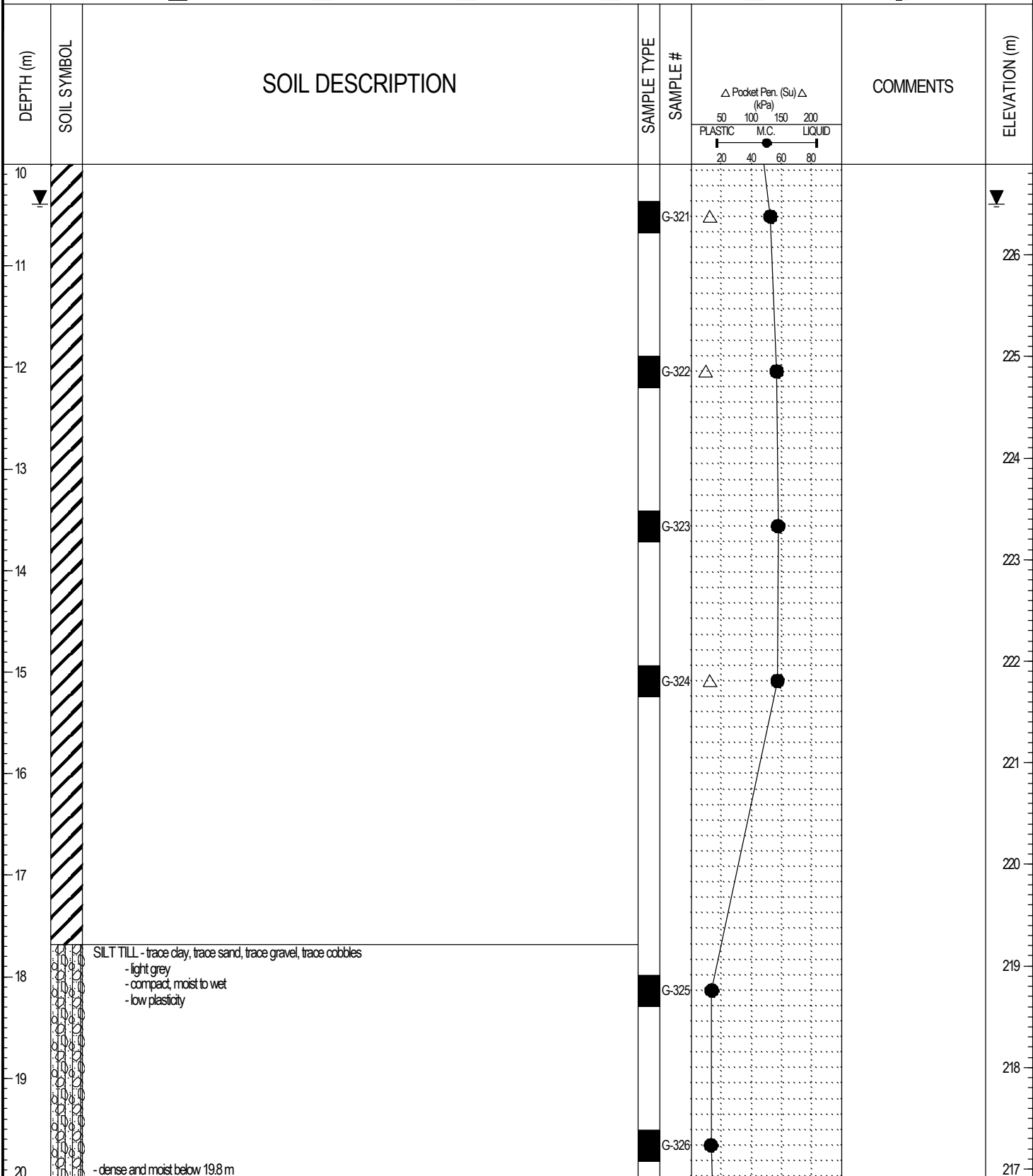
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-34
LOCATION: WTP - N 5524132.146 E 647785.051		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 450mm Auger	ELEVATION (m): 236.894
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-34
LOCATION: WTP - N 5524132.146 E 647785.051		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 450mm Auger	ELEVATION (m): 236.894

SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> SPLIT SPOON	<input type="checkbox"/> BULK	<input type="checkbox"/> NO RECOVERY	<input type="checkbox"/> CORE
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LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

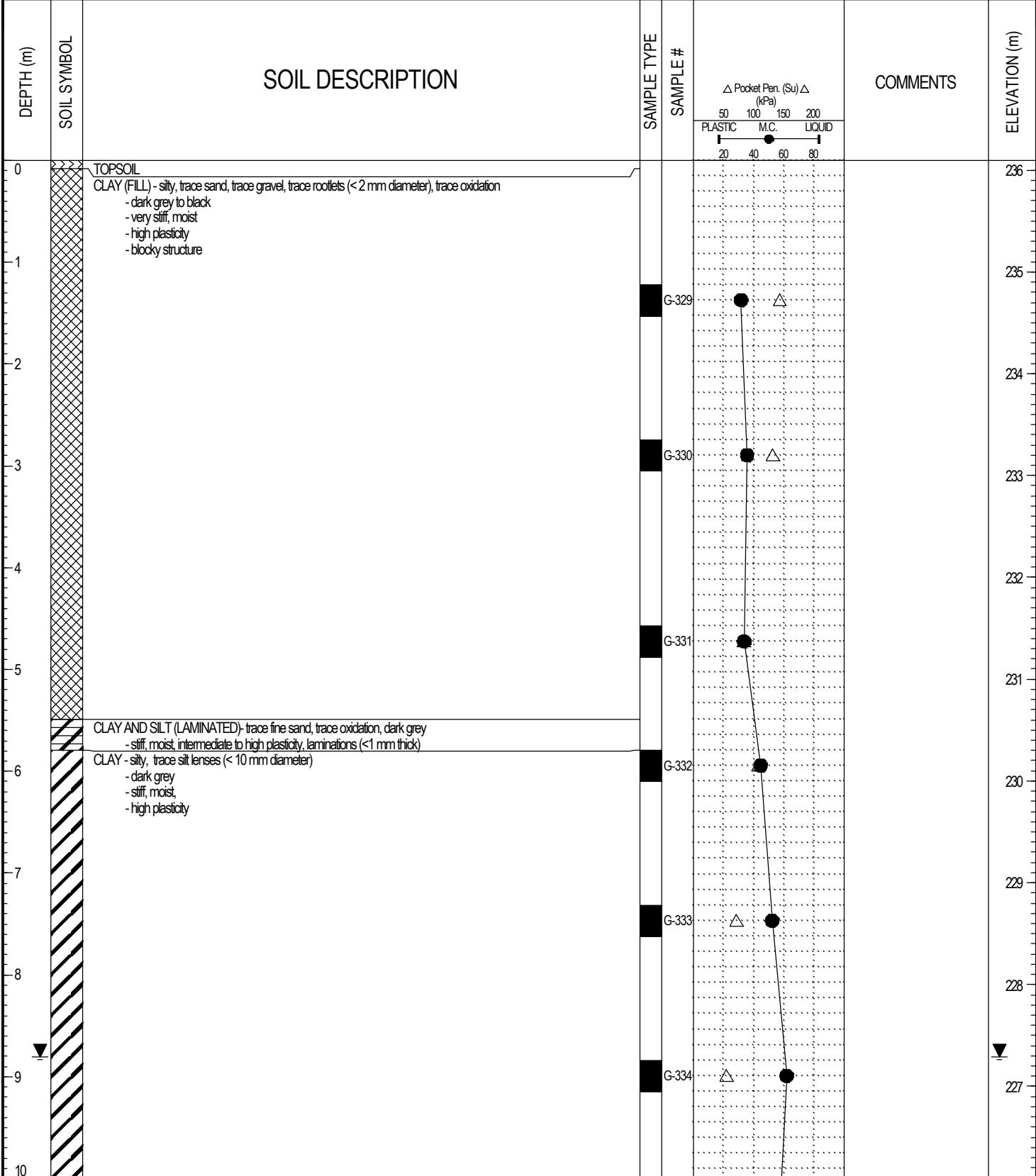
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-34
LOCATION: WTP - N 5524132.146 E 647785.051		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 450mm Auger	ELEVATION (m): 236.894
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK	<input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
20			<input checked="" type="checkbox"/>	G-327		216
21				G-328		215
22						214
23						213
24						212
25		POWER AUGER REFUSAL AT 24.4 m Notes: 1. Sloughing below 22.3m 2. Seepage (heavy) at 22.3 m 4. Water level at 17.4m below ground surface immediately at completion of drilling 5. Water level at 10.4m below ground surface 2 hours after completion of drilling 6. Test hole grouted to ground surface				211
26						210
27						209
28						208
29						207
30						207

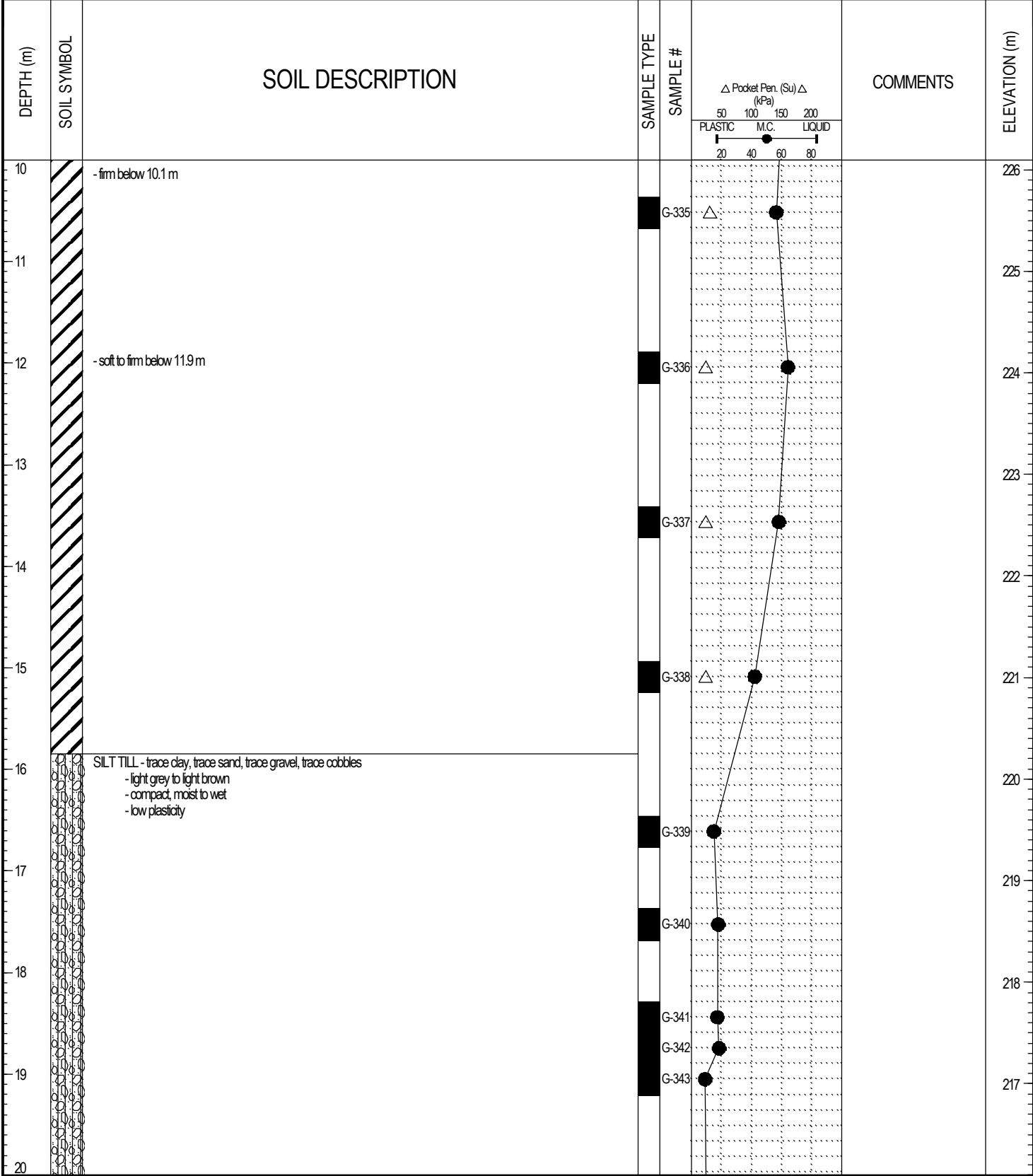
LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

	LOGGED BY: Nelson Ferreira	COMPLETION DEPTH: 24.38 m
	REVIEWED BY:	COMPLETION DATE: 13/12/04
	PROJECT ENGINEER: Ken Skafffeld	Page 3 of 3

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-35
LOCATION: WTP - N 5524103.892 E 647767.976		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 450mm Auger	ELEVATION (m): 236.095
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-35
LOCATION: WTP - N 5524103.892 E 647767.976		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 450mm Auger	ELEVATION (m): 236.095
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



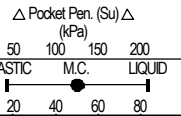
LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-35
LOCATION: WTP - N 5524103.892 E 647767.976		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 450mm Auger	ELEVATION (m): 236.095

SAMPLE TYPE  GRAB     SHELBY TUBE     SPLIT SPOON     BULK     NO RECOVERY     CORE

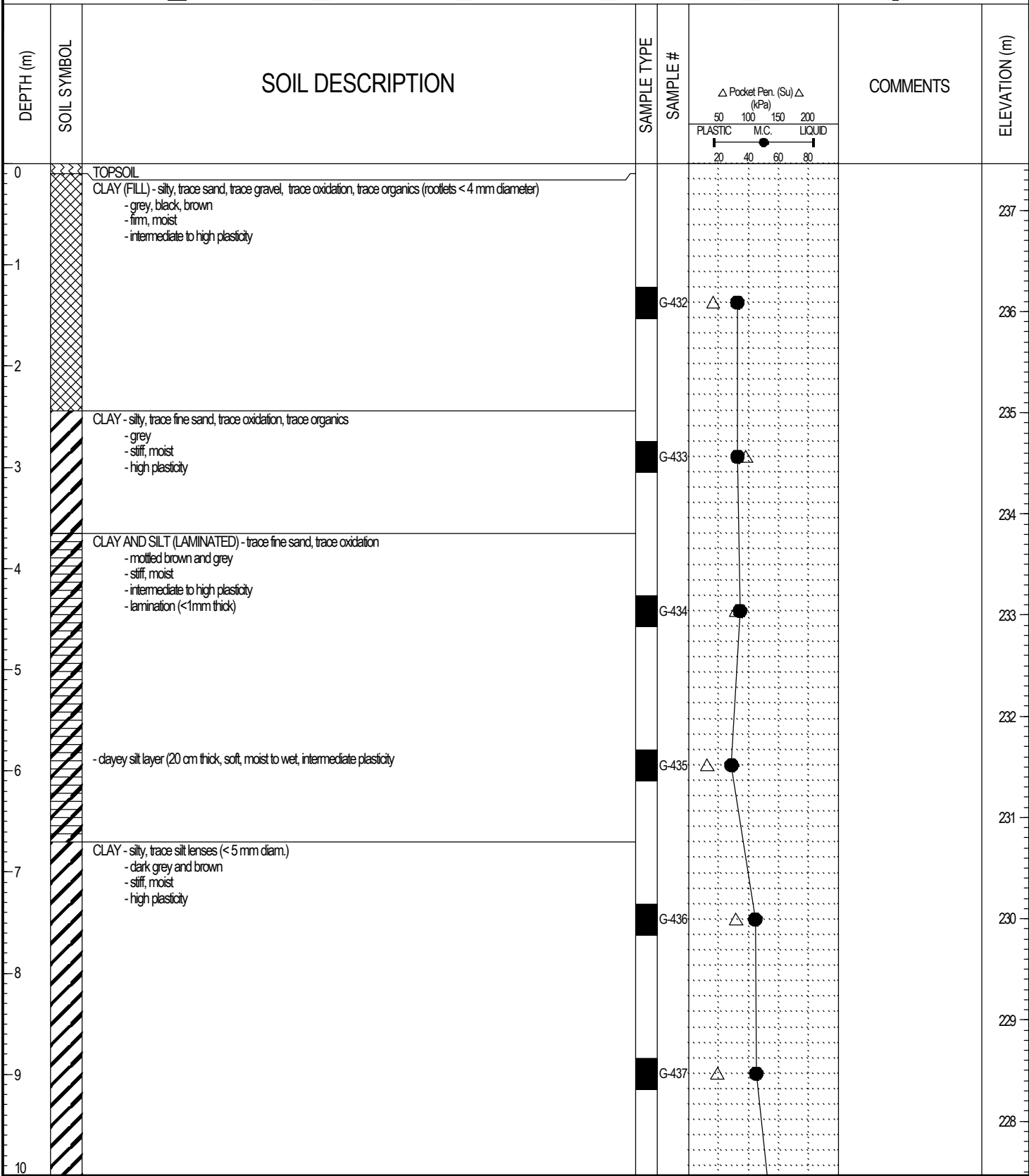
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
20						216
21						215
22		POWER AUGER REFUSAL AT 21.3m Notes: 1. Sloughing below 30.5m 3. Seepage at 21.0m 4. Water level at 9.1m below ground surface 3 hours after completion of drilling 5. Test hole grouted to 3.7m below ground surface and backfilled with cuttings to surface	<input checked="" type="checkbox"/>	G-344		214
23						213
24						212
25						211
26						210
27						209
28						208
29						207
30						207

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



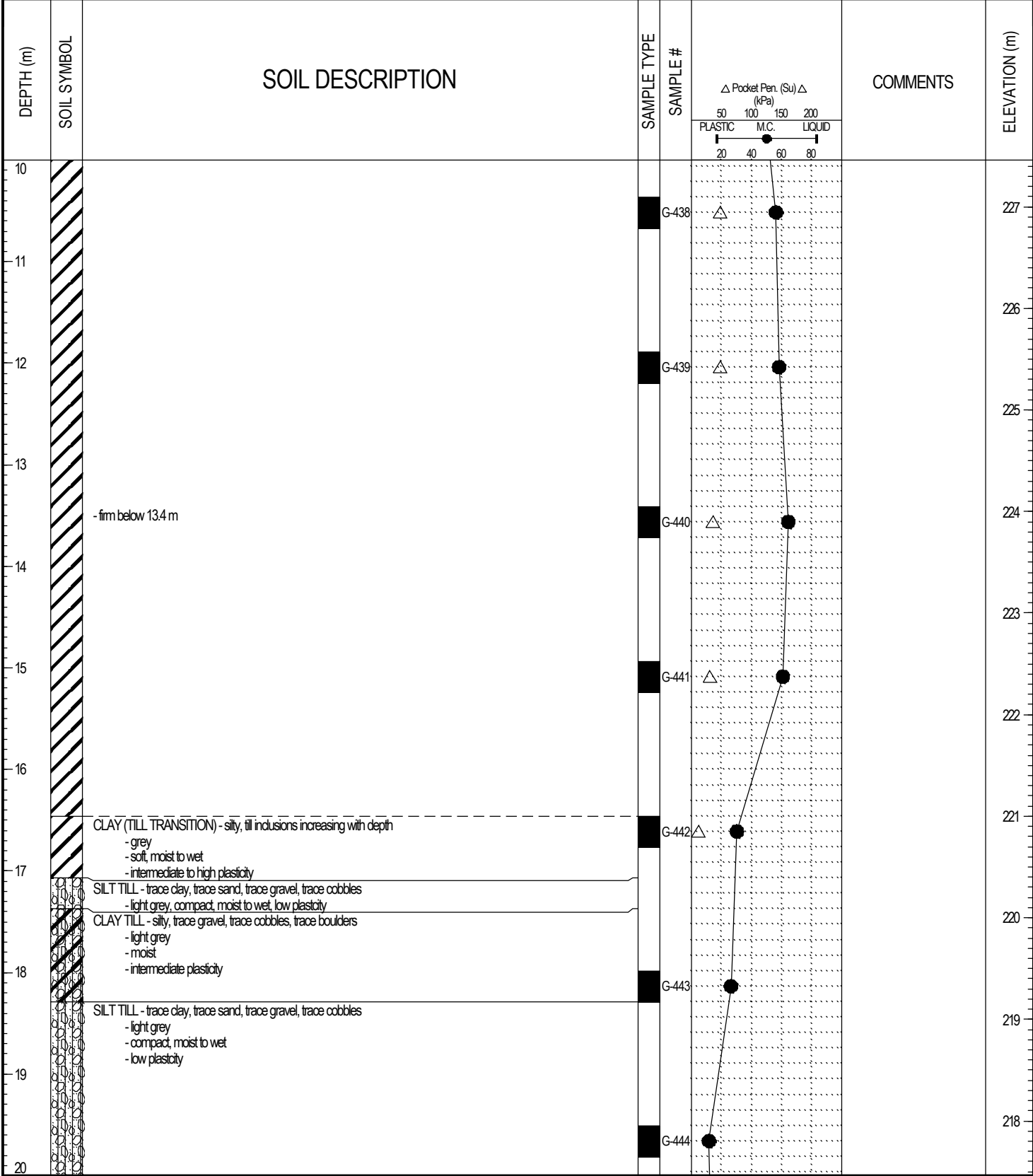


PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-36
LOCATION: WTP - N 5524027.267 E 647809.570		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 237.461
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-36
LOCATION: WTP - N 5524027.267 E 647809.570		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 237.461
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-36
LOCATION: WTP - N 5524027.267 E 647809.570		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 237.461
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK	<input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE

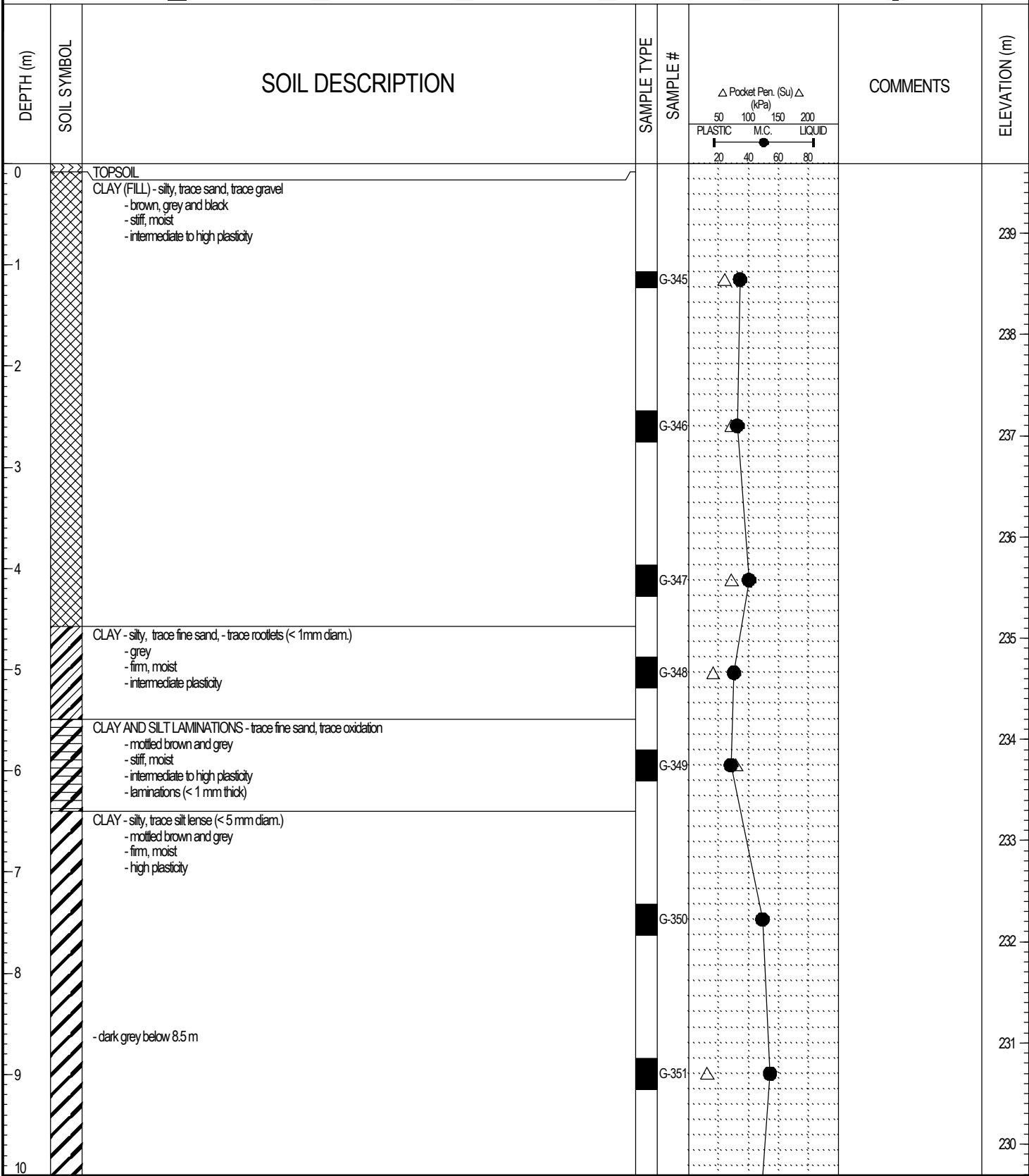
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
20						217
21						216
22				G-445		216
22				G-446		215
23		POWER AUGER REFUSAL AT 22.3m Notes: 1. Seepage at 22.3 m 2. Test hole grouted to 12.2m below ground surface and backfilled with cuttings to surface				215
24						214
25						213
26						212
27						211
28						210
29						209
30						208

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

	LOGGED BY: Nelson Ferreira	COMPLETION DEPTH: 22.25 m
	REVIEWED BY:	COMPLETION DATE: 15/12/04
	PROJECT ENGINEER: Ken Skafffeld	Page 3 of 3

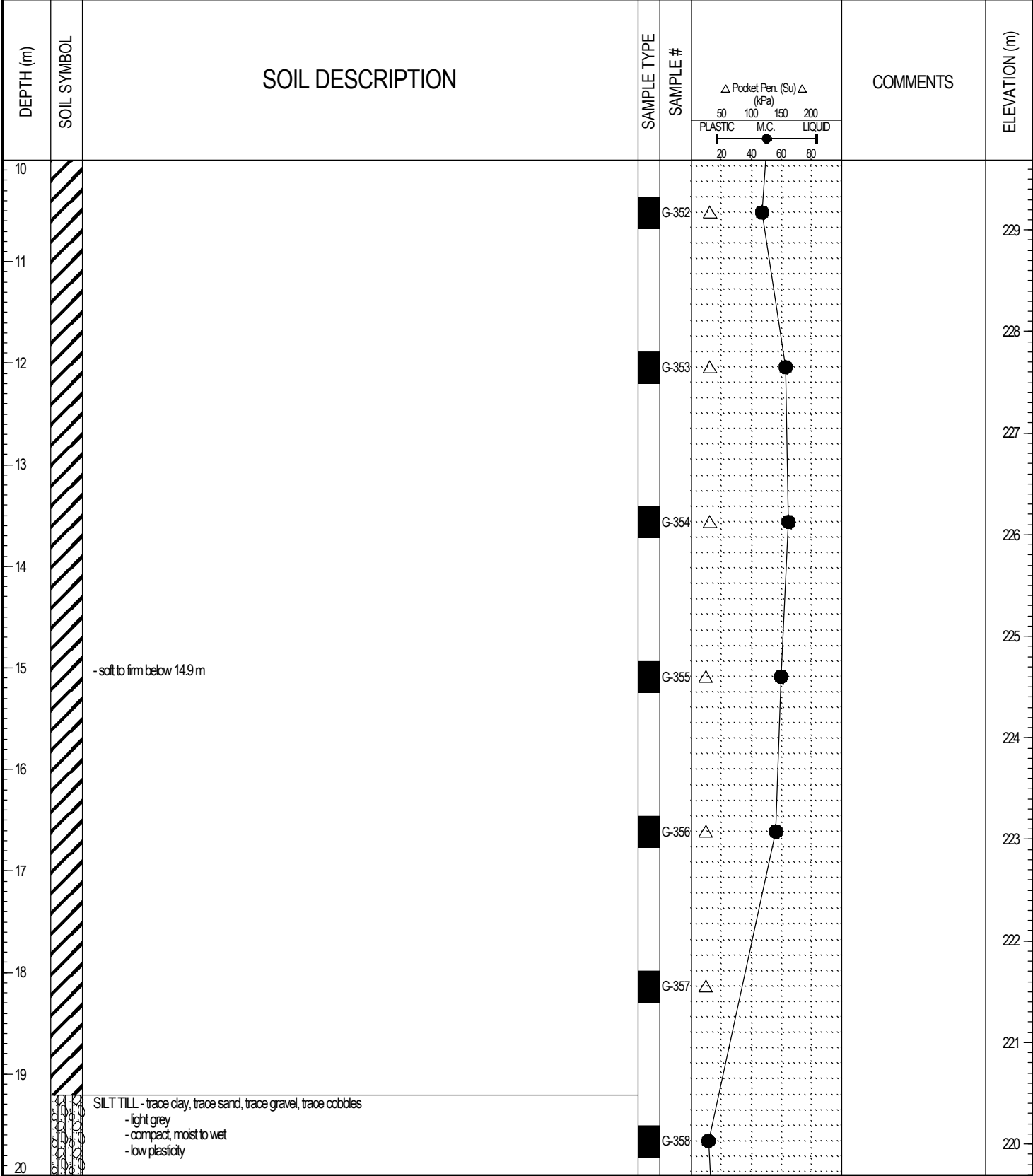
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-37
LOCATION: WTP - N 5524100.010 E 647872.679		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 239.689

SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB	<input type="checkbox"/> SHELBY TUBE	<input type="checkbox"/> SPLIT SPOON	<input type="checkbox"/> BULK	<input type="checkbox"/> NO RECOVERY	<input type="checkbox"/> CORE
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LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-37
LOCATION: WTP - N 5524100.010 E 647872.679		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 239.689
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

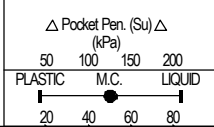


LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

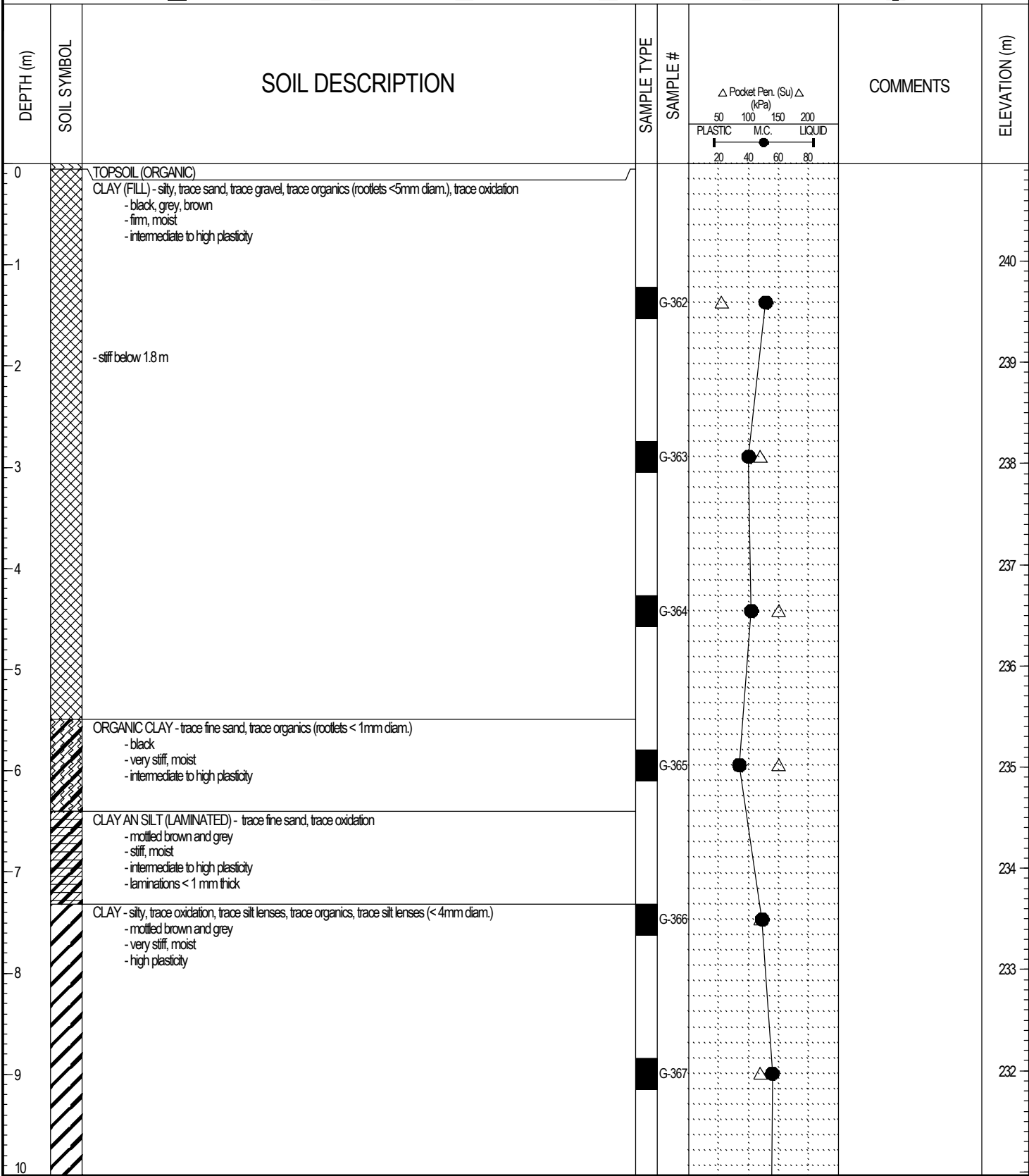
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-37
LOCATION: WTP - N 5524100.010 E 647872.679		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 239.689
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
20		CLAY TILL - trace fine sand, trace gravel, trace cobbles - dark grey - firm, moist - intermediate plasticity				219
21			<input checked="" type="checkbox"/>	G-359		
22		SILT TILL - trace clay, trace sand, trace gravel, trace cobbles - light grey - compact, moist to wet - low plasticity				218
22			<input checked="" type="checkbox"/>	G-360		
23			<input checked="" type="checkbox"/>	G-361		217
25		POWER AUGER REFUSAL AT 25.0 m Notes: 1. Sloughing below 21.3m 2. Seepage at 22.3m 3. Test hole grouted to 8.5m below ground surface and backfilled with auger cuttings to surface				214

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

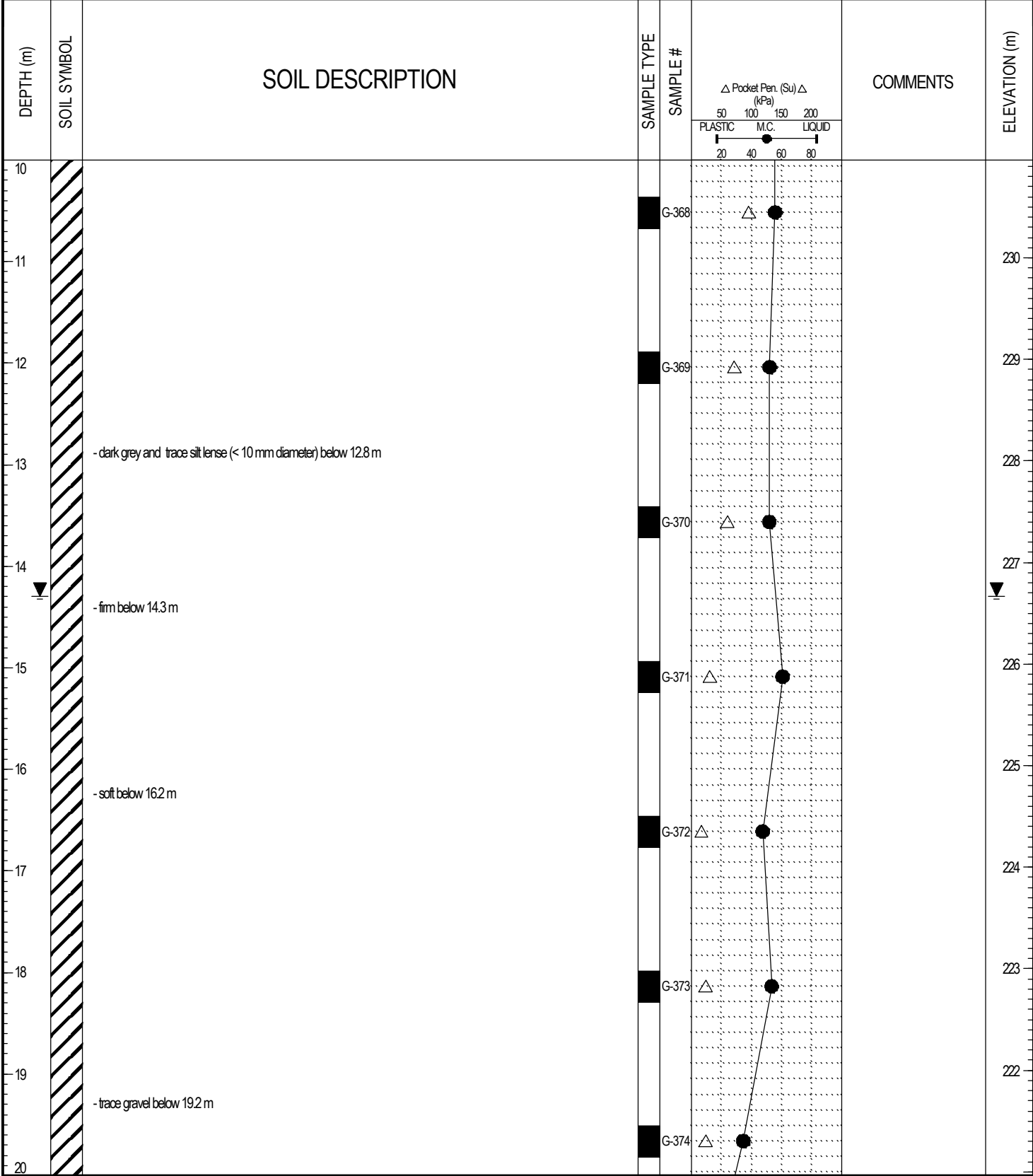


PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-38
LOCATION: WTP - N 5524087.124 E 647893.710		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 450mm Auger	ELEVATION (m): 240.963
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	




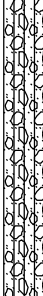
LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-38
LOCATION: WTP - N 5524087.124 E 647893.710		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 450mm Auger	ELEVATION (m): 240.963
SAMPLE TYPE	<input type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

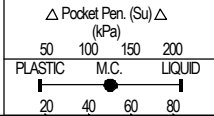




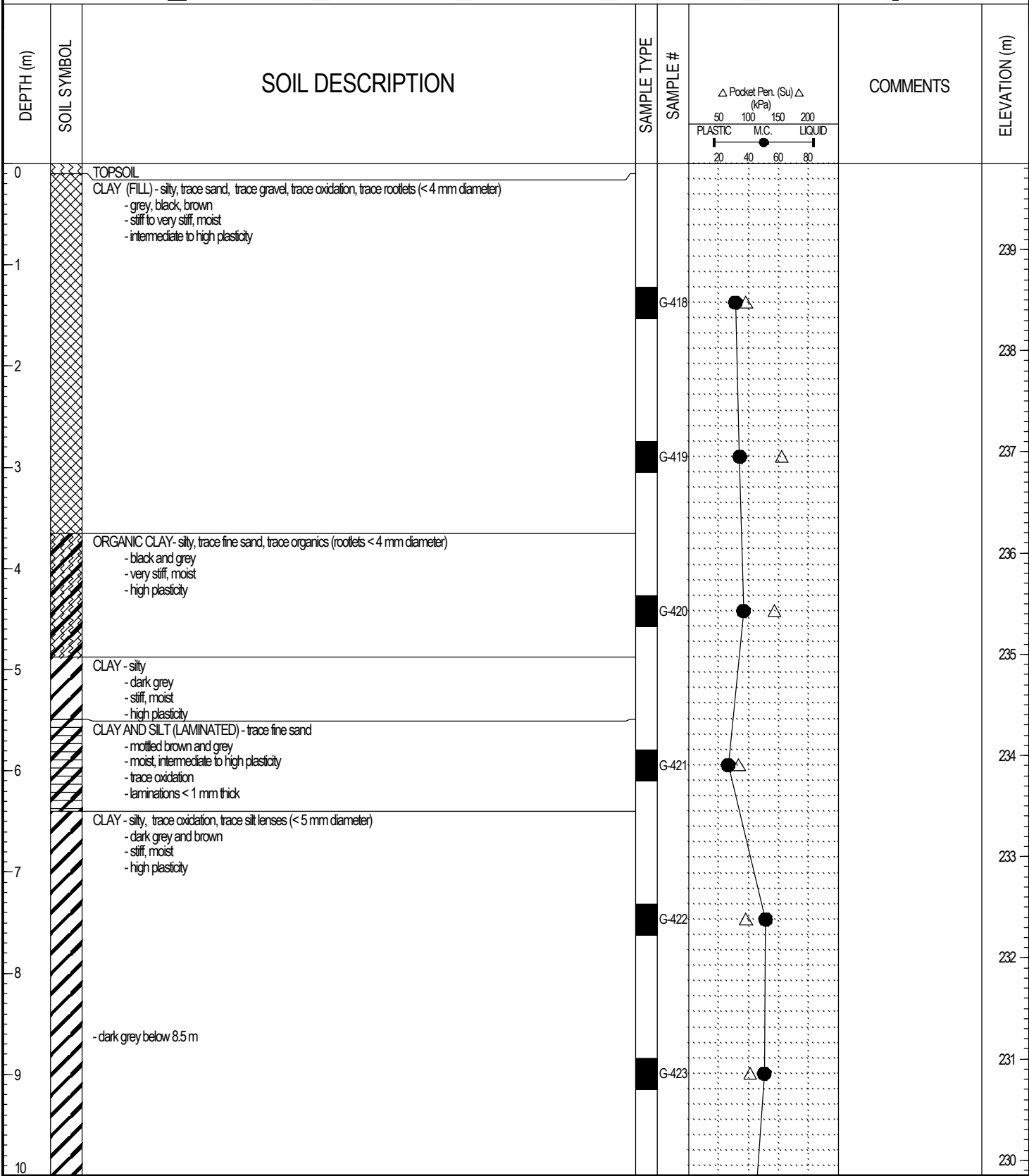
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-38
LOCATION: WTP - N 5524087.124 E 647893.710		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 450mm Auger	ELEVATION (m): 240.963
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
20						
21		SILT TILL - trace clay, trace sand, trace gravel, trace cobbles - light grey to light brown - compact, moist to wet - low plasticity	<input checked="" type="checkbox"/>	G-375		220
22		-moist below 21.9 m				219
23		-seepage below 22.6 m	<input checked="" type="checkbox"/>	G-376		218
23		END OF TEST HOLE AT 22.9 m IN TILL Notes: 1. Power auger refusal not reached due to excessive sloughing and seepage in till layer 2. Sloughing below 22.3 m 3. Seepage (heavy) at 22.6 m 4. Water level at 14.3 m below ground surface 2 hours after completion of drilling 4. Test hole grouted to 8.5 m below ground surface and backfilled with auger cuttings to surface				217
24						216
25						215
26						214
27						213
28						212
29						211
30						210

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

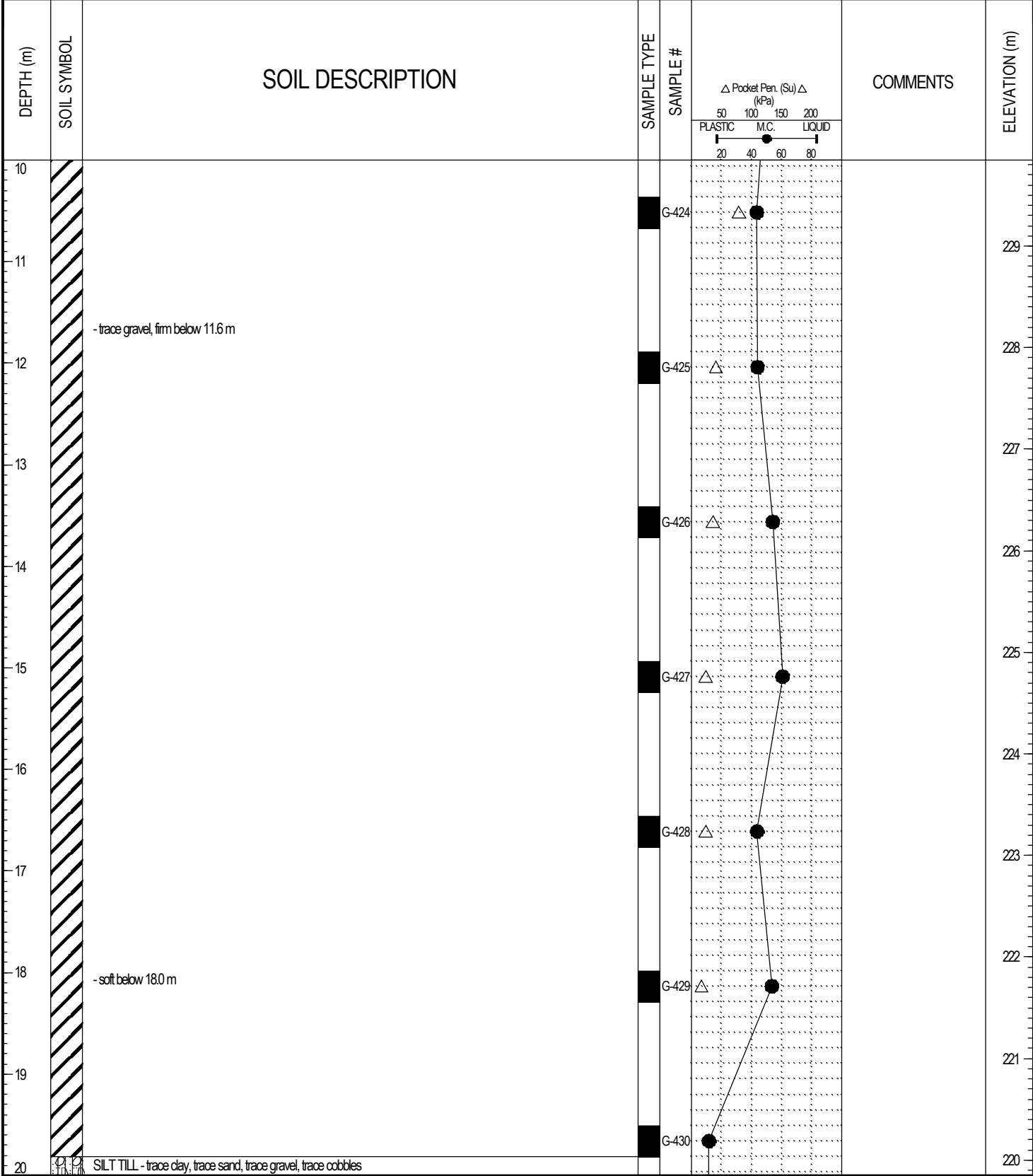


PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-39
LOCATION: WTP - N 5524057.650 E 647875.469		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 239.847
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-39
LOCATION: WTP - N 5524057.650 E 647875.469		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 239.847
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

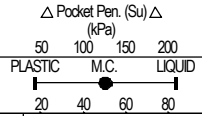


LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-39
LOCATION: WTP - N 5524057.650 E 647875.469		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 239.847
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK	<input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE

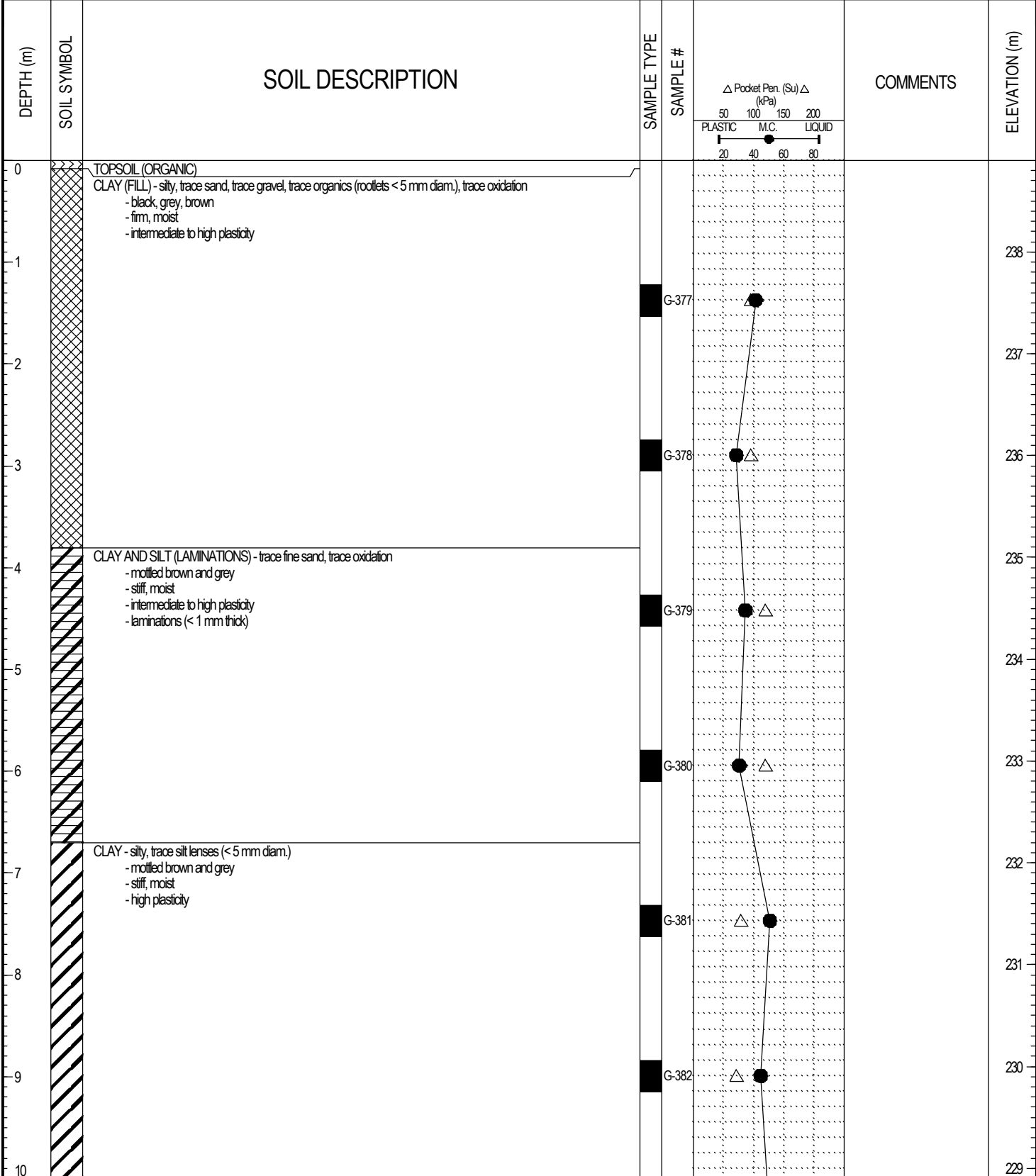
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
20		- light grey - compact, moist to wet - low plasticity				
21						219
22						218
23		POWER AUGER REFUSAL AT 22.9m Notes: 1. Sloughing below 21.9m 2. Water level at 12.8m below ground surface 1 hour after completion of drilling 3. Test hole grouted to 8.1m below ground surface and backfilled with cuttings to surface				217
24						216
25						215
26						214
27						213
28						212
29						211
30						210

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



G-431

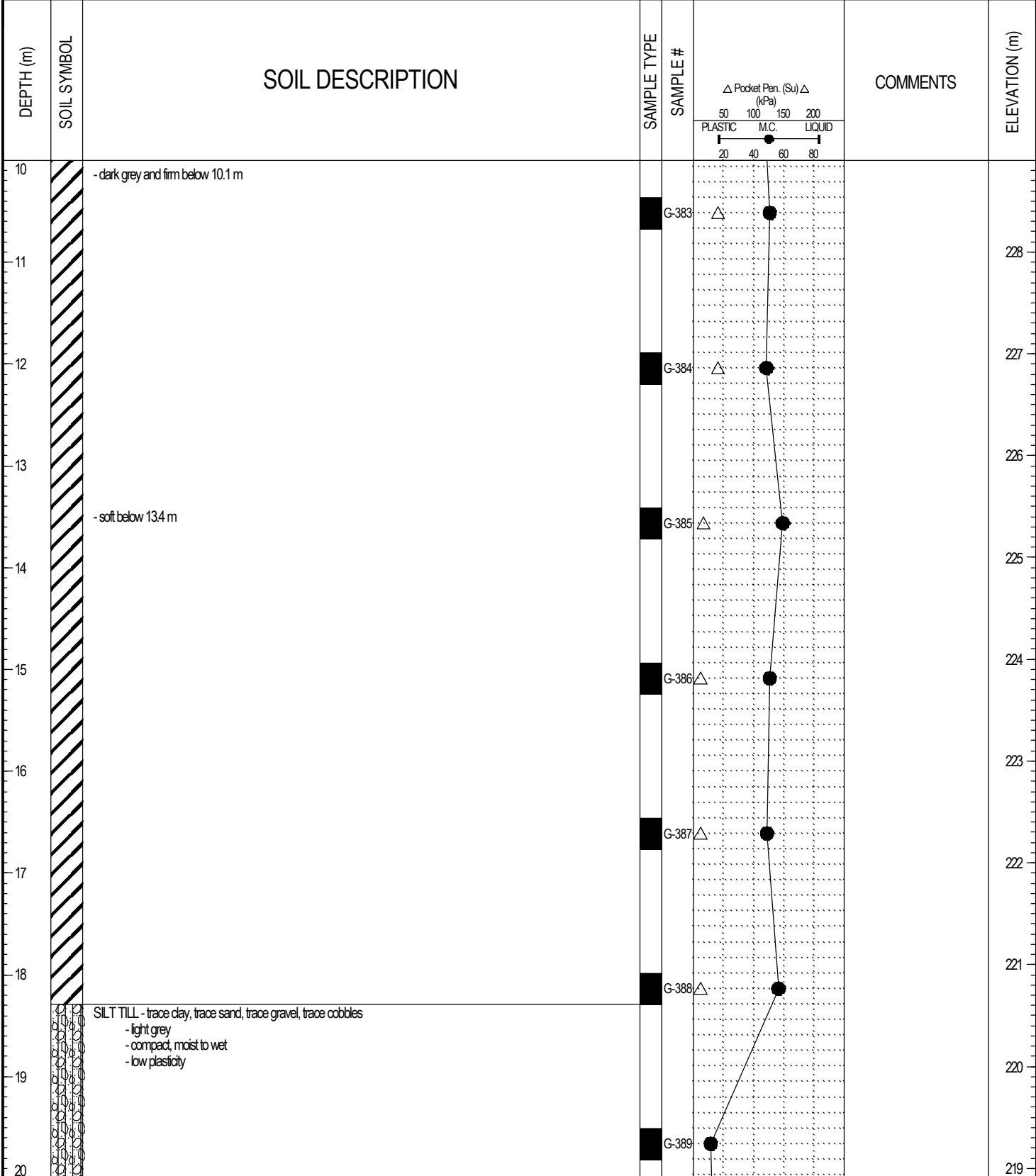
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-40
LOCATION: WTP - N 5524019.655 E 647854.567		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 238.899
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-40
LOCATION: WTP - N 5524019.655 E 647854.567		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 238.899

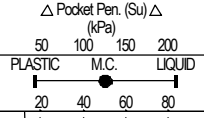
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PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-40
LOCATION: WTP - N 5524019.655 E 647854.567		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 238.899
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK	<input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE

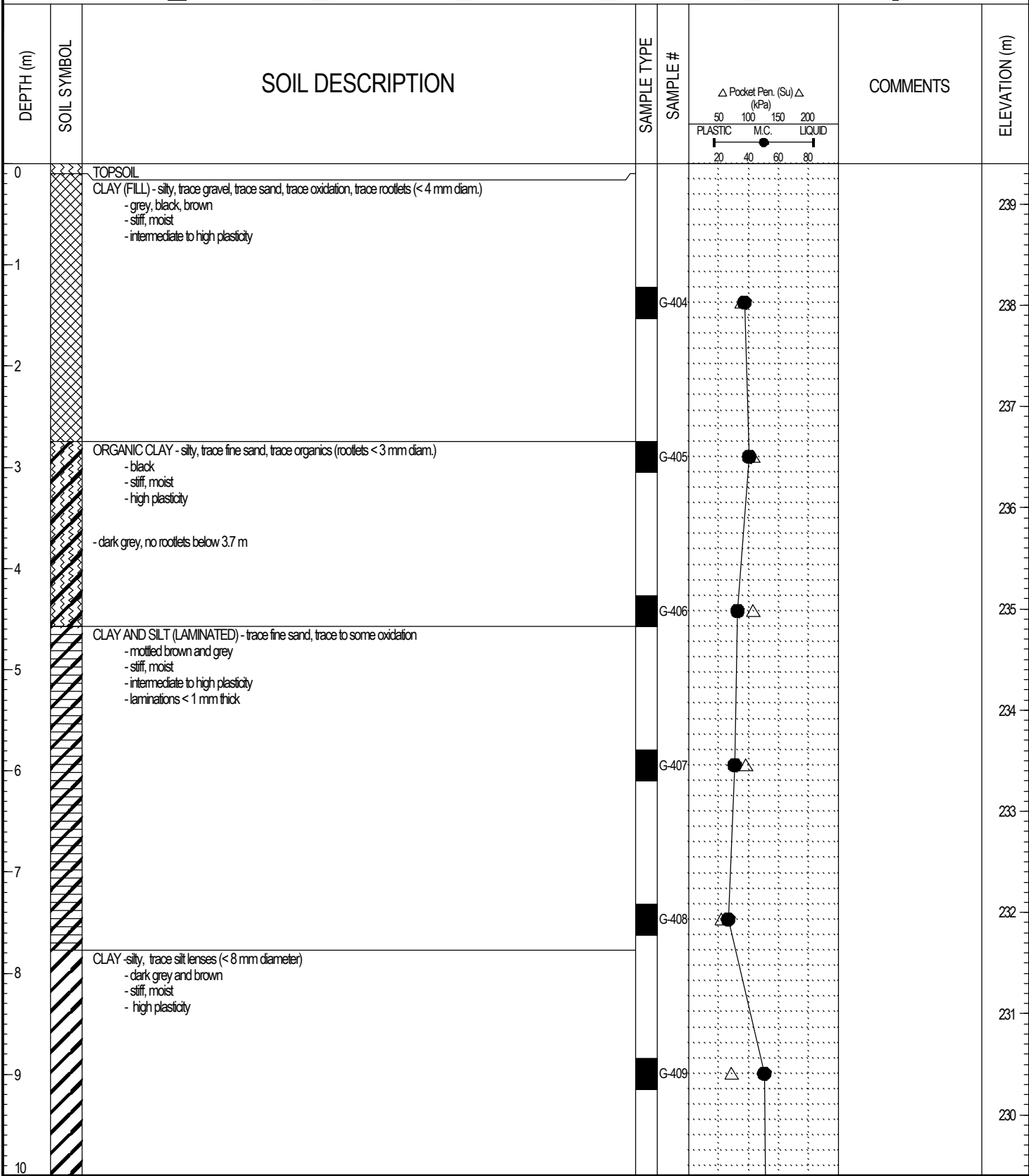
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
20						218
21						217
22		- till is gravelly and cobbly below 21.9 m				216
23		END OF TEST HOLE AT 22.6 m IN SILT TILL Notes: 1. Power auger refusal not reached due to excessive sloughing and seepage in till layer 2. Sloughing below 22.3 m 3. Seepage at 3.8m (laminated clay) and at 20.7 m (silt till) 4. Water level at 12.2 m below ground surface 2 hours after completion of drilling 5. Test hole grouted to 8.5m below ground surface and backfilled with cuttings to surface				215
24						214
25						213
26						212
27						211
28						210
29						209
30						209

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



G-390

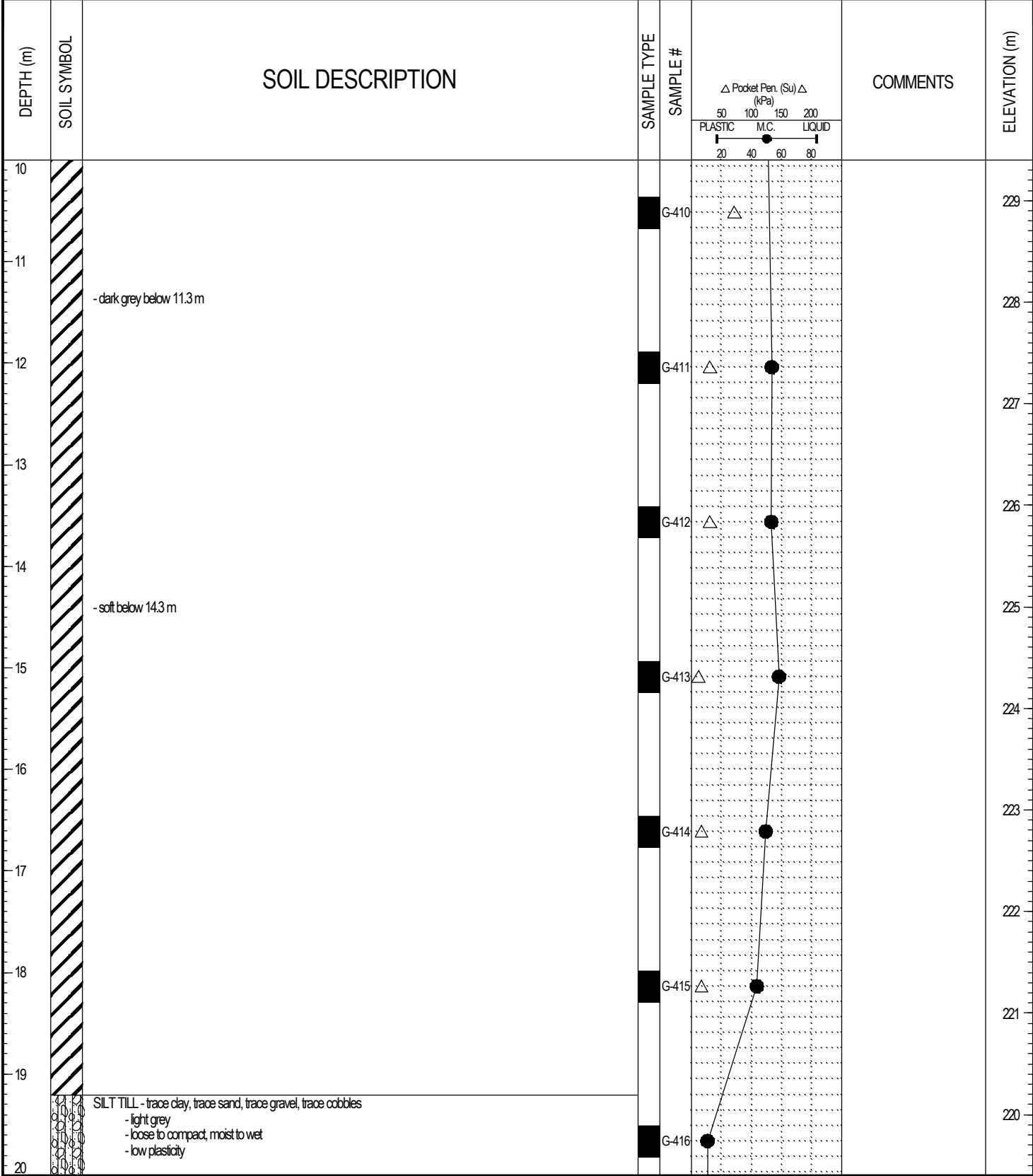
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-41
LOCATION: WTP - N 5524018.150 E 647897.056		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 239.399
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-41
LOCATION: WTP - N 5524018.150 E 647897.056		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 239.399
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

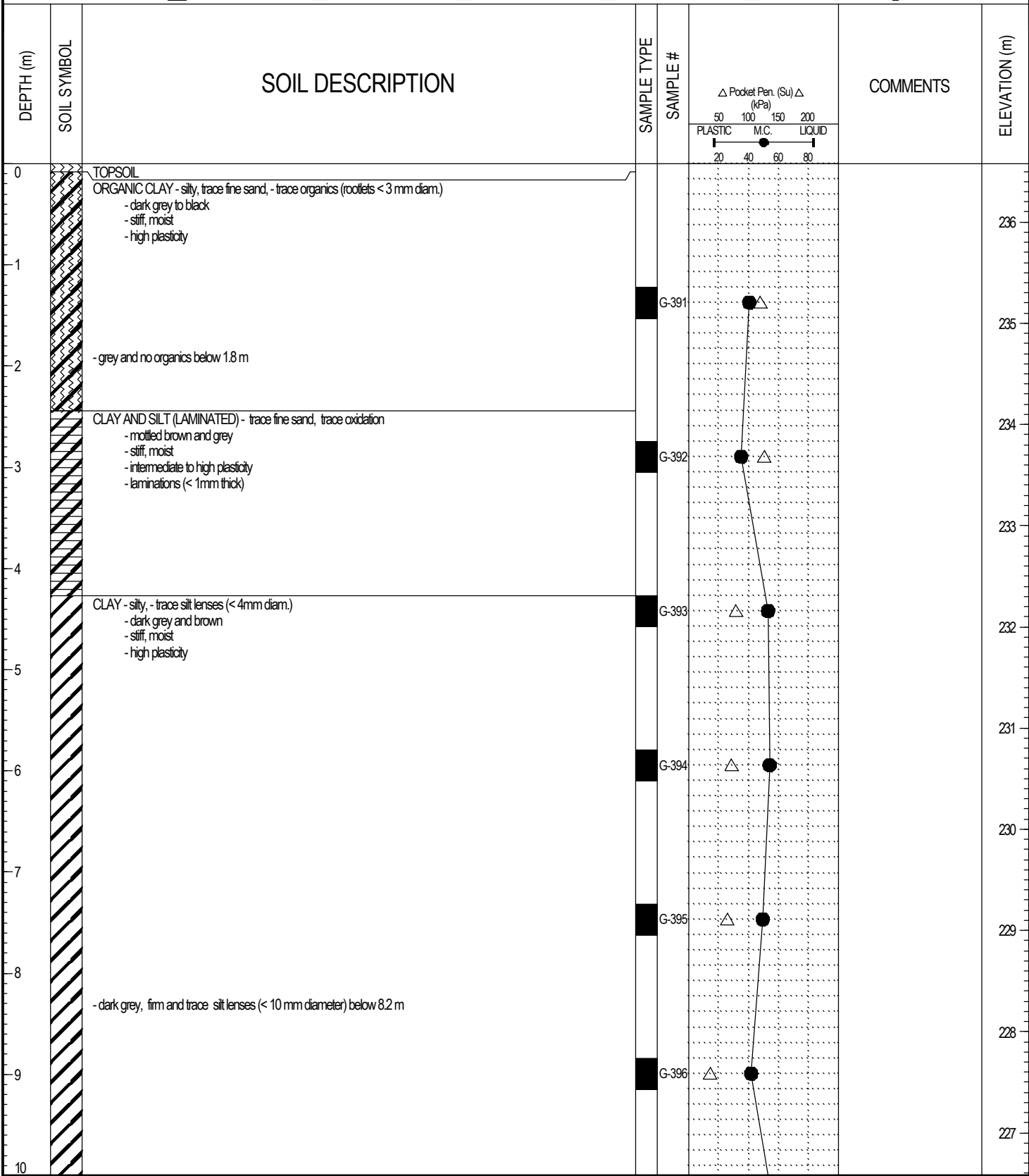
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-41
LOCATION: WTP - N 5524018.150 E 647897.056		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 239.399
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK	<input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
20						219
21						218
22		POWER AUGER REFUSAL AT 21.6m Notes: 1. Sloughing below 21.5m 2. Seepage at 21.0m 3. Water level at 19.7m below ground surface 30 minutes after completion of drilling 4. Test hole grouted to 7.7m below ground surface and backfilled to surface		G-417		217
23						216
24						215
25						214
26						213
27						212
28						211
29						210
30						210

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

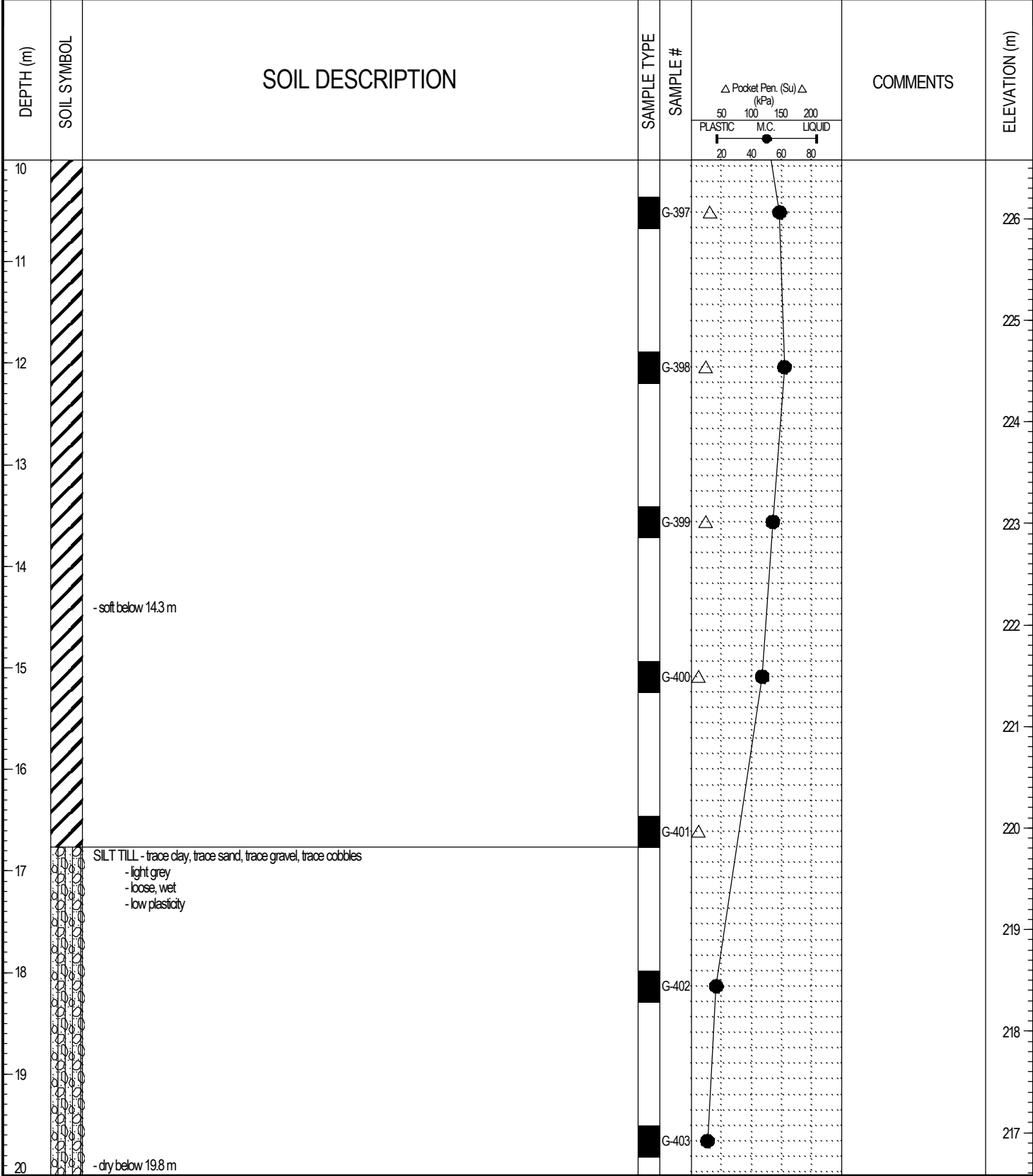
	LOGGED BY: Nelson Ferreira	COMPLETION DEPTH: 21.64 m
	REVIEWED BY:	COMPLETION DATE: 15/12/04
	PROJECT ENGINEER: Ken Skafffeld	Page 3 of 3

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-42
LOCATION: WTP - N 5523979.163 E 647888.166		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 236.577
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-42
LOCATION: WTP - N 5523979.163 E 647888.166		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 236.577
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

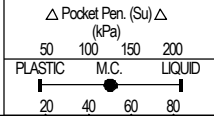


LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

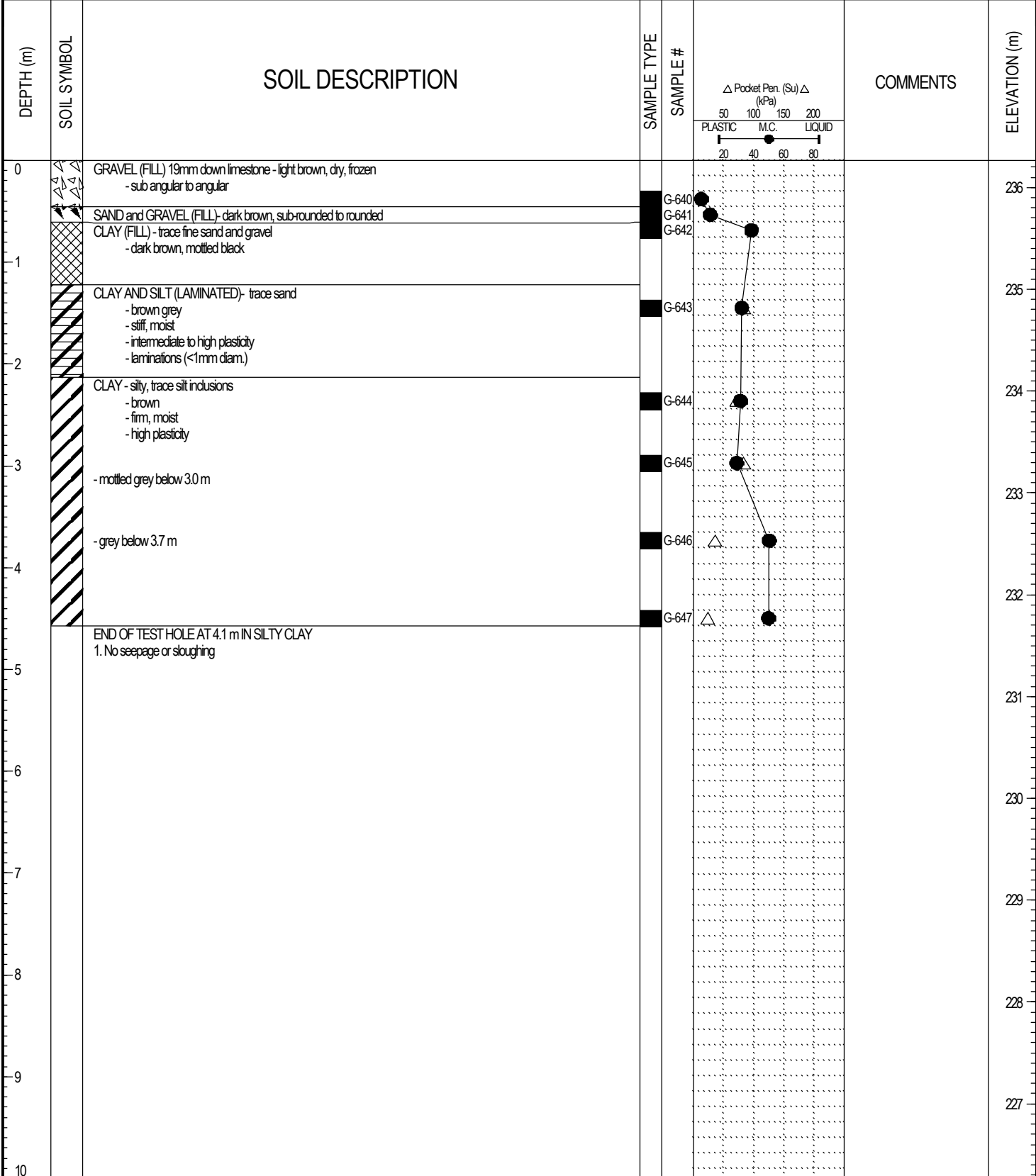
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: <b>04-42</b>
LOCATION: WTP - N 5523979.163 E 647888.166	PROJECT NO.: 3398-055-00-01	
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 236.577
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK	<input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
20		POWER AUGER REFUSAL AT 20.1 m Notes: 1. Sloughing below 19.2m 2. Seepage at 19.2m 3. Water level at 9.6m below ground surface 4.5 hours after completion of drilling 4. Test hole grouted to 5.4m below ground surface and backfilled to surface				216
21						215
22						214
23						213
24						212
25						211
26						210
27						209
28						208
29						207
30						207

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-43
LOCATION: Access Roads - N 5523918.260 E 647838.376		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Maple Leaf Drilling	METHOD: DR 150 - 125 mm Solid Stem Auger	ELEVATION (m): 236.266
SAMPLE TYPE	<input type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

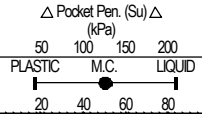


LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-44
LOCATION: Access Roads - N 5523935.322 E 647896.922		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 236.799
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0	TOPSOIL	CLAY (FILL)- silty, trace fine sand, trace gravel, trace oxidation, trace organics (rootlets < 2 mm diam) - brown and grey - stiff, moist - intermediate plasticity				236
1		- desiccated below 0.91 m  - black, trace sand, trace large gravel and dry to moist below 1.5 m		G-467		
2		CLAY - silty, trace fine sand, trace fine gravel, trace (< 3%) oxidation, trace organics (rootlets < 1 mm diam) - dark grey to brown - very stiff, moist - high plasticity - desiccated below 2.4 m		G-468 G-469		235
3		CLAY AND SILT (LAMINATED)- trace fine sand, trace to some oxidation, trace organics (< 1%, rootlets < 1 mm diam) - mottled brown and grey - stiff, moist - intermediate to high plasticity - laminations (<1 mm diam.)		G-470		234
4		CLAY- silty, trace organics (< 2%, rootlets < 2 mm diameter), trace silt lenses (< 4 mm diam) - dark grey to brown - stiff, moist - high plasticity		G-471		233
5		END OF TEST HOLE AT 4.6 m IN SILTY CLAY Notes: 1. No seepage or sloughing				232
6						231
7						230
8						229
9						228
10						227

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-45
LOCATION: Access Roads - 5523955.117 E 647815.851		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 236.772
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	△ Pocket Pen. (Su) △ (kPa) 50 100 150 200 PLASTIC M.C. LIQUID 20 40 60 80	COMMENTS	ELEVATION (m)
0	TOPSOIL						
0 - 1		CLAY (FILL) - silty, trace gravel, trace fine sand, - trace oxidation, trace organics (rootlets < 2 mm diam) - brown and grey - stiff, moist - intermediate to high plasticity	<input checked="" type="checkbox"/>	G-463	●		236
1 - 2		CLAY - silty, trace fine sand, trace fine gravel, trace (< 3%) oxidation, trace organics (rootlets < 1 mm diam) - dark grey to brown - very stiff, moist - high plasticity - desiccated - stiff below 2.0 m	<input checked="" type="checkbox"/>	G-464	●	△	235
2 - 3		CLAY AND SILT (LAMINATED) - trace fine sand, trace to some oxidation, trace organics (< 1%, rootlets < 1 mm diam) - mottled brown and grey - stiff, moist - intermediate to high plasticity - laminations (< 1mm thick)	<input checked="" type="checkbox"/>	G-465	●	△	234
3 - 4		CLAY - silty, trace organics (< 2%, rootlets < 2 mm diam), trace silt lenses (< 4 mm diam) - dark grey to brown - stiff, moist - high plasticity	<input checked="" type="checkbox"/>	G-466	●	△	233
4 - 5		END OF TEST HOLE AT 4.6 m IN CLAY Notes: 1. No seepage or sloughing					232
5 - 6							231
6 - 7							230
7 - 8							229
8 - 9							228
9 - 10							227

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05



PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-46
LOCATION: Access Roads - N 5524112.335 647648.893		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 236.479
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0	TOPSOIL					
0		ORGANIC CLAY -silty, trace fine sand, trace to some oxidation, trace organics (rootlets < 5 mm diam) - dark grey to black - stiff, moist - high plasticity - desiccated		G-458	△ Pocket Pen. (Su) △ (kPa) 50 100 150 200 PLASTIC M.C. LIQUID 20 40 60 80	236
1		CLAY - silty, trace organics (< 4%, rootlets, < 2 mm diam.) - grey - stiff, moist - high plasticity		G-459		235
2		CLAY AND SILT (LAMINATED)- trace fine sand, trace to some oxidation, trace organics (rootlets < 1 mm diam.) - mottled brown and grey - stiff, moist - high plasticity - laminations (< 1 mm thick)		G-460		234
3		CLAY - silty, trace organics (< 2%, rootlets, < 2 mm diam.), silt lenses (< 4 mm diam.) - dark grey to brown - stiff, moist - high plasticity		G-461		233
4		CLAY - silty, trace organics (< 2%, rootlets, < 2 mm diam.), silt lenses (< 4 mm diam.) - dark grey to brown - stiff, moist - high plasticity		G-462		232
5		END OF TEST HOLE AT 4.6 m IN SILTY CLAY Notes: 1. No seepage or sloughing				231
6						230
7						229
8						228
9						227
10						227

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-47
LOCATION: Access Roads - N 5524177.032 E 647667.626		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB	ELEVATION (m): 236.976
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

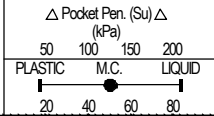
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	Δ Pocket Pen. (Su) Δ (kPa) 50 100 150 200 PLASTIC M.C. LIQUID 20 40 60 80	COMMENTS	ELEVATION (m)
0	TOPSOIL						
0 - 0.5		CLAY - silty, trace fine sand, trace gravel, trace organics (<4%, rootlets < 2 mm diameter), trace oxidation - brown and grey - firm, moist - high plasticity - desiccated	GRAB	G-453	40		236
0.5 - 1.5		CLAY AND SILT (LAMINATED) - trace sand, trace oxidation - mottled brown and grey - stiff, moist - intermediate to high plasticity - laminations (< 1 mm thick)	GRAB	G-454	45		235
1.5 - 3.5		CLAY - silty - grey and brown - stiff, moist - high plasticity - desiccated	GRAB	G-455	55		234
3.5 - 4.6		CLAY AND SILT (LAMINATED) - silty, trace sand, trace oxidation - mottled brown and grey - stiff, moist - intermediate to high plasticity - laminations (< 1 mm thick)	GRAB	G-456	65		233
4.6 - 5.0		END OF TEST HOLE AT 4.6 m IN SILTY CLAY Notes: 1. No seepage or sloughing	GRAB	G-457	75		232
5.0 - 10.0							231 230 229 228

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

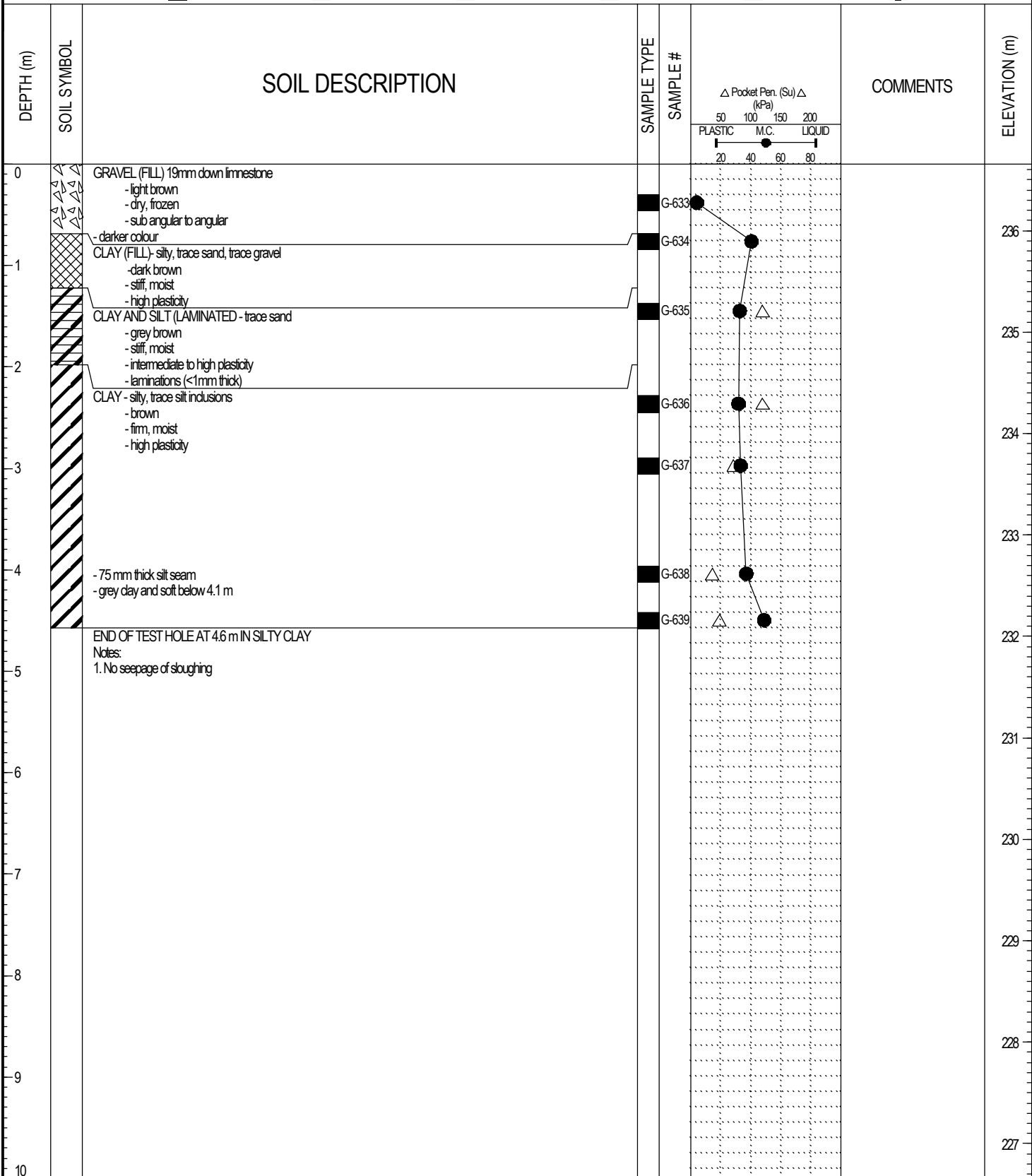
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-48
LOCATION: Access Roads - N 5524184.233 E 647726.958		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Subterranean	METHOD: SoilMech D-312HB, 600mm Auger	ELEVATION (m): 236.211
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	COMMENTS	ELEVATION (m)
0	TOPSOIL	CLAY - silty, trace fine sand, trace gravel, trace oxidation, trace organics (<4%, rootlets < 2 mm diam.) - brown - firm, moist - high plasticity				236
1				G-447		235
2				G-448		234
3		CLAY AND SILT (LAMINATED)- trace sand, trace oxidation - mottled brown and grey - stiff, moist - intermediate to high plasticity - laminations (< 1mm thick)		G-449		233
4		CLAY - silty, trace oxidation, trace silt lenses (< 4 mm diam) - grey and brown - stiff, moist - high plasticity		G-450		232
5		CLAY - silty, trace oxidation, trace silt lenses (< 4 mm diam) - grey and brown - stiff, moist - high plasticity		G-451		232
6		END OF TEST HOLE AT 4.6m IN SILTY CLAY Notes: 1. No seepage or sloughing		G-452		232

LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

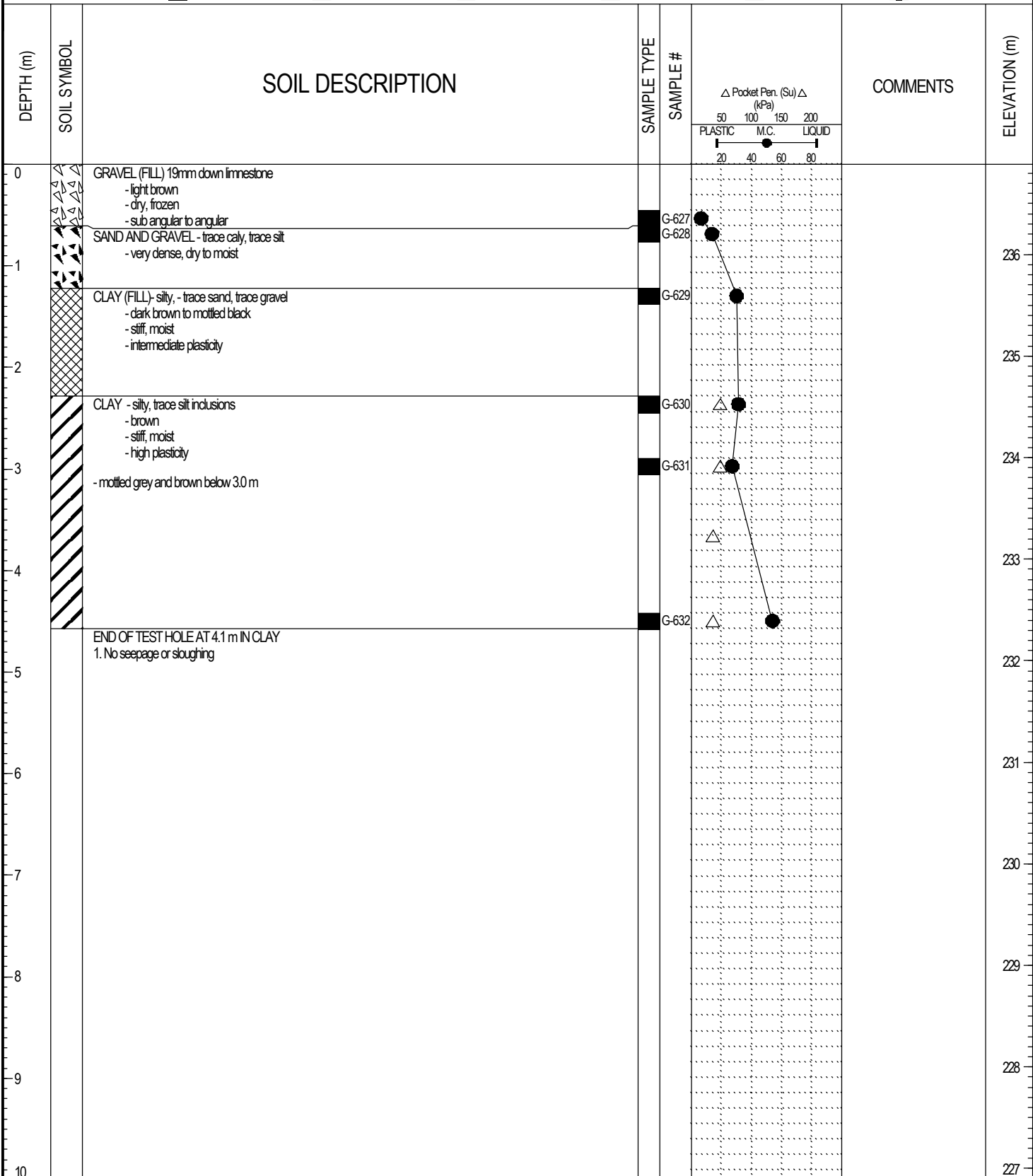


PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-49
LOCATION: Access Roads - N 5523907.744 E 648028.131		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Maple Leaf Drilling	METHOD: DR 150 - 125 mm Solid Stem Auger	ELEVATION (m): 236.656
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

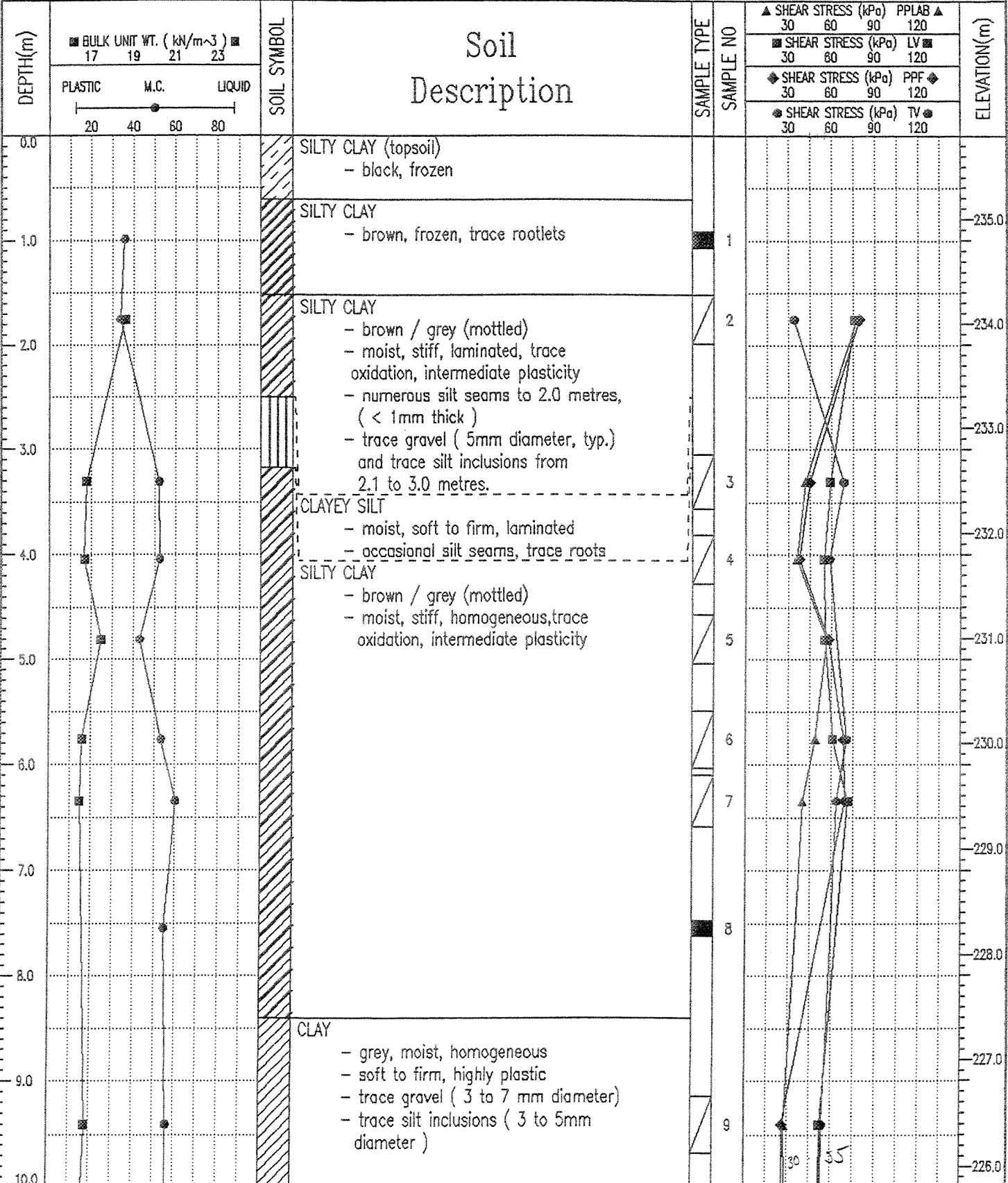
PROJECT: Winnipeg Water Treatment Plant	CLIENT: City of Winnipeg (Earth Tech Can Ltd)	TESTHOLE NO: 04-50
LOCATION: Access Roads - N 5523911.437 E 648218.067		PROJECT NO.: 3398-055-00-01
CONTRACTOR: Maple Leaf Drilling	METHOD: DR 150 - 125 mm Solid Stem Auger	ELEVATION (m): 236.888
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



LOG OF TESTHOLE WINNIPEG WATER TREATMENT PLANT.GPJ UMA.GDT 4/5/05

PROJECT: DEACON DRAINAGE STRUCTURE	DRILLED BY: PADDOCK DRILLING LIMITED	BOREHOLE NO: TH-1
CLIENT: CH2M G&S / CITY OF WINNIPEG	DRILL TYPE: ACKER MP5, 125 mm SS AUGERS	PROJECT NO: 4895-006-07-01
PROJECT ENGINEER: DY	LOCATION: STN 20693.3, 14m S OF BR-1 C/L	ELEVATION: 235.794 (m)

SAMPLE TYPE  GRAB SAMPLE  SHELBY TUBE  DISTURBED  NO RECOVERY  SPLIT SPOON  WIRE LINE-TYPE



UMA Environmental  
Winnipeg, Manitoba

LOGGED BY: GR  
REVIEWED BY: KS  
Fig. No:

COMPLETION DEPTH: 13.7 m  
COMPLETE: 16/02/96

PROJECT: DEACON DRAINAGE STRUCTURE		DRILLED BY: PADDOCK DRILLING LIMITED		BOREHOLE NO: TH-1	
CLIENT: CH2M G&S / CITY OF WINNIPEG		DRILL TYPE: ACKER MP5, 125 mm SS AUGERS		PROJECT NO: 4895-006-07-01	
PROJECT ENGINEER: DY		LOCATION: STN 20693.3, 14m S OF BR-1 C/L		ELEVATION: 235.794 (m)	
SAMPLE TYPE <input checked="" type="checkbox"/> GRAB SAMPLE		<input checked="" type="checkbox"/> SHELBY TUBE		<input checked="" type="checkbox"/> DISTURBED	
		<input type="checkbox"/> NO RECOVERY		<input type="checkbox"/> SPLIT SPOON	
				<input type="checkbox"/> WIRE LINE-TYPE	

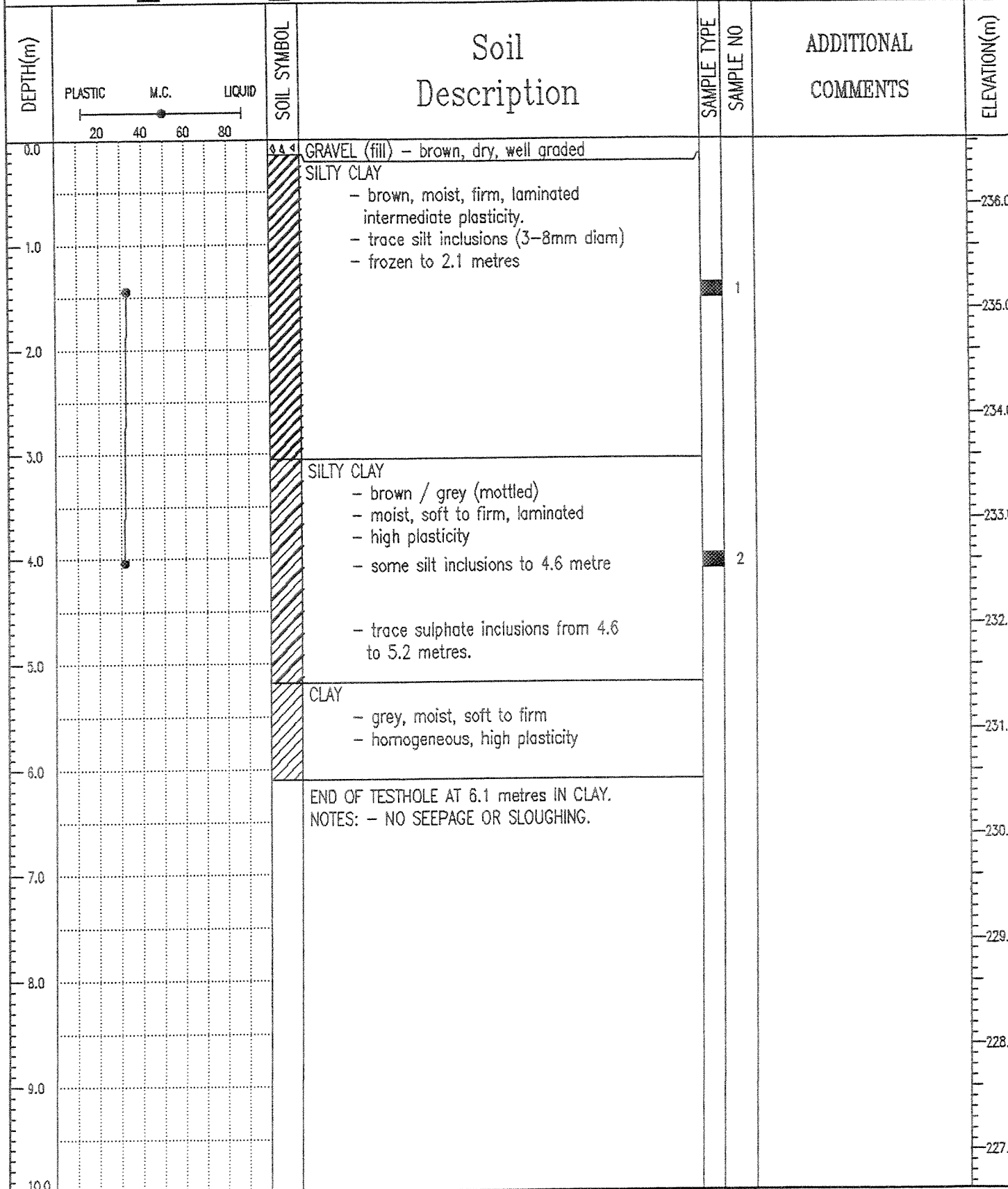
  

DEPTH (m)	BULK UNIT WT. (kN/m <sup>3</sup> )				SOIL SYMBOL	Soil Description	SAMPLE TYPE	SAMPLE NO	SHEAR STRESS (kPa)				ELEVATION (m)		
	17	19	21	23					PPLAB	LV	PPF	TV			
	PLASTIC      M.C.      LIQUID 20      40      60      80														
10.0					<input checked="" type="checkbox"/>	- occasional silt seams from 12.8m	<input checked="" type="checkbox"/>	10					225.0		
11.0															224.0
12.0															223.0
13.0															222.0
14.0						END OF TESTHOLE AT 13.7 metres IN CLAY. NOTES: - NO SEEPAGE OR SLOUGHING						221.0			
15.0												220.0			
16.0												219.0			
17.0												218.0			
18.0												217.0			
19.0												216.0			
20.0															

<b>UMA Environmental</b> Winnipeg, Manitoba	LOGGED BY: GR REVIEWED BY: KS Fig. No:	COMPLETION DEPTH: 13.7 m COMPLETE: 16/02/96
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PROJECT: DEACON DRAINAGE STRUCTURE	DRILLED BY: PADDOCK DRILLING LIMITED	BOREHOLE NO: TH-2
CLIENT: CH2M G&S / CITY OF WINNIPEG	DRILL TYPE: ACKER MP5, 125 mm SS AUGERS	PROJECT NO: 4895-006-07-01
PROJECT ENGINEER: DY	LOCATION: STN 20629m, 10m S OF BR-1 C/L	ELEVATION: 236.633 (m)
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB SAMPLE	<input checked="" type="checkbox"/> SHELBY TUBE
	<input checked="" type="checkbox"/> DISTURBED	<input type="checkbox"/> NO RECOVERY
	<input type="checkbox"/> SPLIT SPOON	<input type="checkbox"/> WIRE LINE-TYPE




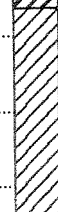
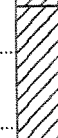


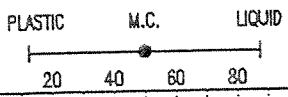
<p>UMA Environmental Winnipeg, Manitoba</p>	LOGGED BY: GR	COMPLETION DEPTH: 6.1 m
	REVIEWED BY: KS	COMPLETE: 16/02/96
	Fig. No:	Page 1 of 1



PROJECT: DEACON DRAINAGE STRUCTURE	DRILLED BY: PADDOCK DRILLING LIMITED	BOREHOLE NO: TH-3
CLIENT: CH2M G&S / CITY OF WINNIPEG	DRILL TYPE: ACKER MP5, 125 mm SS AUGERS	PROJECT NO: 4895-006-07-01
PROJECT ENGINEER: DY	LOCATION: STN 20556m, 8m S OF BR-1 C/L	ELEVATION: 236.222 (m)

SAMPLE TYPE  GRAB SAMPLE  SHELBY TUBE  DISTURBED  NO RECOVERY  SPLIT SPOON  WIRE LINE-TYPE

DEPTH(m)	SOIL SYMBOL	Soil Description	SAMPLE TYPE	SAMPLE NO	ADDITIONAL COMMENTS	ELEVATION(m)
0.0		SILTY CLAY (fill) - brown, frozen - trace gravel				236.0
1.0		SILTY CLAY (topsoil) - black, frozen				235.0
2.0		SILTY CLAY - brown, moist, firm, laminated - high plasticity - trace gravel (3mm diameter typ.)				234.0
3.0						233.0
4.0		CLAY - grey, moist, firm, homogeneous - high plasticity - some silt inclusions - trace gravel (4mm diameter typ.) - soft to firm from 4.8 to 5.2metres				232.0
5.0						231.0
6.0		CLAY - grey, moist, firm, homogeneous - high plasticity, trace silt inclusions				230.0
7.0						229.0
8.0						228.0
9.0						227.0
10.0		END OF TESTHOLE AT 6.1 metres IN CLAY. NOTES: - NO SEEPAGE OR SLOUGHING.				

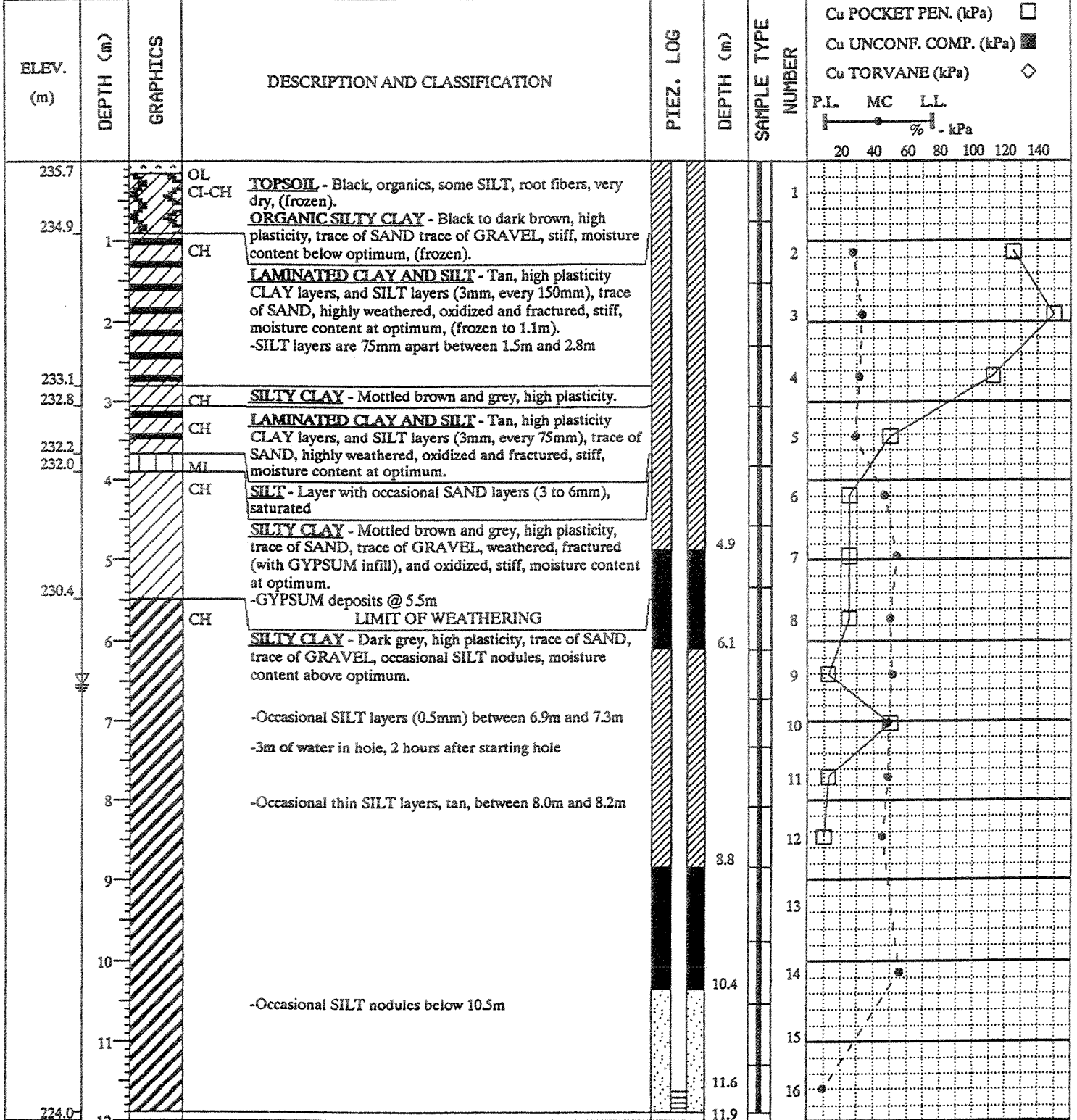


UMA Environmental  
Winnipeg, Manitoba

LOGGED BY: GR	COMPLETION DEPTH: 6.1 m
REVIEWED BY: KS	COMPLETE: 16/02/96
Fig. No:	Page 1 of 1

CLIENT **CITY OF WINNIPEG, WATERWORKS, WASTE AND DISPOSAL**  
 PROJECT **DEACON RESERVOIR - PROPOSED EXPANSION**  
 SITE **CELL 3**  
 LOCATION **(LOCAL) N 4,925 E 4,266**  
 DRILLING METHOD **200mm Hollow Stem Auger**

JOB NO. **90-107-04**  
 GROUND ELEV. **235.8**  
 WATER ELEV. **229.3**  
 DATE DRILLED **91/1/21**



SAMPLE TYPE  SPLIT SPOON  SHELBY  SPLIT BARREL SAMPLER  AUGER GRAB

CONTRACTOR **Paddock Drilling Ltd** INSPECTOR **H.B. Dahl** APPROVED RK DATE **91/04/03**

ELEV. (m)	DEPTH (m)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	PIEZ. LOG	DEPTH (m)	SAMPLE TYPE	NUMBER
	12		<b>END OF HOLE</b>				
	13		<p><b>NOTE:</b> Moved 1.5m EAST and 1.5m NORTH and augered to TILL (16.3m) to install a piezometer in TILL. Auger refusal on boulder @ 16.9m; hole abandoned, no piezometer installed. Dry hole.</p>				
	14						
	15						
	16						
	17						
	18						
	19						
	20						
	21						
	22						
	23						
	24						
	25						
	26						

Cu POCKET PEN. (kPa)   
 Cu UNCONF. COMP. (kPa)   
 Cu TORVANE (kPa)

P.L. MC LL  
 |-----|-----|-----|-----|  
 20 40 60 80 100 120 140 (%)

CLIENT **CITY OF WINNIPEG, WATERWORKS, WASTE AND DISPOSAL**  
 PROJECT **DEACON RESERVOIR - PROPOSED EXPANSION**  
 SITE **CELL 3**  
 LOCATION **(LOCAL) N 4,925 E 4,269**  
 DRILLING METHOD **125mm Hollow Stem Auger**

JOB NO. **90-107-04**  
 GROUND ELEV. **235.8**  
 WATER ELEV. **233.0**  
 DATE DRILLED **91/1/21**

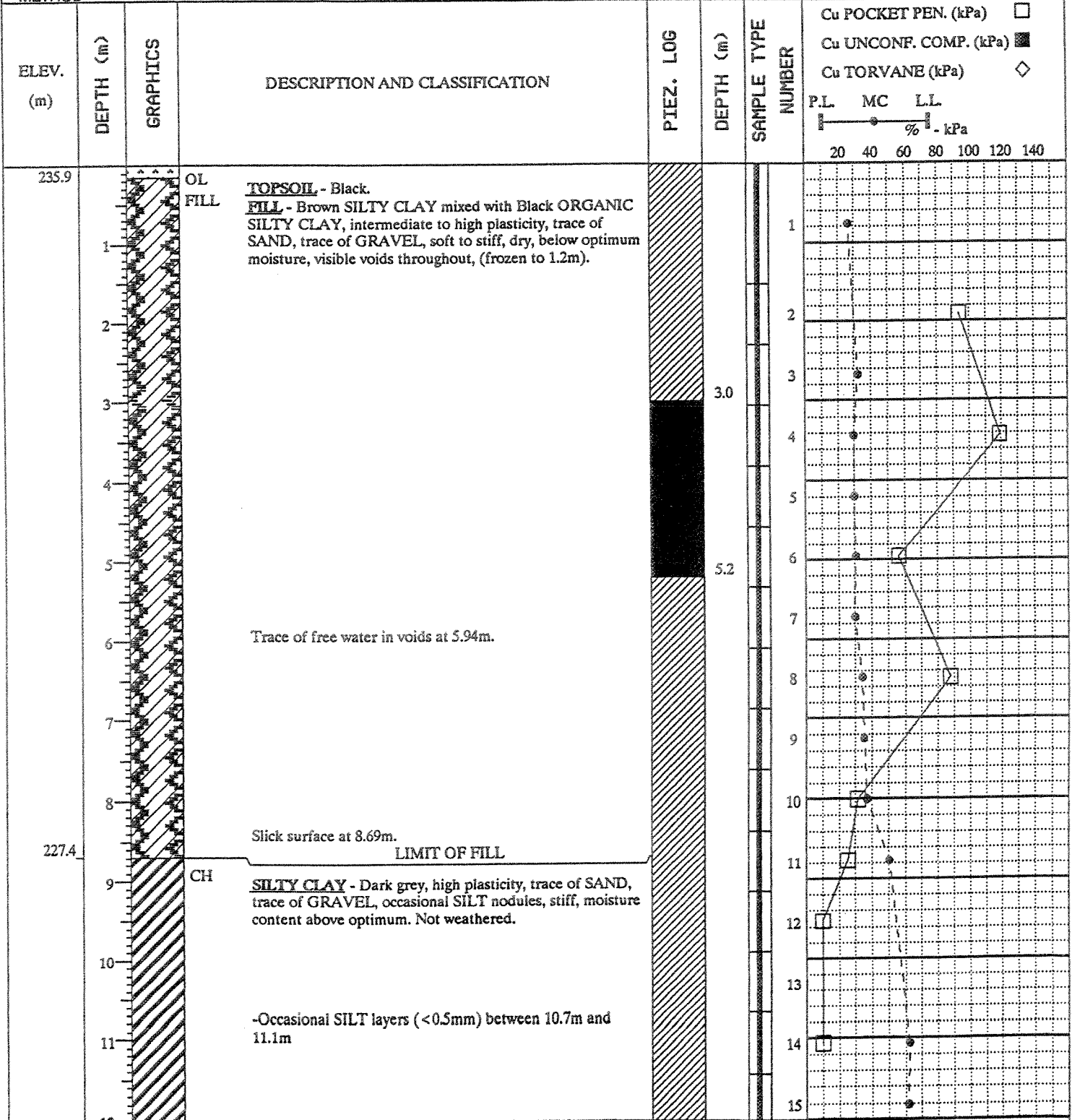
ELEV. (m)	DEPTH (m)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	PIEZ. LOG	DEPTH (m)	SAMPLE TYPE NUMBER	Cu POCKET PEN. (kPa) <input type="checkbox"/> Cu UNCONF. COMP. (kPa) <input checked="" type="checkbox"/> Cu TORVANE (kPa) <input type="checkbox"/> P.L. MC LL. % - kPa 20 40 60 80 100 120 140
235.7			<b>TOPSOIL</b> - Black, organics, some SILT, root fibers, very dry, (frozen).				
234.9	1		<b>ORGANIC SILTY CLAY</b> - Black to dark brown, high plasticity, trace of SAND, trace of GRAVEL, stiff, moisture content below optimum, (frozen).				
	2		<b>LAMINATED CLAY AND SILT</b> - Tan, high plasticity CLAY layers, and SILT layers (3mm, every 150mm), trace of SAND, highly weathered, oxidized and fractured, stiff, moisture content at optimum, (frozen to 1.1m). -SILT layers are 75mm apart between 1.5m and 2.8m				
233.17			<b>SILTY CLAY</b> - Mottled brown and grey, high plasticity.		3.1		
232.8	3		<b>LAMINATED CLAY AND SILT</b> - Tan, high plasticity CLAY layers, and SILT layers (3mm, every 75mm), trace of SAND, highly weathered, oxidized and fractured, stiff, moisture content at optimum.		3.4		
232.2	4		<b>END OF HOLE</b>		3.7		
	5		<b>NOTE: -Soil description from hole A12.</b>				
	6						
	7						
	8						
	9						
	10						
	11						
	12						

SAMPLE TYPE  SPLIT SPOON  SHELBY  SPLIT BARREL SAMPLER  AUGER GRAB

CONTRACTOR **Paddock Drilling Ltd** INSPECTOR **H.B. Dahl** APPROVED RK DATE **91/04/03**

CLIENT **CITY OF WINNIPEG, WATERWORKS, WASTE AND DISPOSAL**  
 PROJECT **DEACON RESERVOIR - PROPOSED EXPANSION**  
 SITE **BOOSTER STATION**  
 LOCATION **(LOCAL) N 5,171 E 4,367**  
 DRILLING METHOD **200mm Hollow Stem Auger**

JOB NO. **90-107-04**  
 GROUND ELEV. **236.0**  
 WATER ELEV.  
 DATE DRILLED **91/1/22**



SAMPLE TYPE  SPLIT SPOON  SHELBY  SPLIT BARREL SAMPLER  AUGER GRAB

CONTRACTOR **Paddock Drilling Ltd**

INSPECTOR **H.B. Dahl**

APPROVED Rke DATE 91/04/03

ELEV. (m)	DEPTH (m)	GRAPHICS	DESCRIPTION AND CLASSIFICATION	PIEZ. LOG	DEPTH (m)	SAMPLE TYPE	NUMBER	Cu POCKET PEN. (kPa) <input type="checkbox"/> Cu UNCONF. COMP. (kPa) <input checked="" type="checkbox"/> Cu TORVANE (kPa) <input type="checkbox"/> P.L. MC LL (%) 
220.8	12		CH <u>SILTY CLAY</u> - Dark grey, high plasticity, trace of SAND, trace of GRAVEL, occasional SILT nodules, stiff, moisture content above optimum. Not weathered.  -Occasional STONES (angular, diam. <25mm) below 13.7m		13.7		16	[Symbol] [Symbol] [Symbol] [Symbol] [Symbol] [Symbol]
	13						17	
	14						18	
	15				15.2		19	
	16		END OF HOLE  NOTE: The unweathered <u>SILTY CLAY</u> below 8.7m is stiffer in hole A13 than it is in the other holes.					
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							





R.M. HARDY & ASSOCIATES LTD.  
CONSULTING ENGINEERING & TESTING

SUMMARY OF SAMPLING & LABORATORY TESTS

PROJECT

DEACON RESERVOIR

NO.

C&D

DATE OF INVESTIGATION

JOB NO W-0420

HOLE 3

WATER CONTENT

SOIL PROFILE

SOIL SAMPLES

SOIL DESCRIPTION

DEPTH  
FEET

WATER

SOIL  
SYMBOL

UNIFIED  
CLASSIF.

CONDITION

TYPE

PENETRATION  
RESISTANCE

RECOVERY, %

OTHER TESTS

WATER CONTENT - %  
10 20 30 40 50 60 70  
w<sub>p</sub> - □ w - ○ w<sub>L</sub> - Δ

SURFACE ELEVATION

36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69

CLAY, SILTY,  
STIFF

$q_u = 2060 \text{ psf}$   
 $e_f = 4.4\%$   
 $\gamma = 105.2 \text{ pcf}$   
 $\gamma_d = 71.8 \text{ pcf}$

$q_u = 2067 \text{ psf}$   
 $e_f = 6.6\%$   
 $\gamma = 112.0 \text{ pcf}$   
 $\gamma_d = 73.3 \text{ pcf}$

TILL, LIGHT  
BROWN, SILT  
WITH SOME  
SAND, CLAY,  
GRAVEL UP TO  
3" SIZE

VERY DENSE, 65'

SEEPAGE ON ROCK  
SURFACE AT 69'





R.M. HARDY & ASSOCIATES LTD.  
CONSULTING ENGINEERING & TESTING

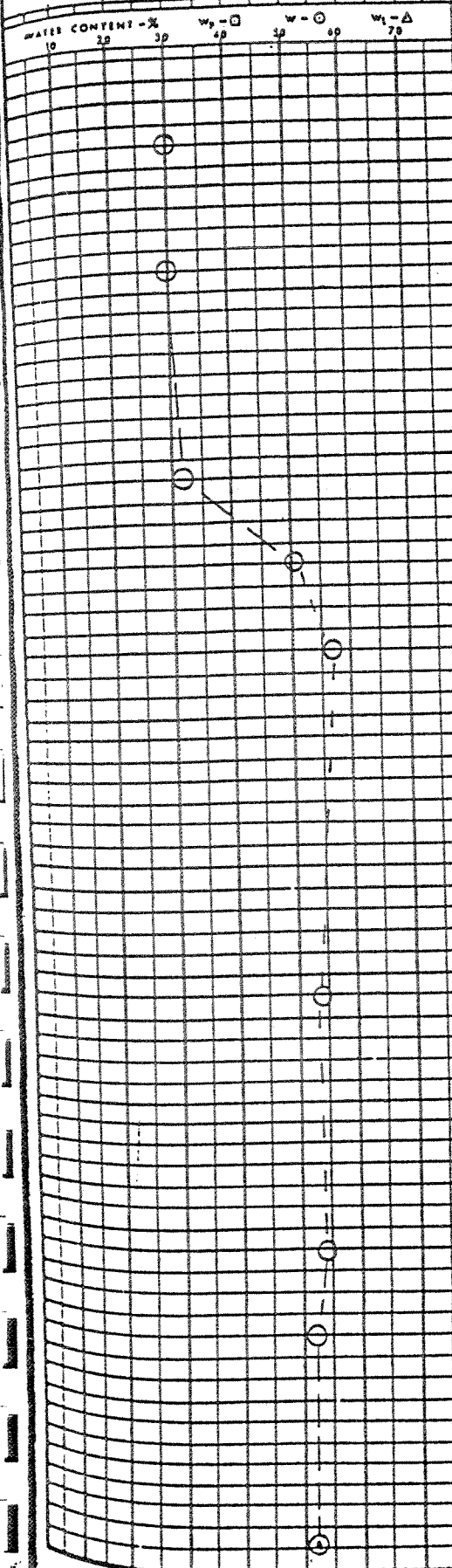
PROJECT  
DEACON RESERVOIR

BY A. L. B.

CEO

DATE OF INVESTIGATION MARCH 24, 1977 100 NO W-0420 HOLE 4

WATER CONTENT



DEPTH DATUM  
/ FEET

SOIL PROFILE

SOIL DESCRIPTION

SOIL SAMPLES

SURFACE ELEVATION

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25  
26  
27  
28  
29  
30  
31  
32  
33  
34  
35

CLAY, BROWN,  
SILTY  
(CONTAINS SILT  
LAYERS 4'-12')

CI  
CI-M

CLAY, GREY  
AND BROWN,  
VARVED,  
FIRM TO  
STIFF

CH

$q_u = 1783 \text{ psf}$   
 $e_f = 2.6\%$   
 $\gamma = 103.5 \text{ pcf}$   
 $\gamma_d = 66.0 \text{ pcf}$

$q_u = 3521 \text{ psf}$   
 $e_f = 2.0\%$   
 $\gamma = 107.0 \text{ pcf}$   
 $\gamma_d = 70.3 \text{ pcf}$

PLATE 10



R.M. HARDY & ASSOCIATES LTD.  
CONSULTING ENGINEERING & TESTING

PROJECT  
DEACON RESERVOIR

A.L.B.

C.E.O.

DATE OF INVESTIGATION MARCH 24, 1977 108 NO. W-0420

HOLE 4

WATER CONTENT

SOIL PROFILE

SOIL SAMPLES

SOIL DESCRIPTION

DEPTH DATUM  
FEET

SOIL  
SYMBOL

UNITED  
STATES  
CLASSIF.

CONDITION

TYPE

PENETRATION  
RESISTANCE

RECOVERY %

OTHER TESTS

WATER CONTENT - %  
10 20 30 40 50 60 70  
w<sub>p</sub> - □  
w - ○  
w<sub>L</sub> - △

SURFACE ELEVATION

CLAY, STIFF

CH

$q_u = 2348 \text{ psf}$   
 $e_f = 2.3\%$   
 $\gamma = 105.1 \text{ pcf}$   
 $\gamma_d = 67.4 \text{ pcf}$

$q_u = 2353 \text{ psf}$   
 $e_f = 3.3\%$   
 $\gamma = 107.0 \text{ pcf}$   
 $\gamma_d = 69.4 \text{ pcf}$

GLACIAL SILT TILL

- GRAVELLY

- FREQUENT

CORRLES, BOULDERS

- FIRM

-- DENSE

END OF HOLE  
(ROCK ENCOUNTERED)

GROUNDWATER LEVEL AT 66'



**R.M. HARDY & ASSOCIATES LTD.**  
CONSULTING ENGINEERING & TESTING

SUMMARY OF SAMPLING & LABORATORY TESTS

PROJECT  
**DEACON RESERVOIR**

BY **A.L.B.**

CRD

DATE OF INVESTIGATION **MARCH 24, 1977** 105 NO W-0420

HOLE **5**

WATER CONTENT				SOIL PROFILE				SOIL SAMPLES						
WATER CONTENT - %				SOIL DESCRIPTION				SOIL SYMBOL	UNIFIED CLASS.	CONDITION	TYPE	PENETRATION RESISTANCE	RECOVERY %	OTHER TESTS
10	20	30	40	50	60	70	DEPTH DATUM FEET							
				SURFACE ELEVATION										
				TOP SOIL										
				1 CLAY, FIRM TO STIFF										
				2										
				3 (CONTAINS				CI-ML						
				4 NUMEROUS SILT										
				5 LAYERS TO 11')										
				6										
				7 SOME COARSE										
				8 SAND 0.3' - 1.5'										
				9										
				10										
				11										
				12										
				13										
				14										
				15										
				16										
				17										
				18										
				19										
				20										
				21										
				22				$q_u = 1039 \text{ psf}$ $e_f = 2.3\%$ $\gamma = 104.6 \text{ pcf}$ $\gamma_d = 67.7 \text{ pcf}$						
				23										
				24										
				25										
				26										
				27										
				28										
				29										
				30										
				31										
				32										
				33										
				34										
				35				$q_u = 2034 \text{ psf}$ $e_f = 2.5\%$ $\gamma = 108.7 \text{ pcf}$ $\gamma_d = 72.2 \text{ pcf}$						
								$q_u = 2200$ $\gamma = 106$						



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CONSULTING ENGINEERING & TESTING

PROJECT  
DEACON RESERVOIR

A. L. B.

C.E.D.

DATE OF INVESTIGATION MARCH 24, 1977

100 NO. W-0420

HOLE 5

WATER CONTENT

SOIL PROFILE

SOIL SAMPLES

SOIL DESCRIPTION

SOIL SYMBOL

UNIFIED CLASSIF.

CONDITION

TYPE

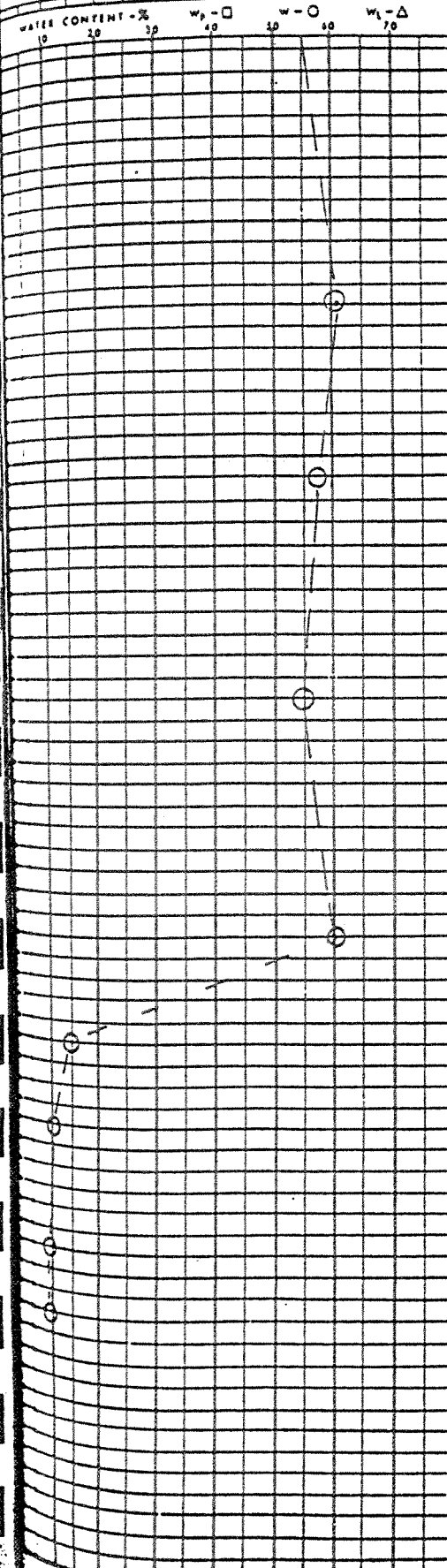
PENETRATION RESISTANCE

RECOVERY %

OTHER TESTS

DEPTH DATUM

SURFACE ELEVATION



CLAY

CH

$q_u = 1700$   
 $\gamma = 104$

$q_u = 1600$   
 $\gamma = 107$

TILL (MOIST),  
LIGHT BROWN  
SILT WITH SOME  
SAND, GRAVEL  
AND CLAY,  
MEDIUM DENSE,  
FREQUENT  
COBBLES AND  
OCCASIONAL  
BOULDERS

END OF HOLE

WATER LEVEL  
AT 66'

R.M. HARDY & ASSOCIATES LTD.  
CONSULTING ENGINEERING & TESTING

PROJECT: DEACON RESERVOIR

DATE OF INVESTIGATION: MARCH 24, 1977 100 NO M-0420

HOLE 6

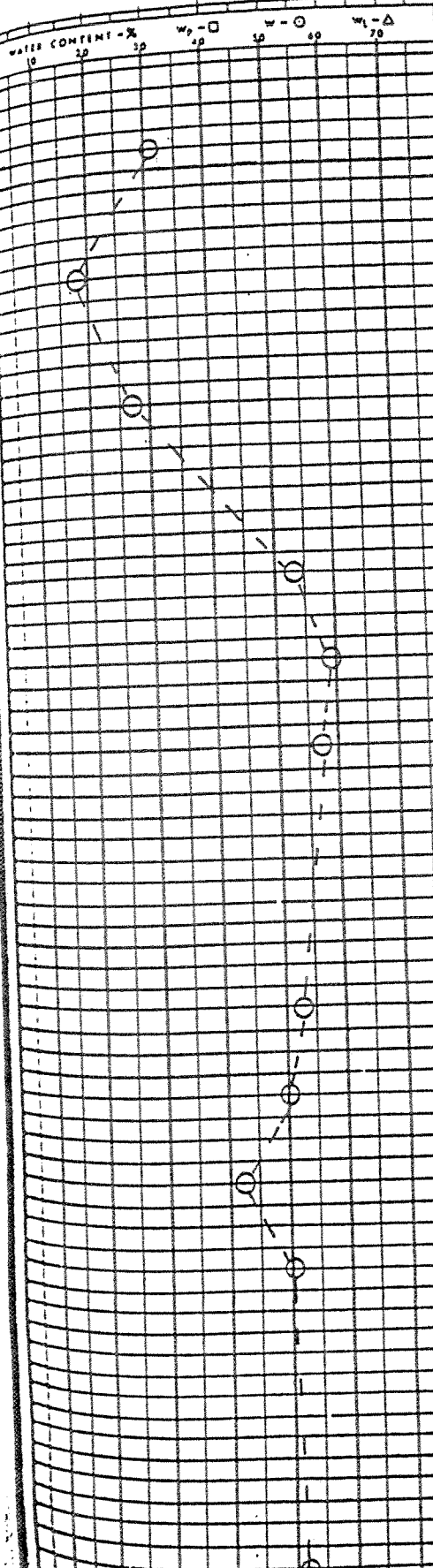
A. L. B.

C & D

SOIL PROFILE

SOIL SAMPLES

WATER CONTENT



DEPTH FEET	SOIL DESCRIPTION	SOIL SYMBOL	SOIL CLASS.	CONDITION	TYPE	PENETRATION RESISTANCE	RECOVERY %	OTHER TESTS
1	TOPSOIL, TREE ROOTS							
2	ROOTS							
3								
4	CLAY, BROWN, SILTY, FIRM		CI-ML					
5	(CONTAINS SILT LAYERS 3-11', TRACE OF SAND)							
6								
7								
8								
9								
10								
11								
12	CLAY, GREY, STIFF		CH					
13								
14	OCC. SILT POCKETS							
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

$q_u = 1470$   
 $e_f = 2.2$   
 $\gamma = 107.1 \text{ pcf}$   
 $\gamma_d = 70.9 \text{ pcf}$

$q_u = 2002 \text{ psf}$   
 $e_f = 2.4\%$   
 $\gamma = 105.2 \text{ pcf}$   
 $\gamma_d = 66.8 \text{ pcf}$

$q_u = 2264 \text{ psf}$   
 $e_f = 3.7\%$   
 $\gamma = 106.0 \text{ pcf}$   
 $\gamma_d = 67.9 \text{ pcf}$



**R.M. HARDY & ASSOCIATES LTD.**  
CONSULTING ENGINEERING & TESTING

SUMMARY OF SAMPLING & LABORATORY TESTS

PROJECT  
**DEACON RESERVOIR**

BY **A.L.B.**

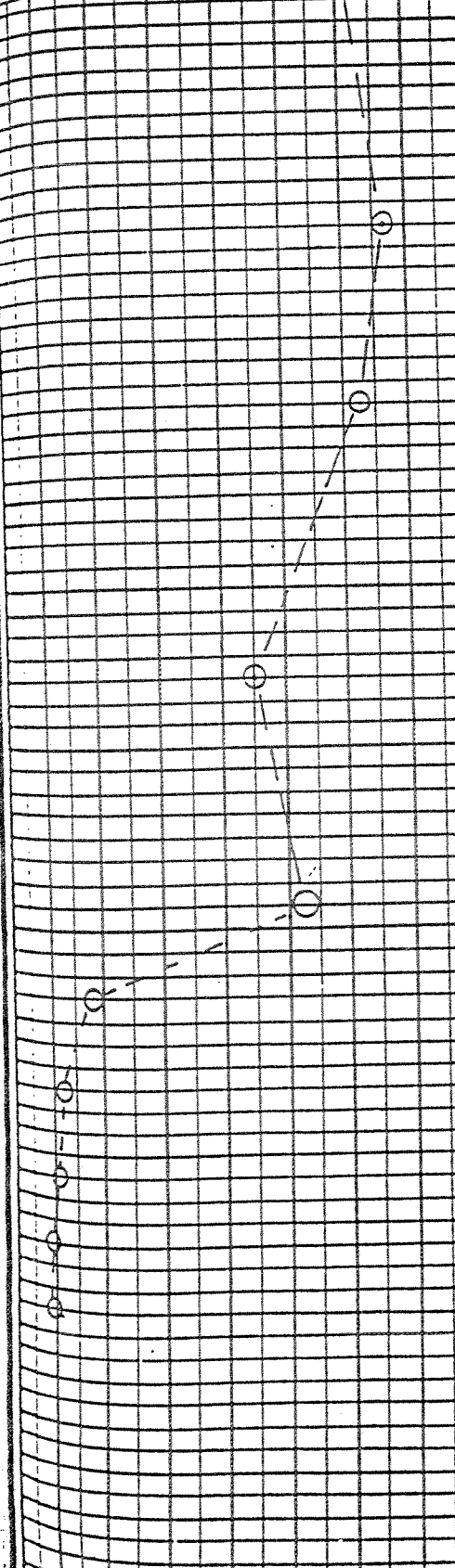
CHK'D

DATE OF INVESTIGATION **MARCH 24, 1977** 100 NO. W-0420

HOLE **6**

WATER CONTENT

WATER CONTENT - %       $w_p$  - □       $w - \circ$        $w_L - \Delta$   
10    20    30    40    50    60    70



SOIL PROFILE

SOIL DESCRIPTION

DEPTH  
FEET

DATUM

SURFACE ELEVATION

36  
37  
38  
39  
40  
41  
42  
43  
44  
45  
46  
47  
48  
49  
50  
51  
52  
53  
54  
55  
56  
57  
58  
59  
60  
61  
62  
63  
64  
65  
66  
67  
68  
69

CLAY, GREY  
FIRM TO  
STIFF

SILT TILL  
- GRAVELLY  
- MOIST  
- FIRM

- - VERY DENSE

WATER LEVEL AT 69'

END OF HOLE

SOIL SAMPLES

OTHER TESTS

SOIL  
STRATA  
UNITED  
CLASS.

CONDITION

TYPE

PENETRATION  
RESISTANCE

RECOVERY %

$q_u = 1662 \text{ psf}$   
 $e_s = 7.1\%$   
 $\gamma = 106.0 \text{ pcf}$   
 $\gamma_d = 63.5 \text{ pcf}$

$q_u = 2200 \text{ psf}$   
 $e_s = 6.5\%$   
 $\gamma = 109.5 \text{ pcf}$   
 $\gamma_d = 75.5 \text{ pcf}$

PROJECT

Proposed Venturi Chambers  
Deacon Reservoir

LOGGED/DWN.	SDG	CXD.	AOD	DATE OF INVEST.	JOB NO.	HOLE NO.			
				21/05/93	931176	1			
WATER CONTENT			DEPTH (M)	SOIL SYMBOL	SOIL DESCRIPTION	SOIL SAMPLE			DRILL TYPE
W <sub>p</sub> - □	W - ○	W <sub>L</sub> - △				DATUM	CONDITION	TYPE	PENETRATION RESISTANCE
PERCENT %								OTHER TESTS	
10	20	30	40	50	60				
			0	XXXX	Fill -clay -some gravel				
			1						
			2						
			3		Clay -mottled brown -highly plastic -silt seams and lenses to 5.2 m				
			4						
			5				U	qu=204.6kpa γ <sub>w</sub> =18.6kn/m <sup>3</sup> pp=222.6kpa Tv 95.8kpa	
			6		---grey				
			7						
			8				U	qu=130.4kpa γ <sub>w</sub> =17.0kn/m <sup>3</sup> pp=138.9kpa Tv=69.2kpa	
			9						
			10						
			11				U	qu=157.7kpa γ <sub>w</sub> =16.5kn/m <sup>3</sup> pp=107.7kpa Tv=57.5kpa	
			12						
			13						
			14				U	qu=156.1kpa γ <sub>w</sub> =15.9kn/m <sup>3</sup> pp=110.1kpa Tv=54.6kpa	
			15						
			16						
			17						
			18						
			19						
					Note: Hole terminated at 19.0 m on glacial till.				

# DYREGROV CONSULTANTS

# BOREHOLE LOG

PROJECT

Proposed Venturi Chambers  
Deacon Reservoir

LOGGED/DWN. SDG CKD. AOD DATE OF INVEST. 21/05/93 JOB NO. 931176 HOLE NO. 2

WATER CONTENT					DEPTH (M)	SOIL SYMBOL	SOIL DESCRIPTION	SOIL SAMPLE			DRILL TYPE
Wp - □	W - ○	W <sub>L</sub> - △	PERCENT %					DATUM	CONDITION	TYPE	PENETRATION RESISTANCE
10	20	30	40	50	60		SURFACE ELEVATION 236.04 M				400 mm Auger
						0	Fill -clay, trace gravel				
						1	Clay -mottled brown				
						2	-highly plastic				
						3	-silt seams and lenses to 3.8 m				
						4	-stiff to firm				
						5			U		qu=60.5kpa γ <sub>w</sub> =17.6kn/m <sup>3</sup> pp=117.3kpa Tv=81.4kpa
						6					
						7	grey				
						8					
						9					
						10					
						11					
						12					
						13					
						14					
						15					
						16					
						17	Glacial Till				
						18	-silty, sandy, gravelly				
						19	-tan, clay seams				
							-cobble and bouldery				
							-wet				
							-compact to medium dense below 18.2 m				
							Note: Hole terminated at 18.9 m in glacial till.				