

APPENDIX A – TEST HOLE LOGS

PROJECT: Jefferson East CSR D&C	CLIENT: City of Winnipeg	TESTHOLE NO: TH 11-01
LOCATION: Scotia Street; Between Seven Oaks Boulevard and Jefferson Avenue (UTM: 14 N, 5 532 752.6, 635 379.8)		PROJECT NO.: 60219315
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM-30, 125 mm SSA	ELEVATION (m): 229.15
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 #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	ELEVATION
					* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) Total Unit Wt (kN/m³)	+ Torvane + × QU × □ Lab Vane □ △ Pocket Pen. △ ⊕ Field Vane ⊕ (kPa)				
0		TOPSOIL (FILL)								229
0-1		CLAY (FILL) - some silt to silty, trace to some sand, brown, moist, firm, intermediate to high plasticity								
1-2		CLAY - silty - brown, moist, firm - intermediate plasticity		G1	●					228
2-3		SILT - some clay, trace sand - light brown, moist, soft - low plasticity		G2	●					227
3-5		- some sand, trace clay at 4.6 m		G3	●					226
5-6				G4	●					225
6-7				G5	●					224
7-8		- some clay, some sand, grey below 6.7 m		G6	●					223
8-9				G7	●					222
9-10				G8	●					221
10-11										220
11-12										219
12-13										218
13-14										217
14-15										216
15										215

LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12

END OF TEST HOLE AT 12.2 m IN SILT
 Notes:
 1. No sloughing observed.
 2. Seepage observed at 6.4 m below surface.
 3. Test hole backfilled with auger cuttings and bentonite pellets.



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 12.19 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 12/12/11
PROJECT ENGINEER: Eymond Toupin	Page 1 of 1

PROJECT: Jefferson East CSR D&C	CLIENT: City of Winnipeg	TESTHOLE NO: TH 11-02
LOCATION: Scotia Street at Tait Avenue (UTM: 14 N, 5 532 592.2, 635 412.6)		PROJECT NO.: 60219315
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM-30, 125 mm SSA	ELEVATION (m): 229.06
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

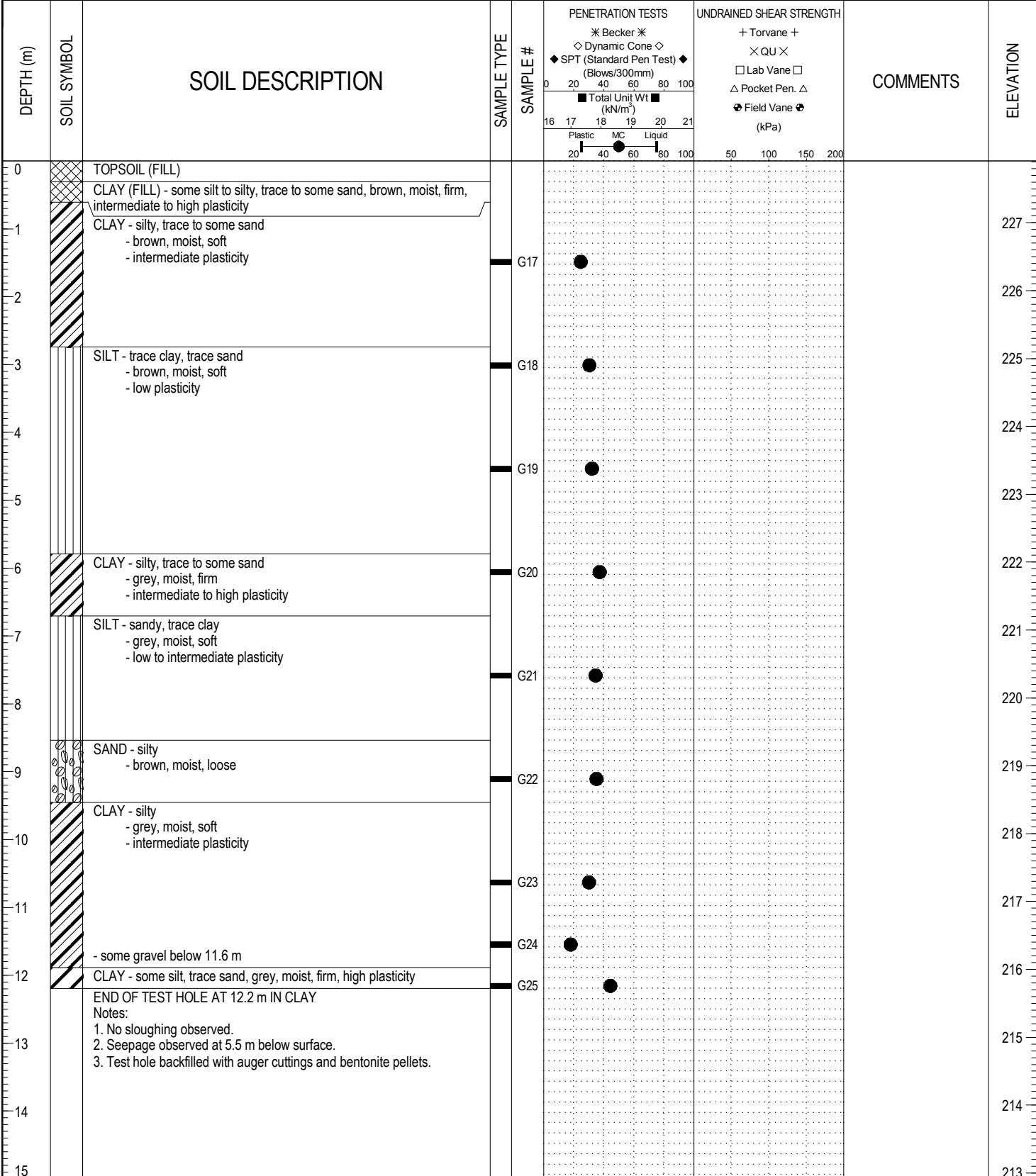
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	ELEVATION
					SPT (Standard Pen Test) (Blows/300mm)	Total Unit Wt (kN/m ³)	Lab Vane	Field Vane		
0		TOPSOIL (FILL)								
0-1		CLAY (FILL) - some silt to silty, trace to some sand, brown, moist, firm, intermediate to high plasticity								
1-2		CLAY - trace silt - dark brown, moist, firm - high plasticity		G9	●					228
2-3		SILT - clayey, some sand - brown, moist, soft to firm - intermediate plasticity		G10	●					227
3-4		- trace clay, soft below 3.7 m		G11	●					226
4-5				G12	●					225
5-6				G13	●					224
6-7		SAND - silty, some clay - brown, moist, loose		G14	●					223
7-8		SILT - some clay, some sand - grey, moist, soft to firm - intermediate plasticity		G15	●				Gravel: 0.0%, Sand: 61.5%, Silt: 23.1%, Clay: 15.4%	222
8-9				G16	●					221
9-10										220
10-11										219
11-12										218
12-13		- some gravel, wet below 11.9 m								217
13-14		END OF TEST HOLE AT 12.2 m IN SILT Notes: 1. No sloughing observed. 2. Seepage observed at 11.9 m below surface. 3. Test hole backfilled with auger cuttings and bentonite pellets.								216
14-15										215

LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 12.19 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 12/12/11
PROJECT ENGINEER: Eymond Toupin	Page 1 of 1

PROJECT: Jefferson East CSR D&C	CLIENT: City of Winnipeg	TESTHOLE NO: TH 11-03
LOCATION: Rupertsland Boulevard; West of Scotia Street (UTM: 14 N, 5 532 453.2, 635 414.9)		PROJECT NO.: 60219315
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM-30, 125 mm SSA	ELEVATION (m): 227.91
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

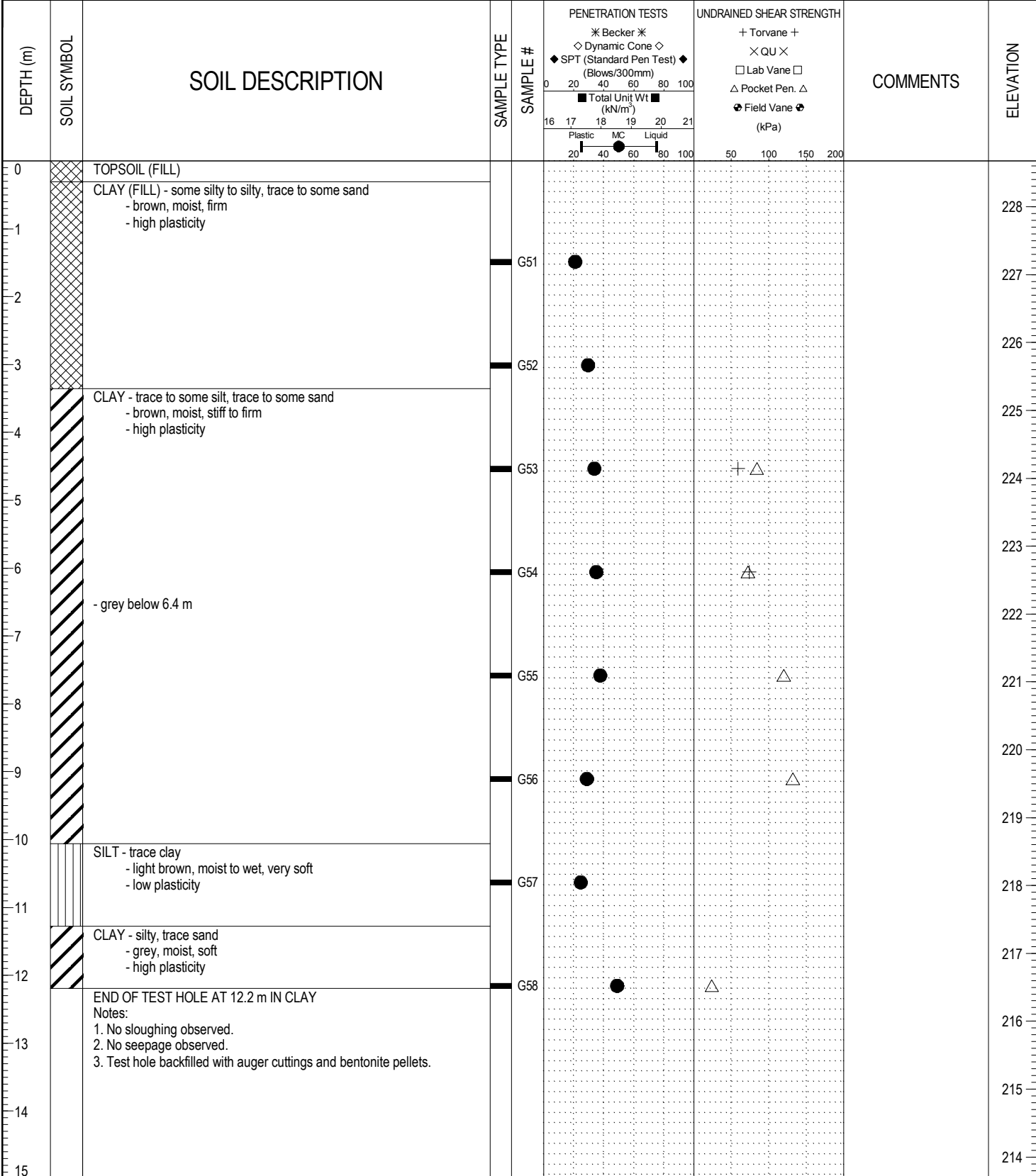


LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 12.19 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 12/12/11
PROJECT ENGINEER: Eymond Toupin	Page 1 of 1

PROJECT: Jefferson East CSR D&C	CLIENT: City of Winnipeg	TESTHOLE NO: TH 11-04
LOCATION: Mac Steet; Between Rupertsland Boulevard and Tait Avenue (UTM: 14 N, 5 532 609.5, 635 216.2)		PROJECT NO.: 60219315
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM-30, 125 mm SSA	ELEVATION (m): 228.68
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 TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 12.19 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 12/13/11
PROJECT ENGINEER: Eymond Toupin	Page 1 of 1

PROJECT: Jefferson East CSR D&C CLIENT: City of Winnipeg TESTHOLE NO: TH 11-05
 LOCATION: Jones Street at Colleen Road (UTM: 14 N, 5 532 613.7, 634 999.3) PROJECT NO.: 60219315
 CONTRACTOR: Paddock Drilling Ltd. METHOD: RM-30, 125 mm SSA ELEVATION (m): 229.10

SAMPLE TYPE GRAB SHELBY TUBE SPLIT SPOON BULK NO RECOVERY CORE

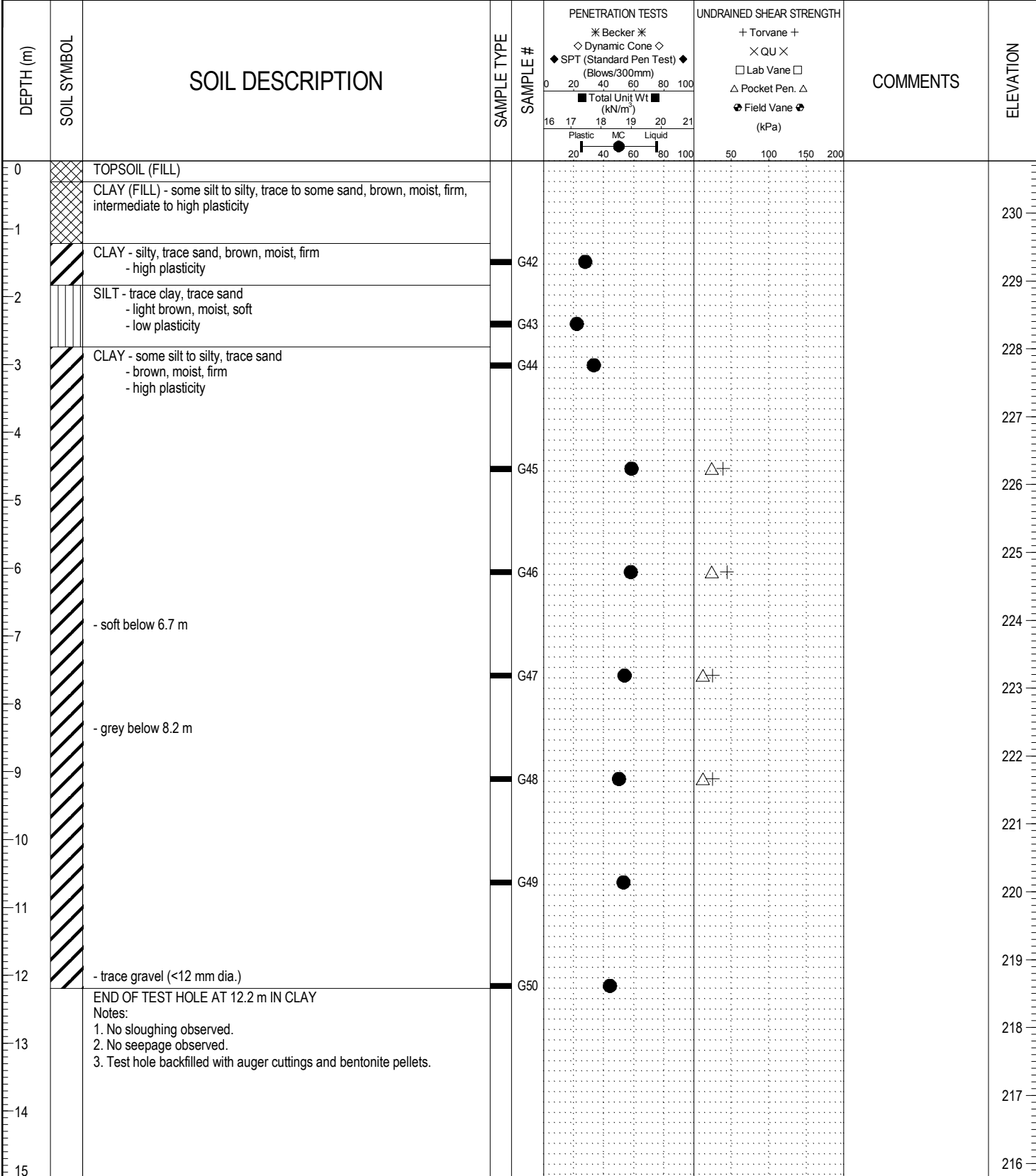
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	ELEVATION
					SPT (Standard Pen Test) (Blows/300mm)	Total Unit Wt (kN/m ³)	Lab Vane	Field Vane		
0		TOPSOIL (FILL)								229
0		CLAY (FILL) - some silt to silty, trace to some sand, brown, moist, firm, intermediate to high plasticity								228
1		CLAY - silty, trace sand - dark grey, moist, firm - high plasticity - brown below 1.5 m		G26	●					227
3		- trace silt, firm to soft below 3.7 m		G27	●		+△			226
5				G28	●		+			225
6				G29	●		+			224
7		- soft below 6.7 m		G30	●					223
8				G31	●					222
9				G32	●					221
10				G33	●					220
12		END OF TEST HOLE AT 12.2 m IN CLAY								219
13		Notes: 1. No sloughing observed. 2. No seepage observed. 3. Test hole backfilled with auger cuttings and bentonite pellets.								218
14										217
15										216

LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



LOGGED BY: Stephen Petsche COMPLETION DEPTH: 12.19 m
 REVIEWED BY: Jared Baldwin COMPLETION DATE: 12/12/11
 PROJECT ENGINEER: Eymond Toupin Page 1 of 1

PROJECT: Jefferson East CSR D&C	CLIENT: City of Winnipeg	TESTHOLE NO: TH 11-06
LOCATION: Seven Oaks Boulevard; Between Jones Street and Scotia Street (UTM: 14 N, 5 532 779.6, 635 215.3)		PROJECT NO.: 60219315
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM-30, 125 mm SSA	ELEVATION (m): 230.77
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	

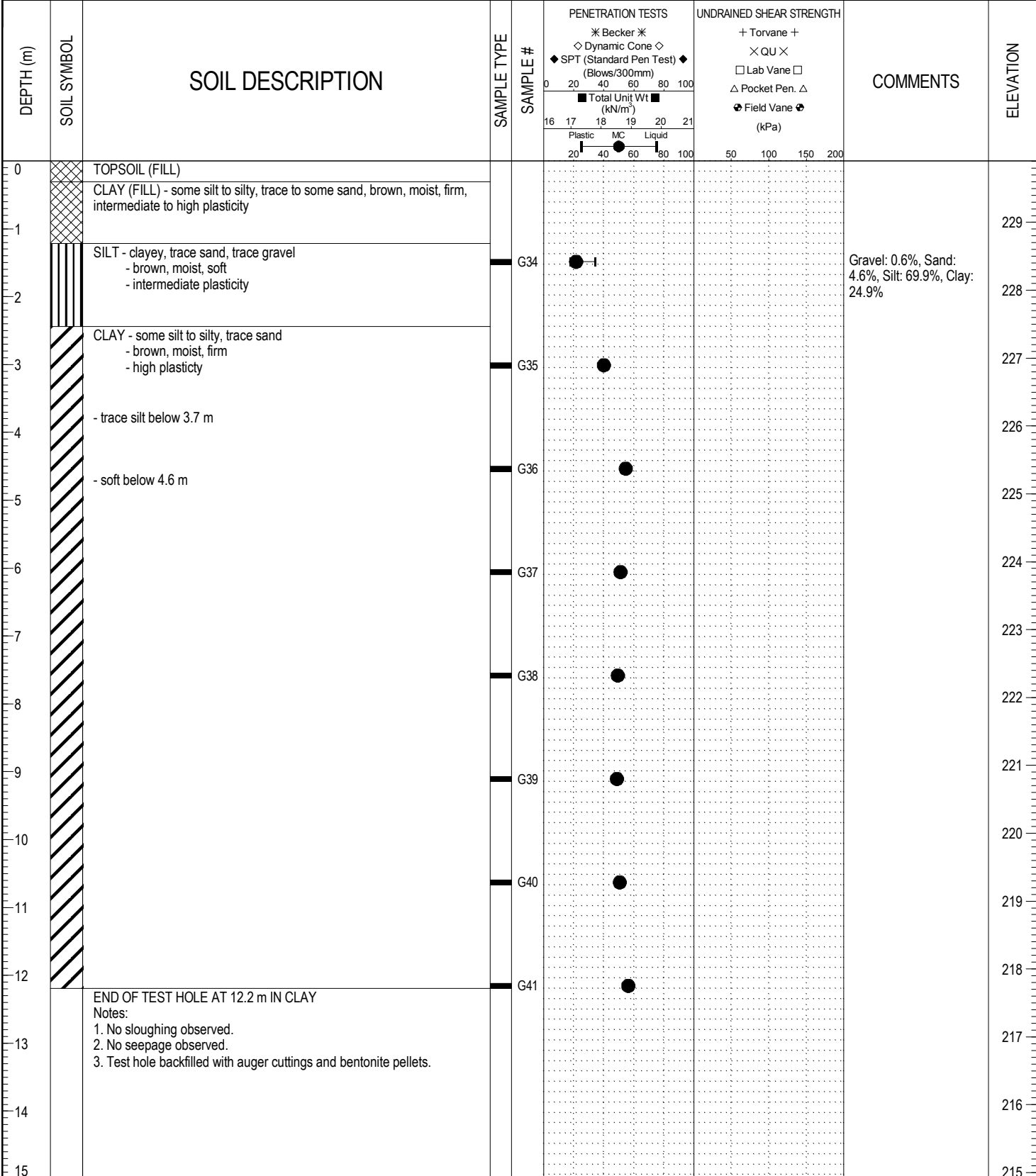


LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 12.19 m
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PROJECT ENGINEER: Eymond Toupin	Page 1 of 1

PROJECT: Jefferson East CSR D&C	CLIENT: City of Winnipeg	TESTHOLE NO: TH 11-07
LOCATION: Seven Oaks Boulevard; East of Main Street (UTM: 14 N, 5 532 903.1, 634 952.4)		PROJECT NO.: 60219315
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM-30, 125 mm SSA	ELEVATION (m): 229.91
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	

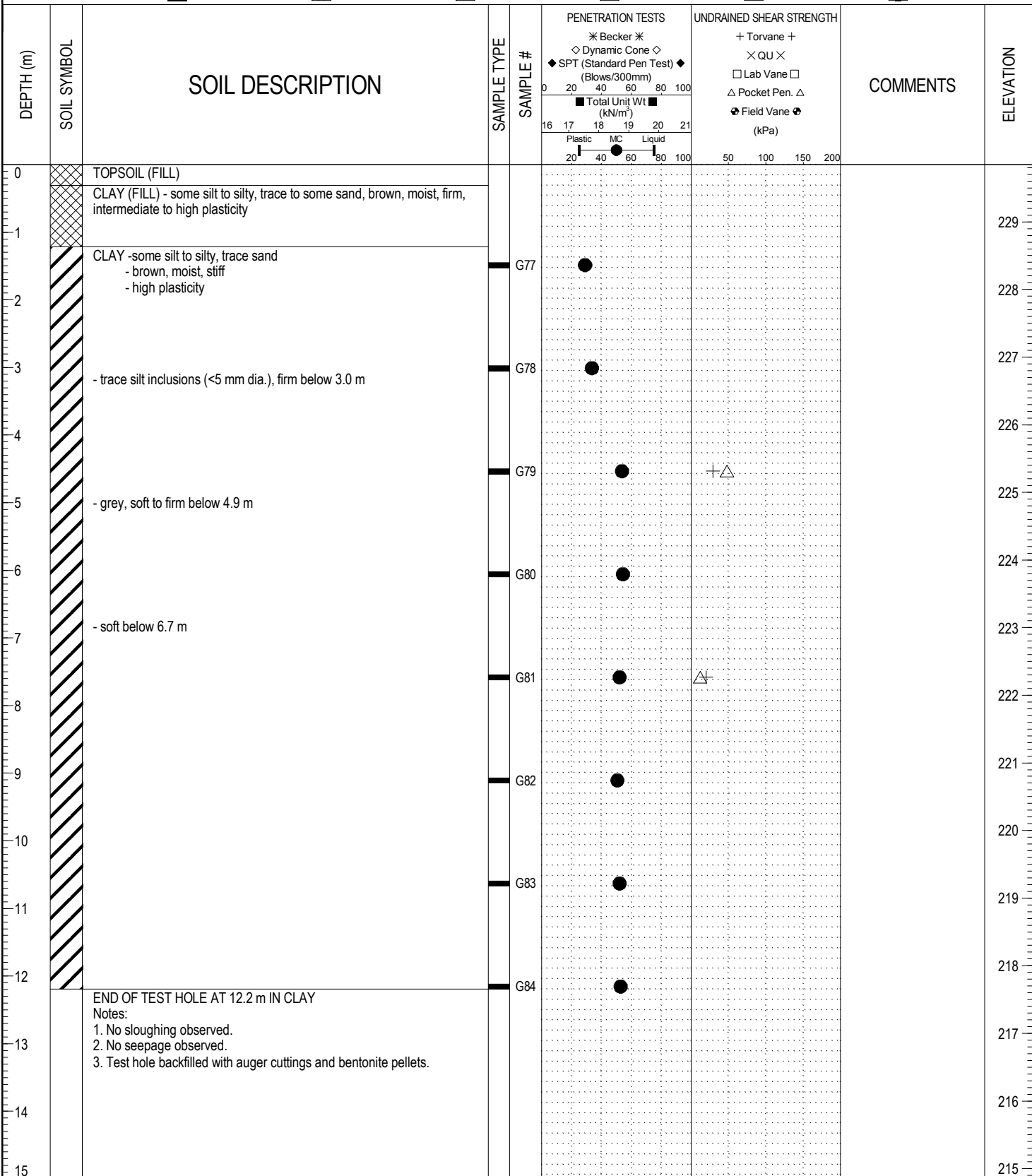


LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 12.19 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 12/12/11
PROJECT ENGINEER: Eymond Toupin	Page 1 of 1

PROJECT: Jefferson East CSR D&C CLIENT: City of Winnipeg TESTHOLE NO: TH 11-08
 LOCATION: Jones Street at St. Anthony Avenue (UTM: 14 N, 5 533 005.7, 635 169.6) PROJECT NO.: 60219315
 CONTRACTOR: Paddock Drilling Ltd. METHOD: RM-30, 125 mm SSA ELEVATION (m): 229.85
 SAMPLE TYPE GRAB SHELBY TUBE SPLIT SPOON BULK NO RECOVERY CORE

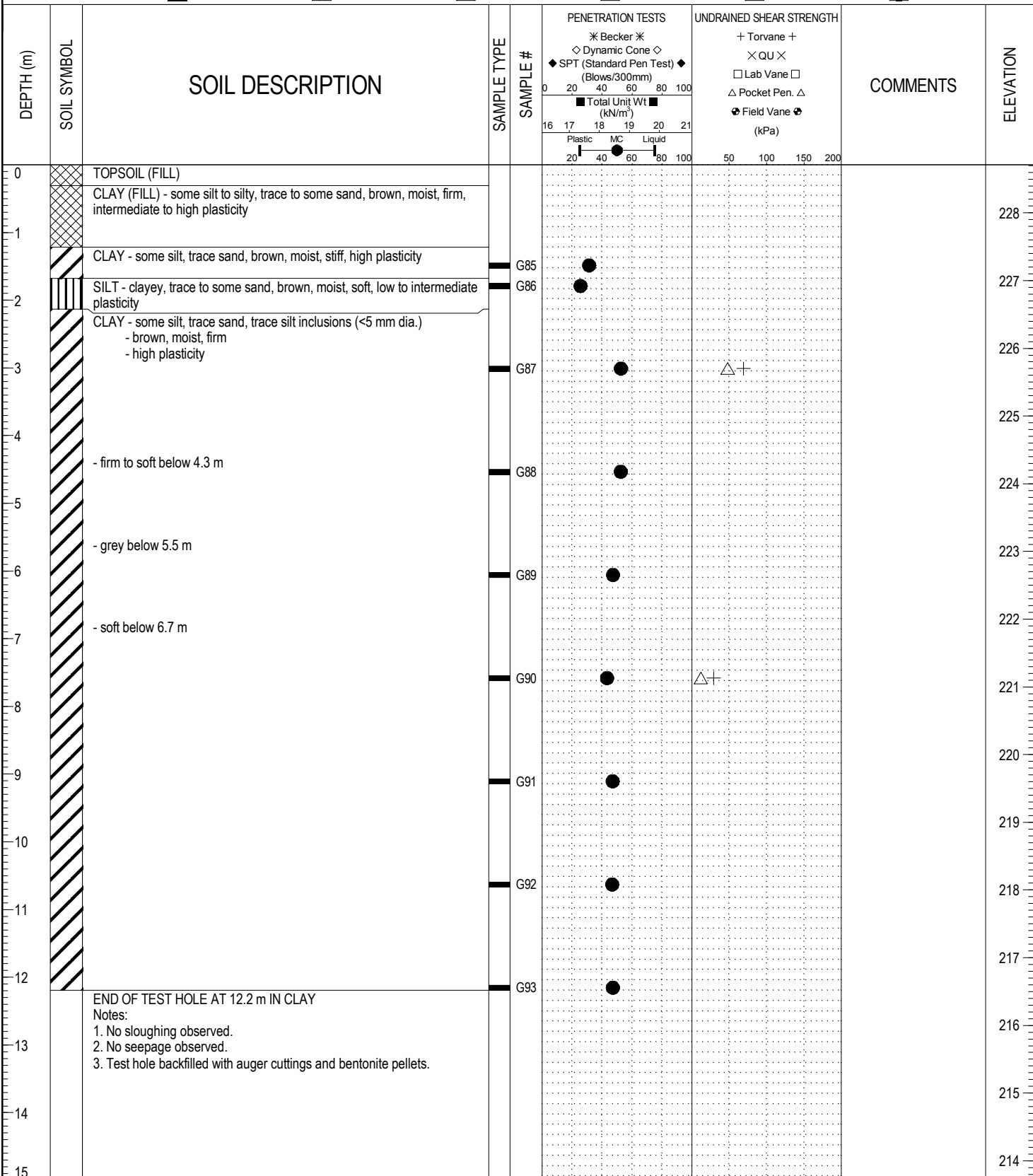


LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



LOGGED BY: Stephen Petsche COMPLETION DEPTH: 12.19 m
 REVIEWED BY: Jared Baldwin COMPLETION DATE: 12/13/11
 PROJECT ENGINEER: Eymond Toupin Page 1 of 1

PROJECT: Jefferson East CSR D&C	CLIENT: City of Winnipeg	TESTHOLE NO: TH 11-09
LOCATION: Jones Street at Hartford Avenue (UTM: 14 N, 5 533 159.7, 635 238.0)		PROJECT NO.: 60219315
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM-30, 125 mm SSA	ELEVATION (m): 228.71
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 TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 12.19 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 12/13/11
PROJECT ENGINEER: Eymond Toupin	Page 1 of 1

PROJECT: Jefferson East CSR D&C	CLIENT: City of Winnipeg	TESTHOLE NO: TH 11-10
LOCATION: Scotia Street at Belmont Avenue (UTM: 14 N, 5 533 204.8, 635 369.7)		PROJECT NO.: 60219315
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM-30, 125 mm SSA	ELEVATION (m): 230.67
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

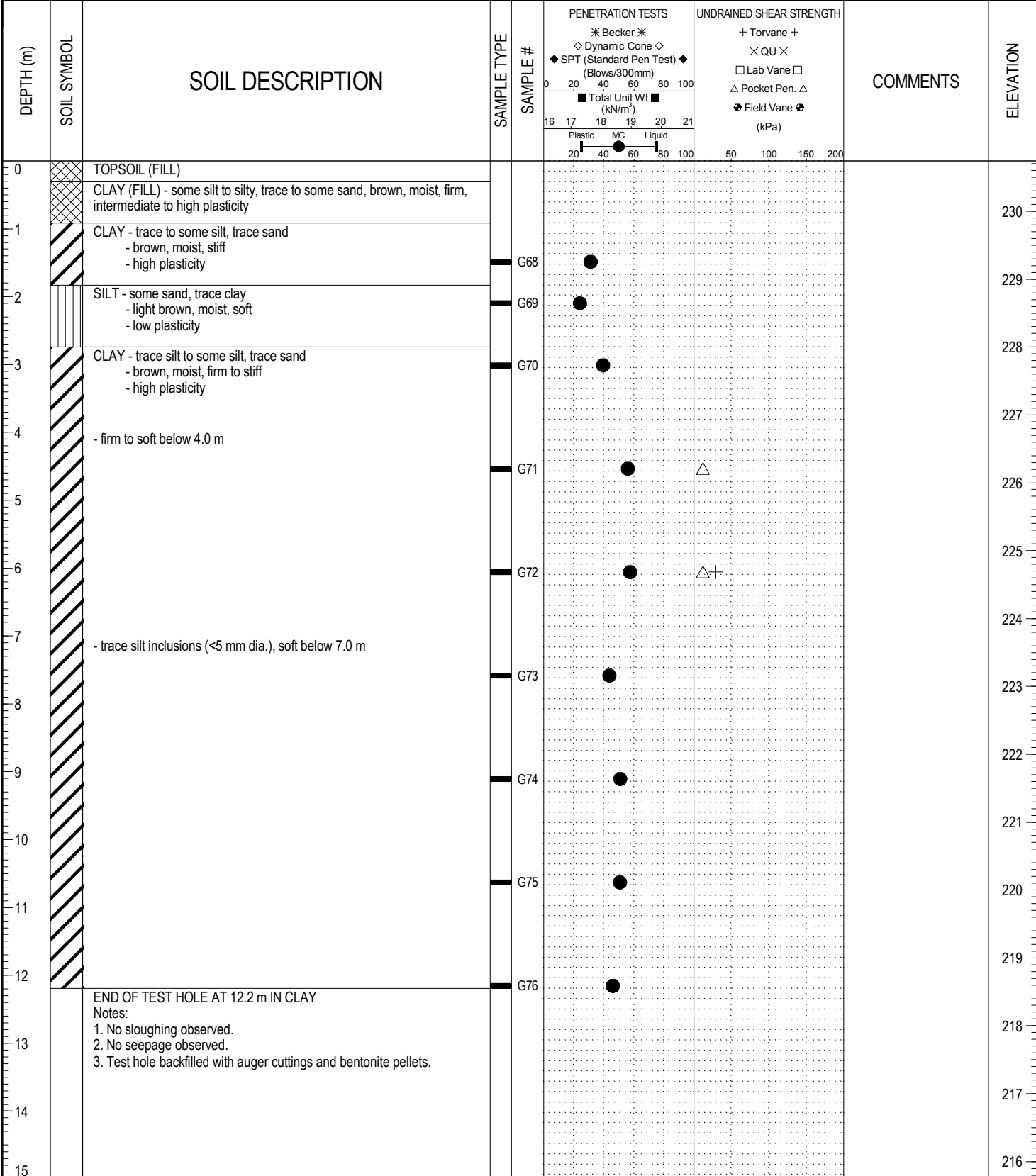
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	ELEVATION
					* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) ■ Total Unit Wt (kN/m ³)	+ Torvane + × QU × □ Lab Vane □ △ Pocket Pen. △ ⊕ Field Vane ⊕ (kPa)				
0		TOPSOIL (FILL)								
0		CLAY (FILL) - some silt to silty, trace to some sand, brown, moist, firm, intermediate to high plasticity								230
1		CLAY - some silt to silty, trace sand, brown, moist, firm - high plasticity		G94	●					229
2		SILT - trace to some clay, trace sand - light brown, moist, soft - low plasticity		G95	●					228
3		CLAY - trace to some silt, trace sand - brown, moist, firm - high plasticity		G96	●					227
4		- grey, soft below 4.0 m		G97	●		△			226
6				G98	●		△			225
8				G99	●		△			223
10				G100	●					221
11				G101	●					220
12				G102	●					219
12.19		END OF TEST HOLE AT 12.2 m IN CLAY								218
13		Notes: 1. No sloughing observed. 2. No seepage observed. 3. Test hole backfilled with auger cuttings and bentonite pellets.								217

LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 12.19 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 12/14/11
PROJECT ENGINEER: Eymond Toupin	Page 1 of 1

PROJECT: Jefferson East CSR D&C	CLIENT: City of Winnipeg	TESTHOLE NO: TH 11-11
LOCATION: Semple Avenue; East of Main Street (UTM: 14 N, 5 533 432.1, 635 210.0)		PROJECT NO.: 60219315
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM-30, 125 mm SSA	ELEVATION (m): 230.74
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

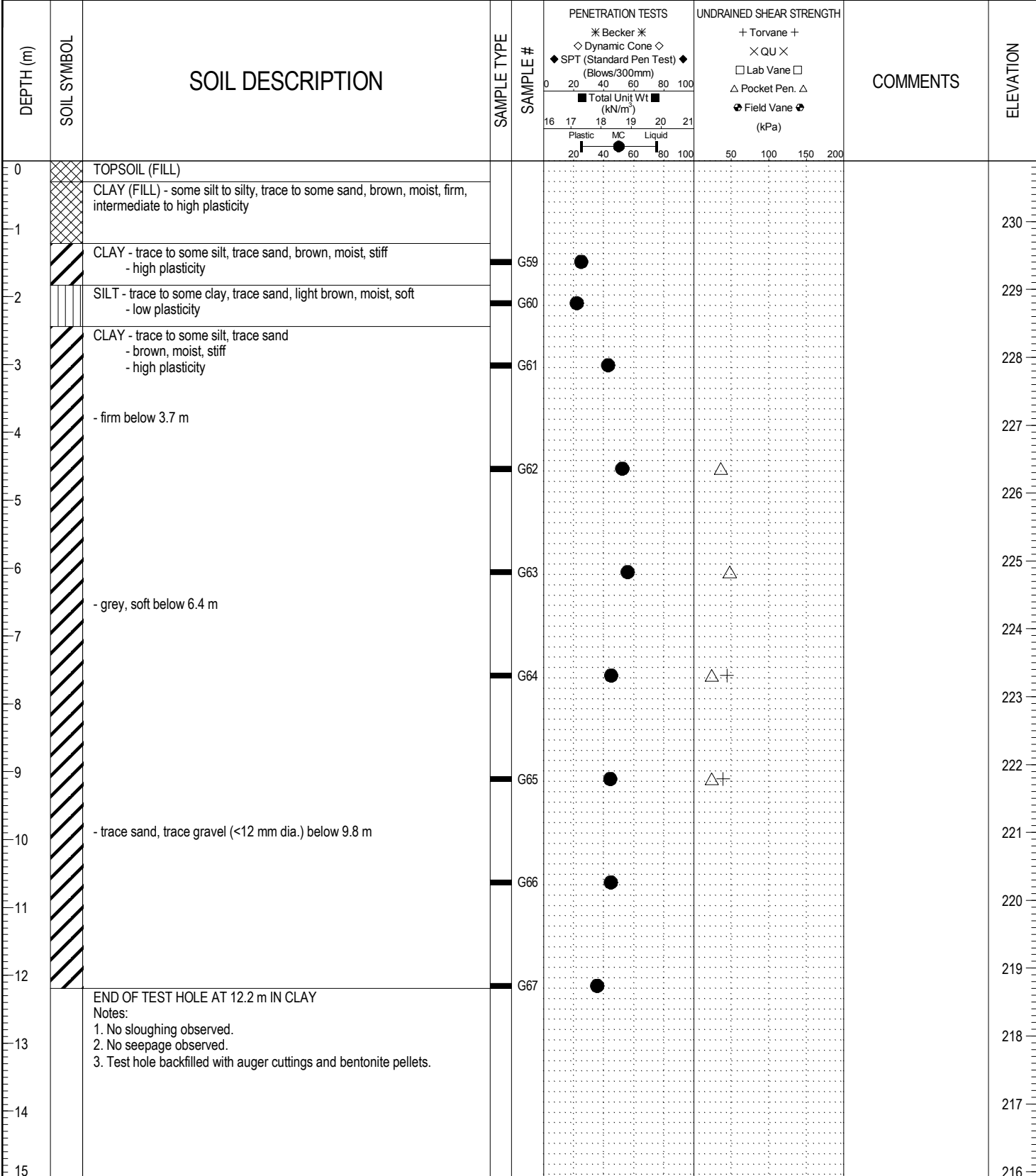


LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 12.19 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 12/13/11
PROJECT ENGINEER: Eymond Toupin	Page 1 of 1

PROJECT: Jefferson East CSR D&C	CLIENT: City of Winnipeg	TESTHOLE NO: TH 11-12
LOCATION: Scotia Street at Semple Avenue (UTM: 14 N, 5 533 321.9, 635 426.4)		PROJECT NO.: 60219315
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM-30, 125 mm SSA	ELEVATION (m): 230.89
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	

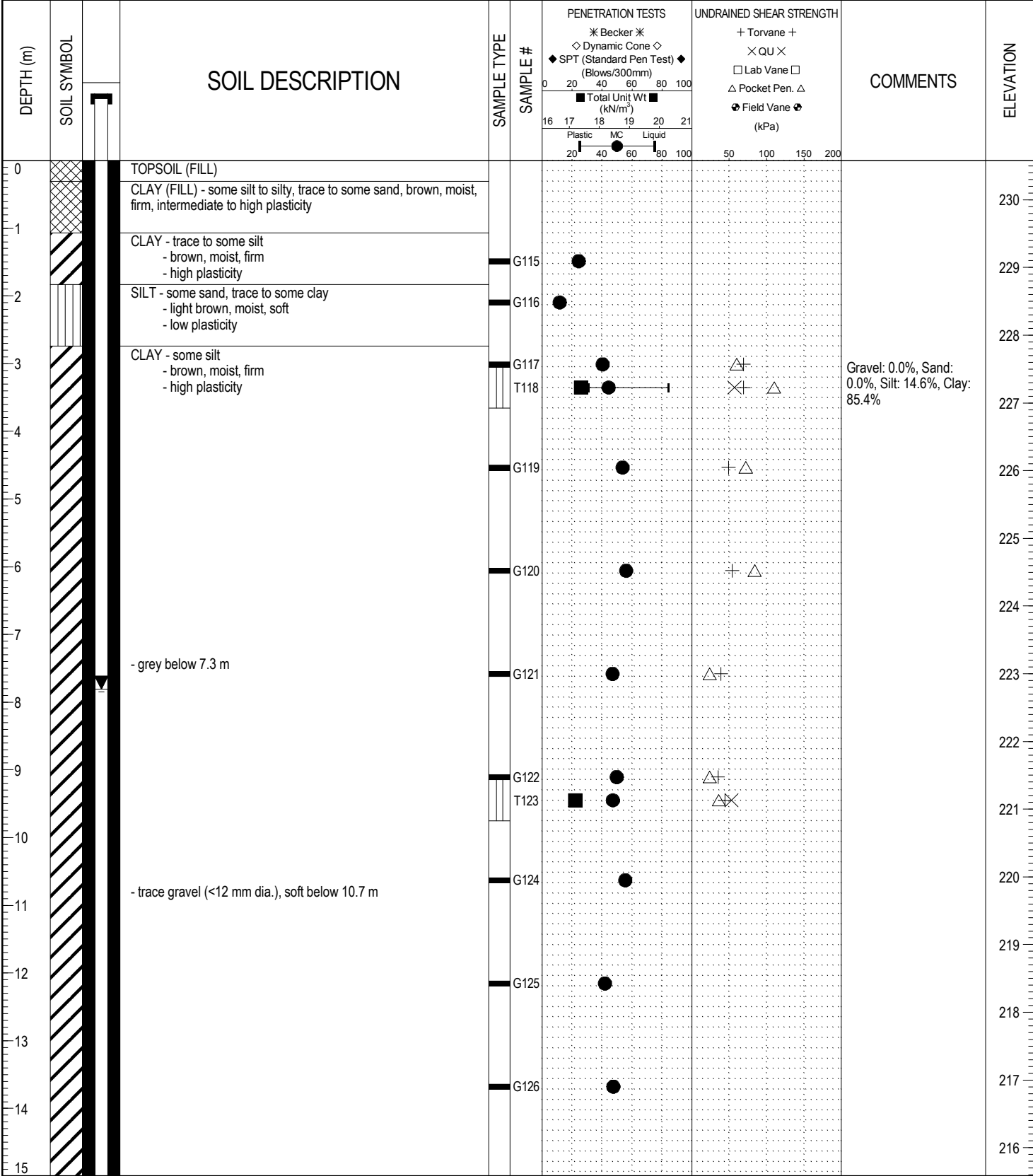


LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 12.19 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 12/13/11
PROJECT ENGINEER: Eymond Toupin	Page 1 of 1

PROJECT: Jefferson East CSR D&C		CLIENT: City of Winnipeg		TESTHOLE NO: SP 11-13		
LOCATION: Upper Outfall Area; East of Scotia Street (UTM: 14 N, 5 533 354.1, 635 496.6)				PROJECT NO.: 60219315		
CONTRACTOR: Paddock Drilling Ltd.		METHOD: RM-30, 125 mm SSA		ELEVATION (m): 230.58		
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND

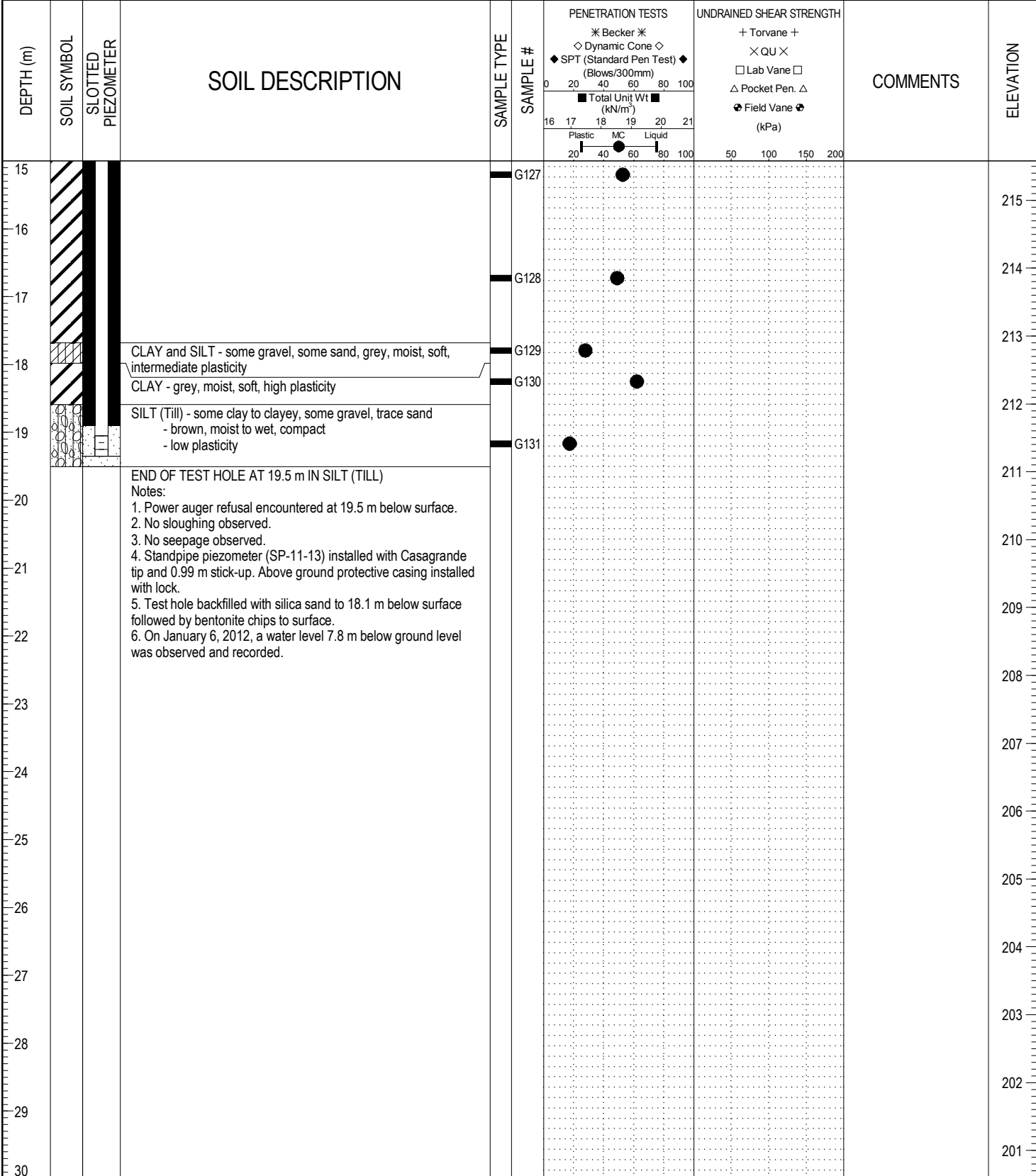


LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 19.51 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 12/14/11
PROJECT ENGINEER: Eymond Toupin	Page 1 of 2

PROJECT: Jefferson East CSR D&C		CLIENT: City of Winnipeg		TESTHOLE NO: SP 11-13		
LOCATION: Upper Outfall Area; East of Scotia Street (UTM: 14 N, 5 533 354.1, 635 496.6)				PROJECT NO.: 60219315		
CONTRACTOR: Paddock Drilling Ltd.		METHOD: RM-30, 125 mm SSA		ELEVATION (m): 230.58		
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND

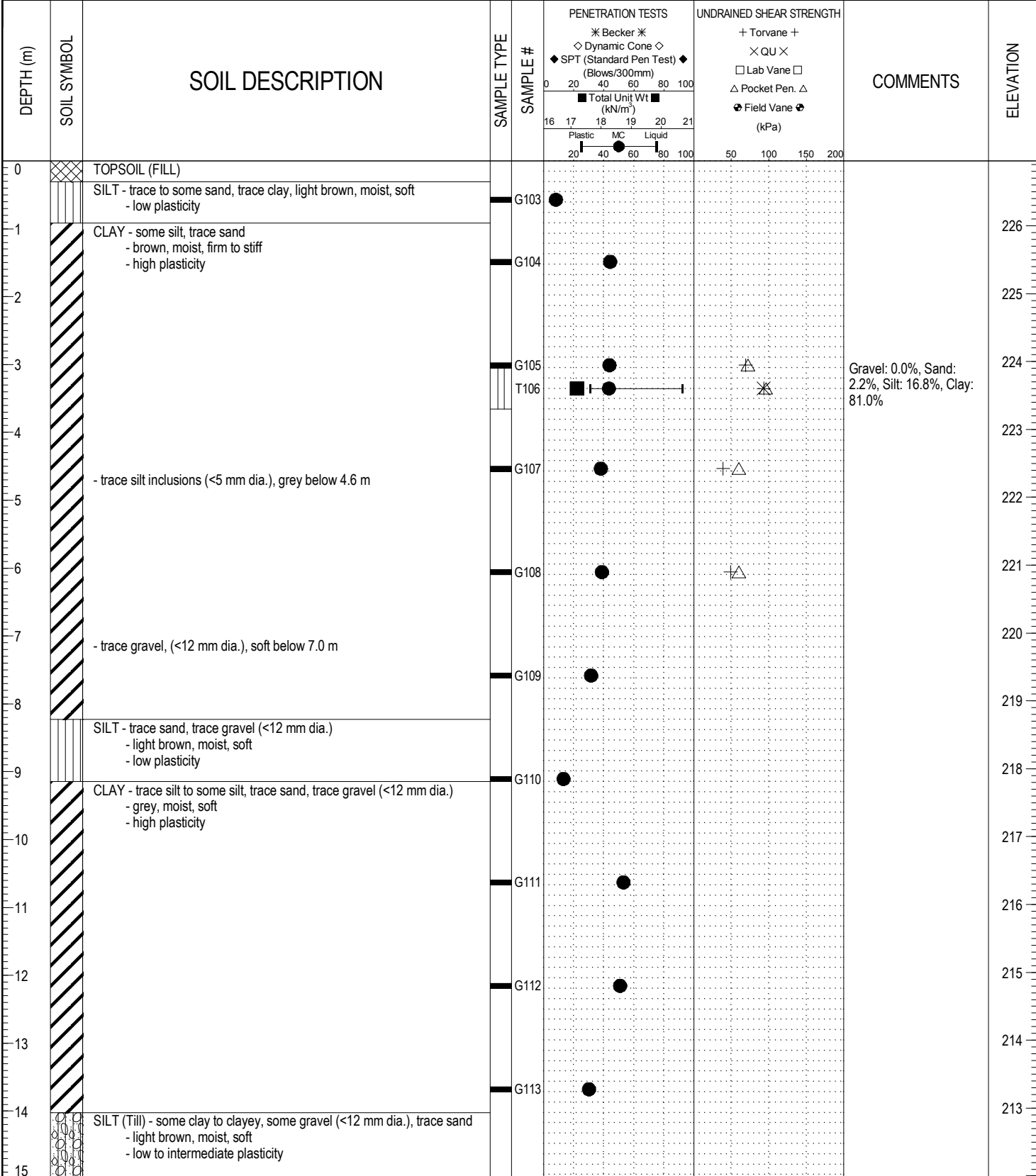


LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 19.51 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 12/14/11
PROJECT ENGINEER: Eymond Toupin	Page 2 of 2

PROJECT: Jefferson East CSR D&C	CLIENT: City of Winnipeg	TESTHOLE NO: TH 11-14
LOCATION: Lower Outfall Area; East of Scotia Street (UTM: 14 N, 5 533 345.7, 635 513.5)		PROJECT NO.: 60219315
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM-30, 125 mm SSA	ELEVATION (m): 226.96
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 TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINNI.GDT 1/23/12



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 15.54 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 12/14/11
PROJECT ENGINEER: Eymond Toupin	Page 1 of 2

PROJECT: Jefferson East CSR D&C	CLIENT: City of Winnipeg	TESTHOLE NO: TH 11-14
LOCATION: Lower Outfall Area; East of Scotia Street (UTM: 14 N, 5 533 345.7, 635 513.5)	PROJECT NO.: 60219315	
CONTRACTOR: Paddock Drilling Ltd.	METHOD: RM-30, 125 mm SSA	ELEVATION (m): 226.96
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 #	PENETRATION TESTS	UNDRAINED SHEAR STRENGTH	COMMENTS	ELEVATION
15	●	END OF TEST HOLE AT 15.5 m IN SILT (TILL) Notes: 1. Power auger refusal encountered at 15.5 m below surface. 2. No sloughing observed. 3. No seepage observed. 4. Test hole backfilled with auger cuttings and bentonite pellets.		G114	* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) 0 20 40 60 80 100 ■ Total Unit Wt ■ (kN/m ³) 16 17 18 19 20 21 Plastic MC Liquid 20 40 60 80 100	+ Torvane + × QU × □ Lab Vane □ △ Pocket Pen. △ ⊗ Field Vane ⊗ (kPa) 50 100 150 200		211
16								210
17								209
18								208
19								207
20								206
21								205
22								204
23								203
24								202
25								201
26								200
27								199
28								198
29								
30								

LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



LOGGED BY: Stephen Petsche	COMPLETION DEPTH: 15.54 m
REVIEWED BY: Jared Baldwin	COMPLETION DATE: 12/14/11
PROJECT ENGINEER: Eymond Toupin	Page 2 of 2