

APPENDIX B

AECOM TEST HOLE LOGS

JULY 2009



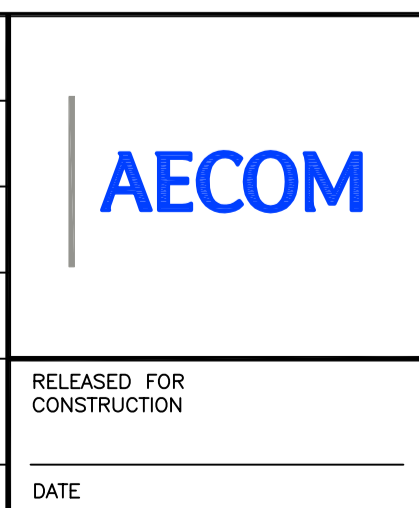
L:\work\112000\112000\02-cad\Proj_Drawings\STR\CONTR\C4-S001_SITE_PLAN.dwg



LOCATION UNDERGROUND STRUCTURES	APPROVED STRUCTURES				
SUPV. U/G STRUCTURES COMMITTEE	DATE				
NOTE: LOCATION OF UNDERGROUND STRUCTURES AS SHOWN ARE BASED ON THE BEST INFORMATION AVAILABLE. BUT NO GUARANTEE IS GIVEN THAT ALL EXISTING UTILITIES ARE SHOWN OR THAT THE GIVEN LOCATIONS ARE EXACT. CONFIRMATION OF EXISTENCE AND EXACT LOCATION OF ALL SERVICES MUST BE OBTAINED FROM THE INDIVIDUAL UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.					
NO.	REVISIONS	DATE	BY	DATE	DATE

B.M. ELEV.	DESIGNED BY	GGP
	DRAWN BY	KAA
	CHECKED BY	
	APPROVED BY	
	HOR. SCALE	1 : 250
	VERTICAL	1 : 10
	RELEASED FOR CONSTRUCTION	
	DATE	

	ENGINEER'S SEAL
	CONSULTANT PROJECT NO.



	ENGINEER'S SEAL
	CONSULTANT PROJECT NO.

SOUTHWEST RAPID TRANSIT CORRIDOR - STAGE 1 TRANSITWAY TUNNEL AT CN RIVER SUBDIVISION MILEAGE 1.38 & ASSOCIATED WORKS	
CITY DRAWING NUMBER	P-XXXX- 1
SHEET	1 OF XX
CONSULTANT DRAWING NUMBER	C4-S1001-P

TEST HOLE LOCATION PLAN

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.

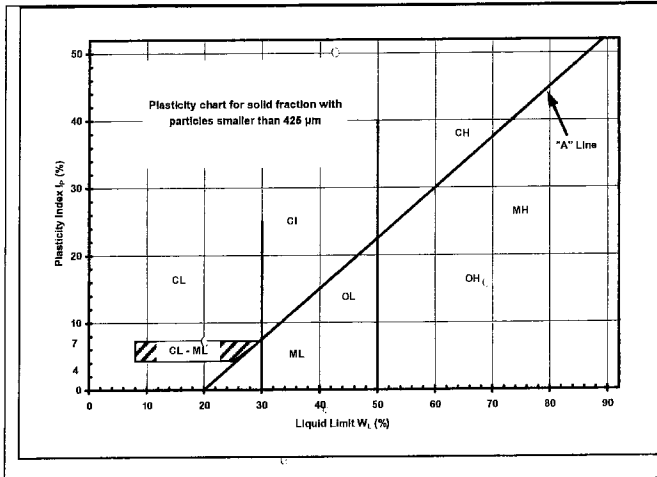
Since it is possible for conditions to vary from those assumed in the analysis and upon which our conclusions and recommendations are based, a contingency fund should be included in the construction budget to allow for the possibility of variations which may result in modification of the design and construction 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	10-20 some
Silt (non-plastic) or Clay (plastic)	< 0.075 mm		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)

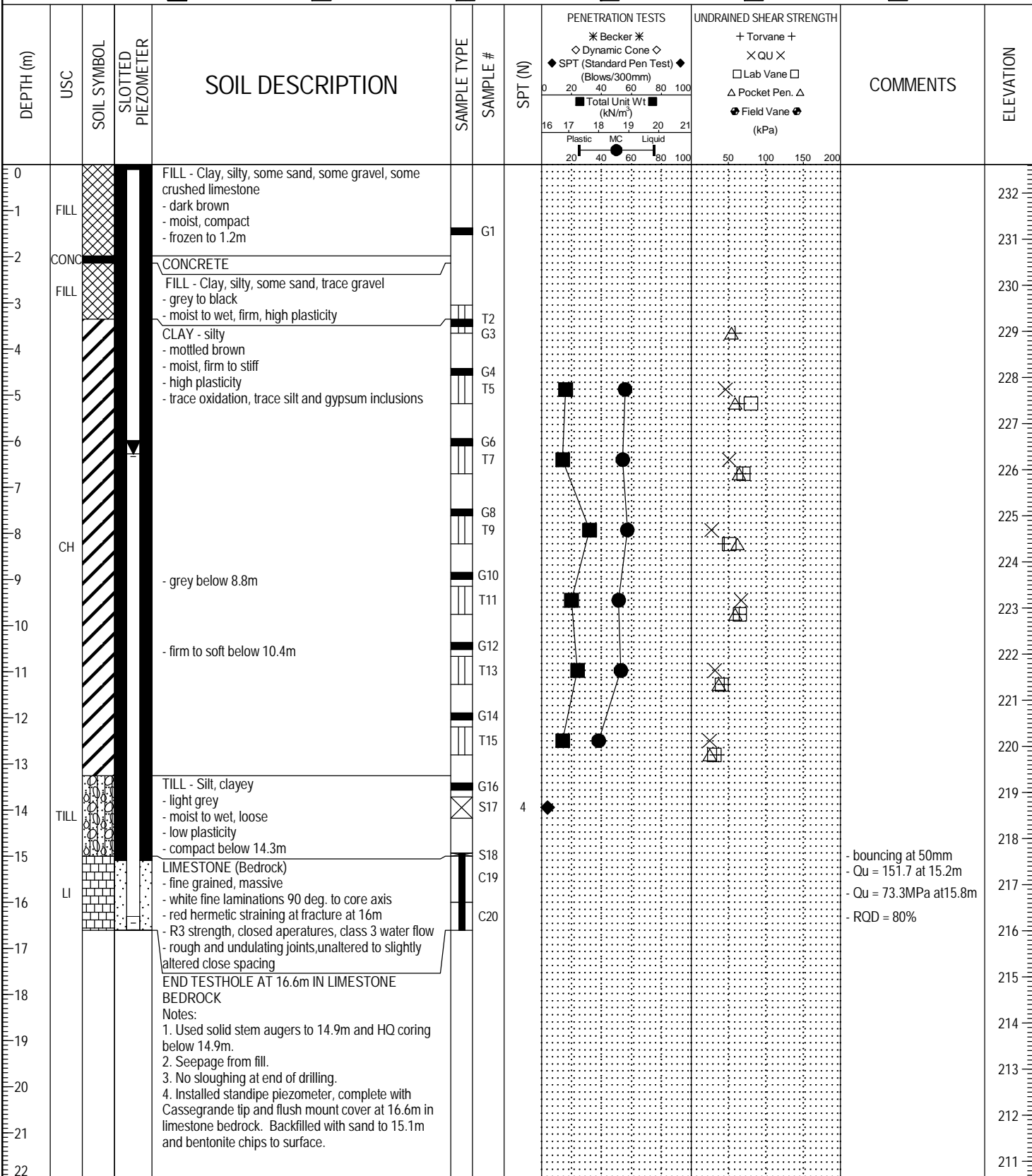
The undrained shear strength (Su) of a cohesive soil can be related to its consistency as follows:

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: Southwest Transit Corridor		CLIENT: Dillon Consulting		TESTHOLE NO: TH-1		
LOCATION: Retaining wall at South-East end of underpass N 5525890 E 633614 N 1,684,291.3 E 193,125.5				PROJECT NO.: F504-444		
CONTRACTOR: Paddock Drilling Ltd.		METHOD: 125mm Solid Stem Augers and HQ coring		ELEVATION (m): 232.62		
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND

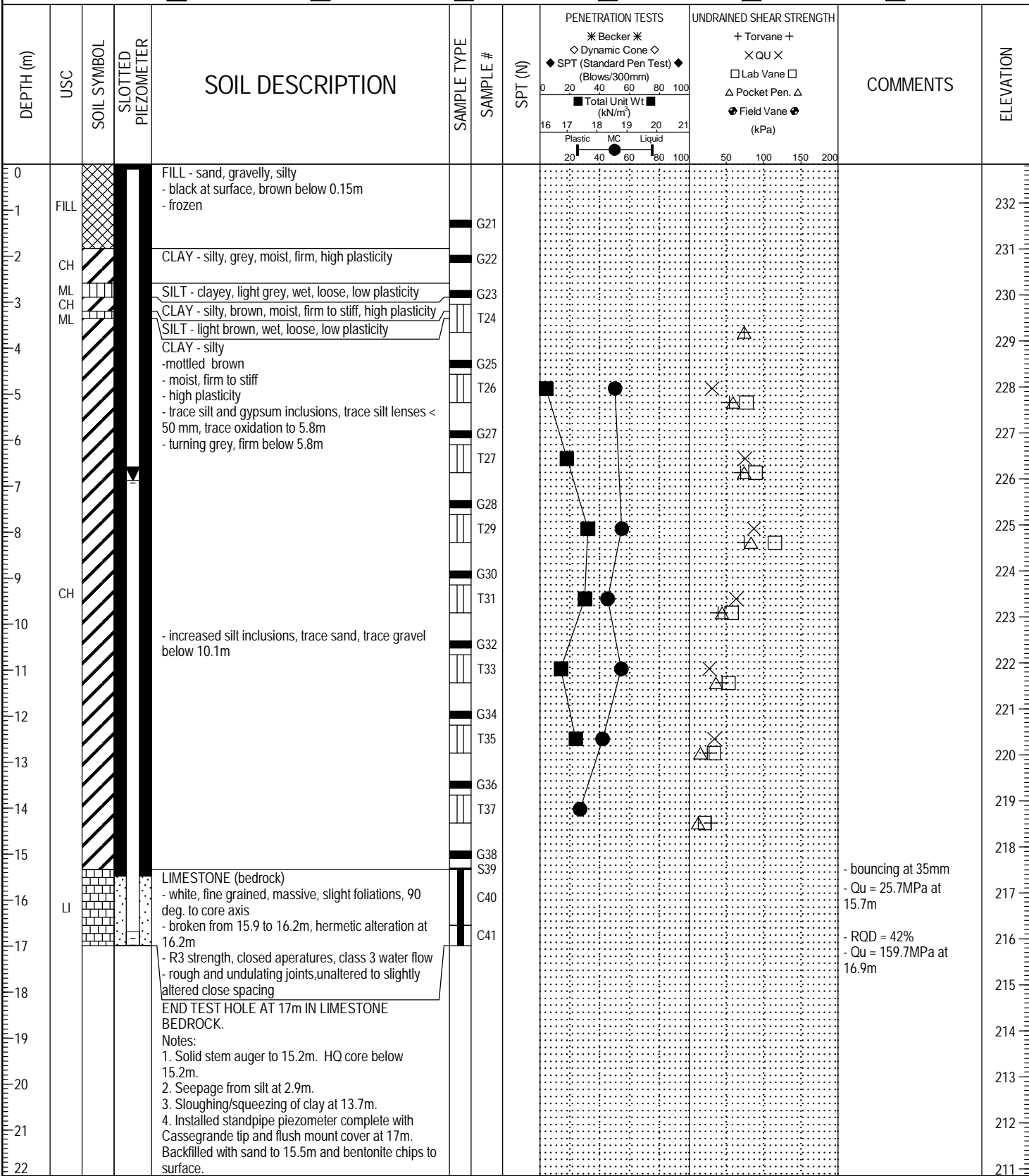


LOG OF TEST HOLE 26032009 BRT TEST HOLE LOGS.GPJ UMA WINN.GDT 18/6/09



LOGGED BY: KT	COMPLETION DEPTH: 16.61 m
REVIEWED BY: FK	COMPLETION DATE: 24/3/09
PROJECT ENGINEER: Faris Khalil	Page 1 of 1

PROJECT: Southwest Transit Corridor		CLIENT: Dillon Consulting		TESTHOLE NO: TH-2		
LOCATION: Retaining wall at North-West end of underpass N 5526034 E 633525				PROJECT NO.: F504-444		
CONTRACTOR: Paddock Drilling Ltd.		METHOD: 125mm Solid Stem Augers and HQ coring		ELEVATION (m): 232.84		
SAMPLE TYPE	GRAB	SHELBY TUBE	SPLIT SPOON	BULK	NO RECOVERY	CORE
BACKFILL TYPE	BENTONITE	GRAVEL	SLOUGH	GROUT	CUTTINGS	SAND



LOG OF TEST HOLE 26032009 BRT TEST HOLE LOGS.GPJ UMA WINN.GDT 18/6/09



LOGGED BY: KT	COMPLETION DEPTH: 16.99 m
REVIEWED BY: FK	COMPLETION DATE: 25/3/09
PROJECT ENGINEER: Faris Khalil	Page 1 of 1