



LEGEND

— SEMPLE AVE - TRUNK SEWER ALIGNMENT
— EXISTING LDS AND OUTFALL
 ○ MANHOLE

⊕	TEST HOLE (AECOM 2012)	⊕	PIEZOMETER TEST HOLE (AECOM 2012)
⊕	TEST HOLE (AECOM 2015)	⊕	PIEZOMETER TEST HOLE (AECOM 2015)
⊕	TEST HOLE (AECOM 2019)	⊕	PIEZOMETER TEST HOLE (AECOM 2019)

60 0 60 120
m
1:6,000
NAD 1983 UTM Zone 14N



Issue Status: Draft

TEST HOLE LOCATION PLAN

SEMPLA AVENUE TRUNK SEWER
 GEOTECHNICAL DATA REPORT
 CITY OF WINNIPEG, WATER AND WASTE DEPARTMENT

AECOM

FIGURE: 3

AECOM Canada Ltd.

GENERAL STATEMENT

NORMAL VARIABILITY OF SUBSURFACE CONDITIONS

The scope of the investigation presented herein is limited to an investigation of the subsurface conditions as to suitability for the proposed project. This report has been prepared to aid in the evaluation of the site and to assist the engineer in the design of the facilities. Our description of the project represents our understanding of the significant aspects of the project relevant to the design and construction of earth work, foundations and similar. In the event of any changes in the basic design or location of the structures as outlined in this report or plan, we should be given the opportunity to review the changes and to modify or reaffirm in writing the conclusions and recommendations of this report.

The analysis and recommendations presented in this report are based on the data obtained from the borings and test pit excavations made at the locations indicated on the site plans and from other information discussed herein. This report is based on the assumption that the subsurface conditions everywhere are not significantly different from those disclosed by the borings and excavations. However, variations in soil conditions may exist between the excavations and, also, general groundwater levels and conditions may fluctuate from time to time. The nature and extent of the variations may not become evident until construction. If subsurface conditions differ from those encountered in the exploratory borings and excavations, are observed or encountered during construction, or appear to be present beneath or beyond excavations, we should be advised at once so that we can observe and review these conditions and reconsider our recommendations where necessary.

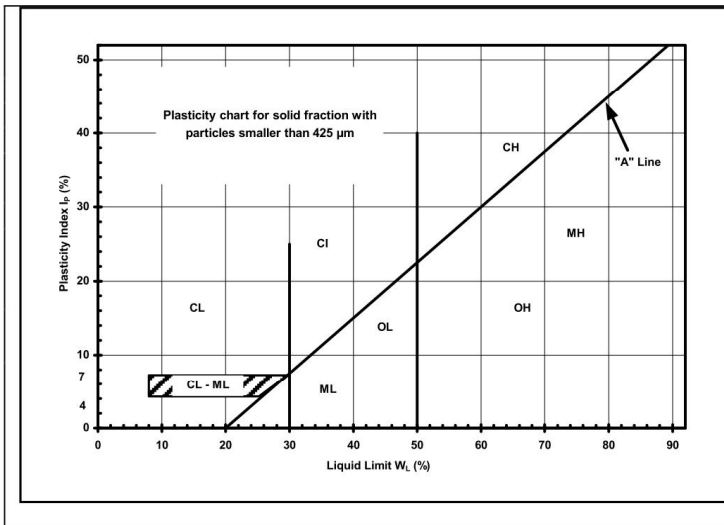
Since it is possible for conditions to vary from those assumed in the analysis and upon which our conclusions and recommendations are based, a contingency fund should be included in the construction budget to allow for the possibility of variations which may result in modification of the design and construction procedures.

In order to observe compliance with the design concepts, specifications or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated, we recommend that all construction operations dealing with earth work and the foundations be observed by an experienced soils engineer. We can be retained to provide these services for you during construction. In addition, we can be retained to review the plans and specifications that have been prepared to check for substantial conformance with the conclusions and recommendations contained in our report.

EXPLANATION OF FIELD & LABORATORY TEST DATA

Description		UMA Log Symbols	USCS Classification	Laboratory Classification Criteria					
				Fines (%)	Grading	Plasticity	Notes		
COARSE GRAINED SOILS	GRAVELS (More than 50% of coarse fraction of gravel size)	CLEAN GRAVELS (Little or no fines)	Well graded gravels, sandy gravels, with little or no fines		GW	0-5	$C_u > 4$ $1 < C_c < 3$	Dual symbols if 5-12% fines. Dual symbols if above "A" line and $4 < W_p < 7$ $C_u = \frac{D_{60}}{D_{10}}$ $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$	
			Poorly graded gravels, sandy gravels, with little or no fines		GP	0-5	Not satisfying GW requirements		
		DIRTY GRAVELS (With some fines)	Silty gravels, silty sandy gravels		GM	> 12			Atterberg limits below "A" line or $W_p < 4$
			Clayey gravels, clayey sandy gravels		GC	> 12			Atterberg limits above "A" line or $W_p < 7$
	SANDS (More than 50% of coarse fraction of sand size)	CLEAN SANDS (Little or no fines)	Well graded sands, gravelly sands, with little or no fines		SW	0-5	$C_u > 6$ $1 < C_c < 3$		
			Poorly graded sands, gravelly sands, with little or no fines		SP	0-5	Not satisfying SW requirements		
		DIRTY SANDS (With some fines)	Silty sands, sand-silt mixtures		SM	> 12			Atterberg limits below "A" line or $W_p < 4$
			Clayey sands, sand-clay mixtures		SC	> 12			Atterberg limits above "A" line or $W_p < 7$
FINE GRAINED SOILS	SILTS (Below 'A' line negligible organic content)	$W_L < 50$	Inorganic silts, silty or clayey fine sands, with slight plasticity		ML		Classification is Based upon Plasticity Chart		
		$W_L > 50$	Inorganic silts of high plasticity		MH				
	CLAYS (Above 'A' line negligible organic content)	$W_L < 30$	Inorganic clays, silty clays, sandy clays of low plasticity, lean clays		CL				
		$30 < W_L < 50$	Inorganic clays and silty clays of medium plasticity		CI				
		$W_L > 50$	Inorganic clays of high plasticity, fat clays		CH				
	ORGANIC SILTS & CLAYS (Below 'A' line)	$W_L < 50$	Organic silts and organic silty clays of low plasticity		OL				
		$W_L > 50$	Organic clays of high plasticity		OH				
	HIGHLY ORGANIC SOILS		Peat and other highly organic soils		Pt	Von Post Classification Limit		Strong colour or odour, and often fibrous texture	
	Asphalt		Till			AECOM			
	Concrete		Bedrock (Undifferentiated)						
	Fill		Bedrock (Limestone)						

When the above classification terms are used in this report or test hole logs, the designated fractions may be visually estimated and not measured.



FRACTION	SEIVE SIZE (mm)		DEFINING RANGES OF PERCENTAGE BY WEIGHT OF MINOR COMPONENTS	
	Passing	Retained	Percent	Identifier
Gravel	Coarse	76	19	35-50 and
	Fine	19	4.75	
Sand	Coarse	4.75	2.00	20-35 "y" or "ey" *
	Medium	2.00	0.425	
	Fine	0.425	0.075	
Silt (non-plastic) or Clay (plastic)	< 0.075 mm		10-20	some
1-10 trace				
* for example: gravelly, sandy clayey, silty				
Definition of Oversize Material				
COBBLES: 76mm to 300mm diameter				
BOULDERS: >300mm diameter				

LEGEND OF SYMBOLS

Laboratory and field tests are identified as follows:

- qu - undrained shear strength (kPa) derived from unconfined compression testing.
- Tv - undrained shear strength (kPa) measured using a torvane
- pp - undrained shear strength (kPa) measured using a pocket penetrometer.
- Lv - undrained shear strength (kPa) measured using a lab vane.
- Fv - undrained shear strength (kPa) measured using a field vane.
- γ - bulk unit weight (kN/m³).
- SPT - Standard Penetration Test. Recorded as number of blows (N) from a 63.5 kg hammer dropped 0.76 m (free fall) which is required to drive a 51 mm O.D. Raymond type sampler 0.30 m into the soil.
- DPPT - Drive Point Pentrometer Test. Recorded as number of blows from a 63.5 kg hammer dropped 0.76 m (free fall) which is required to drive a 50 mm drive point 0.30 m into the soil.
- w - moisture content (WL, WP)

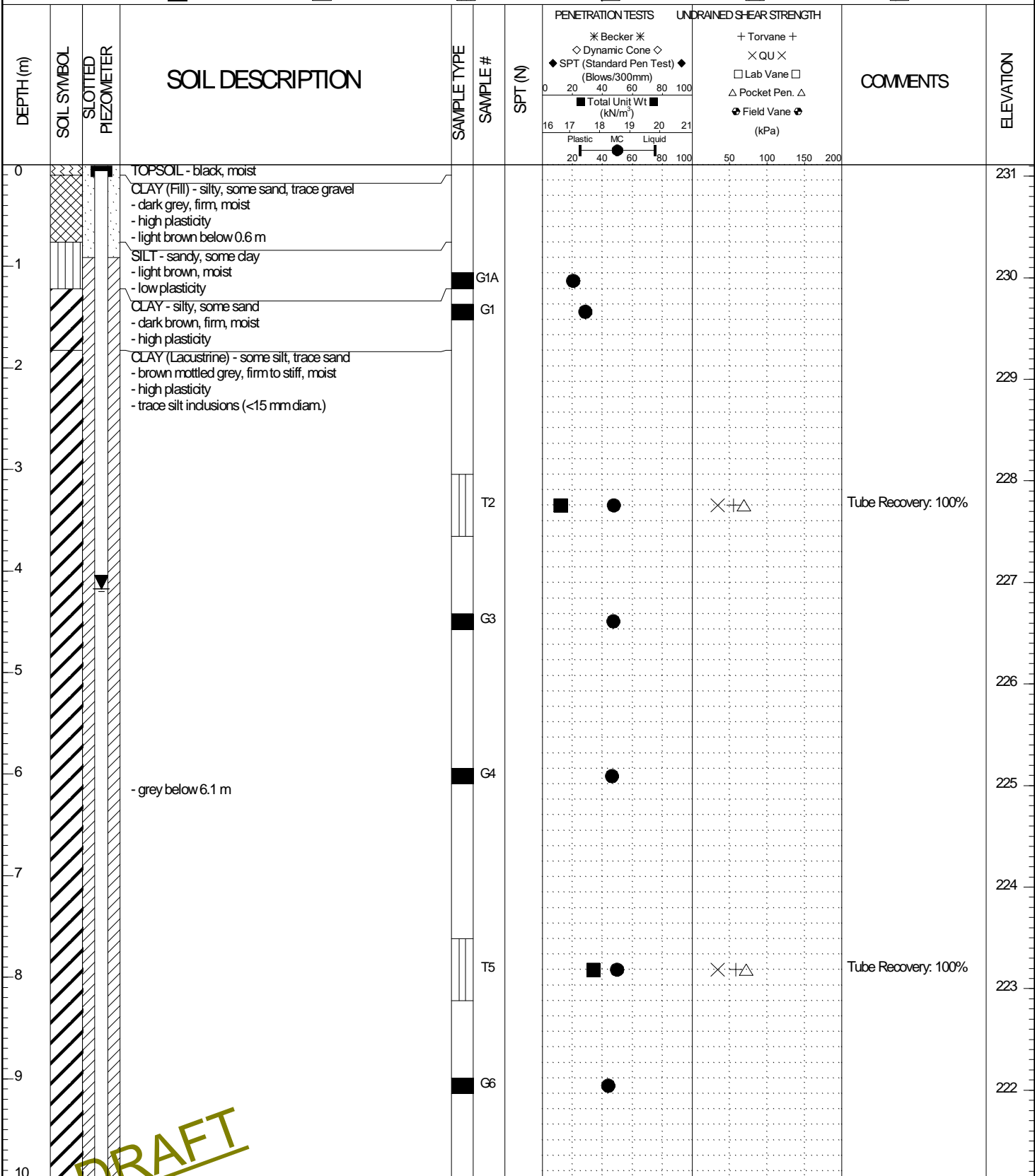
The undrained shear strength (Su) of a cohesive soil can be related to its consistency as follows:

Su (kPa)	CONSISTENCY
<12	very soft
12 – 25	soft
25 – 50	medium or firm
50 – 100	stiff
100 – 200	very stiff
200	hard

The resistance (N) of a non-cohesive soil can be related to compactness condition as follows

N – BLOWS/0.30 m	COMPACTNESS
0 - 4	very loose
4 - 10	loose
10 - 30	compact
30 - 50	dense
50	very dense

PROJECT: Jefferson East CSR Works (Contract 5)		CLIENT: City of Winnipeg WWD		TESTHOLE NO: TH19-01			
LOCATION: UTM 14 - 5533995 m N, 634036 m E				PROJECT NO.: 60599385			
CONTRACTOR: Maple Leaf Drilling		METHOD: Canterra CT-250 - 125 mm SSA		ELEVATION (m): 231.11			
SAMPLE TYPE		GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE		BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



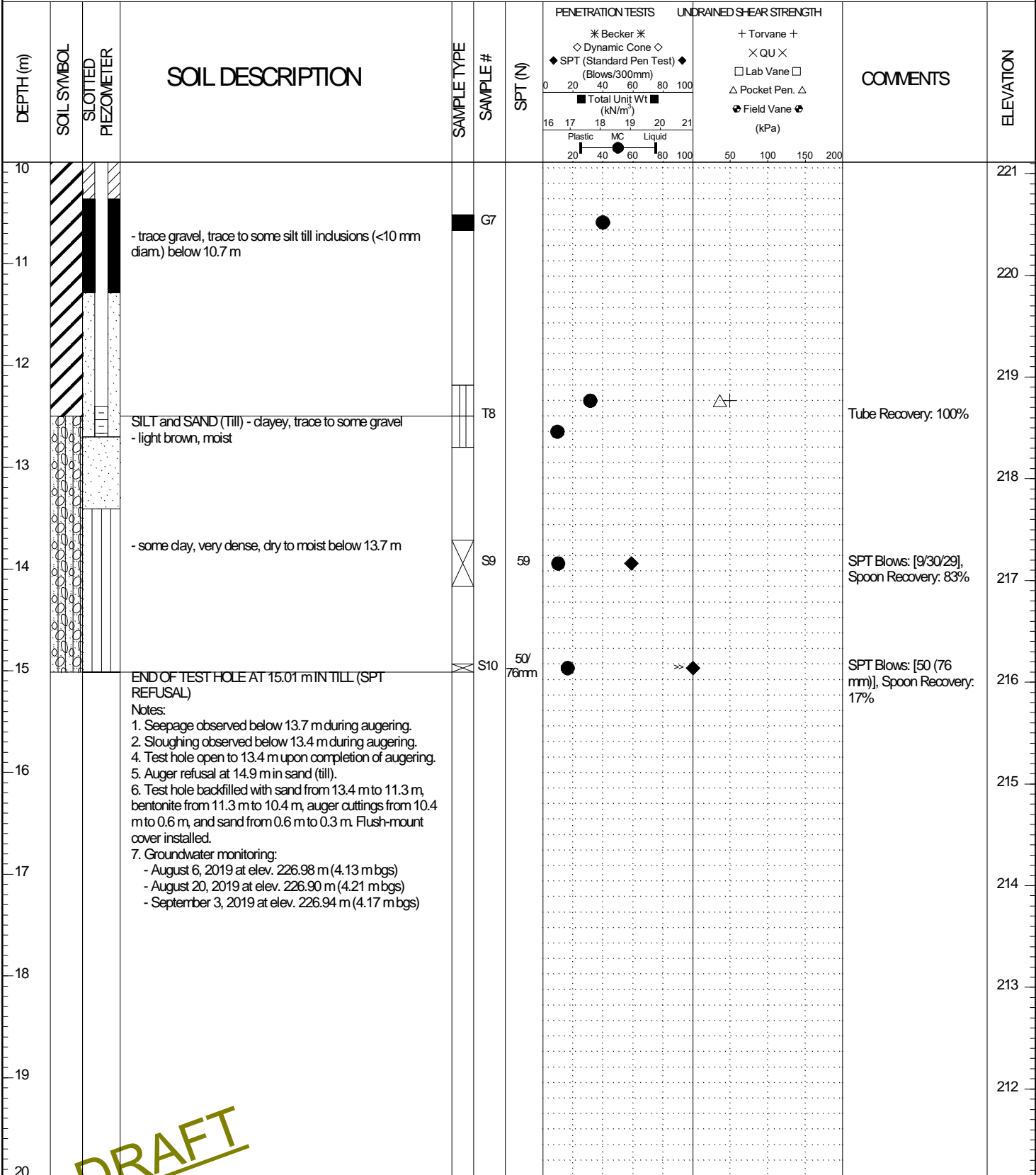
LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED.GPJ UJMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harris	COMPLETION DEPTH: 15.01 m
REVIEWED BY:	COMPLETION DATE: 6/27/19
PROJECT ENGINEER: Jordan Thompson	Page 1 of 2

PROJECT: Jefferson East CSR Works (Contract 5)		CLIENT: City of Winnipeg WWD		TESTHOLE NO: TH19-01			
LOCATION: UTM 14 - 5533995 m N, 634036 m E				PROJECT NO.: 60599385			
CONTRACTOR: Maple Leaf Drilling		METHOD: Canterra CT-250 - 125 mm SSA		ELEVATION (m): 231.11			
SAMPLE TYPE		GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE		BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



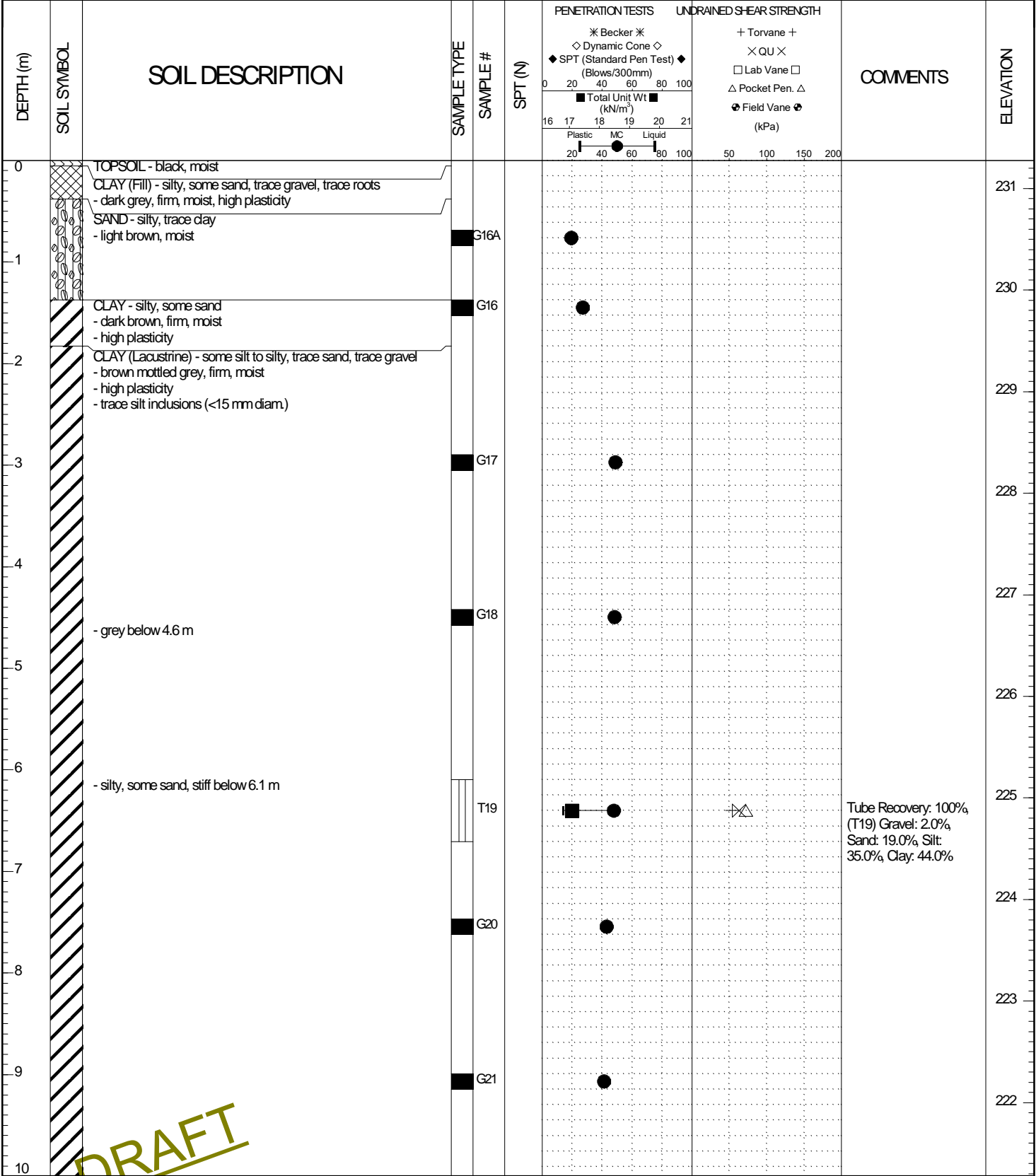
LOG OF TEST HOLE DRAFT 60599385 - ALL COMBINED GP.J UMA WINN.GDT 10/15/19

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LOGGED BY: Ryan Harris	COMPLETION DEPTH: 15.01 m
REVIEWED BY:	COMPLETION DATE: 6/27/19
PROJECT ENGINEER: Jordan Thompson	Page 2 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-02
LOCATION: UTM 14 - 5533973 m N, 634084 m E		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 231.28
SAMPLE TYPE <input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input checked="" type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE		



LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED GP.J UJMA WINN.GDT 10/15/19

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LOGGED BY: Ryan Harris	COMPLETION DEPTH: 12.19 m
REVIEWED BY:	COMPLETION DATE: 6/25/19
PROJECT ENGINEER: Jordan Thompson	Page 1 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-02
LOCATION: UTM 14 - 5533973 mN, 634084 mE		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 231.28
SAMPLE TYPE <input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input checked="" type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE		

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	SPT (N)	PENETRATION TESTS	UNDRAINED SHEAR STRENGTH	COMMENTS	ELEVATION
10		- trace silt till inclusions (<15 mm diam.) below 10.7 m	<input checked="" type="checkbox"/>	G22		●			221
11									220
12			<input checked="" type="checkbox"/>	G23		●			219
13		END OF TEST HOLE AT 12.19 m IN CLAY Notes: 1. Seepage not observed during augering. 2. Sloughing not observed during augering. 3. Test hole backfilled with auger cuttings and bentonite upon completion.							218
14									217
15									216
16									215
17									214
18									213
19									212
20									211

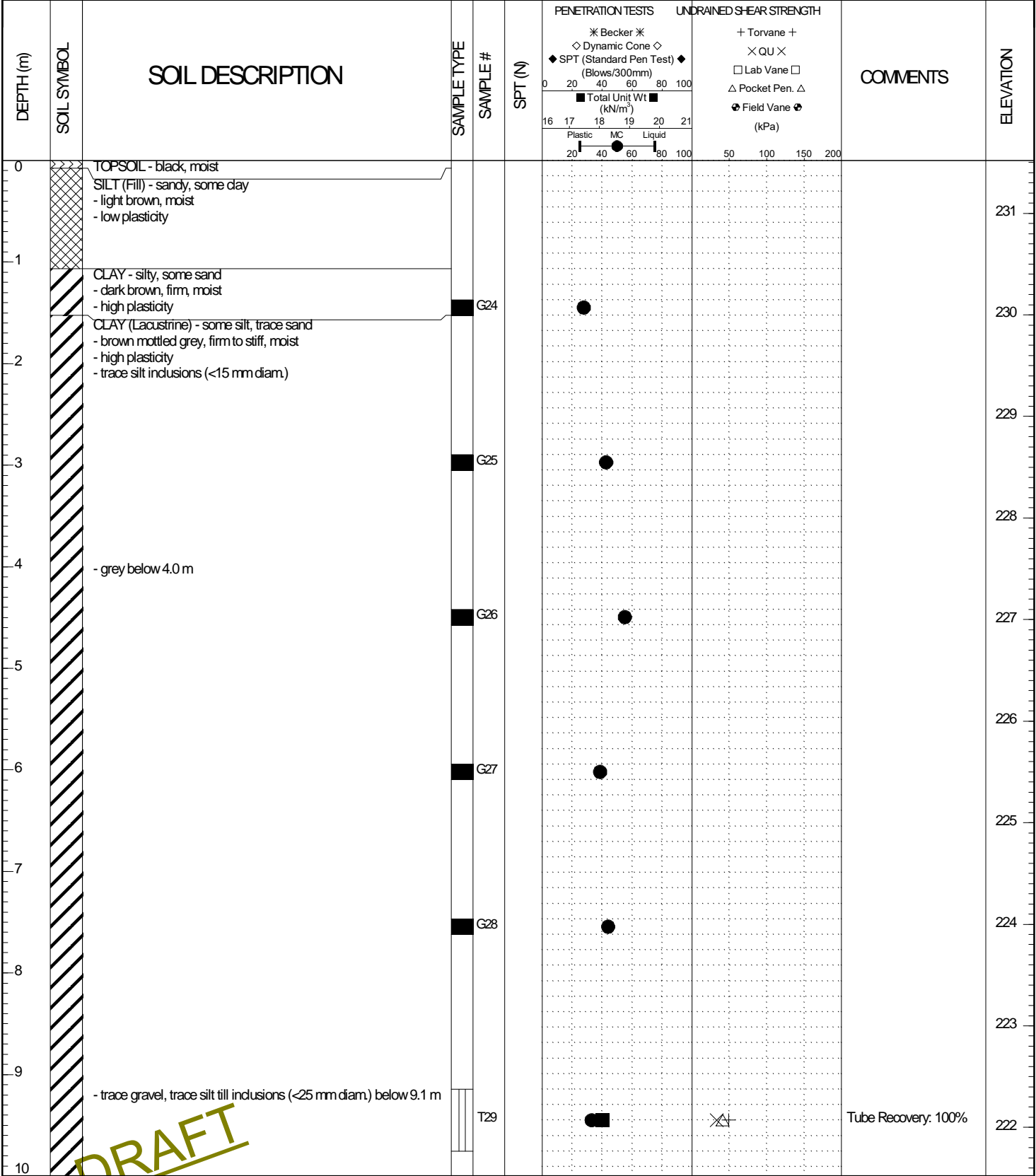
LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED GP.J UJMA WINN.GDT 10/15/19

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LOGGED BY: Ryan Harras	COMPLETION DEPTH: 12.19 m
REVIEWED BY:	COMPLETION DATE: 6/25/19
PROJECT ENGINEER: Jordan Thompson	Page 2 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-03
LOCATION: UTM 14 - 5533922 m N, 634193 m E		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 231.52
SAMPLE TYPE <input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input checked="" type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE		



LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED GP.J UMA WINN.GDT 10/15/19

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LOGGED BY: Ryan Harris	COMPLETION DEPTH: 12.19 m
REVIEWED BY:	COMPLETION DATE: 6/25/19
PROJECT ENGINEER: Jordan Thompson	Page 1 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-03
LOCATION: UTM 14 - 5533922 mN, 634193 mE		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 231.52
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 #	SPT (N)	PENETRATION TESTS	UNDRAINED SHEAR STRENGTH	COMMENTS	ELEVATION
10			<input checked="" type="checkbox"/>	G30		●			221
11									220
12			<input checked="" type="checkbox"/>	G31		●			219
13		END OF TEST HOLE AT 12.19 m IN CLAY Notes: 1. Seepage not observed during augering. 2. Sloughing not observed during augering. 3. Test hole backfilled with auger cuttings and bentonite upon completion.							218
14									217
15									216
16									215
17									214
18									213
19									212
20									212

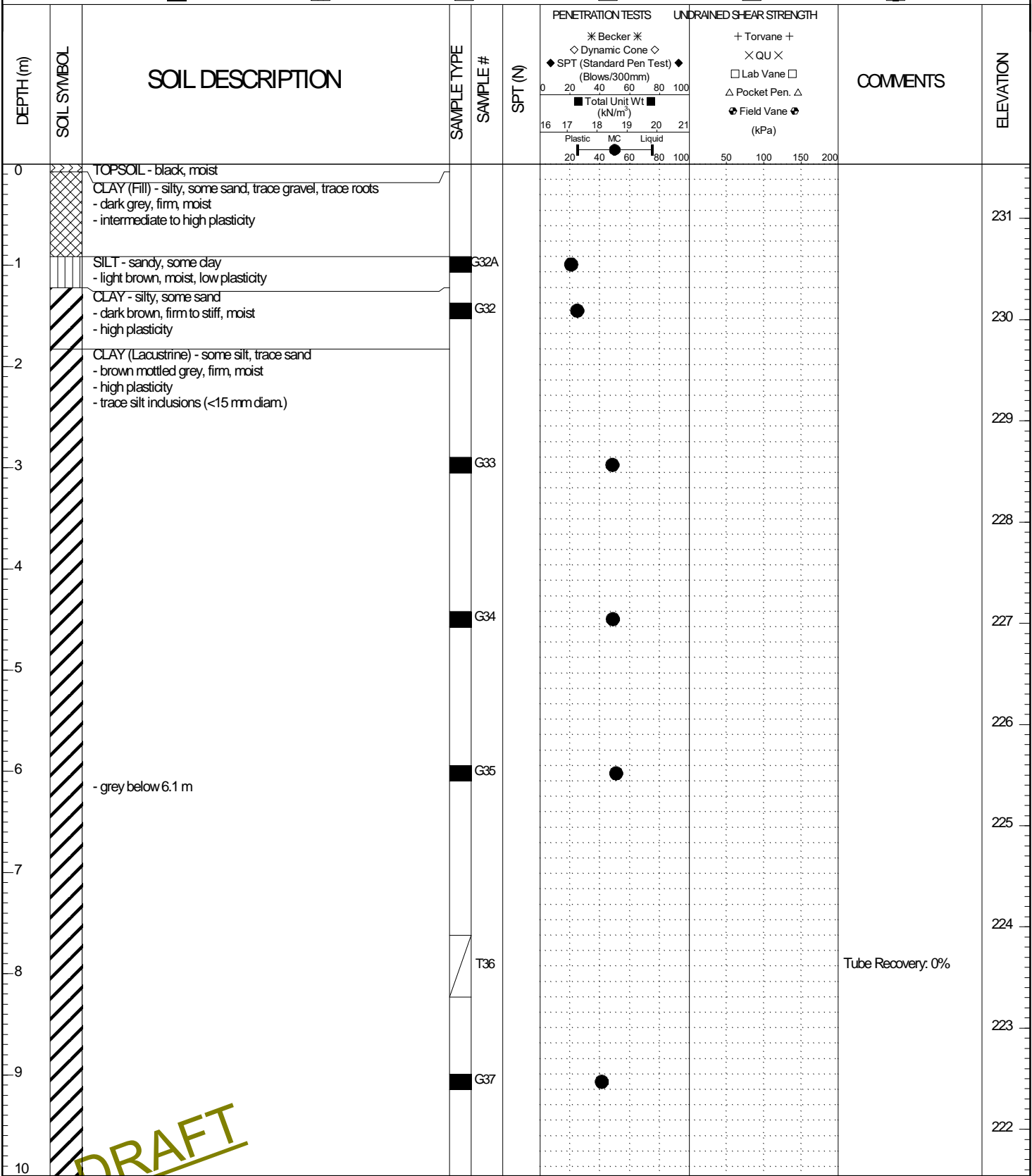
LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED GP.J UMA WINN.GDT 10/15/19

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LOGGED BY: Ryan Harras	COMPLETION DEPTH: 12.19 m
REVIEWED BY:	COMPLETION DATE: 6/25/19
PROJECT ENGINEER: Jordan Thompson	Page 2 of 2

PROJECT: Jefferson East CSR Works (Contract 5) CLIENT: City of Winnipeg WMD TESTHOLE NO: TH19-04
 LOCATION: UTM 14 - 5533885 mN, 634272 mE PROJECT NO.: 60599385
 CONTRACTOR: Maple Leaf Drilling METHOD: Acker MP-5 - 125 mm SSA ELEVATION (m): 231.54
 SAMPLE TYPE GRAB SHELBY TUBE SPLIT SPOON BULK NO RECOVERY CORE



LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED GP.J UMA WINN.GDT 10/15/19

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LOGGED BY: Ryan Harris COMPLETION DEPTH: 12.19 m
 REVIEWED BY: COMPLETION DATE: 6/25/19
 PROJECT ENGINEER: Jordan Thompson Page 1 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-04
LOCATION: UTM 14 - 5533885 mN, 634272 mE		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 231.54
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 #	SPT (N)	PENETRATION TESTS	UNDRAINED SHEAR STRENGTH	COMMENTS	ELEVATION
10									221
11									220
12									219
12.19		END OF TEST HOLE AT 12.19 m IN CLAY		G39					218
13		Notes: 1. Seepage not observed during augering. 2. Sloughing not observed during augering. 3. Test hole backfilled with auger cuttings and bentonite upon completion.							217
14									216
15									215
16									214
17									213
18									212
19									211
20									210

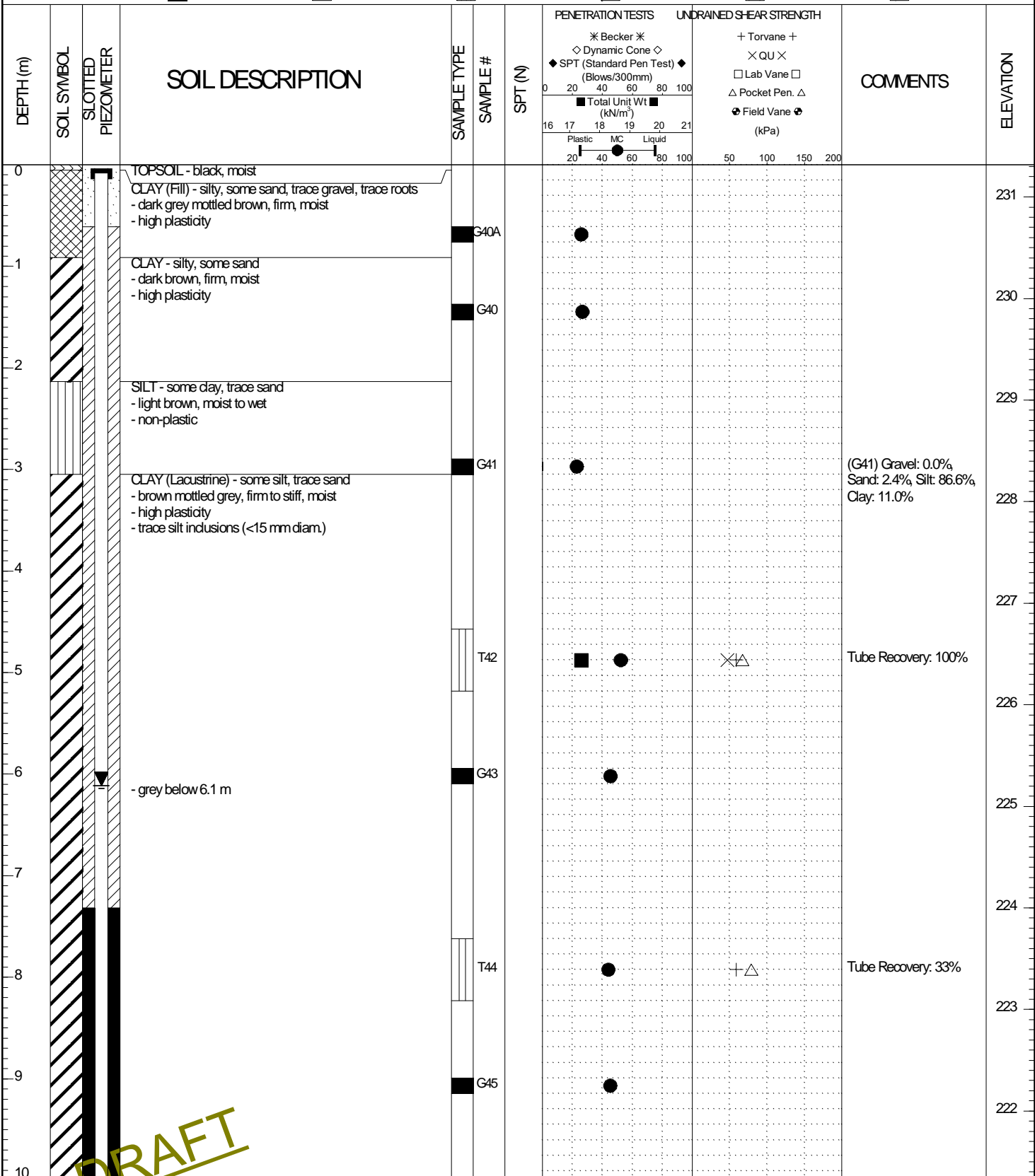
LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED.GPJ UJMA WINN.GDT 10/15/19

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LOGGED BY: Ryan Harras	COMPLETION DEPTH: 12.19 m
REVIEWED BY:	COMPLETION DATE: 6/25/19
PROJECT ENGINEER: Jordan Thompson	Page 2 of 2

PROJECT: Jefferson East CSR Works (Contract 5)		CLIENT: City of Winnipeg WWD		TESTHOLE NO: TH19-05			
LOCATION: UTM 14 - 5533828 m N, 634394 m E		METHOD: Aker MP-5 - 125 mm SSA		PROJECT NO.: 60593385			
CONTRACTOR: Maple Leaf Drilling		METHOD: Aker MP-5 - 125 mm SSA		ELEVATION (m): 231.32			
SAMPLE TYPE		GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE		BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



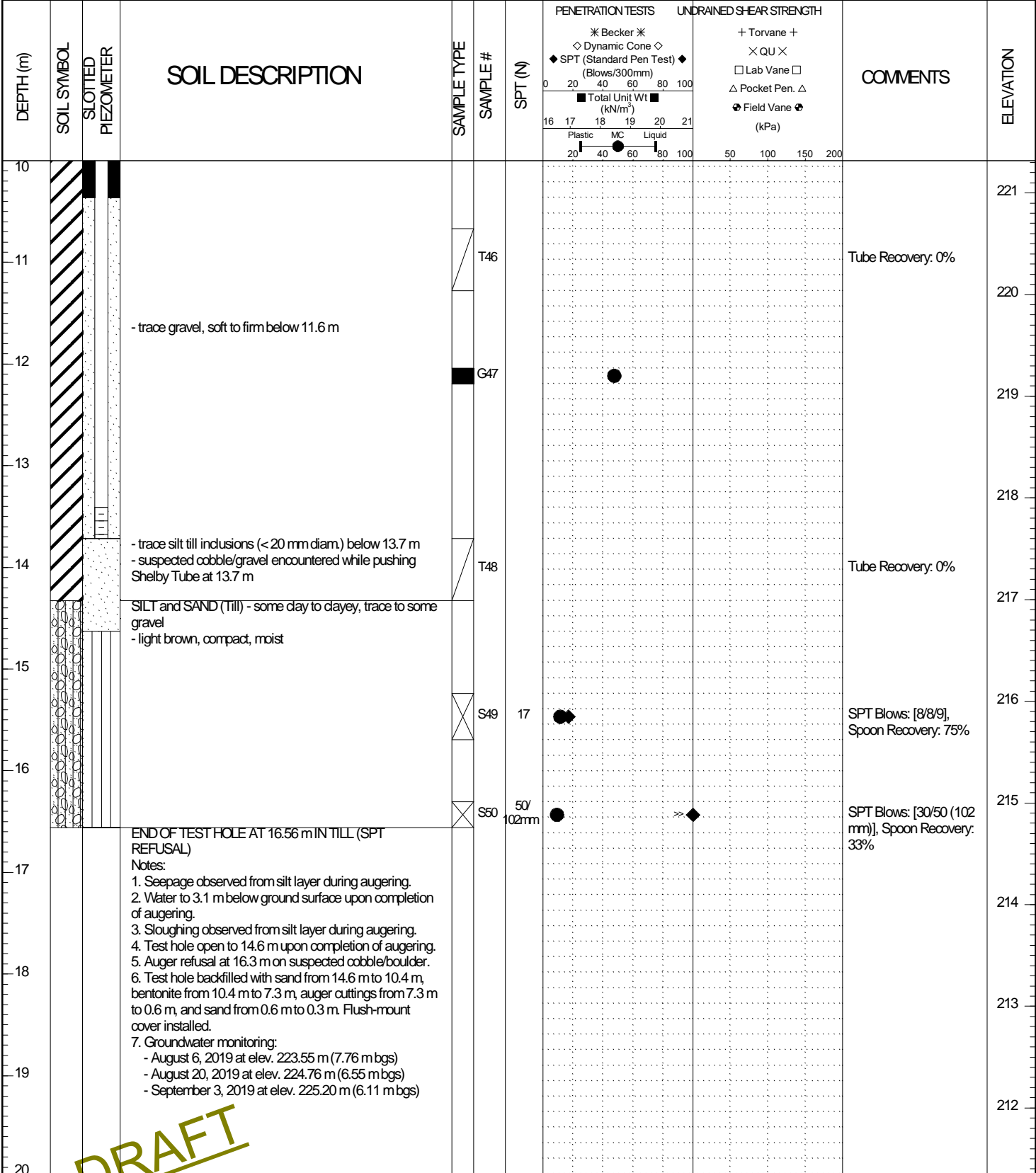
LOG OF TEST HOLE DRAFT 60593385 - TEST HOLE LOGS - ALL COMBINED GP.J UMA WINN.GDT 10/15/19

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LOGGED BY: Ryan Harris	COMPLETION DEPTH: 16.56 m
REVIEWED BY:	COMPLETION DATE: 6/26/19
PROJECT ENGINEER: Jordan Thompson	Page 1 of 2

PROJECT: Jefferson East CSR Works (Contract 5)		CLIENT: City of Winnipeg WWD		TESTHOLE NO: TH19-05			
LOCATION: UTM 14 - 5533828 m N, 634394 m E				PROJECT NO.: 60599385			
CONTRACTOR: Maple Leaf Drilling		METHOD: Acker MP-5 - 125 mm SSA		ELEVATION (m): 231.32			
SAMPLE TYPE		GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE		BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



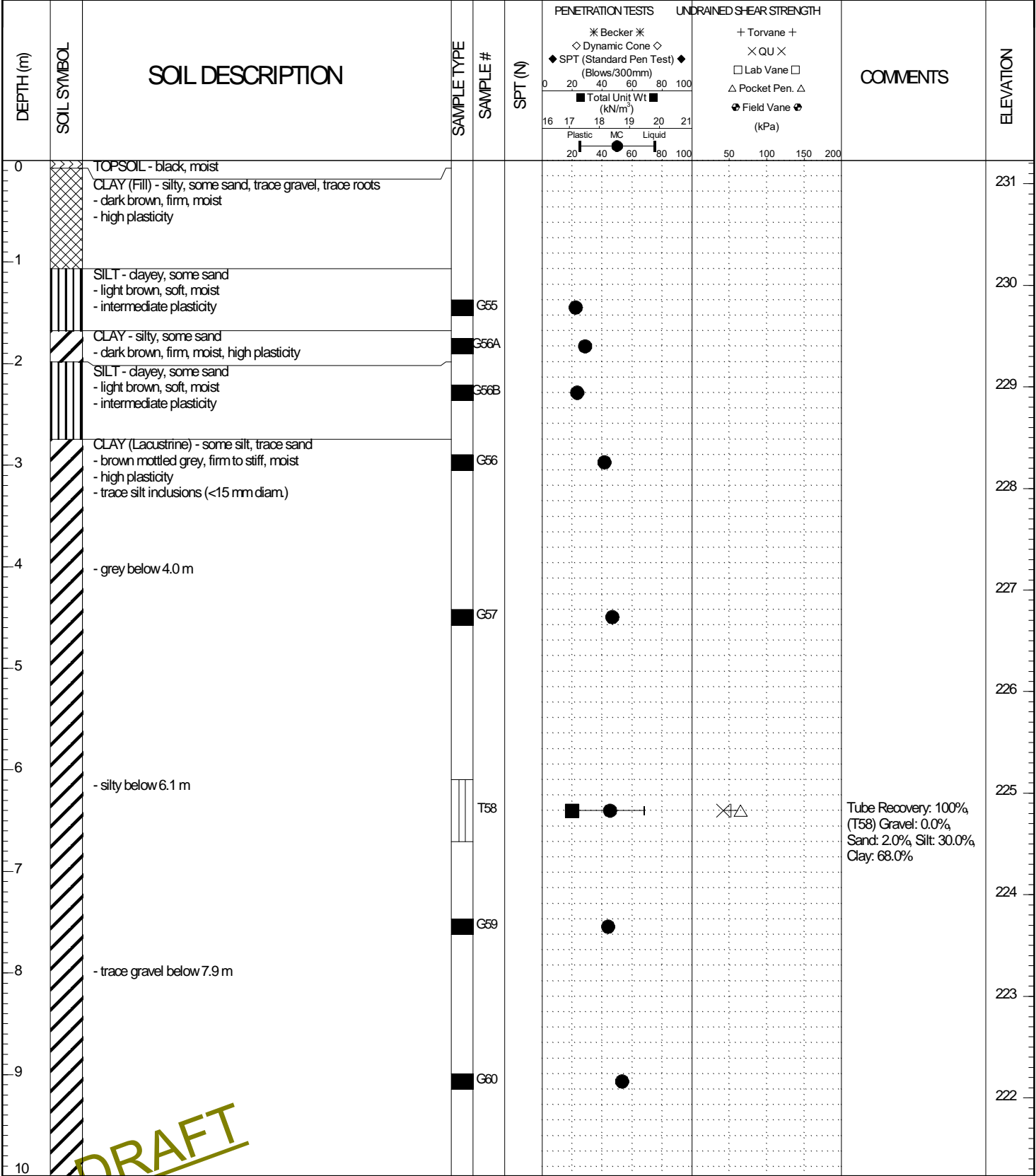
LOG OF TEST HOLE DRAFT 60599385 - ALL COMBINED.GPJ UJMA WINN.GDT 10/15/19

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LOGGED BY: Ryan Harris	COMPLETION DEPTH: 16.56 m
REVIEWED BY:	COMPLETION DATE: 6/26/19
PROJECT ENGINEER: Jordan Thompson	Page 2 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-06
LOCATION: UTM 14 - 5533801 mN, 634449 mE		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 231.23
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	



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LOGGED BY: Ryan Harris	COMPLETION DEPTH: 12.19 m
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PROJECT ENGINEER: Jordan Thompson	Page 1 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-06
LOCATION: UTM 14 - 5533801 mN, 634449 mE		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 231.23
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 #	SPT (N)	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH (kPa)	COMMENTS	ELEVATION
						Blows/300mm	Total Unit Wt (kN/m ³)			
10		- trace silt till inclusions (<25 mm diam.) below 10.7 m	<input checked="" type="checkbox"/>	G61						221
11										220
12			<input checked="" type="checkbox"/>	G62						219
13		END OF TEST HOLE AT 12.19 m IN CLAY Notes: 1. Seepage not observed during augering. 2. Sloughing not observed during augering. 3. Test hole backfilled with auger cuttings and bentonite upon completion.								218
14										217
15										216
16										215
17										214
18										213
19										212
20										

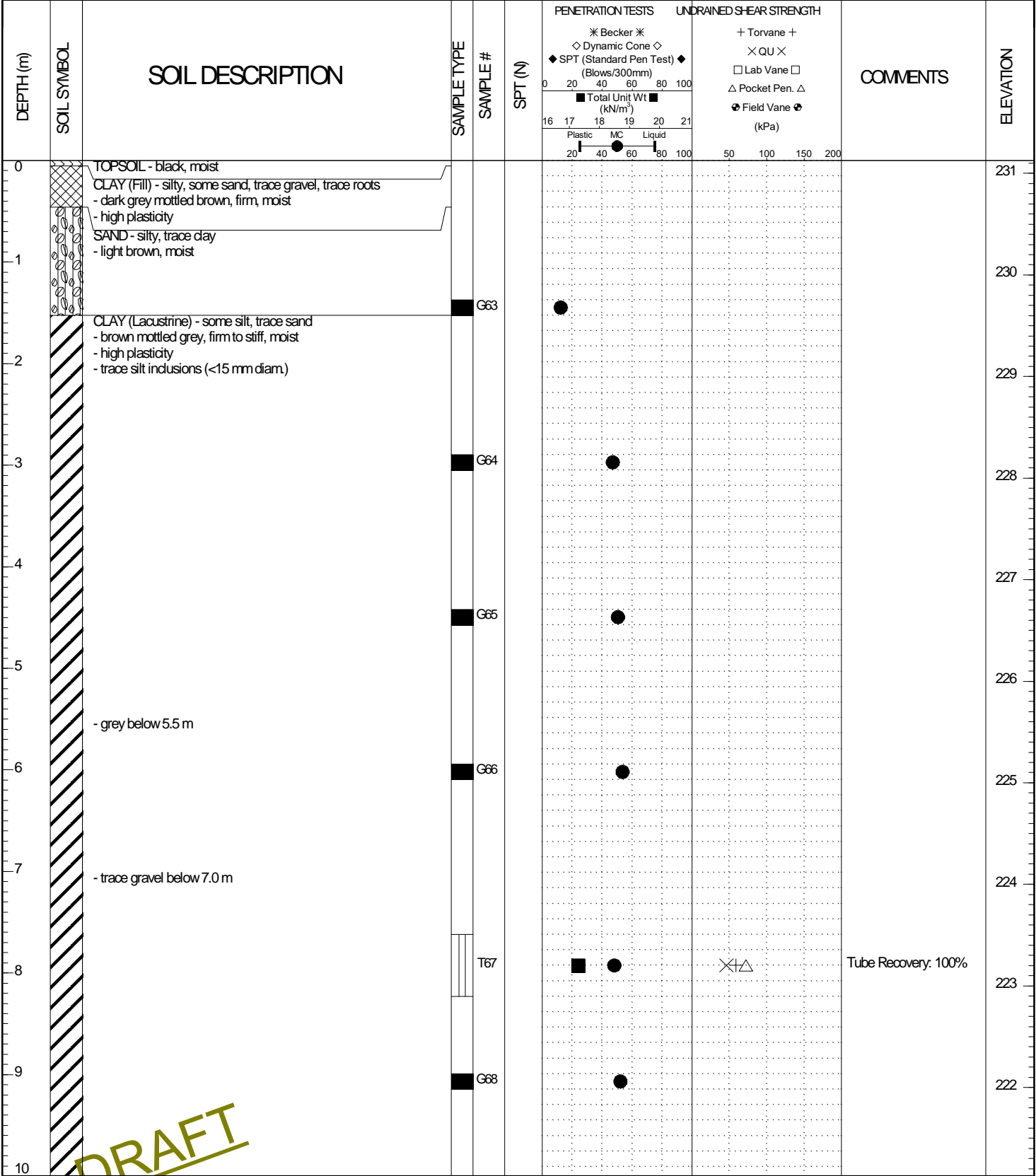
LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED GPJ UMA WINN.GDT 10/15/19

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LOGGED BY: Ryan Harras	COMPLETION DEPTH: 12.19 m
REVIEWED BY:	COMPLETION DATE: 6/26/19
PROJECT ENGINEER: Jordan Thompson	Page 2 of 2

PROJECT: Jefferson East CSR Works (Contract 5)		CLIENT: City of Winnipeg WMD	TESTHOLE NO: TH19-07
LOCATION: UTM 14 - 5533750 m N, 634559 m E		PROJECT NO.: 60599385	
CONTRACTOR: Maple Leaf Drilling		METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 231.13
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input checked="" type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE		



LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED.GPJ UJMA WINN.GDT 10/15/19

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LOGGED BY: Ryan Harris	COMPLETION DEPTH: 12.19 m
REVIEWED BY:	COMPLETION DATE: 6/26/19
PROJECT ENGINEER: Jordan Thompson	Page 1 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-07
LOCATION: UTM 14 - 5533750 mN, 634559 mE		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 231.13
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 #	SPT (N)	PENETRATION TESTS	UNDRAINED SHEAR STRENGTH	COMMENTS	ELEVATION
10									221
11			<input checked="" type="checkbox"/>	G69		●			220
12			<input checked="" type="checkbox"/>	G70		●			219
13		END OF TEST HOLE AT 12.19 m IN CLAY Notes: 1. Seepage not observed during augering. 2. Sloughing not observed during augering. 3. Test hole backfilled with auger cuttings and bentonite upon completion.							218
14									217
15									216
16									215
17									214
18									213
19									212
20									

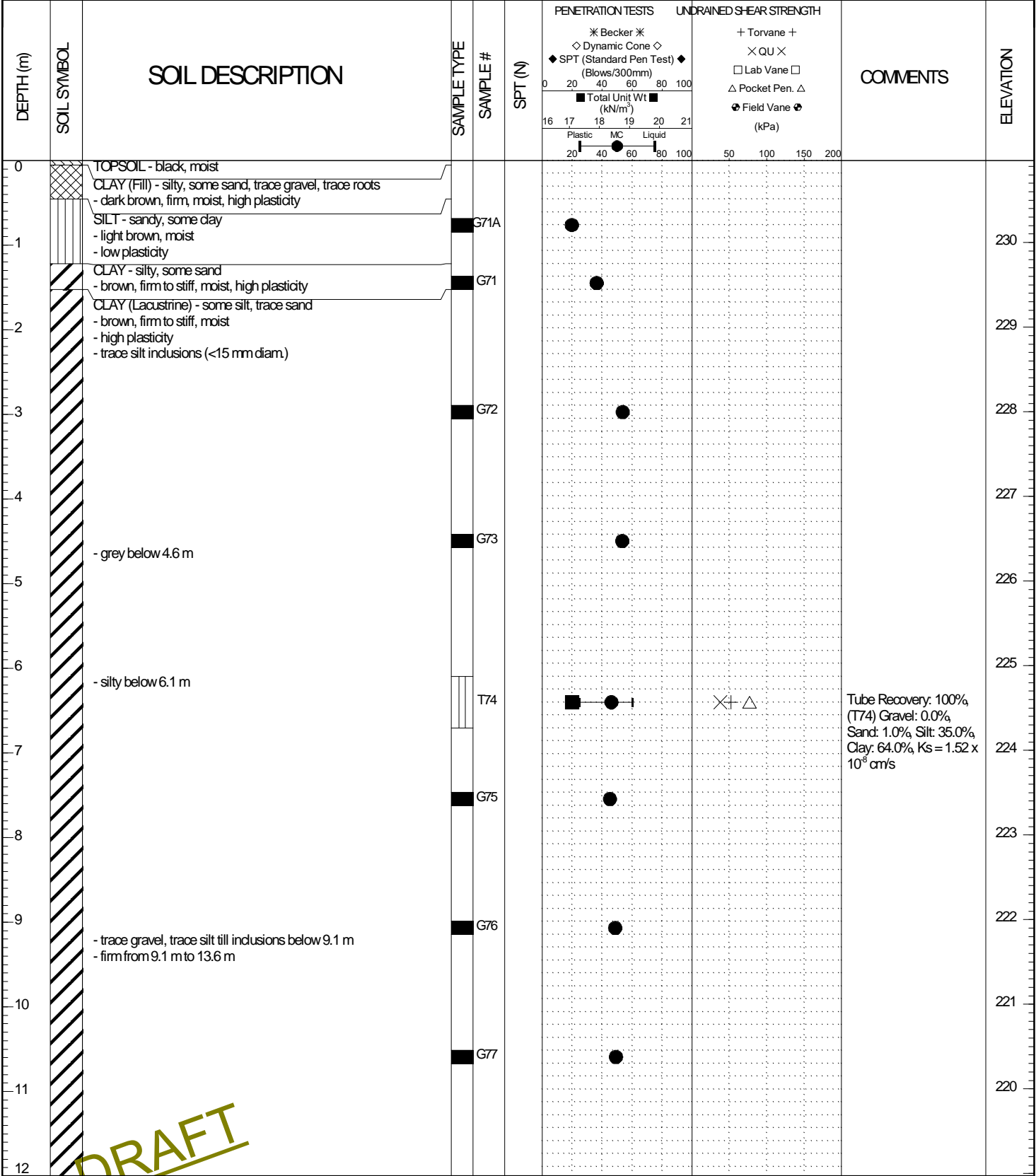
LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED GPJ UJMA WINN.GDT 10/15/19

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LOGGED BY: Ryan Harras	COMPLETION DEPTH: 12.19 m
REVIEWED BY:	COMPLETION DATE: 6/26/19
PROJECT ENGINEER: Jordan Thompson	Page 2 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-08
LOCATION: UTM 14 - 5533718 mN, 634627 mE		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 230.97
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	



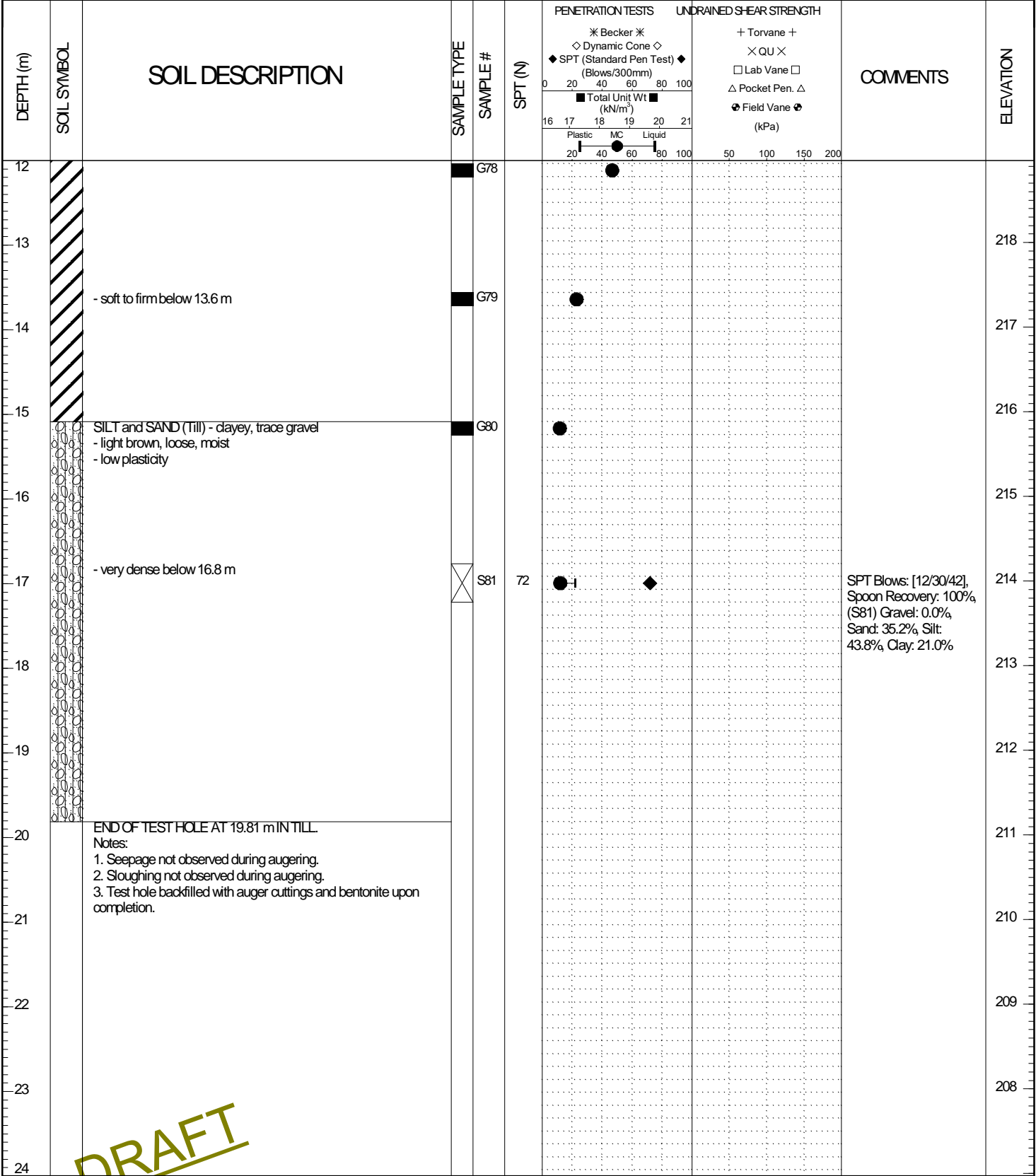
LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED.GPJ UJMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harris	COMPLETION DEPTH: 19.81 m
REVIEWED BY:	COMPLETION DATE: 6/26/19
PROJECT ENGINEER: Jordan Thompson	Page 1 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-08
LOCATION: UTM 14 - 5533718 mN, 634627 mE		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 230.97
SAMPLE TYPE	<input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input checked="" type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



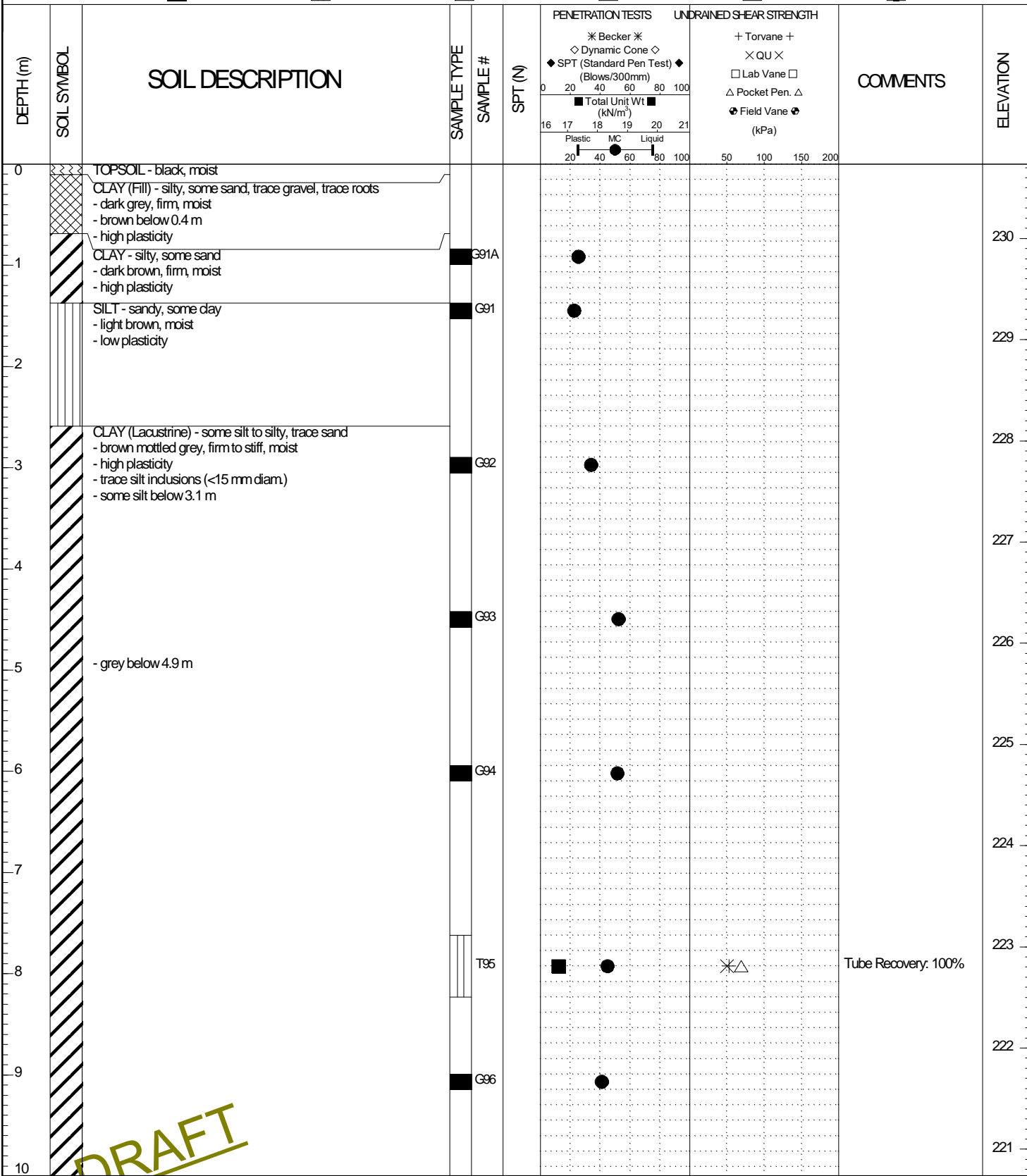
LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED.GPJ UJMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harris	COMPLETION DEPTH: 19.81 m
REVIEWED BY:	COMPLETION DATE: 6/26/19
PROJECT ENGINEER: Jordan Thompson	Page 2 of 2

PROJECT: Jefferson East CSR Works (Contract 5) CLIENT: City of Winnipeg WWD TESTHOLE NO: TH19-10
 LOCATION: UTM 14 - 5533626 m N, 634825 m E PROJECT NO.: 60599385
 CONTRACTOR: Maple Leaf Drilling METHOD: Canterra CT-250 - 125 mm SSA ELEVATION (m): 230.73
 SAMPLE TYPE GRAB SHELBY TUBE SPLIT SPOON BULK NO RECOVERY CORE



LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED GP.J UMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harris COMPLETION DEPTH: 12.19 m
 REVIEWED BY: COMPLETION DATE: 6/27/19
 PROJECT ENGINEER: Jordan Thompson Page 1 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-10
LOCATION: UTM 14 - 5533626 m N, 634825 m E		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Canterra CT-250 - 125 mm SSA	ELEVATION (m): 230.73
SAMPLE TYPE <input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input checked="" 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
10			<input checked="" type="checkbox"/>	G97	●			220
11								219
12			<input checked="" type="checkbox"/>	G98	●			218
13		END OF TEST HOLE AT 12.19 m IN CLAY Notes: 1. Seepage not observed during augering. 2. Sloughing not observed during augering. 3. Test hole backfilled with auger cuttings and bentonite upon completion.						217
14								216
15								215
16								214
17								213
18								212
19								211
20								211

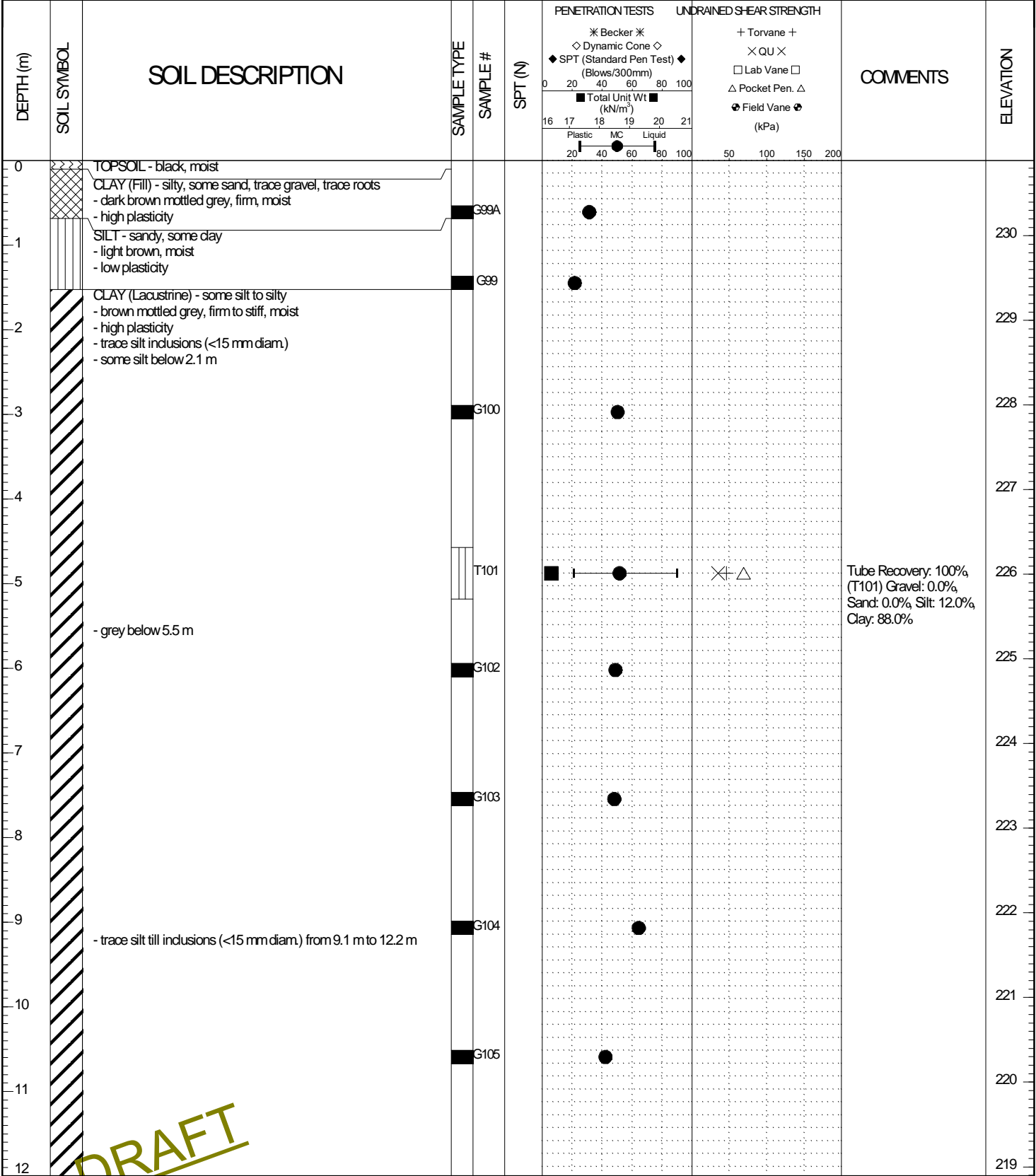
LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED.GPJ UJMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harras	COMPLETION DEPTH: 12.19 m
REVIEWED BY:	COMPLETION DATE: 6/27/19
PROJECT ENGINEER: Jordan Thompson	Page 2 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-11
LOCATION: UTM 14 - 5533577 mN, 634929 mE		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Canterra CT-250 - 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 checked="" type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



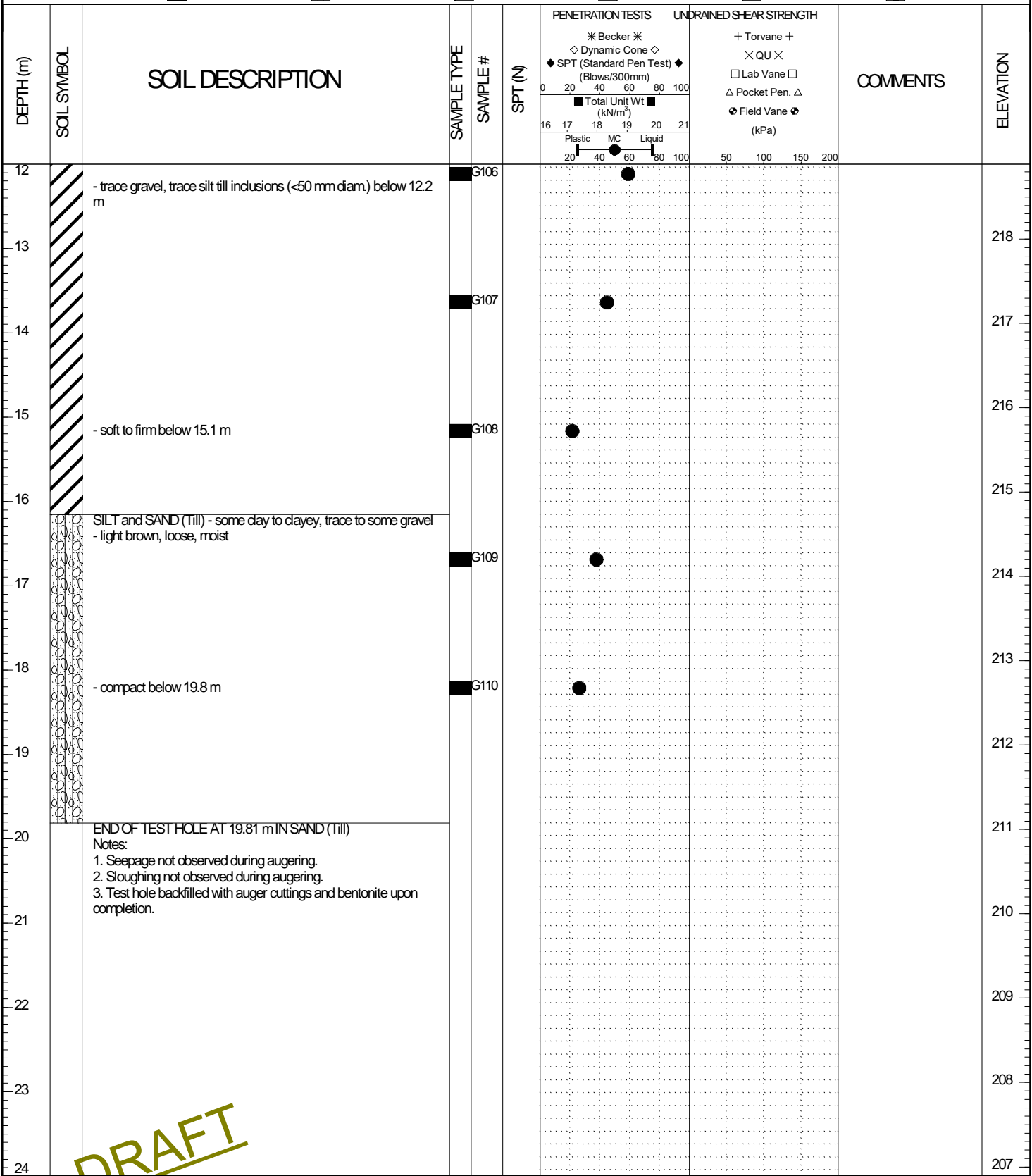
LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED.GPJ UJMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harris	COMPLETION DEPTH: 19.81 m
REVIEWED BY:	COMPLETION DATE: 6/27/19
PROJECT ENGINEER: Jordan Thompson	Page 1 of 2

PROJECT: Jefferson East CSR Works (Contract 5) CLIENT: City of Winnipeg WMD TESTHOLE NO: TH19-11
 LOCATION: UTM 14 - 5533577 mN, 634929 mE PROJECT NO.: 60599385
 CONTRACTOR: Maple Leaf Drilling METHOD: Canterra CT-250 - 125 mm SSA ELEVATION (m): 230.89
 SAMPLE TYPE GRAB SHELBY TUBE SPLIT SPOON BULK NO RECOVERY CORE



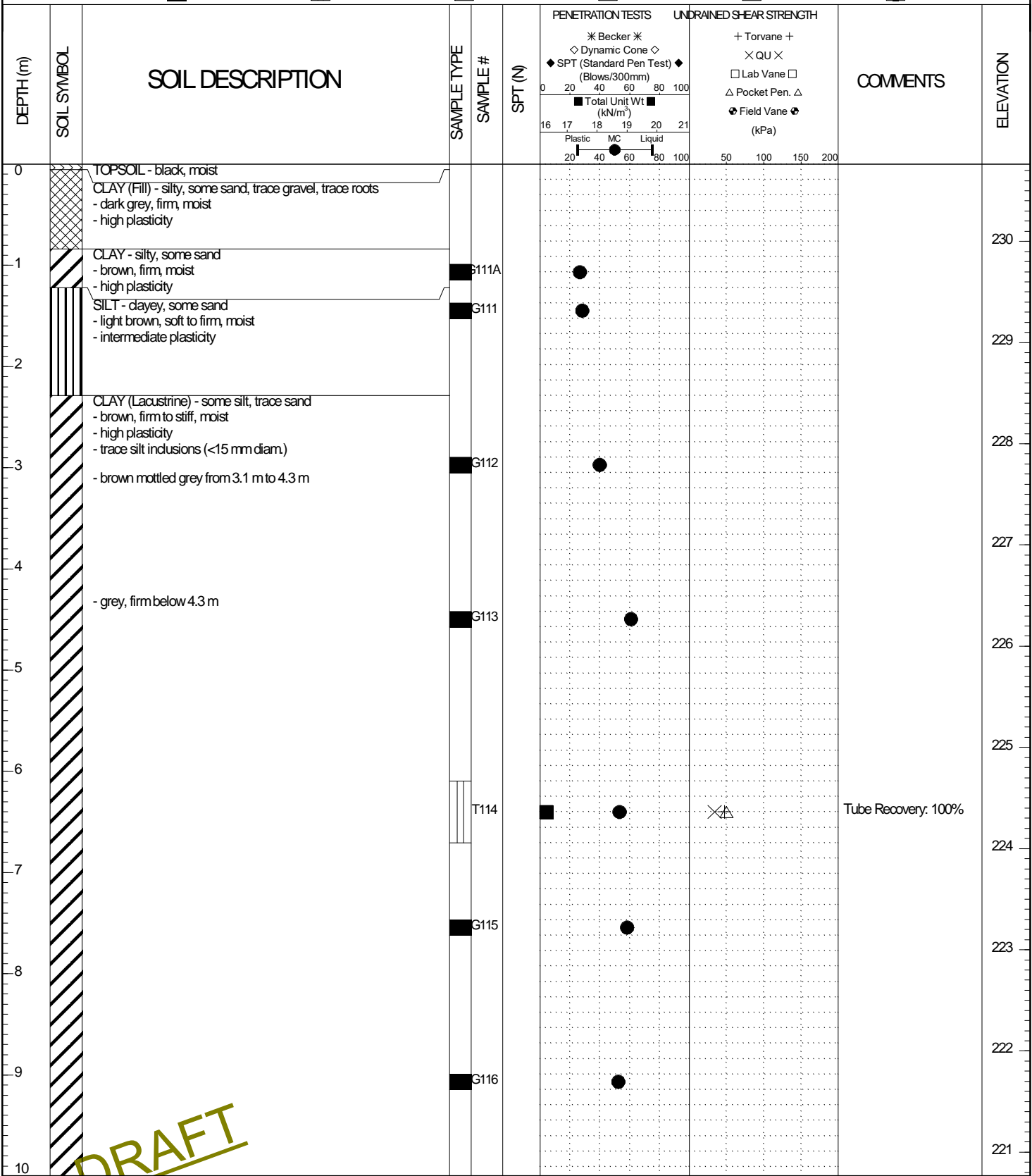
LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED.GPJ UMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harris COMPLETION DEPTH: 19.81 m
 REVIEWED BY: COMPLETION DATE: 6/27/19
 PROJECT ENGINEER: Jordan Thompson Page 2 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WMD	TESTHOLE NO: TH19-12
LOCATION: UTM 14 - 5533542 m N, 635003 m E		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 230.76
SAMPLE TYPE <input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input checked="" type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE		



LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED.GPJ UJMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harris	COMPLETION DEPTH: 12.19 m
REVIEWED BY:	COMPLETION DATE: 6/25/19
PROJECT ENGINEER: Jordan Thompson	Page 1 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-12
LOCATION: UTM 14 - 5533542 mN, 635003 mE		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 230.76
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 #	SPT (N)	PENETRATION TESTS	UNDRAINED SHEAR STRENGTH	COMMENTS	ELEVATION
10									220
11				G117		●			
12				G118		●			219
12.19		END OF TEST HOLE AT 12.19 m IN CLAY							218
13		Notes: 1. Seepage not observed during augering. 2. Sloughing not observed during augering. 3. Test hole backfilled with auger cuttings and bentonite upon completion.							217
14									216
15									215
16									214
17									213
18									212
19									211
20									210

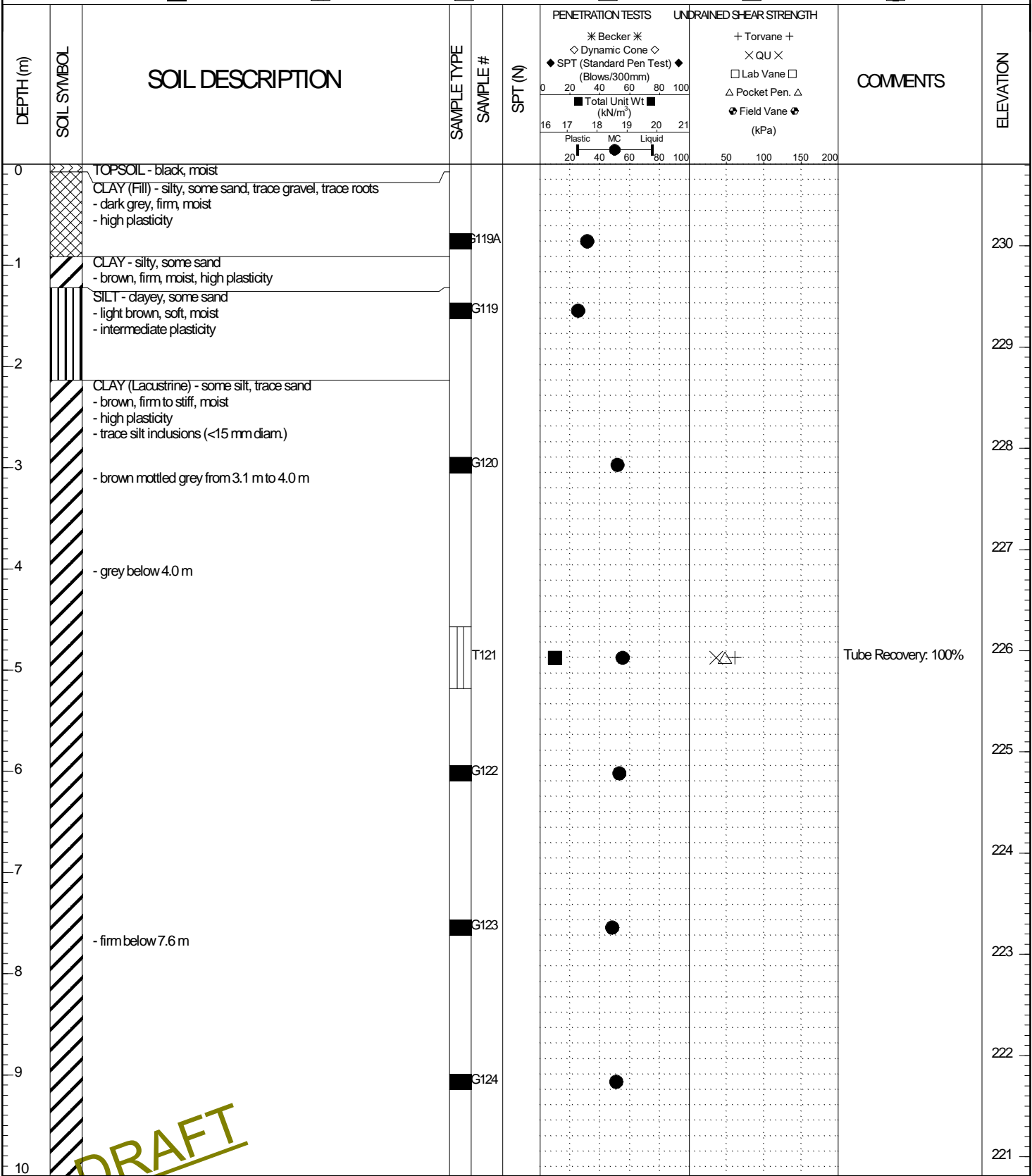
LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED GPJ UJMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harras	COMPLETION DEPTH: 12.19 m
REVIEWED BY:	COMPLETION DATE: 6/25/19
PROJECT ENGINEER: Jordan Thompson	Page 2 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-13
LOCATION: UTM 14 - 5533487 mN, 635121 mE		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 230.81
SAMPLE TYPE <input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input checked="" type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE		



LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED GP.J UMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harris	COMPLETION DEPTH: 12.19 m
REVIEWED BY:	COMPLETION DATE: 6/25/19
PROJECT ENGINEER: Jordan Thompson	Page 1 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-13
LOCATION: UTM 14 - 5533487 mN, 635121 mE		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 230.81
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 #	SPT (N)	PENETRATION TESTS	UNDRAINED SHEAR STRENGTH	COMMENTS	ELEVATION
10									
11			<input checked="" type="checkbox"/>	G125		●			220
12			<input checked="" type="checkbox"/>	G126		●			219
12.19		END OF TEST HOLE AT 12.19 m IN CLAY							
13		Notes: 1. Seepage not observed during augering. 2. Sloughing not observed during augering. 3. Test hole backfilled with auger cuttings and bentonite upon completion.							218
14									217
15									216
16									215
17									214
18									213
19									212
20									211

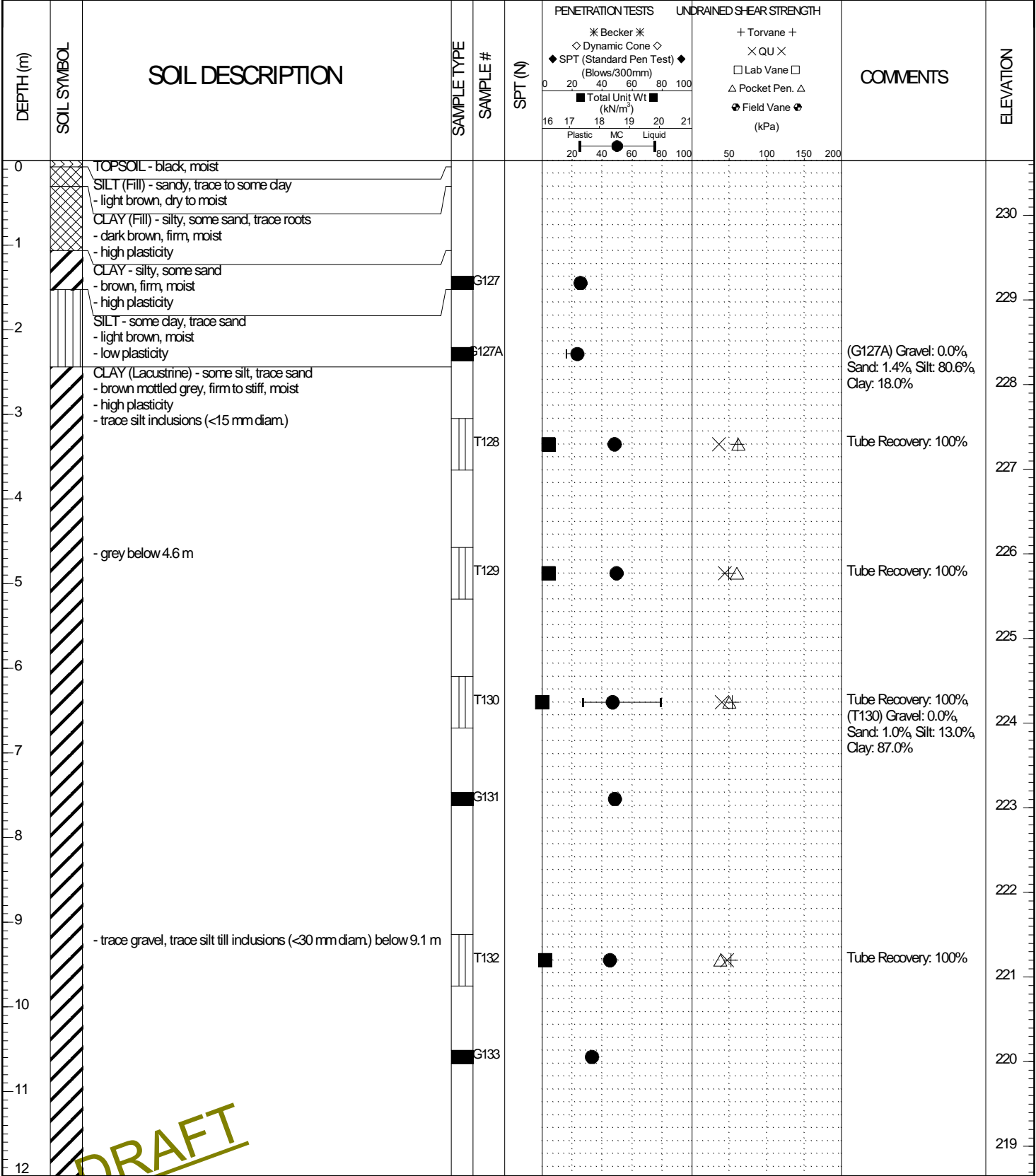
LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED GPJ UJMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harras	COMPLETION DEPTH: 12.19 m
REVIEWED BY:	COMPLETION DATE: 6/25/19
PROJECT ENGINEER: Jordan Thompson	Page 2 of 2

PROJECT: Jefferson East CSR Works (Contract 5) CLIENT: City of Winnipeg WMD TESTHOLE NO: TH19-14
 LOCATION: UTM 14 - 5533421 mN, 635261 mE PROJECT NO.: 60599385
 CONTRACTOR: Maple Leaf Drilling METHOD: Acker MP-5 - 125 mm SSA ELEVATION (m): 230.65
 SAMPLE TYPE GRAB SHELBY TUBE SPLIT SPOON BULK NO RECOVERY CORE



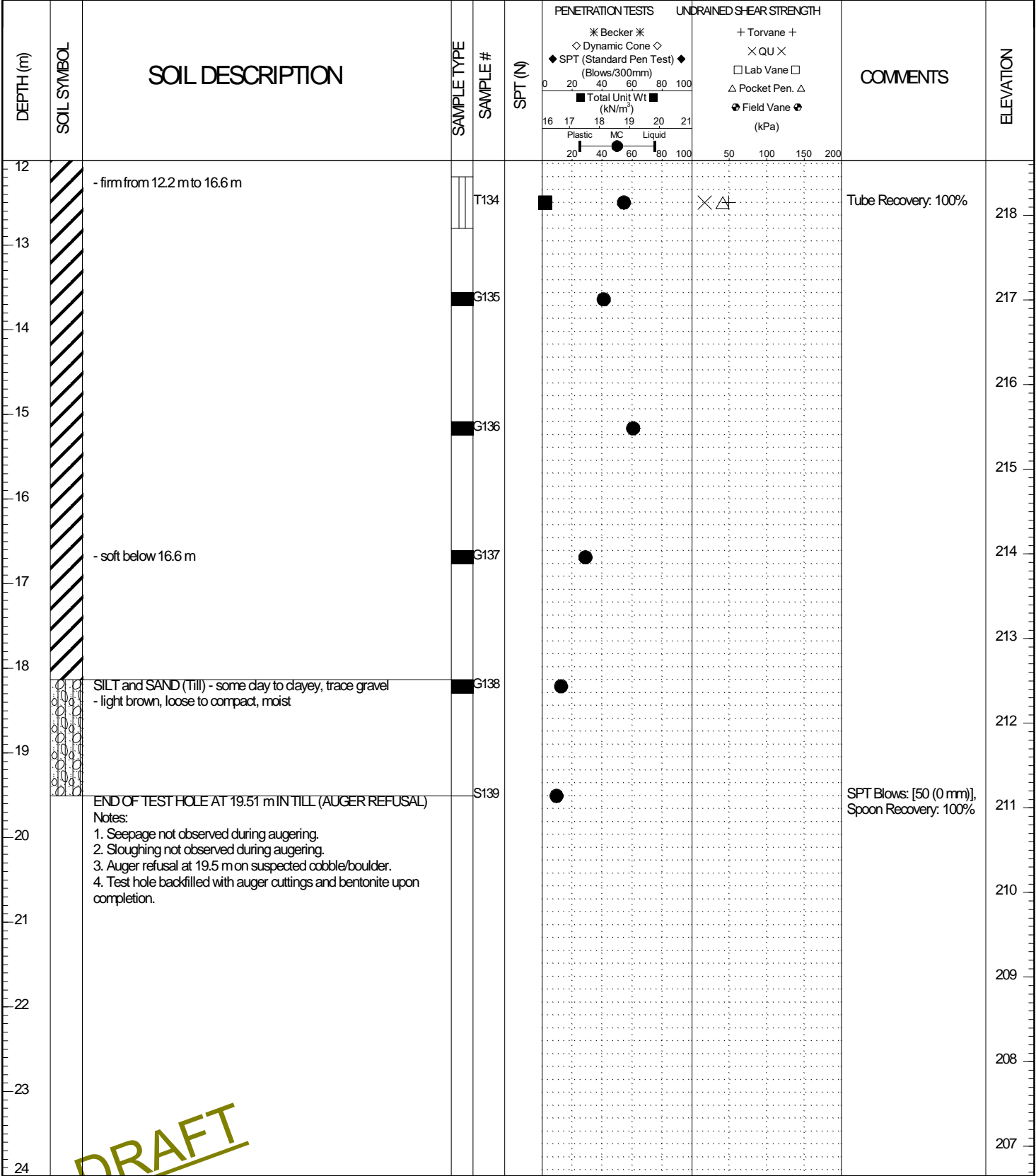
LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED.GPJ UJMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harris COMPLETION DEPTH: 19.51 m
 REVIEWED BY: COMPLETION DATE: 6/25/19
 PROJECT ENGINEER: Jordan Thompson Page 1 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-14
LOCATION: UTM 14 - 5533421 mN, 635261 mE		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 230.65
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	



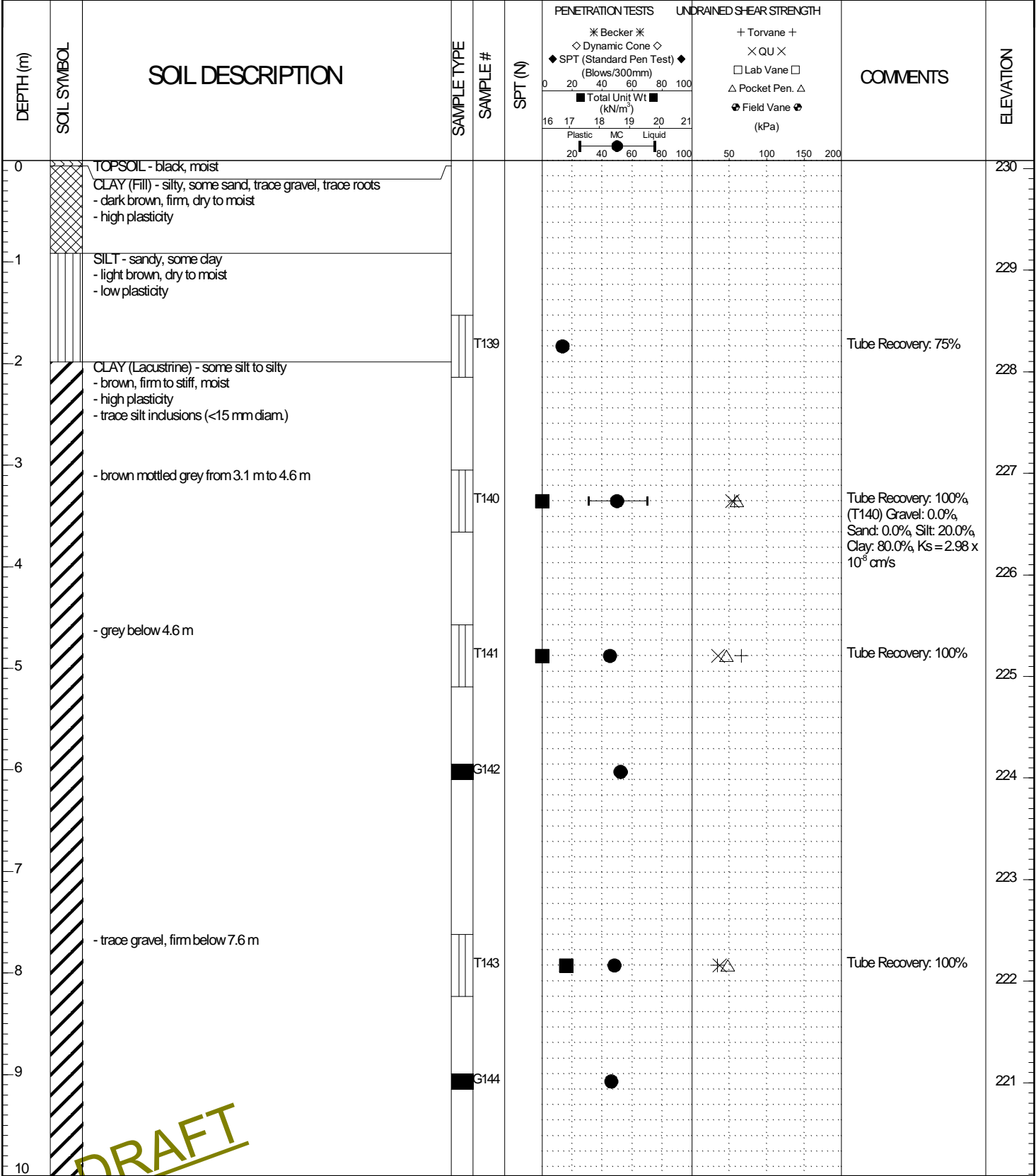
LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED GP.J UMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harris	COMPLETION DEPTH: 19.51 m
REVIEWED BY:	COMPLETION DATE: 6/25/19
PROJECT ENGINEER: Jordan Thompson	Page 2 of 2

PROJECT: Jefferson East CSR Works (Contract 5) CLIENT: City of Winnipeg WMD TESTHOLE NO: TH19-15
 LOCATION: UTM 14 - 5533404 m N, 635298 m E PROJECT NO.: 60599385
 CONTRACTOR: Maple Leaf Drilling METHOD: Acker MP-5 - 125 mm SSA ELEVATION (m): 230.08
 SAMPLE TYPE GRAB SHELBY TUBE SPLIT SPOON BULK NO RECOVERY CORE



LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED.GPJ UMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harris COMPLETION DEPTH: 11.28 m
 REVIEWED BY: COMPLETION DATE: 6/24/19
 PROJECT ENGINEER: Jordan Thompson Page 1 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-15
LOCATION: UTM 14 - 5533404 m N, 635298 m E		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 230.08
SAMPLE TYPE <input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input checked="" type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE		

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	SPT (N)	PENETRATION TESTS	UNDRAINED SHEAR STRENGTH	COMMENTS	ELEVATION
10									220
11				T145		●		Tube Recovery: 54%	219
12		END OF TEST HOLE AT 11.28 m IN CLAY Notes: 1. Seepage not observed during augering. 2. Sloughing not observed during augering. 3. Test hole backfilled with auger cuttings and bentonite upon completion.							218
13									217
14									216
15									215
16									214
17									213
18									212
19									211
20									210

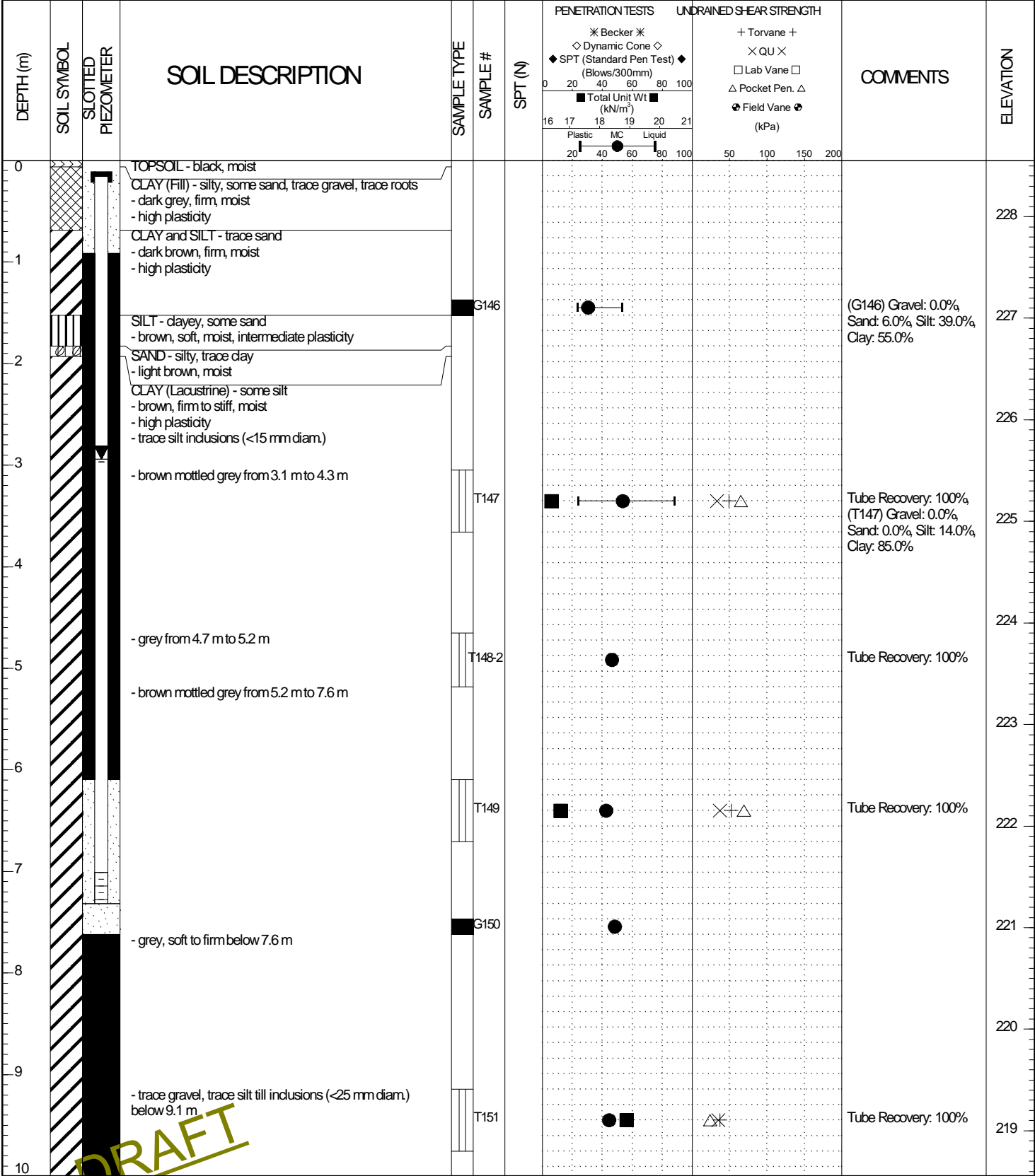
LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED GPJ UMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harras	COMPLETION DEPTH: 11.28 m
REVIEWED BY:	COMPLETION DATE: 6/24/19
PROJECT ENGINEER: Jordan Thompson	Page 2 of 2

PROJECT: Jefferson East CSR Works (Contract 5)		CLIENT: City of Winnipeg WWD		TESTHOLE NO: TH19-16			
LOCATION: UTM 14 - 5533376 mN, 635357 mE				PROJECT NO.: 60593385			
CONTRACTOR: Maple Leaf Drilling		METHOD: Aker MP-5 - 125 mm SSA		ELEVATION (m): 228.55			
SAMPLE TYPE		GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE		BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



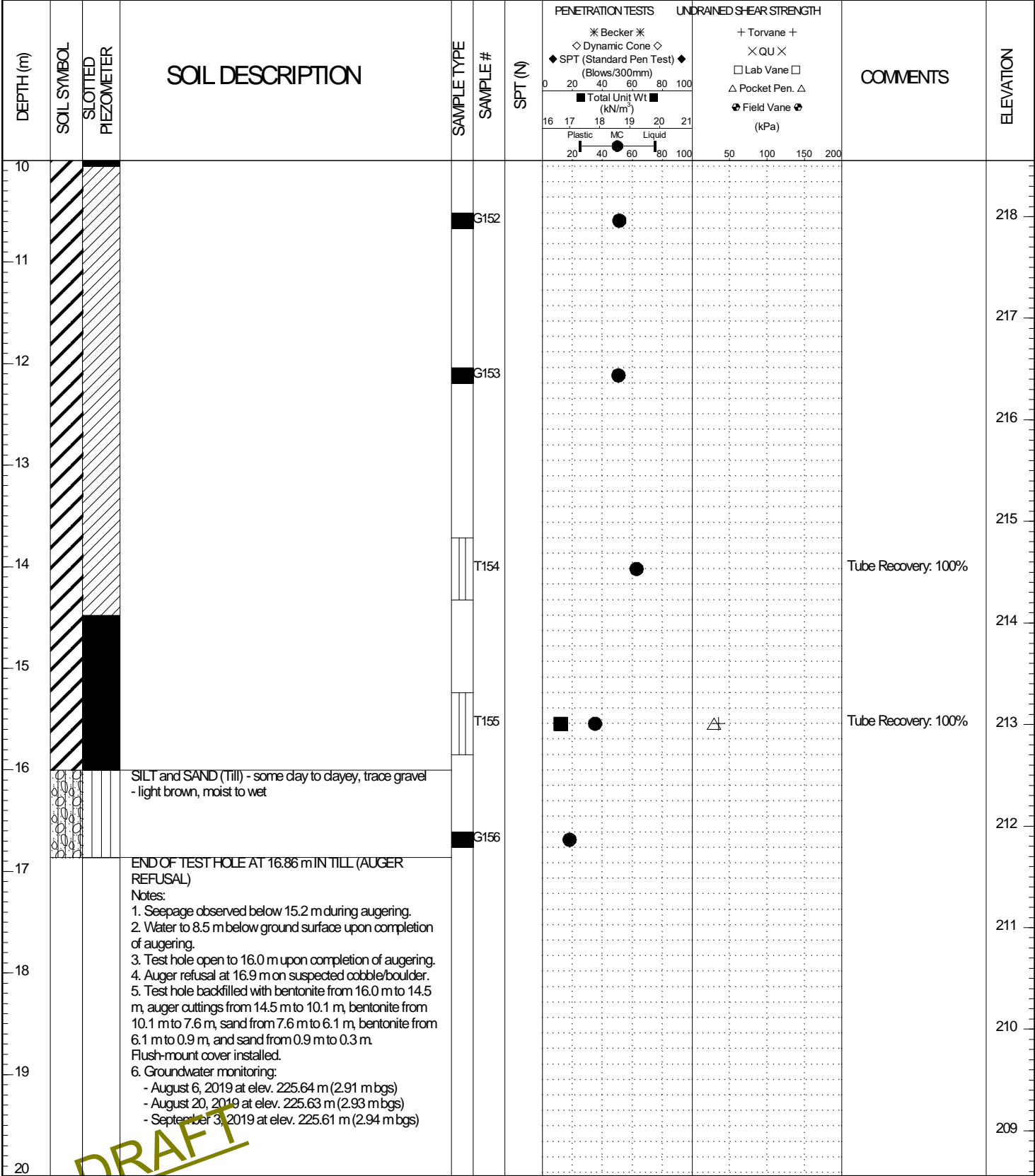
LOG OF TEST HOLE DRAFT 60593385 - TEST HOLE LOGS - ALL COMBINED GP.J UMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harris	COMPLETION DEPTH: 16.86 m
REVIEWED BY:	COMPLETION DATE: 6/24/19
PROJECT ENGINEER: Jordan Thompson	Page 1 of 2

PROJECT: Jefferson East CSR Works (Contract 5)		CLIENT: City of Winnipeg WWD		TESTHOLE NO: TH19-16		
LOCATION: UTM 14 - 5533376 mN, 635357 mE				PROJECT NO.: 60593385		
CONTRACTOR: Maple Leaf Drilling			METHOD: Acker MP-5 - 125 mm SSA		ELEVATION (m): 228.55	
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



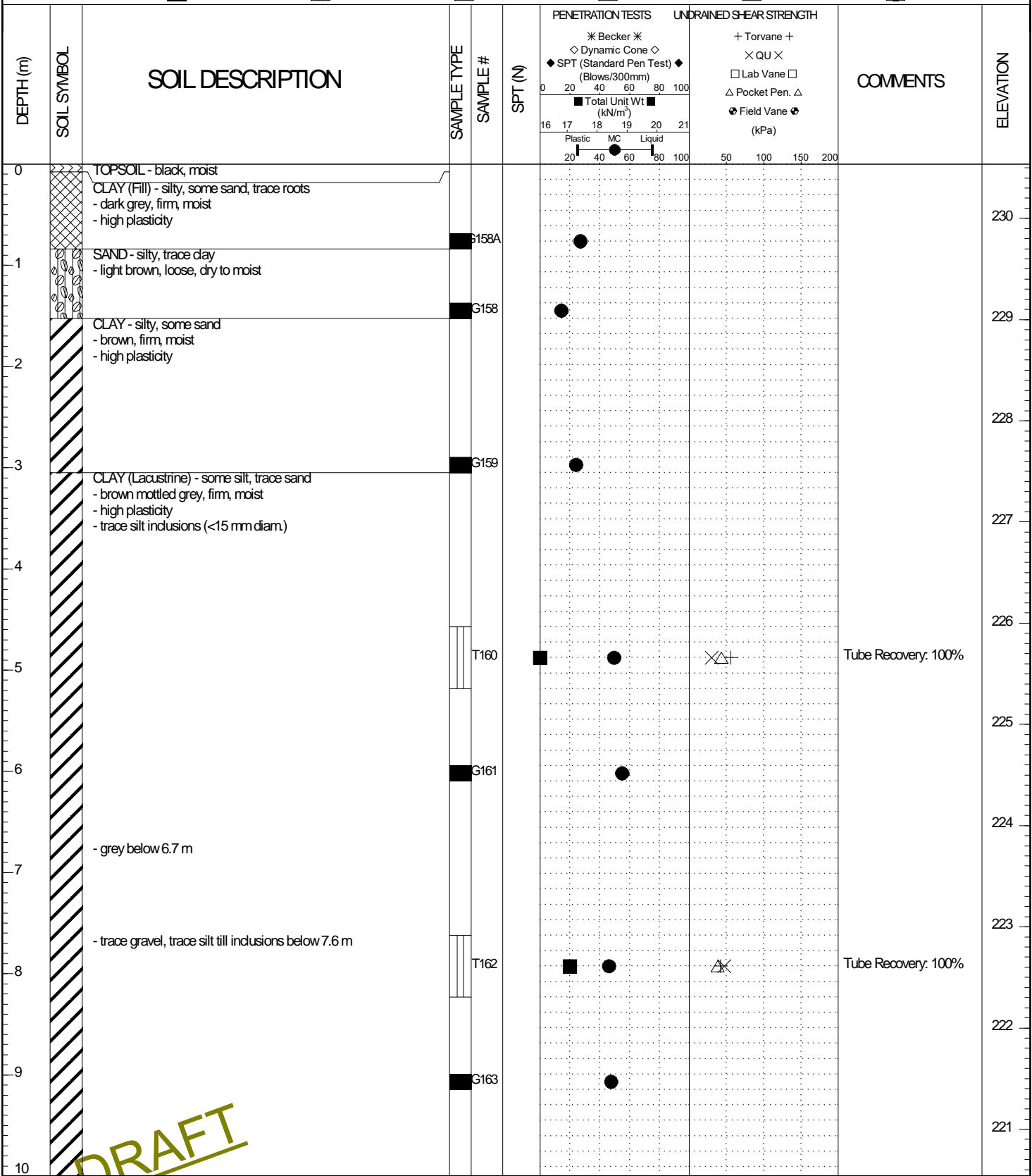
LOG OF TEST HOLE DRAFT 60593385 - TEST HOLE LOGS - ALL COMBINED.GPJ UMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harris	COMPLETION DEPTH: 16.86 m
REVIEWED BY:	COMPLETION DATE: 6/24/19
PROJECT ENGINEER: Jordan Thompson	Page 2 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-17
LOCATION: UTM 14 - 5533349 m N, 635414 m E		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 230.54
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 DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED GP.J UMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harris	COMPLETION DEPTH: 11.28 m
REVIEWED BY:	COMPLETION DATE: 6/24/19
PROJECT ENGINEER: Jordan Thompson	Page 1 of 2

PROJECT: Jefferson East CSR Works (Contract 5)	CLIENT: City of Winnipeg WWD	TESTHOLE NO: TH19-17
LOCATION: UTM 14 - 5533349 m N, 635414 m E		PROJECT NO.: 60599385
CONTRACTOR: Maple Leaf Drilling	METHOD: Acker MP-5 - 125 mm SSA	ELEVATION (m): 230.54
SAMPLE TYPE <input checked="" type="checkbox"/> GRAB <input type="checkbox"/> SHELBY TUBE <input checked="" type="checkbox"/> SPLIT SPOON <input checked="" type="checkbox"/> BULK <input checked="" type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE		

DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	SPT (N)	PENETRATION TESTS	UNDRAINED SHEAR STRENGTH	COMMENTS	ELEVATION
10									220
11				T164				Tube Recovery: 100%	219
12		END OF TEST HOLE AT 11.28 m IN CLAY Notes: 1. Seepage not observed during augering. 2. Sloughing not observed during augering. 3. Test hole backfilled with auger cuttings and bentonite upon completion.							218
13									217
14									216
15									215
16									214
17									213
18									212
19									211
20									210

LOG OF TEST HOLE DRAFT 60599385 - TEST HOLE LOGS - ALL COMBINED GPJ UMA WINN.GDT 10/15/19

DRAFT



LOGGED BY: Ryan Harris	COMPLETION DEPTH: 11.28 m
REVIEWED BY:	COMPLETION DATE: 6/24/19
PROJECT ENGINEER: Jordan Thompson	Page 2 of 2

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 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/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		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.								218
13-14										217
14-15										216

LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINNI.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 11-02
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

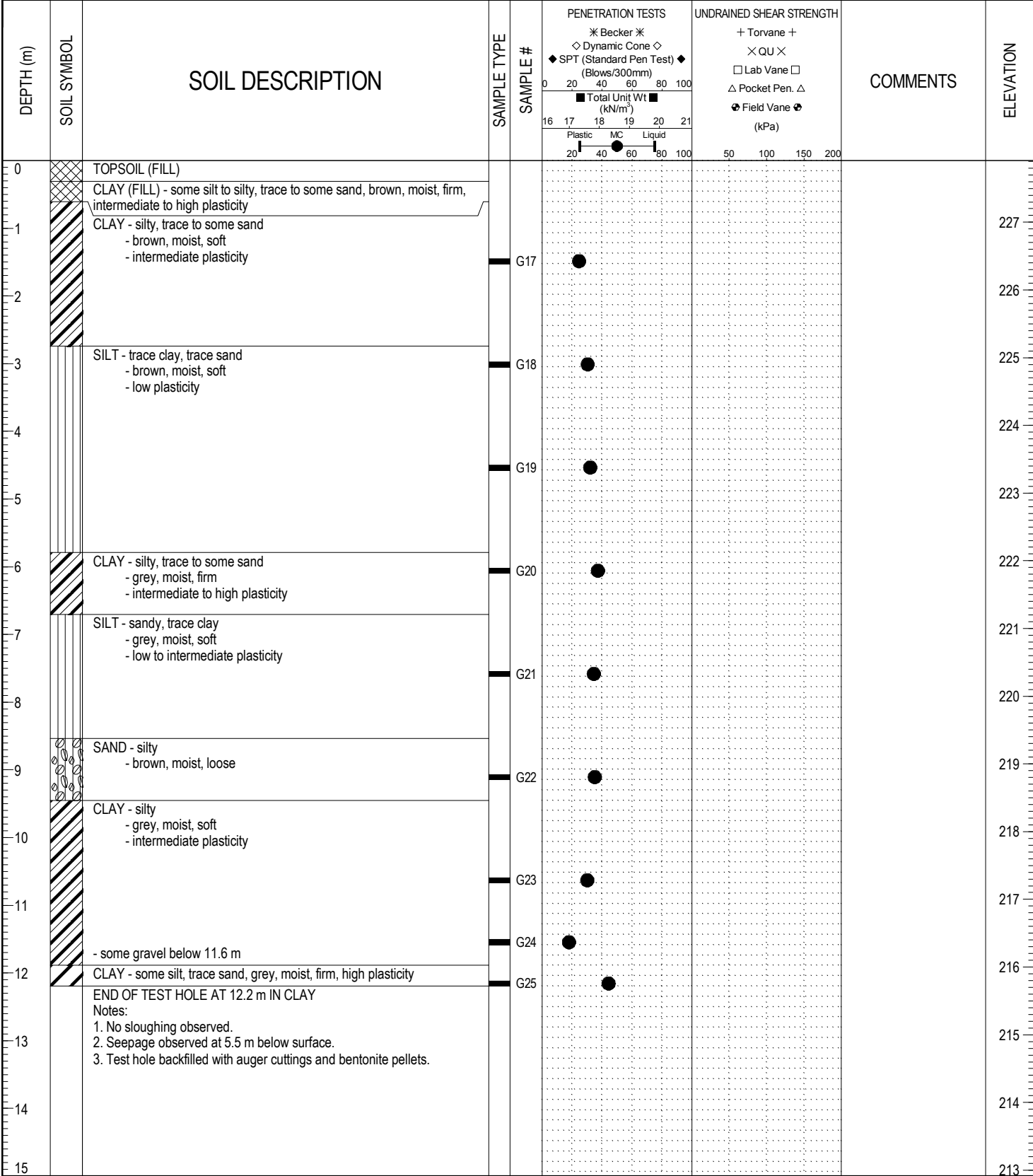
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	ELEVATION
					SPT (Standard Pen Test) (Blows/300mm)	Total Unit Wt (kN/m ³)	Lab Vane	Field Vane		
0		TOPSOIL (FILL)								
0-1		CLAY (FILL) - some silt to silty, trace to some sand, brown, 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
13-15		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

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 GRAB SHELBY TUBE SPLIT SPOON BULK NO RECOVERY CORE

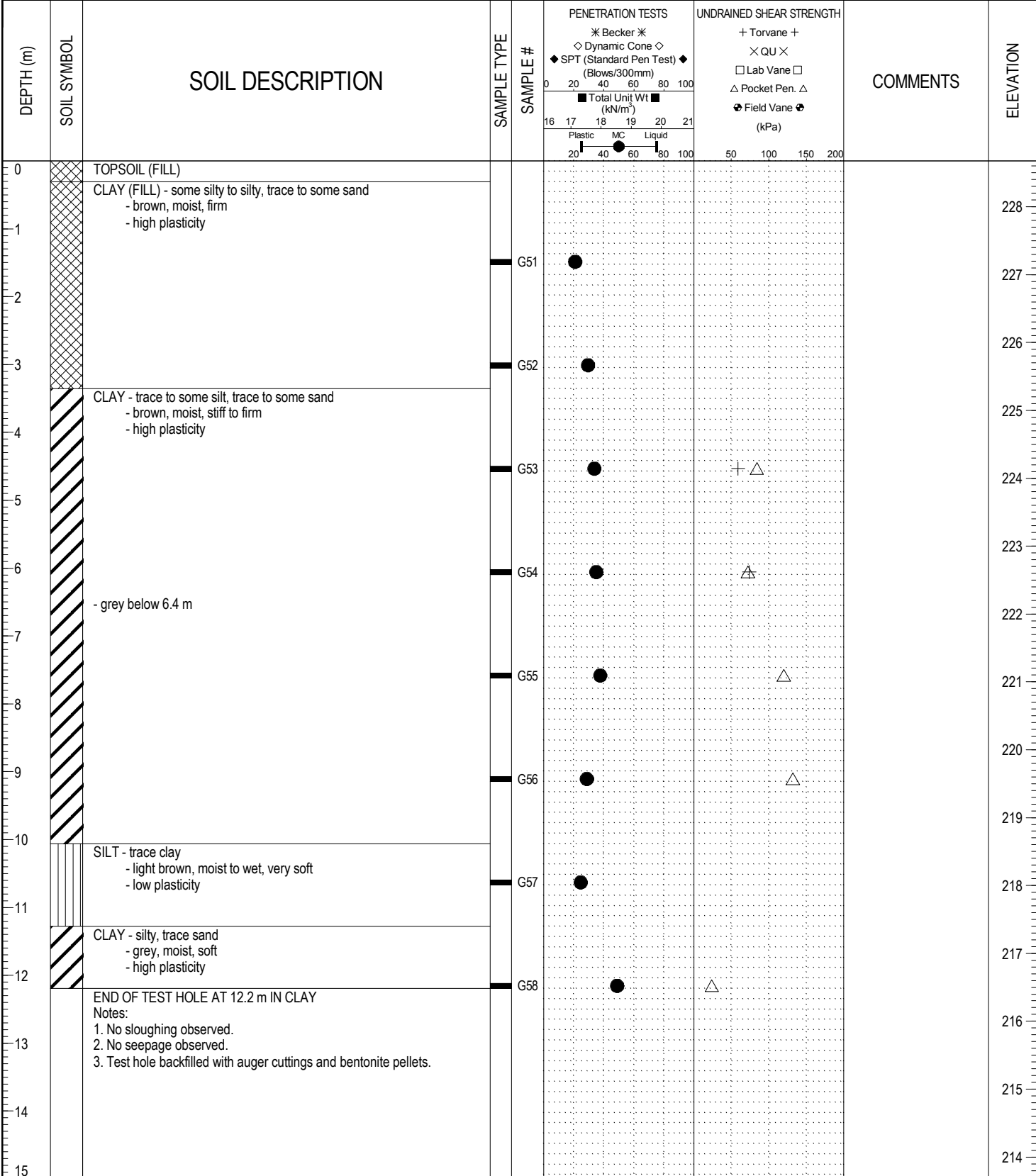


LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



LOGGED BY: Stephen Petsche COMPLETION DEPTH: 12.19 m
 REVIEWED BY: Jared Baldwin COMPLETION DATE: 12/12/11
 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 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 11-05
 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

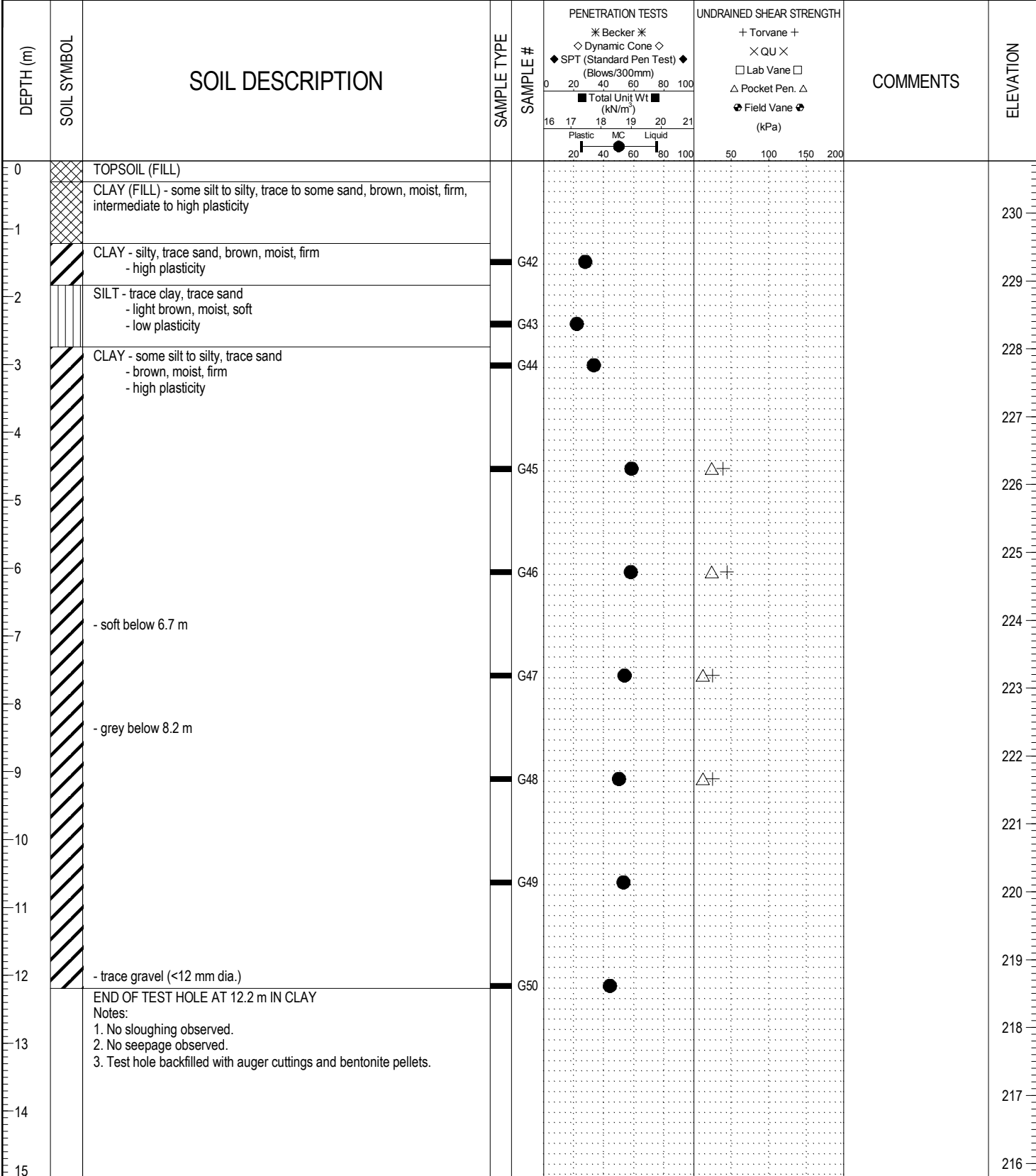
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	ELEVATION
					SPT (Standard Pen Test) (Blows/300mm)	Total Unit Wt (kN/m ³)	+	+		
0		TOPSOIL (FILL)								229
0		CLAY (FILL) - some silt to silty, trace to some sand, brown, moist, firm,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

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 type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

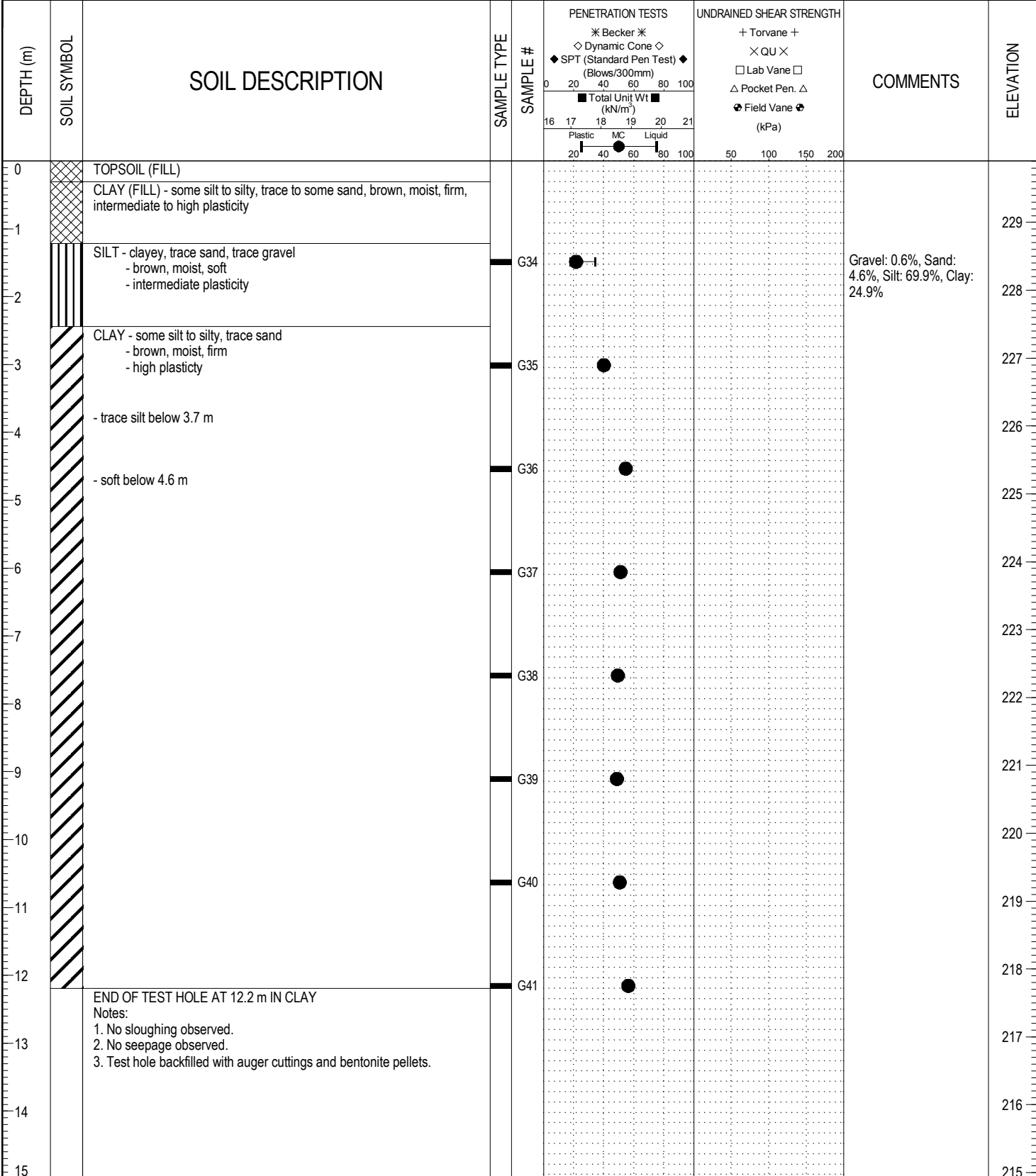


LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



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 11-07
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 checked="" type="checkbox"/> SPLIT SPOON <input type="checkbox"/> BULK <input type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	



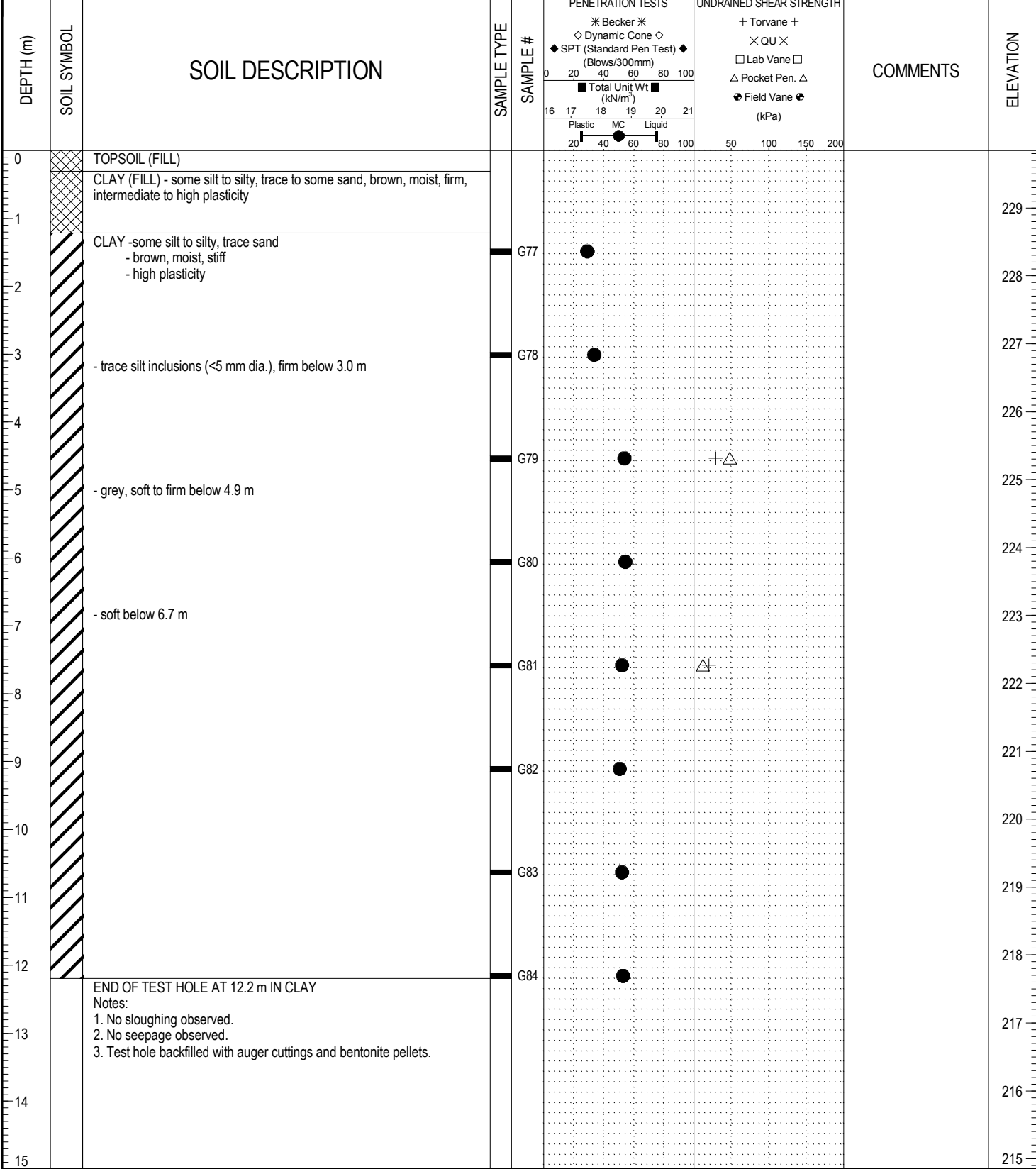
LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



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

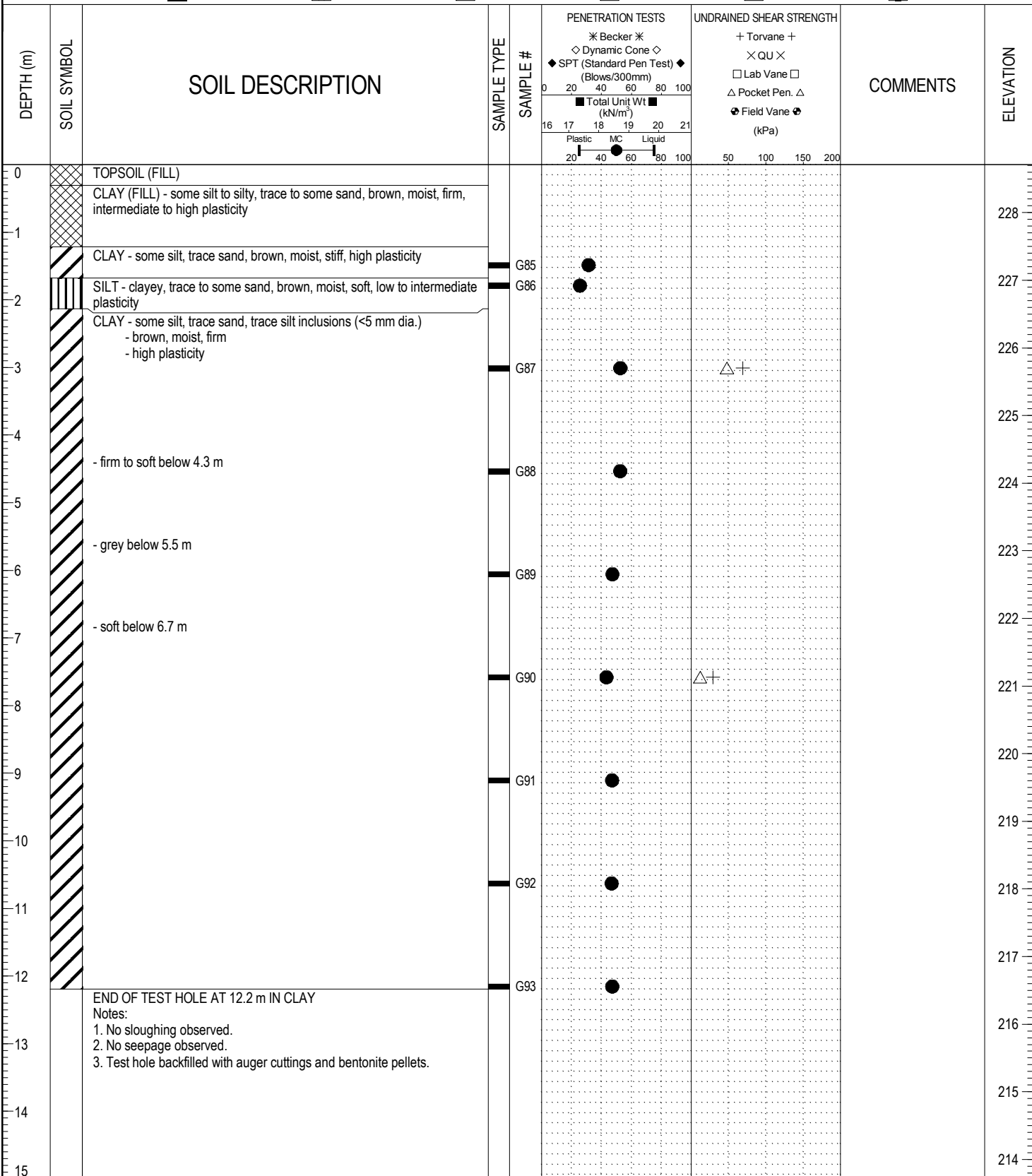


LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



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 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 11-10
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 type="checkbox"/> NO RECOVERY <input type="checkbox"/> CORE	

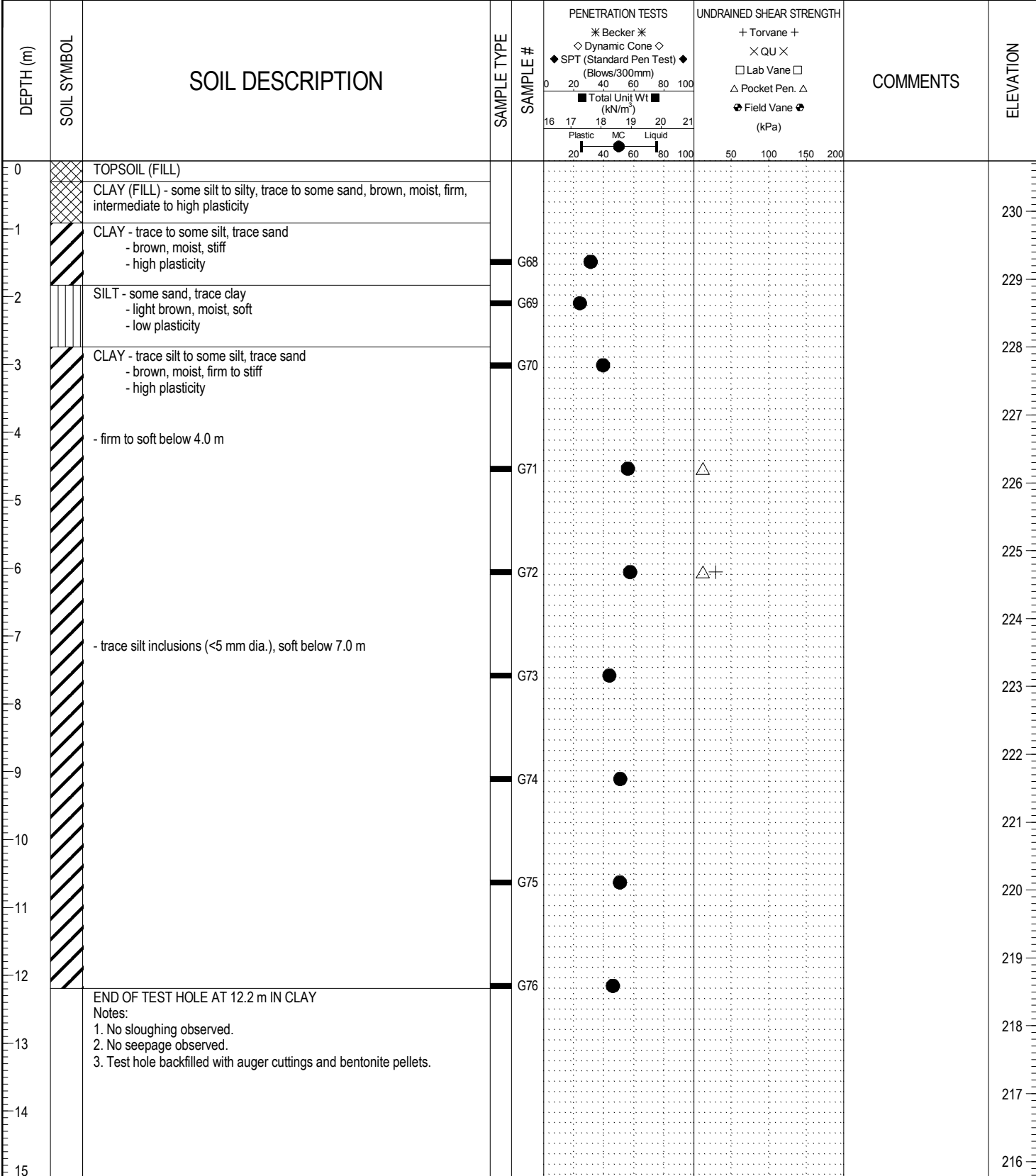
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	ELEVATION
					* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) ■ Total Unit Wt (kN/m ³)	+ Torvane + × QU × □ Lab Vane □ △ Pocket Pen. △ ⊗ Field Vane ⊗ (kPa)				
0		TOPSOIL (FILL)								
0-1		CLAY (FILL) - some silt to silty, trace to some sand, brown, moist, firm, intermediate to high plasticity								230
1-2		CLAY - some silt to silty, trace sand, brown, moist, firm - high plasticity		G94	●					229
2-3		SILT - trace to some clay, trace sand - light brown, moist, soft - low plasticity		G95	●					228
3-4		CLAY - trace to some silt, trace sand - brown, moist, firm - high plasticity		G96	●					227
4-12		- grey, soft below 4.0 m		G97	●		△			226
				G98	●		△			225
				G99	●		△			224
				G100	●					223
				G101	●					222
				G102	●					221
12		END OF TEST HOLE AT 12.2 m IN CLAY								220
13		Notes: 1. No sloughing observed. 2. No seepage observed. 3. Test hole backfilled with auger cuttings and bentonite pellets.								219
14										218
15										217
										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: 12/14/11
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	

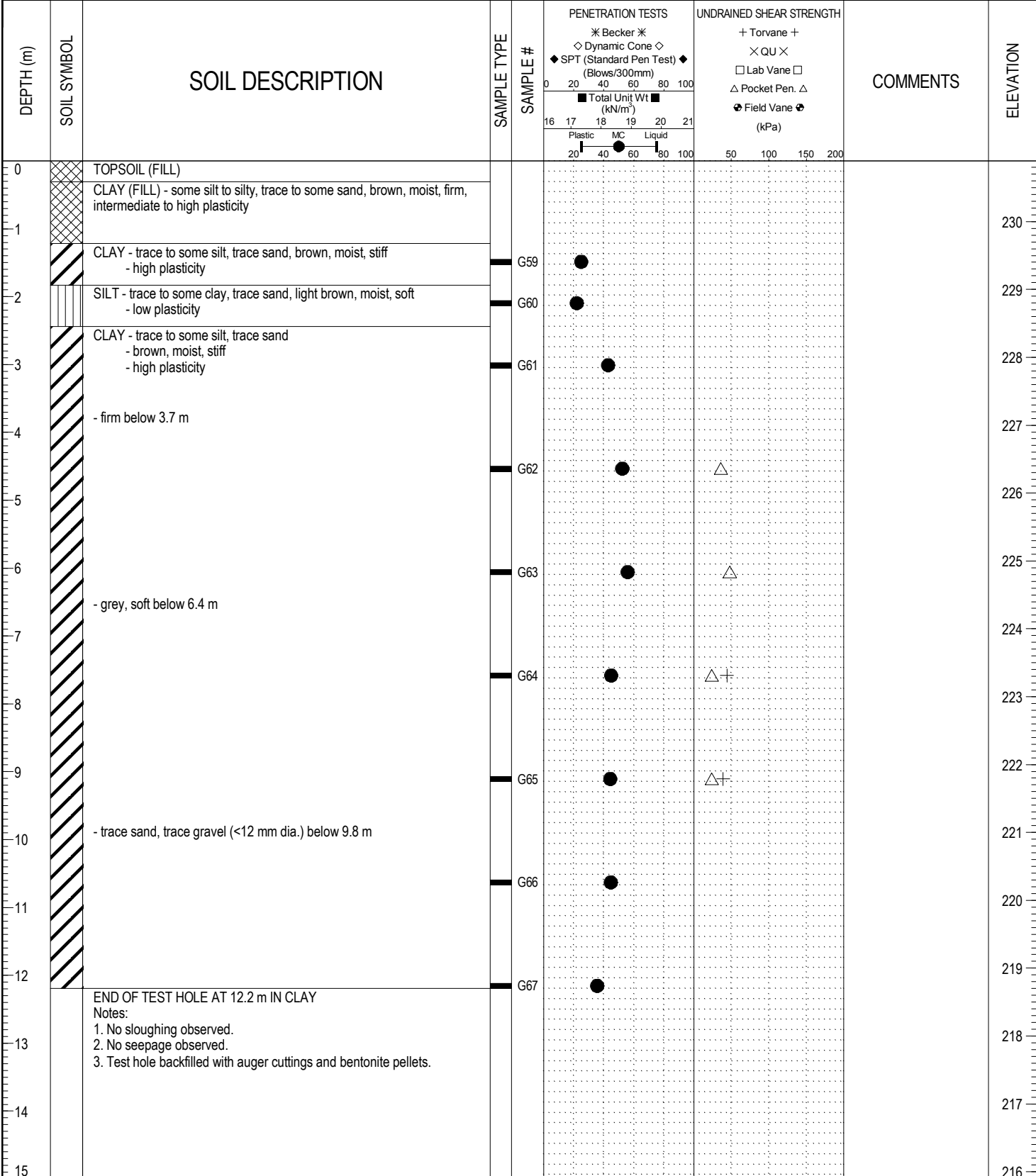


LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



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	

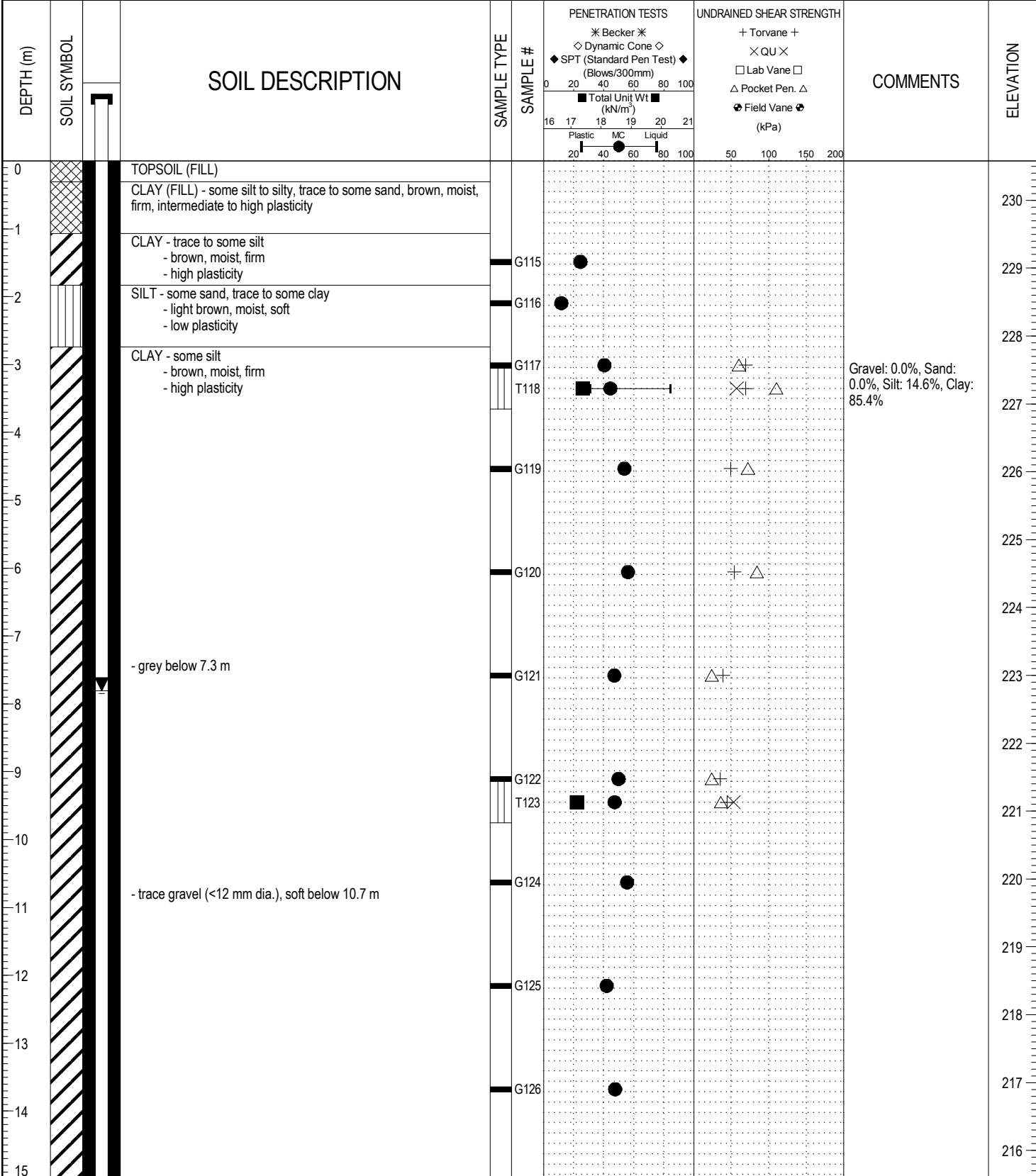


LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



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

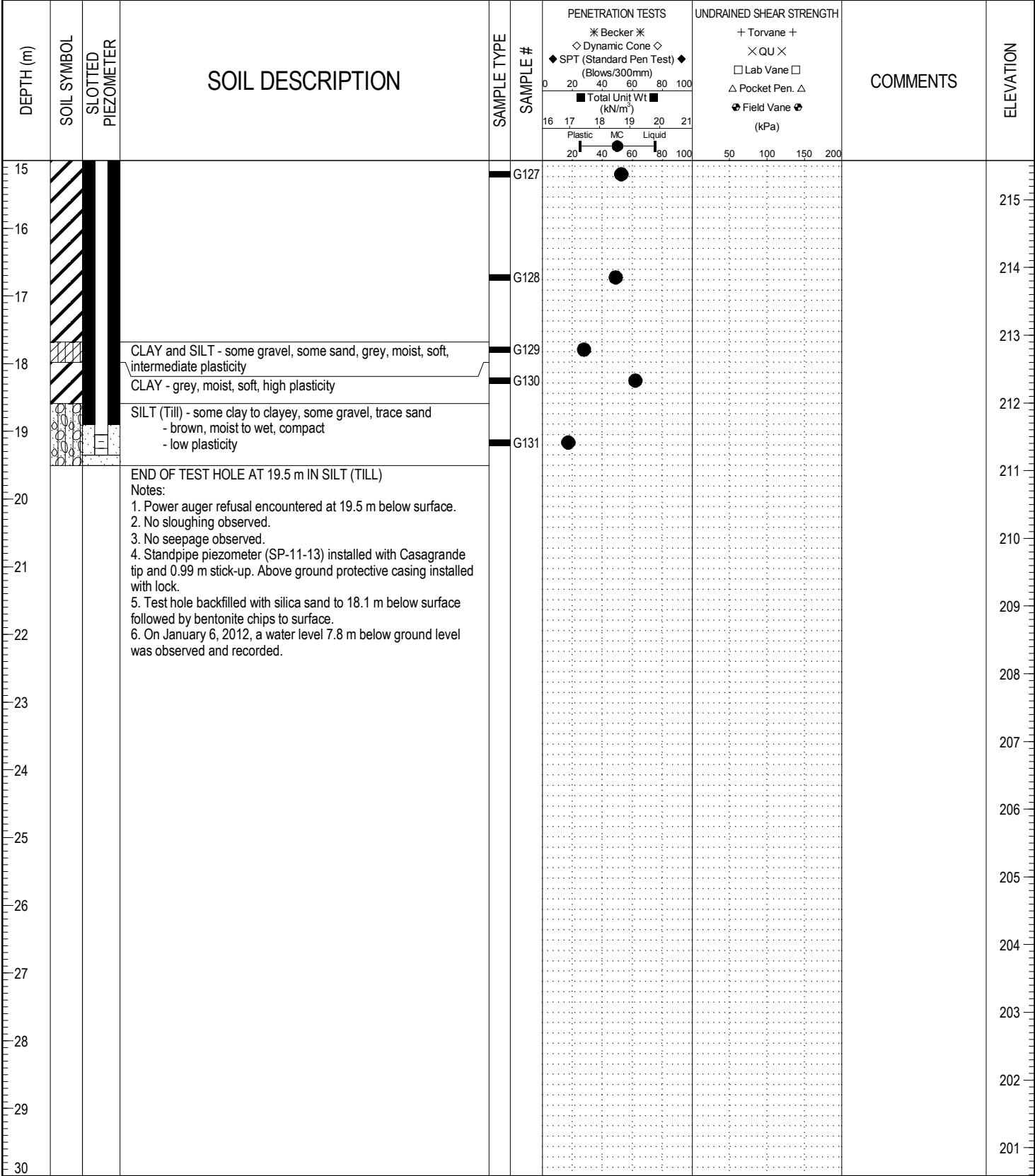


LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINN.GDT 1/23/12



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

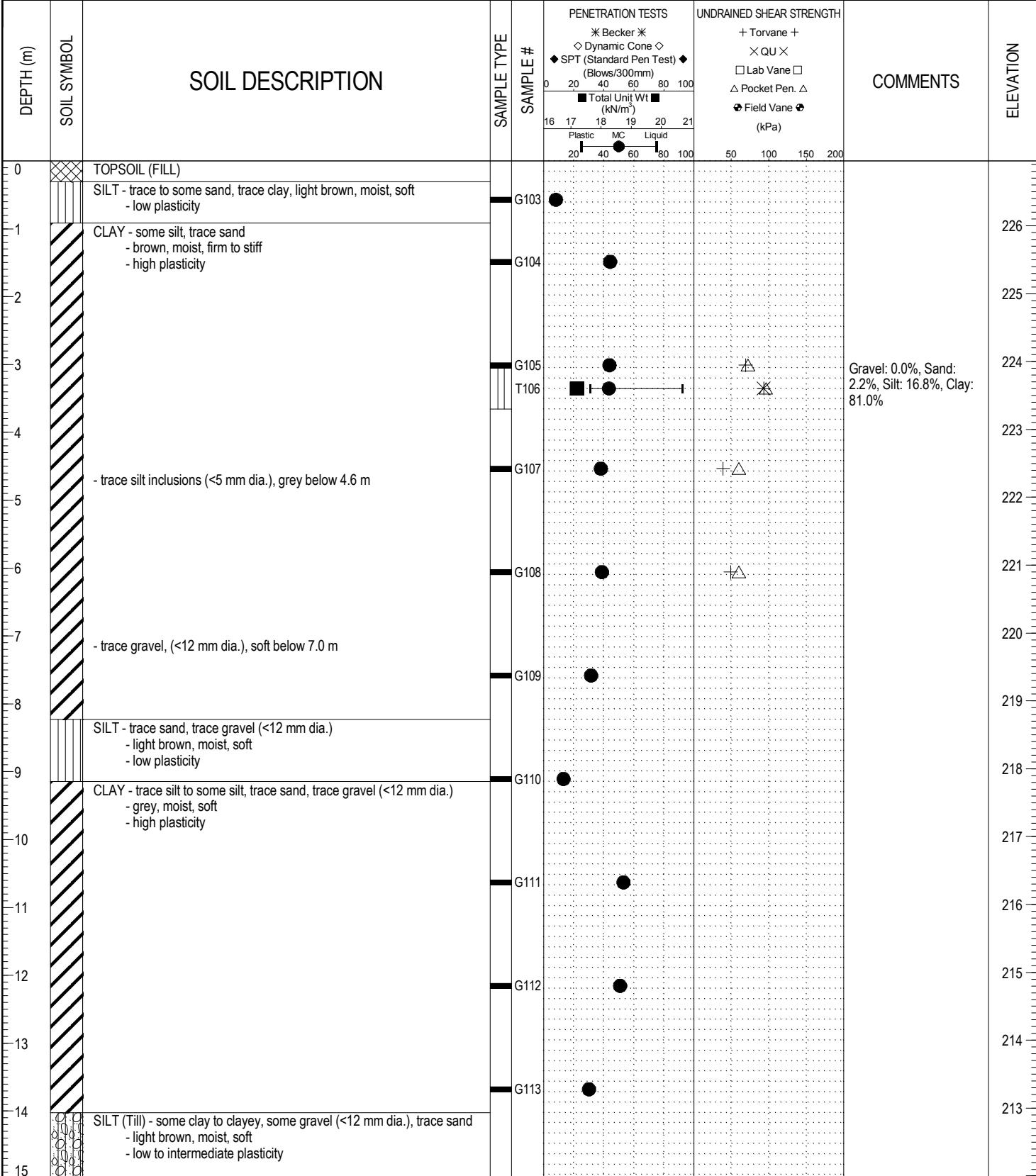


LOG OF TEST HOLE JEFFERSON EAST LOGS.GPJ UMA WINNI.GDT 1/23/12



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 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	

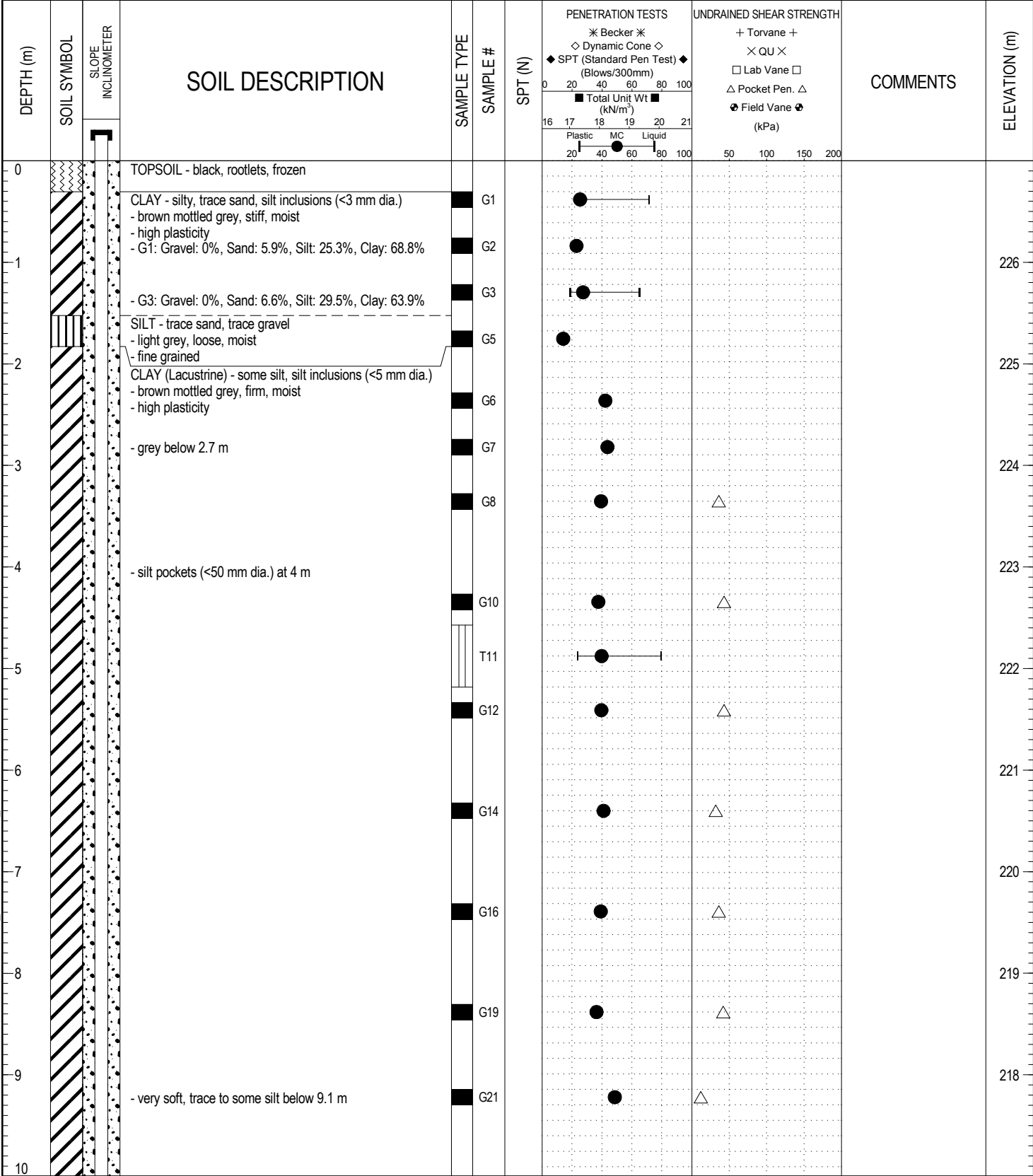
DEPTH (m)	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	PENETRATION TESTS	UNDRAINED SHEAR STRENGTH	COMMENTS	ELEVATION	
15	●	END OF TEST HOLE AT 15.5 m IN SILT (TILL) Notes: 1. Power auger refusal encountered at 15.5 m below surface. 2. No sloughing observed. 3. No seepage observed. 4. Test hole backfilled 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 × <input type="checkbox"/> Lab Vane <input type="checkbox"/> △ 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

PROJECT: Jefferson East CSR - Sample Outfall		CLIENT: City of Winnipeg		TESTHOLE NO: S115-01		
LOCATION: North of the Proposed Outfall Pipe, 4 m West of Lower Slope				PROJECT NO.: 60219315		
CONTRACTOR: Maple Leaf Drilling Ltd.		METHOD: MP5 Track Mounted-125mm SSA/HQ Barrel		ELEVATION (m): 227.00		
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND

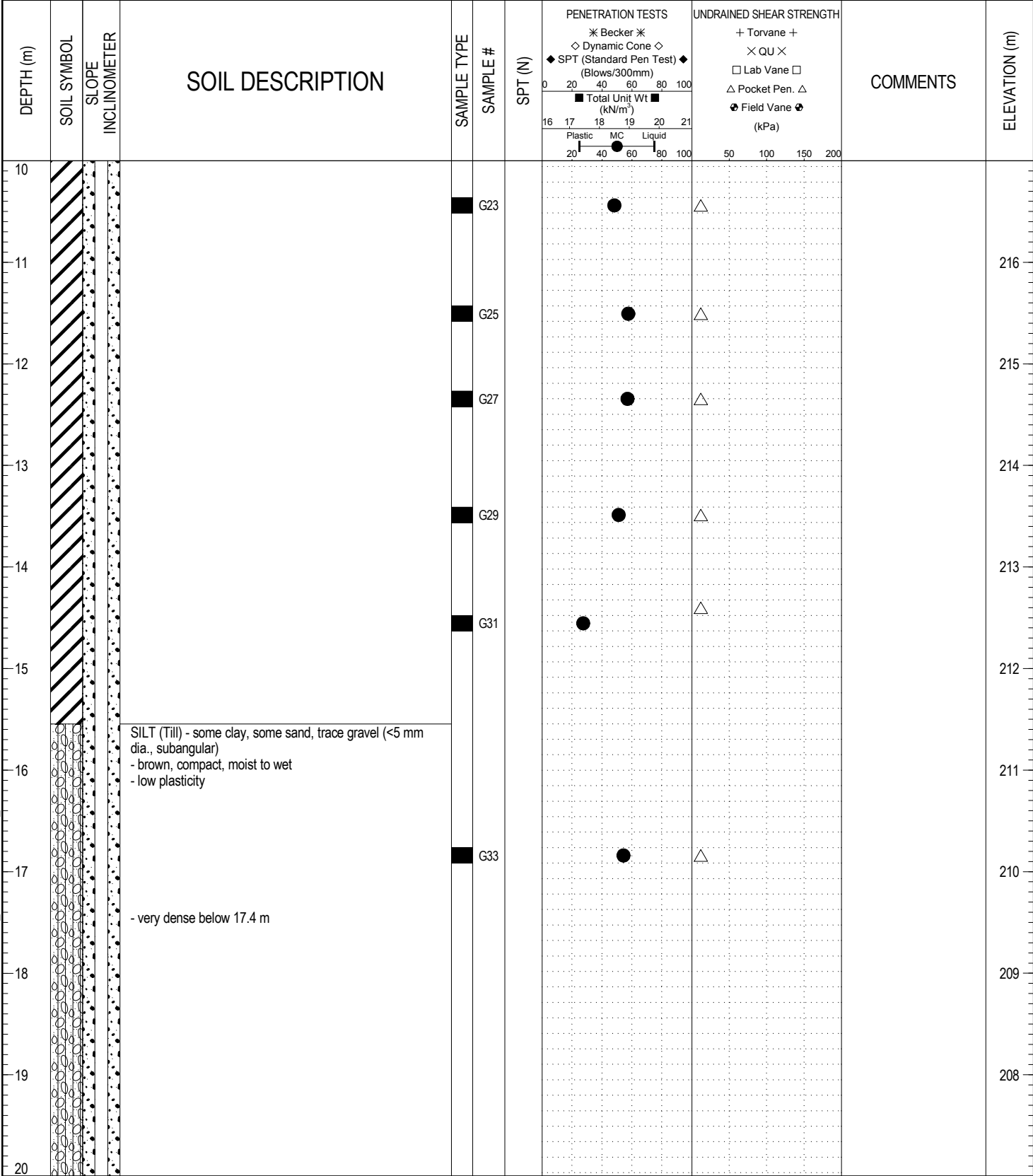


LOG OF TEST HOLE JEFFERSON CSR - SAMPLE OUTFALL TEST HOLE LOGS_REV 02.GPJ UMA WINNI.GDT 10/26/15



LOGGED BY: Mustafa Alkiki	COMPLETION DEPTH: 22.61 m
REVIEWED BY: Zeyad Shukri	COMPLETION DATE: 2/24/15
PROJECT ENGINEER: Eymond Toupin	Page 1 of 3

PROJECT: Jefferson East CSR - Sample Outfall		CLIENT: City of Winnipeg		TESTHOLE NO: S115-01		
LOCATION: North of the Proposed Outfall Pipe, 4 m West of Lower Slope				PROJECT NO.: 60219315		
CONTRACTOR: Maple Leaf Drilling Ltd.		METHOD: MP5 Track Mounted-125mm SSA/HQ Barrel		ELEVATION (m): 227.00		
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



LOG OF TEST HOLE JEFFERSON CSR - SAMPLE OUTFALL TEST HOLE LOGS - REV 02.GPJ UMA WINN.GDT 10/26/15



LOGGED BY: Mustafa Alkiki	COMPLETION DEPTH: 22.61 m
REVIEWED BY: Zeyad Shukri	COMPLETION DATE: 2/24/15
PROJECT ENGINEER: Eymond Toupin	Page 2 of 3

PROJECT: Jefferson East CSR - Sample Outfall	CLIENT: City of Winnipeg	TESTHOLE NO: SI15-01
LOCATION: North of the Proposed Outfall Pipe, 4 m West of Lower Slope		PROJECT NO.: 60219315
CONTRACTOR: Maple Leaf Drilling Ltd.	METHOD: MP5 Track Mounted-125mm SSA/HQ Barrel	ELEVATION (m): 227.00
SAMPLE TYPE	<input 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 type="checkbox"/> BENTONITE <input type="checkbox"/> GRAVEL <input type="checkbox"/> SLOUGH <input type="checkbox"/> GROUT <input type="checkbox"/> CUTTINGS <input type="checkbox"/> SAND	

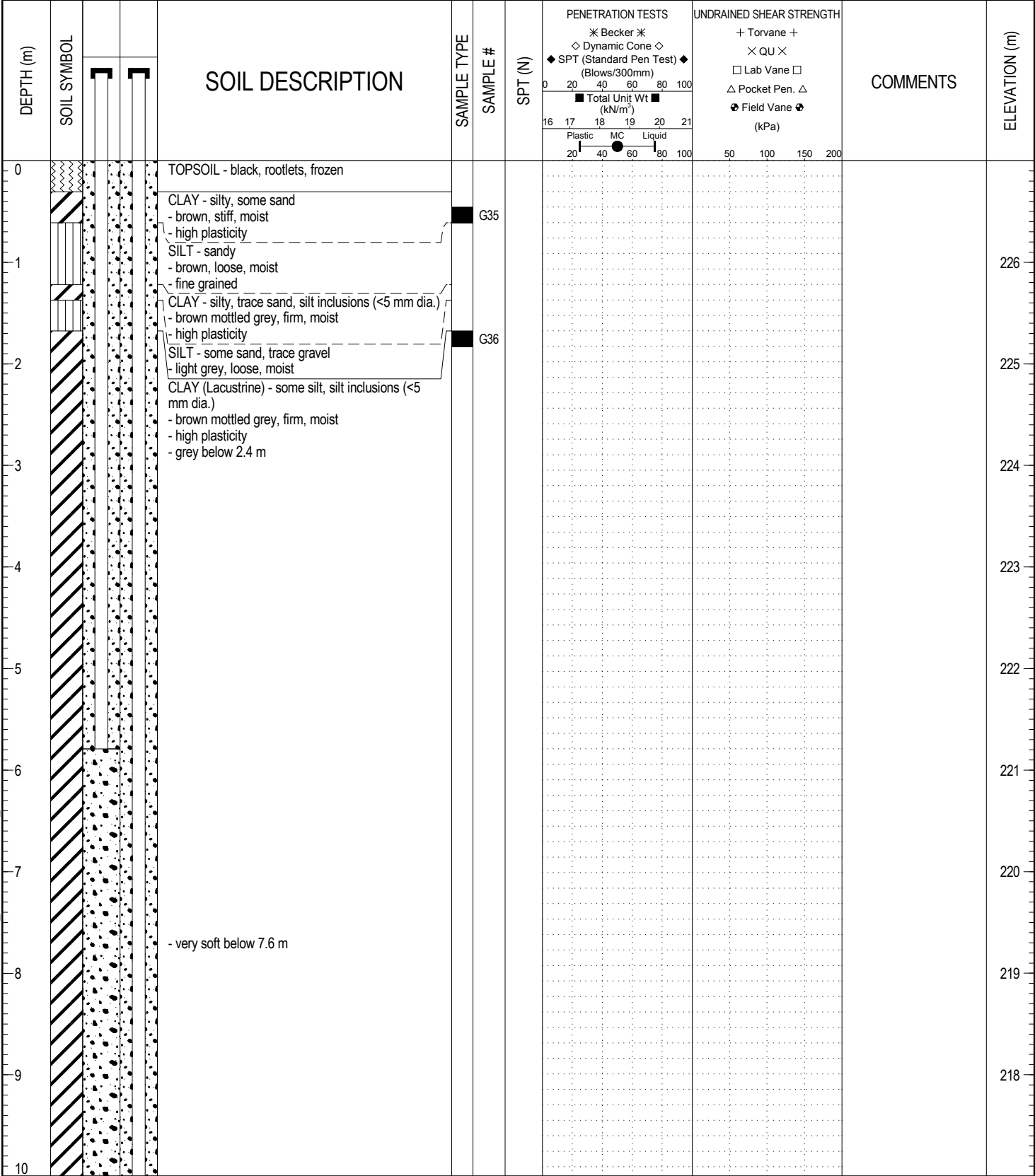
DEPTH (m)	SOIL SYMBOL	SLOPE INCLINOMETER	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	SPT (N)	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	ELEVATION (m)
							* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) Total Unit Wt (kN/m ³) Plastic MC Liquid	+ Torvane + × QU × □ Lab Vane □ △ Pocket Pen. △ ⊕ Field Vane ⊕ (kPa)				
20												
21												206
22			BEDROCK (Limestone)									205
23			END OF TEST HOLE AT 22.61 m IN BEDROCK (LIMESTONE) Notes: 1. Power auger refusal at 17.4 m below grade. 2. Switched to HQ barrel below 17.4 m. 3. No sloughing observed during drilling. 4. Seepage observed at 9 and 12.8 m below grade. 5. Installed slope inclinometer (SI15-01) to 22.6 m. 6. Test hole backfilled with cement/grout to ground surface.									204
24												203
25												202
26												201
27												200
28												199
29												198
30												

LOG OF TEST HOLE - JEFFERSON CSR - SAMPLE OUTFALL - TEST HOLE LOGS - REV 02.GPJ UMA WINN.GDT 10/26/15



LOGGED BY: Mustafa Alkiki	COMPLETION DEPTH: 22.61 m
REVIEWED BY: Zeyad Shukri	COMPLETION DATE: 2/24/15
PROJECT ENGINEER: Eymond Toupin	Page 3 of 3

PROJECT: Jefferson East CSR - Sample Outfall	CLIENT: City of Winnipeg	TESTHOLE NO: VW15-02
LOCATION: South of the Proposed Outfall Pipe, 15 m West of Lower Slope		PROJECT NO.: 60219315
CONTRACTOR: Maple Leaf Drilling Ltd.	METHOD: MP5 Track Mounted-125mm SSA/HQ Barrel	ELEVATION (m): 227.00
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 TEST HOLE - JEFFERSON CSR - SAMPLE OUTFALL - TEST HOLE LOGS - REV 02.GPJ UMA WINN.GDT 10/26/15



LOGGED BY: Mustafa Alkiki	COMPLETION DEPTH: 12.50 m
REVIEWED BY: Zeyad Shukri	COMPLETION DATE: 2/24/15
PROJECT ENGINEER: Eymond Toupin	Page 1 of 2

PROJECT: Jefferson East CSR - Sempole Outfall	CLIENT: City of Winnipeg	TESTHOLE NO: VW15-02
LOCATION: South of the Proposed Outfall Pipe, 15 m West of Lower Slope		PROJECT NO.: 60219315
CONTRACTOR: Maple Leaf Drilling Ltd.	METHOD: MP5 Track Mounted-125mm SSA/HQ Barrel	ELEVATION (m): 227.00
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)	SOIL SYMBOL	VW PIEZOMETER	VW PIEZOMETER	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE #	SPT (N)	PENETRATION TESTS		UNDRAINED SHEAR STRENGTH		COMMENTS	ELEVATION (m)
								* Becker * ◇ Dynamic Cone ◇ ◆ SPT (Standard Pen Test) ◆ (Blows/300mm) ■ Total Unit Wt ■ (kN/m ³)	+ Torvane + × QU × □ Lab Vane □ △ Pocket Pen. △ ⊕ Field Vane ⊕ (kPa)				
10													
11													216
12													215
13				END OF TEST HOLE AT 12.50 m IN CLAY (Lacustrine)									214
14				Notes: 1. No sloughing observed during drilling. 2. Seepage observed ay 9.6 m below grade. 3. Squeezing below 8.3 m 4. Installed VW15-02 and VW15-03 in test hole at 5.8 and 12 m, respectively. 5. Test hole backfilled with cement/grout (full depth).									213
15													212
16													211
17													210
18													209
19													208
20													

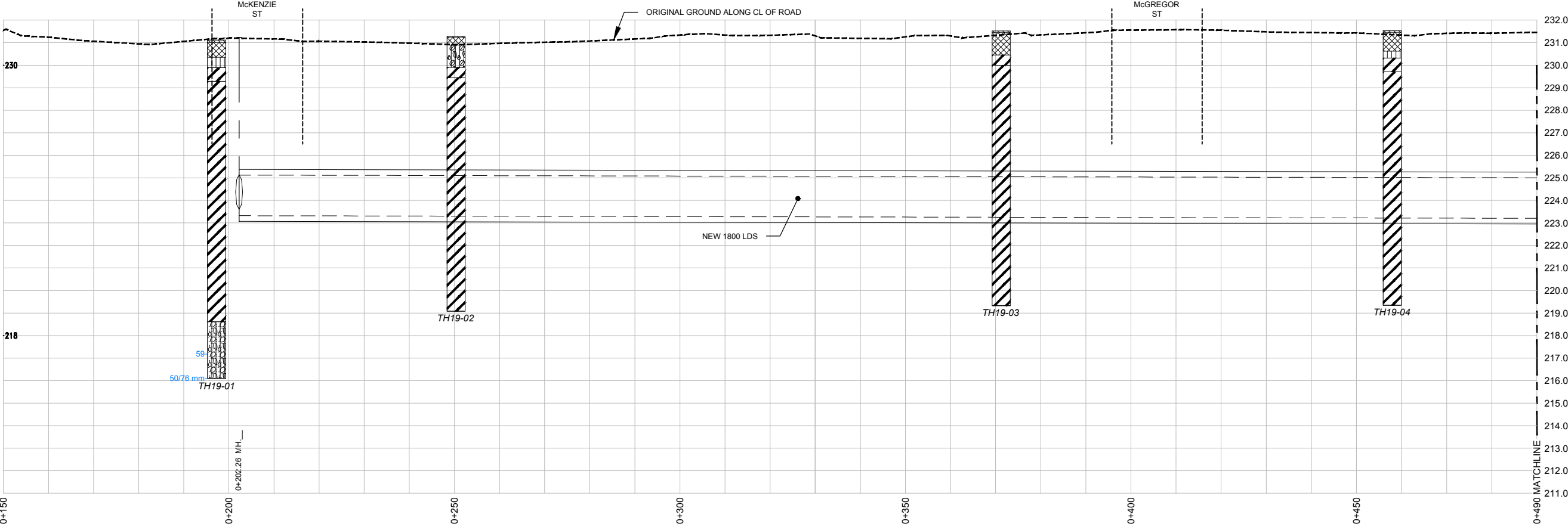
LOG OF TEST HOLE - JEFFERSON CSR - SEMPOL OUTFALL - TEST HOLE LOGS - REV 02.GPJ UMA WINN.GDT 10/26/15



LOGGED BY: Mustafa Alkiki	COMPLETION DEPTH: 12.50 m
REVIEWED BY: Zeyad Shukri	COMPLETION DATE: 2/24/15
PROJECT ENGINEER: Eymond Toupin	Page 2 of 2



REFER TO FIG. 4B
 MATCHLINE AT STA 0+490










LEGEND

TOPSOIL	INTERMEDIATE PLASTIC SILT	GLACIAL TILL
FILL	LOW PLASTIC SILT	66 SPT (N) VALUES
SILTY SAND	HIGH PLASTIC CLAY	

NOTE 1: THIS FIGURE SHOULD BE USED FOR BASELINE PURPOSES ONLY AND SHOULD BE READ IN CONJUNCTION WITH THE GEOTECHNICAL BASELINE (GBR) AND DATA REPORT (GDR). THIS FIGURE PROVIDES BASELINE STRATIGRAPHIC CROSS SECTION ALONG THE TUNNEL SECTIONS ONLY. FOR BASELINE STRATIGRAPHIC CONDITIONS AT THE SHAFT LOCATIONS, REFER TO GBR.
 NOTE 2: SUBSURFACE CONDITIONS ARE KNOWN ONLY AT THE TEST HOLE LOCATIONS. THE ACTUAL GROUND CONDITIONS BETWEEN THE TEST HOLES MAY VARY.
 NOTE 3: DETAILED DESCRIPTIONS OF MATERIALS, CHARACTERISTICS AND VARIABILITY ANTICIPATED WITHIN EACH SOIL UNIT ARE PRESENTED IN THE GDR AND GBR. FOR DETAILS OF THE TEST HOLE LOGS AND GROUNDWATER MEASUREMENTS REFER TO GDR.
 NOTE 4: LOCATION OF EXISTING UTILITIES ARE NOT SHOWN. FOR DETAILS ON EXISTING UTILITY LOCATIONS REFER TO DRAWINGS/SPECS.

Issue Status: Draft

LEGEND

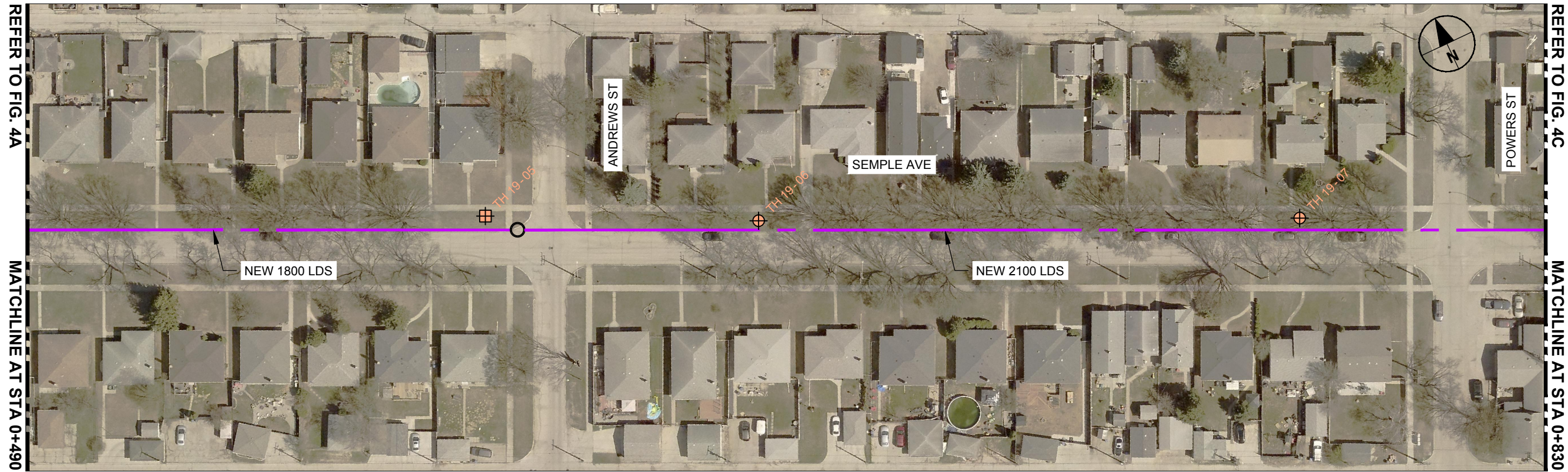
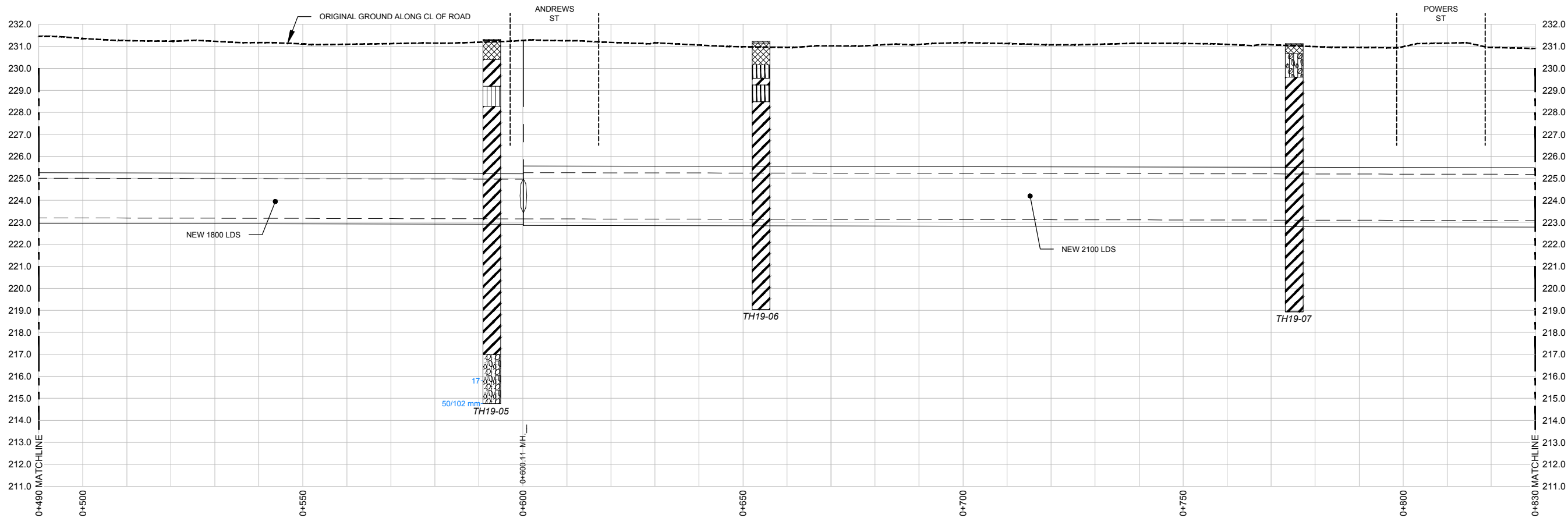
-  TOPSOIL
-  FILL
-  SILTY SAND
-  INTERMEDIATE PLASTIC SILT
-  LOW PLASTIC SILT
-  HIGH PLASTIC CLAY
-  GLACIAL TILL
- 66** SPT (N) VALUES

NOTE 1: THIS FIGURE SHOULD BE USED FOR BASELINE PURPOSES ONLY AND SHOULD BE READ IN CONJUNCTION WITH THE GEOTECHNICAL BASELINE (GBR) AND DATA REPORT (GDR). THIS FIGURE PROVIDES BASELINE STRATIGRAPHIC CROSS SECTION ALONG THE TUNNEL SECTIONS ONLY. FOR BASELINE STRATIGRAPHIC CONDITIONS AT THE SHAFT LOCATIONS, REFER TO GBR.

NOTE 2: SUBSURFACE CONDITIONS ARE KNOWN ONLY AT THE TEST HOLE LOCATIONS. THE ACTUAL GROUND CONDITIONS BETWEEN THE TEST HOLES MAY VARY.

NOTE 3: DETAILED DESCRIPTIONS OF MATERIALS, CHARACTERISTICS AND VARIABILITY ANTICIPATED WITHIN EACH SOIL UNIT ARE PRESENTED IN THE GDR AND GBR. FOR DETAILS OF THE TEST HOLE LOGS AND GROUNDWATER MEASUREMENTS REFER TO GDR.

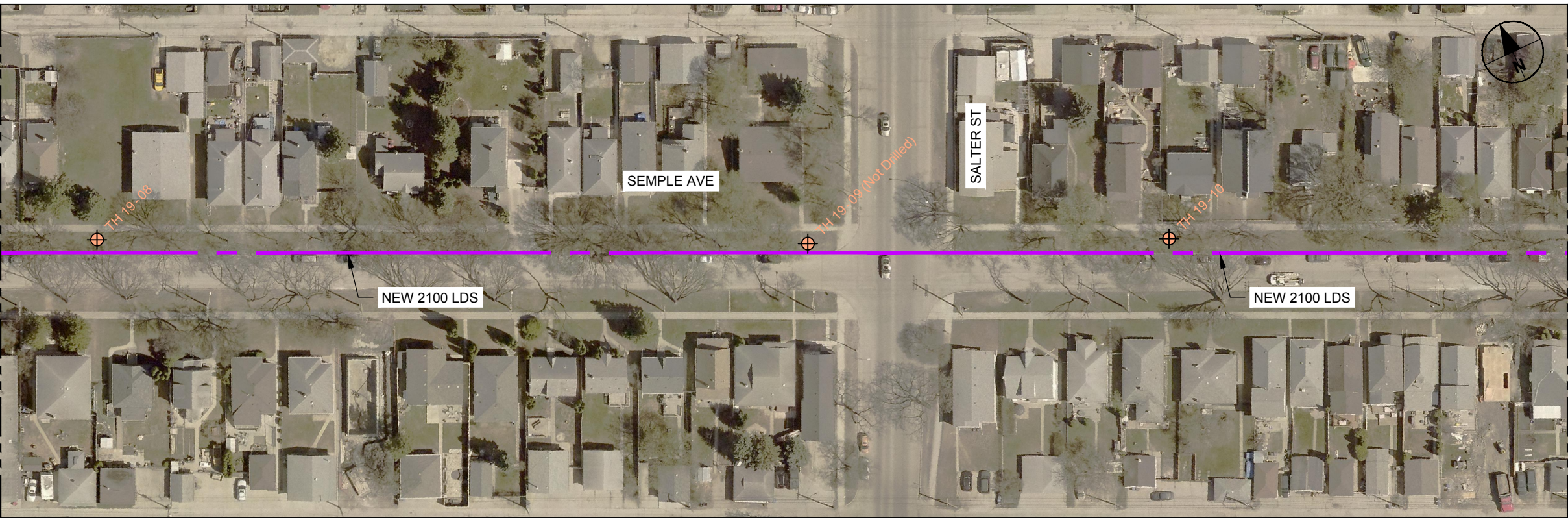
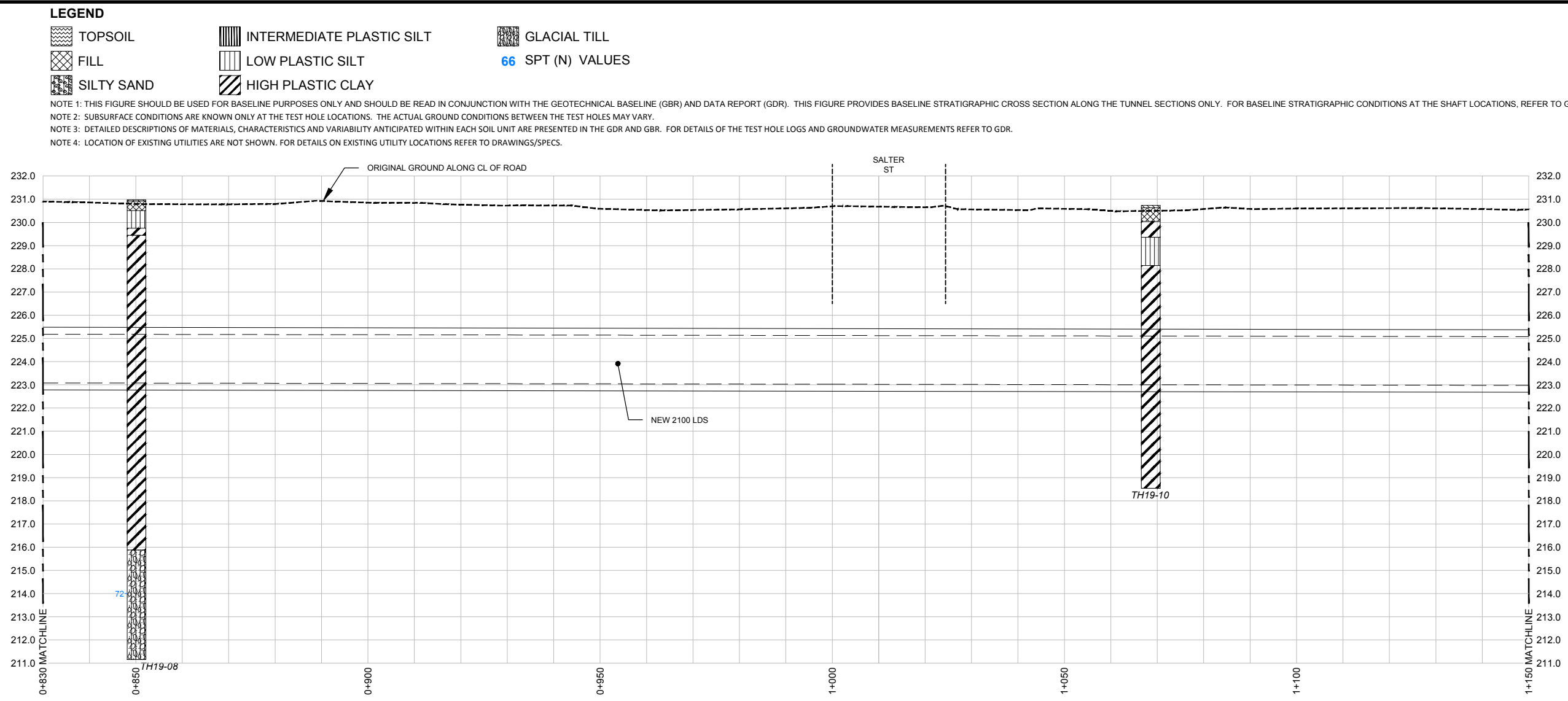
NOTE 4: LOCATION OF EXISTING UTILITIES ARE NOT SHOWN. FOR DETAILS ON EXISTING UTILITY LOCATIONS REFER TO DRAWINGS/SPECS.



Issue Status: Draft

STRATIGRAPHIC SECTION OF SEMPLA AVENUE
TRUNK SEWER ALIGNMENT
STN 0+490 TO STN 0+830

SEMPLA AVENUE TRUNK SEWER
GEOTECHNICAL DATA REPORT
CITY OF WINNIPEG, WATER AND WASTE DEPARTMENT



REFER TO FIG. 4B
 MATCHLINE AT STA 0+830



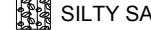




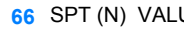
REFER TO FIG. 4D
 MATCHLINE AT STA 1+150

LEGEND

TOPSOIL	INTERMEDIATE PLASTIC SILT	GLACIAL TILL
FILL	LOW PLASTIC SILT	66 SPT (N) VALUES
SILTY SAND	HIGH PLASTIC CLAY	

NOTE 1: THIS FIGURE SHOULD BE USED FOR BASELINE PURPOSES ONLY AND SHOULD BE READ IN CONJUNCTION WITH THE GEOTECHNICAL BASELINE (GBR) AND DATA REPORT (GDR). THIS FIGURE PROVIDES BASELINE STRATIGRAPHIC CROSS SECTION ALONG THE TUNNEL SECTIONS ONLY. FOR BASELINE STRATIGRAPHIC CONDITIONS AT THE SHAFT LOCATIONS, REFER TO GBR.
 NOTE 2: SUBSURFACE CONDITIONS ARE KNOWN ONLY AT THE TEST HOLE LOCATIONS. THE ACTUAL GROUND CONDITIONS BETWEEN THE TEST HOLES MAY VARY.
 NOTE 3: DETAILED DESCRIPTIONS OF MATERIALS, CHARACTERISTICS AND VARIABILITY ANTICIPATED WITHIN EACH SOIL UNIT ARE PRESENTED IN THE GDR AND GBR. FOR DETAILS OF THE TEST HOLE LOGS AND GROUNDWATER MEASUREMENTS REFER TO GDR.
 NOTE 4: LOCATION OF EXISTING UTILITIES ARE NOT SHOWN. FOR DETAILS ON EXISTING UTILITY LOCATIONS REFER TO DRAWINGS/SPECS.

LEGEND

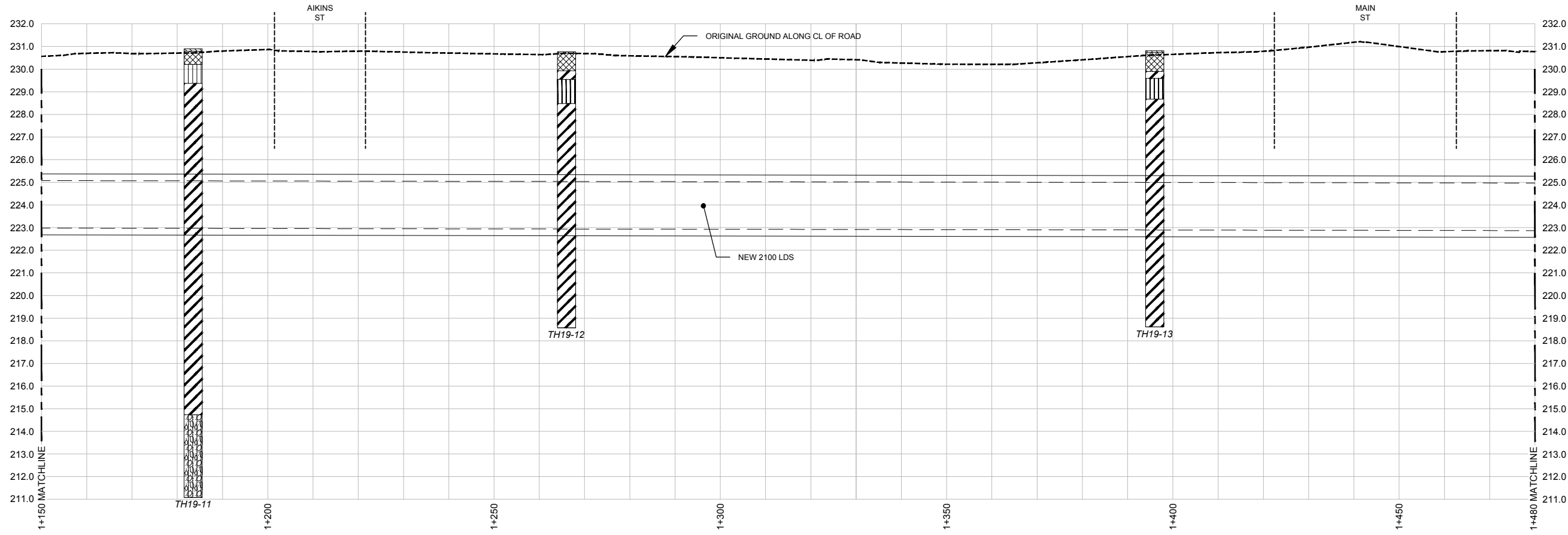
-  TOPSOIL
-  FILL
-  SILTY SAND
-  INTERMEDIATE PLASTIC SILT
-  LOW PLASTIC SILT
-  HIGH PLASTIC CLAY
-  GLACIAL TILL
-  66 SPT (N) VALUES

NOTE 1: THIS FIGURE SHOULD BE USED FOR BASELINE PURPOSES ONLY AND SHOULD BE READ IN CONJUNCTION WITH THE GEOTECHNICAL BASELINE (GBR) AND DATA REPORT (GDR). THIS FIGURE PROVIDES BASELINE STRATIGRAPHIC CROSS SECTION ALONG THE TUNNEL SECTIONS ONLY. FOR BASELINE STRATIGRAPHIC CONDITIONS AT THE SHAFT LOCATIONS, REFER TO GBR.

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NOTE 4: LOCATION OF EXISTING UTILITIES ARE NOT SHOWN. FOR DETAILS ON EXISTING UTILITY LOCATIONS REFER TO DRAWINGS/SPECS.



REFER TO FIG. 4C

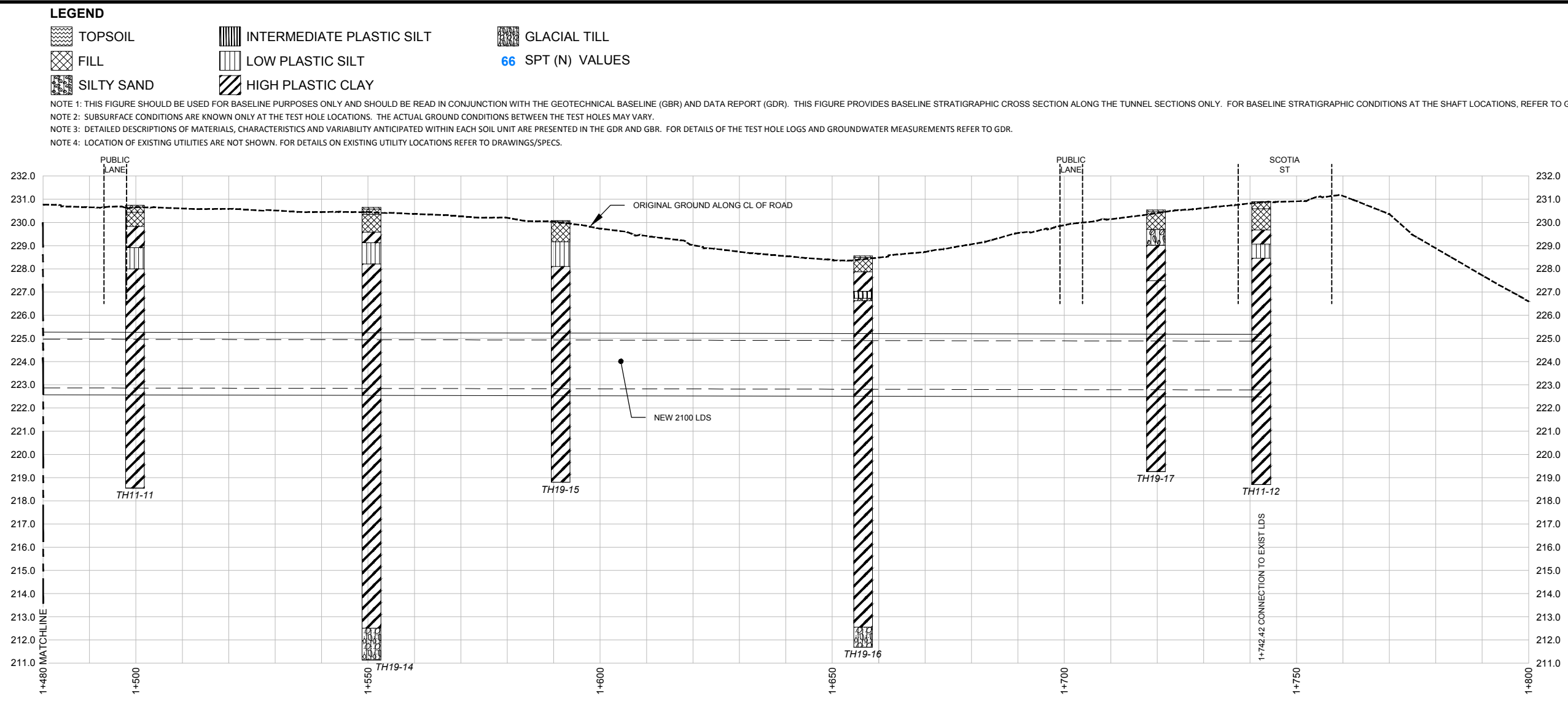
MATCHLINE AT STA 1+150



REFER TO FIG. 4E

MATCHLINE AT STA 1+480

Issue Status: Draft



REFER TO FIG. 4D

MATCHLINE AT STA 1+480

Issue Status: Draft

STRATIGRAPHIC SECTION OF SEMPLE AVENUE
 TRUNK SEWER ALIGNMENT
 STN 1+480 TO STN 1+800

SEMPLE AVENUE TRUNK SEWER
 GEOTECHNICAL DATA REPORT
 CITY OF WINNIPEG, WATER AND WASTE DEPARTMENT