

APPENDIX 'A'

GEOTECHNICAL REPORT

APPENDIX 'A' - GEOTECHNICAL REPORT

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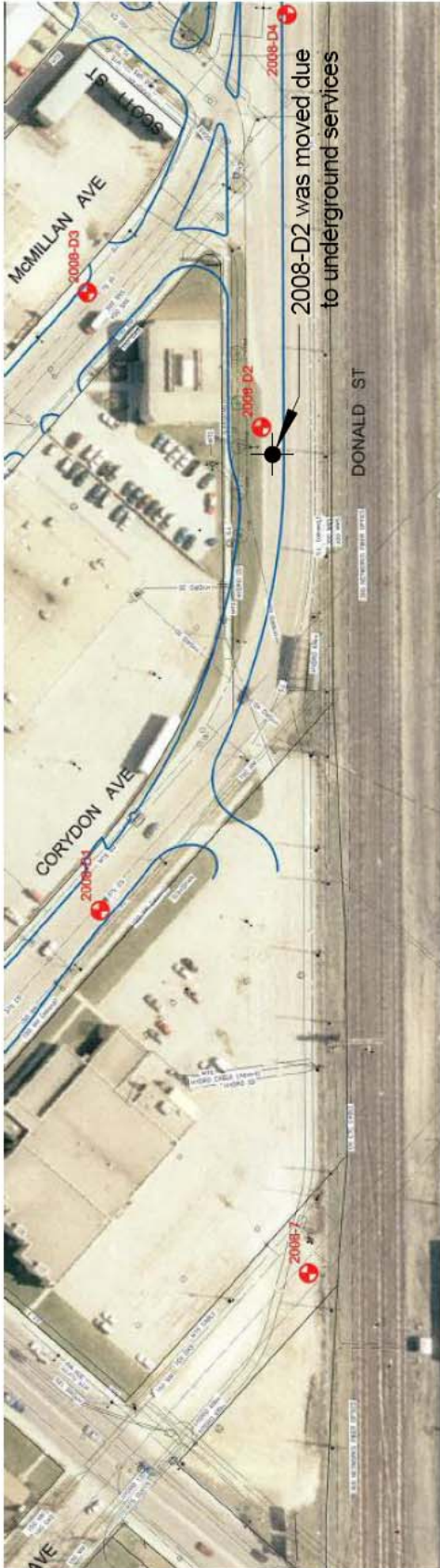
The geotechnical report is provided to aid in the Contractor's evaluation of the existing pavement structure and/or soil conditions. The information presented is considered accurate at the locations shown on the Drawings and at the time of drilling. However, variations in pavement structure and/or soil conditions may exist between test holes and fluctuations in groundwater levels can be expected seasonally and may occur as a result of construction activities. The nature and extent of variations may not become evident until construction commences.

Geotechnical Report for Southwest Rapid Transit Corridor – Stage 1: Transit way Construction, Donald/Harkness Reconstruction and Associated Works

Test Hole Locations



 <p style="font-size: small; margin: 0;"> THE NATIONAL TESTING LABORATORIES LIMITED Established in 1923 </p>	Project No.: DIL-812 Date: Nov 13, 2008	Drawn by: KK Reviewed by: DF	Figure: 1 Scale: NTS	Testhole Location Plan Bus Rapid Transit System Southwestern Transit Corridor Winnipeg, MB
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Testhole Location Plan
 Bus Rapid Transit System
 Southwestern Transit Corridor
 Winnipeg, MB

Figure: 4

Drawn by: KK

Project No.: DIL-812

Scale: NTS

Reviewed by: DF

Date: Nov 13, 2008

THE NATIONAL TESTING LABORATORIES LIMITED
 Established in 1923



 <p>THE NATIONAL TESTING LABORATORIES LIMITED <small>Established in 1923</small></p>	Project No.: DIL-812	Drawn by: KK	Testhole Location Plan Bus Rapid Transit System Southwestern Transit Corridor Winnipeg, MB	
	Date: Nov 13, 2008	Reviewed by: DF	Figure: 5	Scale: NTS

**TABLE 1
 TESTHOLE LOCATIONS
 BUS RAPID TRANSIT SYSTEM
 SOUTHWESTERN TRANSIT CORRIDOR**

Testhole ID	UTM Co-ordinate	General Description
2008-7	633600 E / 5526274 N	Jessie Avenue
2008-8	633883 E / 5526945 N	Lagopoulos Way
2008-9	633974 E / 5527056 N	Between Stradbrook and CNR Rivers
2008-10	634096 E / 5527211 N	Between Stradbrook and CNR Rivers
2008-11	634169 E / 5527322 N	Between Stradbrook and CNR Rivers
2008-D1	633585 E / 5526390 N	Corydon Avenue
2008-D2	633669 E / 5526486 N	Donald Street
2008-D3	633641 E / 5526544 N	McMillan Avenue
2008-D4	633710 E / 5526587 N	Donald Street
2008-D5	633768 E / 5526749 N	Between Donald Street and CNR Rivers
2008-H1	633925 E / 5527037 N	Stradbrook Avenue
2008-H2	633981 E / 5527097 N	Stradbrook Avenue
2008-H3	634015 E / 5527134 N	Harkness Avenue

Summary of Core Samples

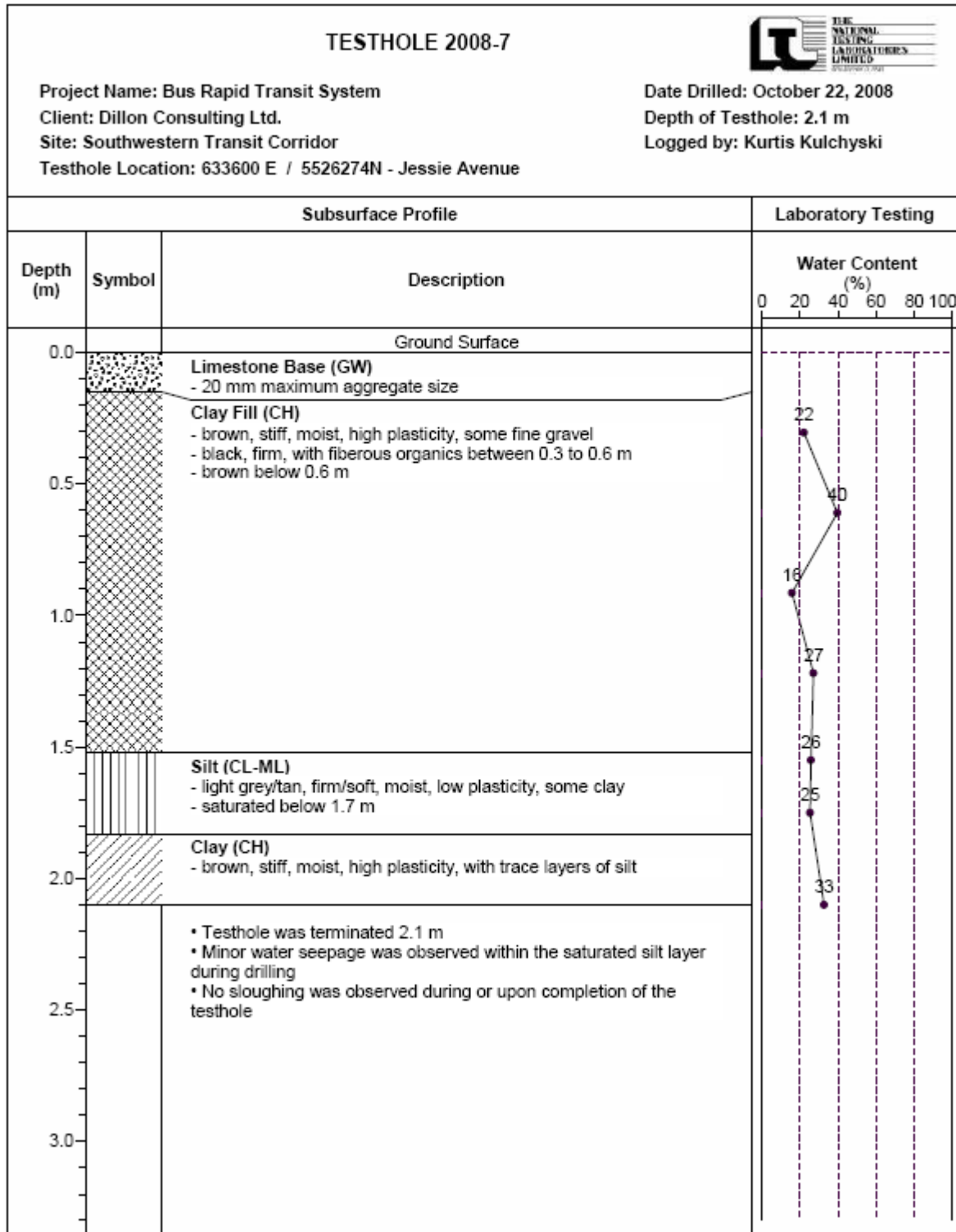
**TABLE 2
 PAVEMENT SECTIONS
 BUS RAPID TRANSIT SYSTEM
 SOUTHWESTERN TRANSIT CORRIDOR**

Testhole ID	Pavement Surface		Pavement Structure Material	
	Type	Thickness (mm)	Type	Thickness (mm)
2008-8	Asphalt / Concrete	40 / 240	Fill/ Granular Fill	100/250
2008-D1	Asphalt / Concrete	32 / 203	Granular Base	50
2008-D2	Asphalt / Concrete	70 / 245	Granular Base	595
2008-D3	Asphalt / Concrete	65 / 235	Granular Base	25
2008-D4	Asphalt / Concrete	115 / 225	Granular Base	25
2008-H1	Concrete	245	Limestone Base	665
2008-H2	Concrete	125	Limestone Base	175
2008-H3	Concrete	120	Limestone Base	180

**TABLE 3
 SOILS TEST DATA
 BUS RAPID TRANSIT SYSTEM
 SOUTHWESTERN TRANSIT CORRIDOR**

Testhole ID	Sample Depth (m)	Sample Description	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
2008-D3	0.9	Clayey Silt (CL)	23	0.4	6.5	62.7	30.4	33	19	14
2008-D4	1.2	Clay (CH)	32	0	1.3	14.3	84.4	84	26	58
2008-5	0.9	Granular Fill (SM)	18	0	88.0	8.5	3.5	-	-	-
2008-6	1.5	Silt (CL-ML)	16	-	-	-	-	26	19	7

Test Hole Logs for SWRTC



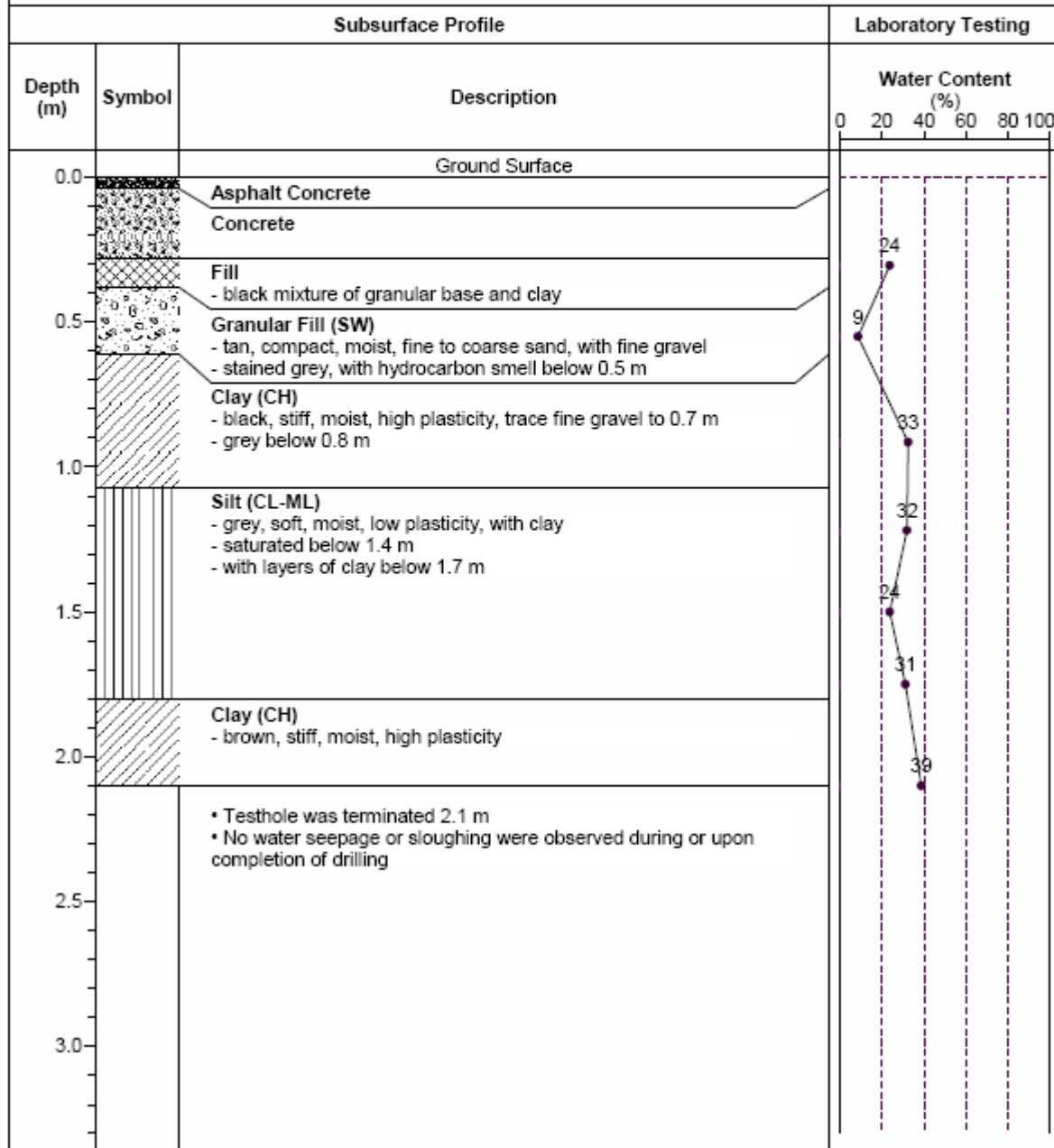
Template Version: C420081212 - RW

TESTHOLE 2008-8



Project Name: Bus Rapid Transit System
Client: Dillon Consulting Ltd.
Site: Southwestern Transit Corridor
Testhole Location: 633883 E / 5526945 N - Lagopoulos Way

Date Drilled: October 30, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski

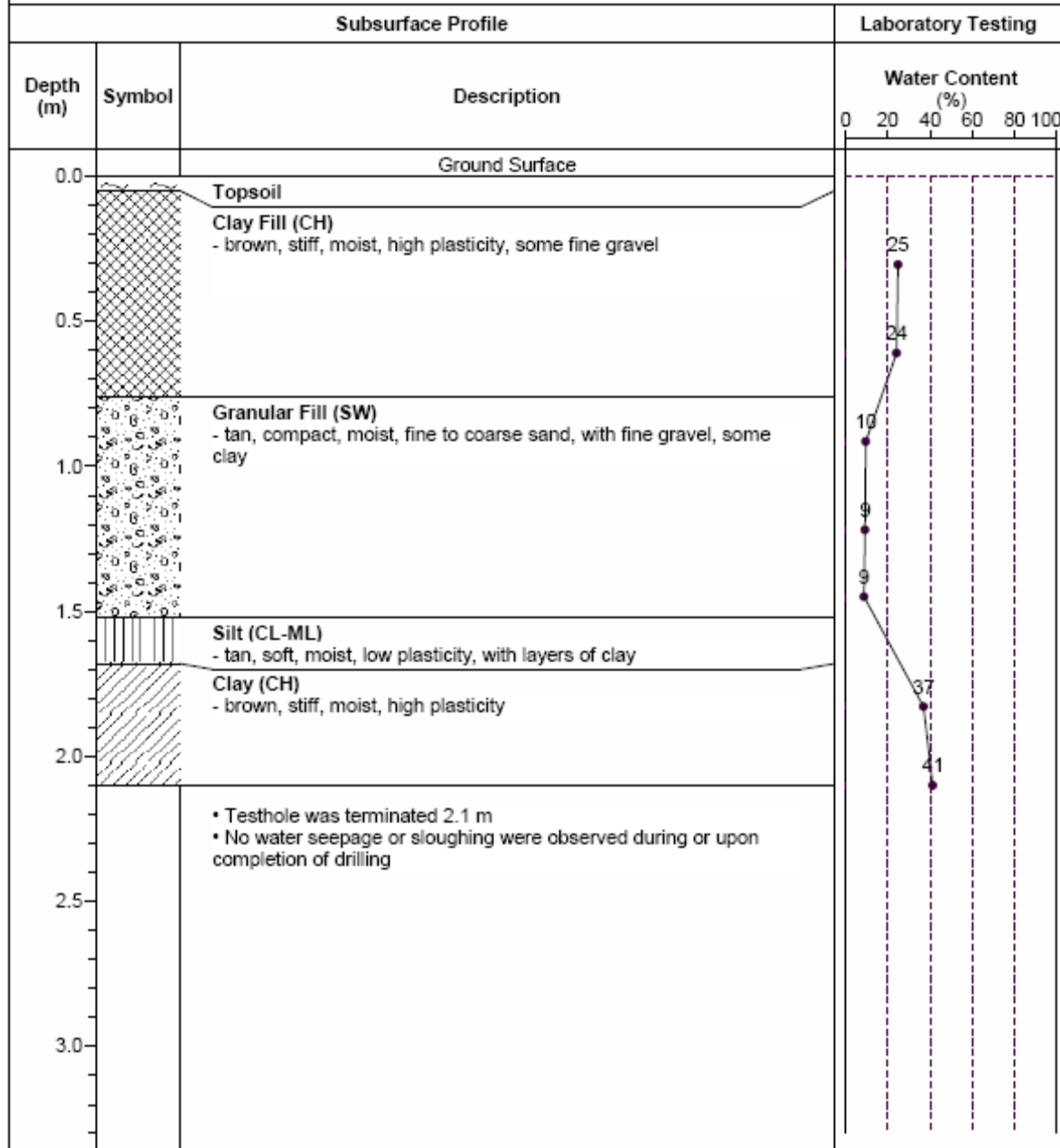


TESTHOLE 2008-9



Project Name: Bus Rapid Transit System
Client: Dillon Consulting Ltd.
Site: Southwestern Transit Corridor
Testhole Location: 633974 E / 5527056N - Between Stradbrook and CNR Rivers

Date Drilled: October 22, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski

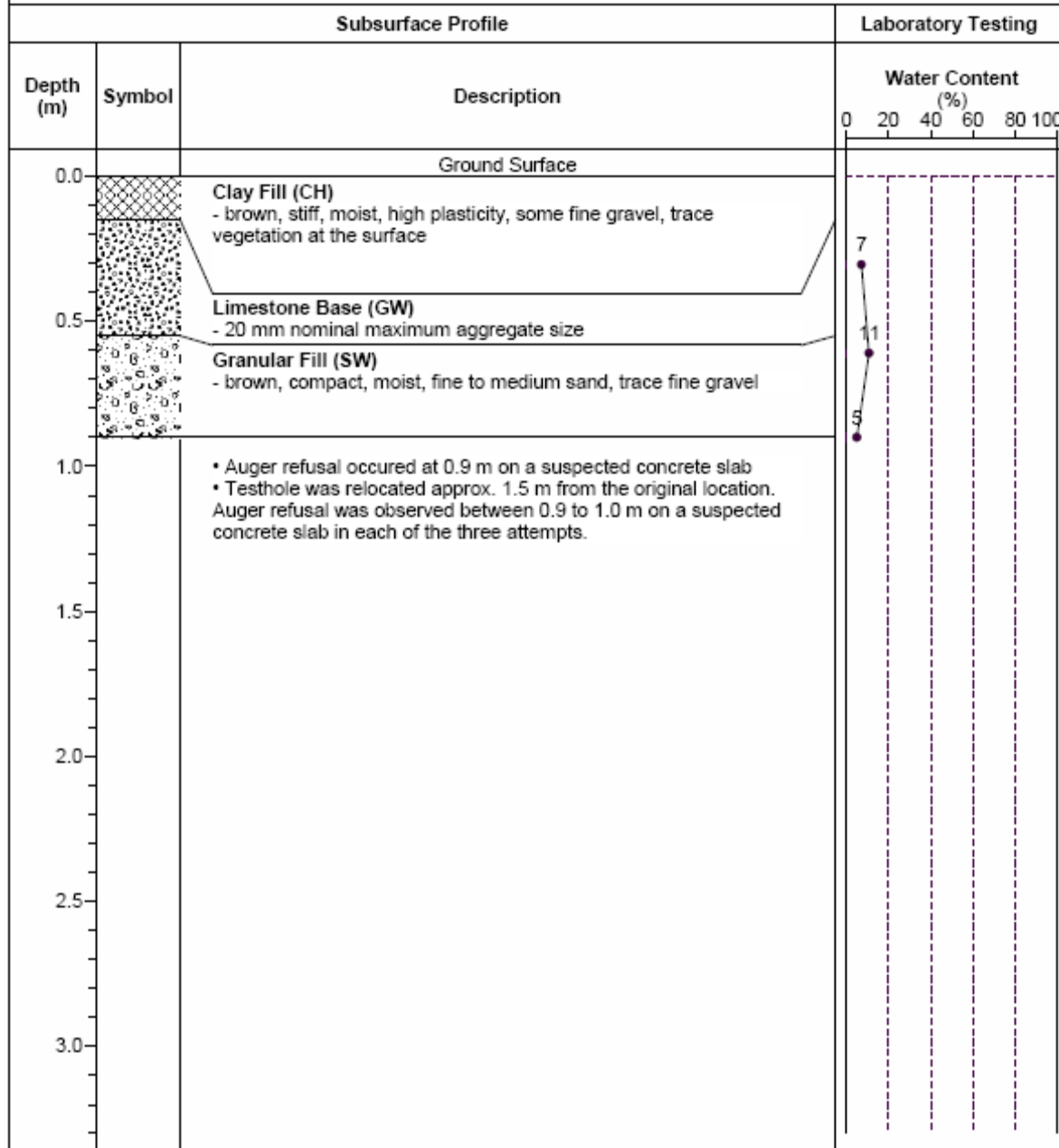


TESTHOLE 2008-10



Project Name: Bus Rapid Transit System
Client: Dillon Consulting Ltd.
Site: Southwestern Transit Corridor
Testhole Location: 634096 E / 5527211N - Between Stradbrook and CNR Rivers

Date Drilled: October 22, 2008
Depth of Testhole: 0.9 m
Logged by: Kurtis Kulchyski

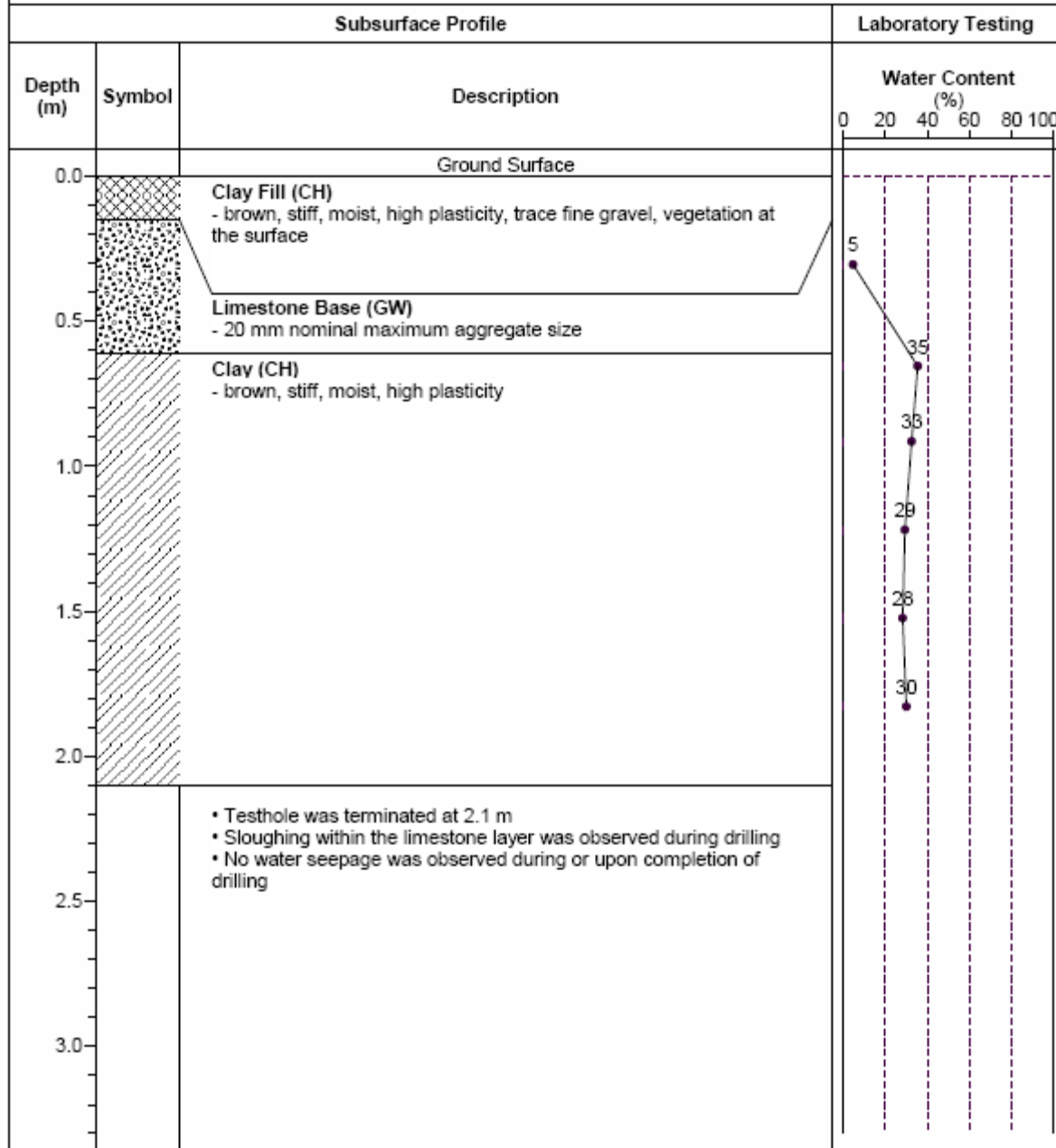


TESTHOLE 2008-11



Project Name: Bus Rapid Transit System
Client: Dillon Consulting Ltd.
Site: Southwestern Transit Corridor
Testhole Location: 634169 E / 5527322 N - Between Stradbrook and CNR Rivers

Date Drilled: October 22, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski

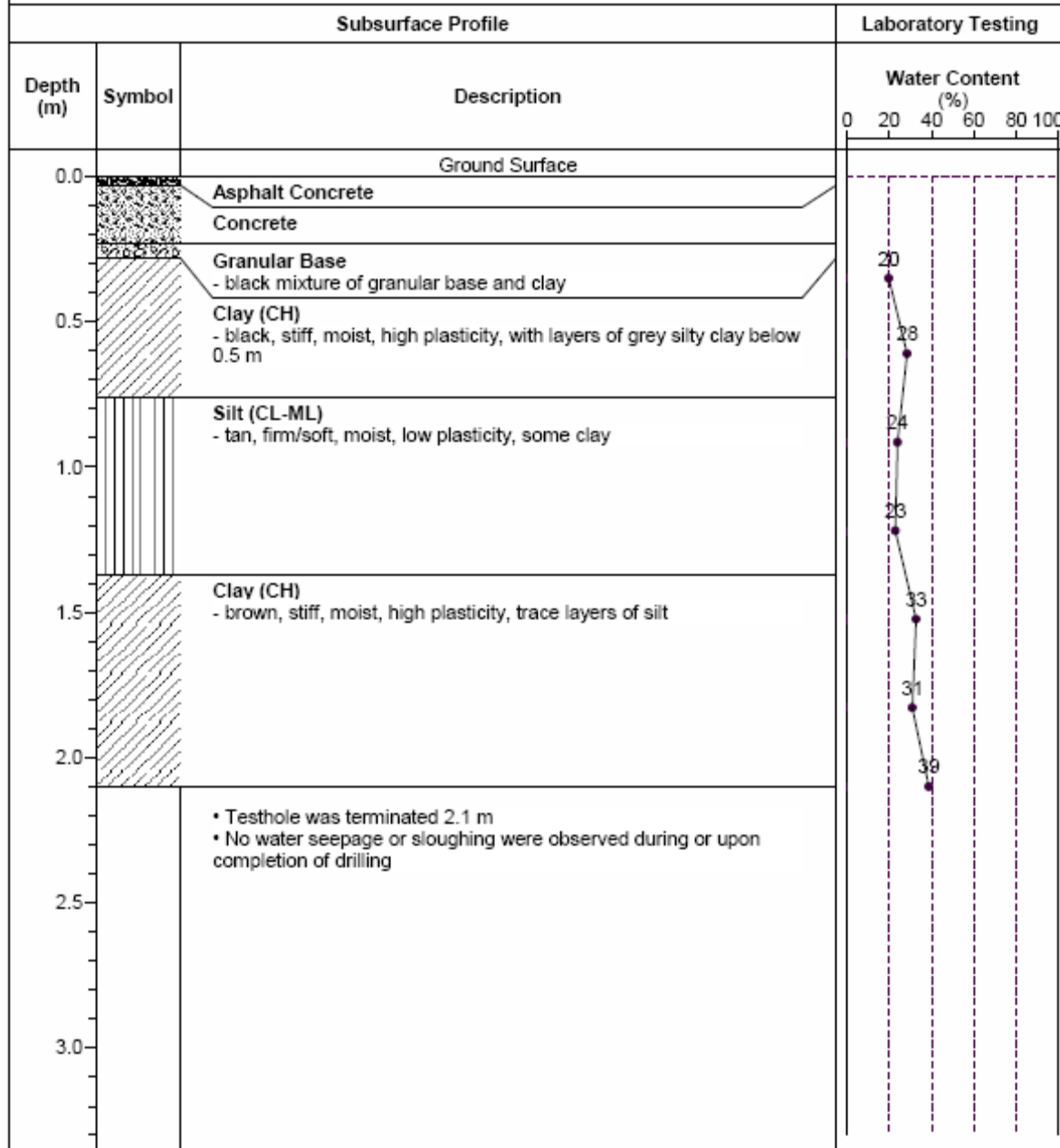


TESTHOLE 2008-D1



Project Name: Bus Rapid Transit System
Client: Dillon Consulting Ltd.
Site: Southwestern Transit Corridor
Testhole Location: 633585 E / 5526390 N - Corydon Avenue

Date Drilled: October 30, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski

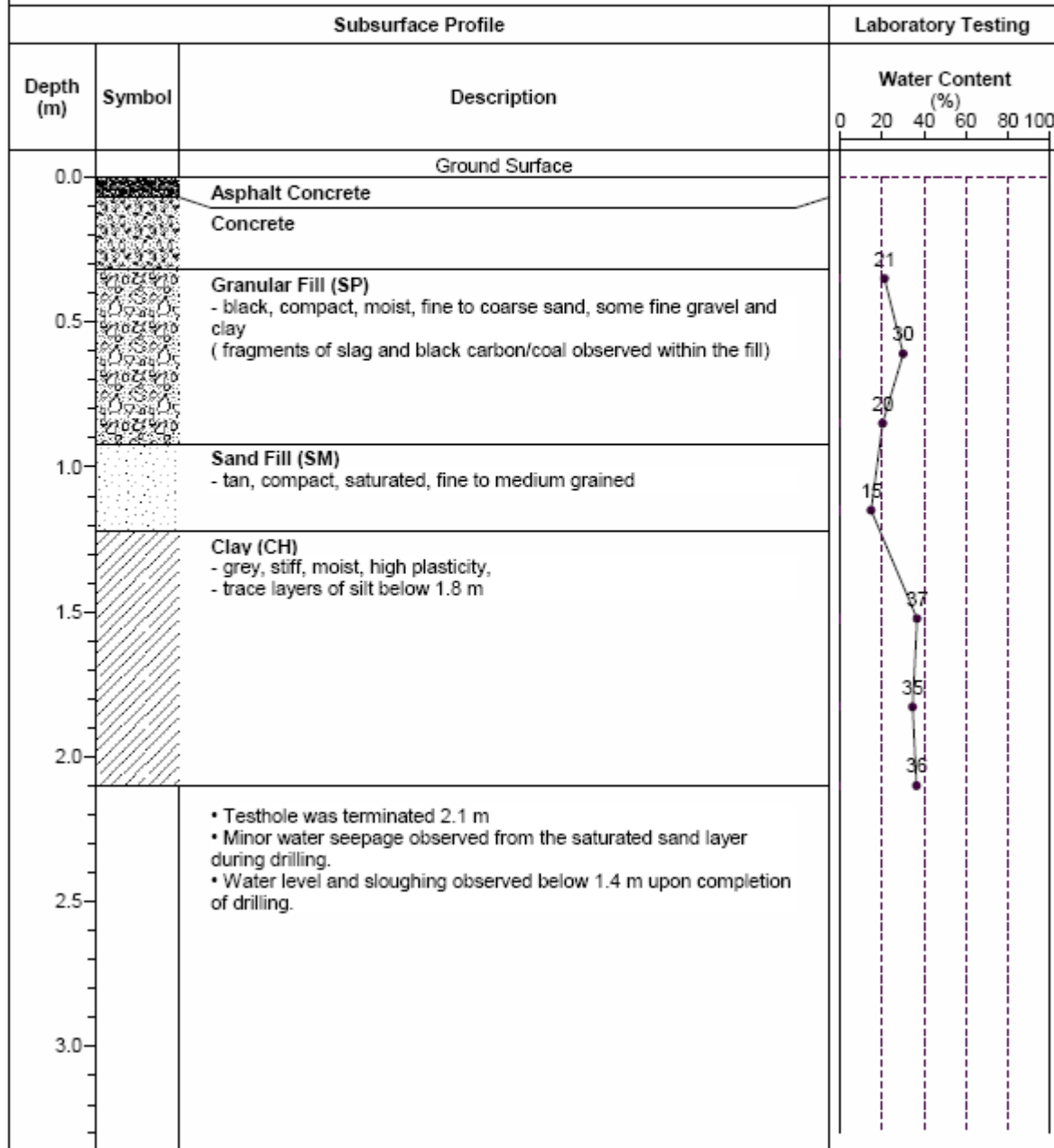


TESTHOLE 2008-D2



Project Name: Bus Rapid Transit System
Client: Dillon Consulting Ltd.
Site: Southwestern Transit Corridor
Testhole Location: 633669 E / 5526486 N - Donald Street

Date Drilled: October 30, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski



TESTHOLE 2008-D4



Project Name: Bus Rapid Transit System
Client: Dillon Consulting Ltd.
Site: Southwestern Transit Corridor
Testhole Location: 633710 E / 5526587 N - Donald Street

Date Drilled: October 30, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski

Subsurface Profile			Laboratory Testing					
Depth (m)	Symbol	Description	Water Content (%)		Gravel (%)	Sand (%)	Silt (%)	Clay (%)
			PL	LL				
0.0		Ground Surface						
		Asphalt Concrete						
		Concrete						
0.5		Granular Base (SW) - 20 mm maximum aggregate size						
1.0		Clay (CH) - black/grey, stiff, moist, high plasticity - brown below 0.8 m - trace layers of saturated silt and fine sand below 1.5 m						
1.5								
2.0								
2.5		<ul style="list-style-type: none"> • Testhole was terminated 2.1 m • Minor/moderate water seepage was observed from the saturated layers of silt/fine sand below 1.5 m during drilling • Water level observed at 2.0 m upon completion of drilling • No sloughing was observed during or upon completion of drilling 						
3.0								

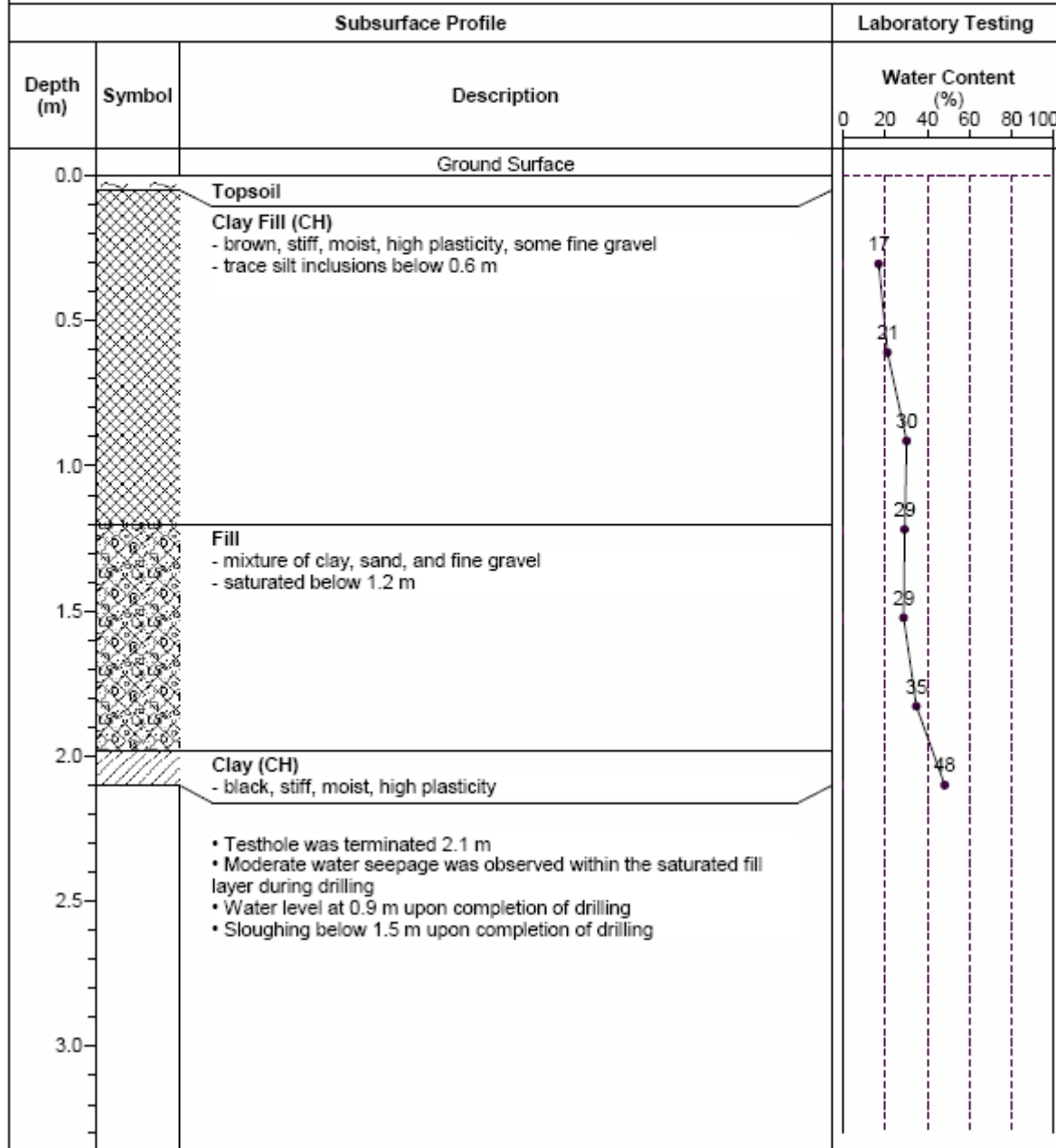
Depth (m)	Water Content (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
0.29	29				
0.29	29				
0.30	30				
0.32	32	0	1.3	14.3	84.4
0.33	33				
0.33	33				
0.31	31				

TESTHOLE 2008-D5



Project Name: Bus Rapid Transit System
Client: Dillon Consulting Ltd.
Site: Southwestern Transit Corridor
Testhole Location: 633768 E / 5526749N - Between Donald Street and CNR Rivers

Date Drilled: October 22, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski



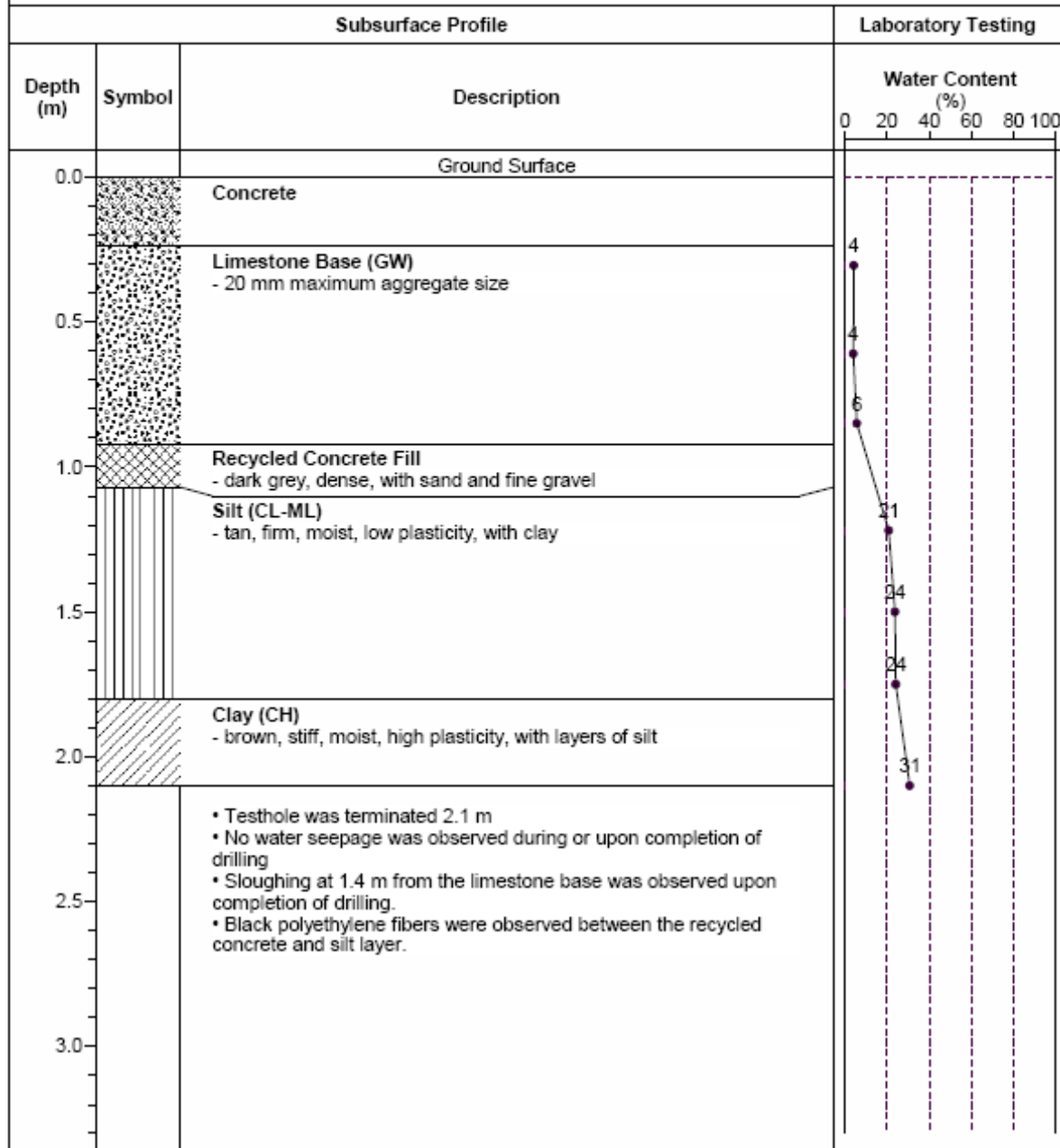
Template Version: C420081212 - RW

TESTHOLE 2008-H1



Project Name: Bus Rapid Transit System
Client: Dillon Consulting Ltd.
Site: Southwestern Transit Corridor
Testhole Location: 633925 E / 5527037 N - Stradbrook Avenue

Date Drilled: October 30, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski

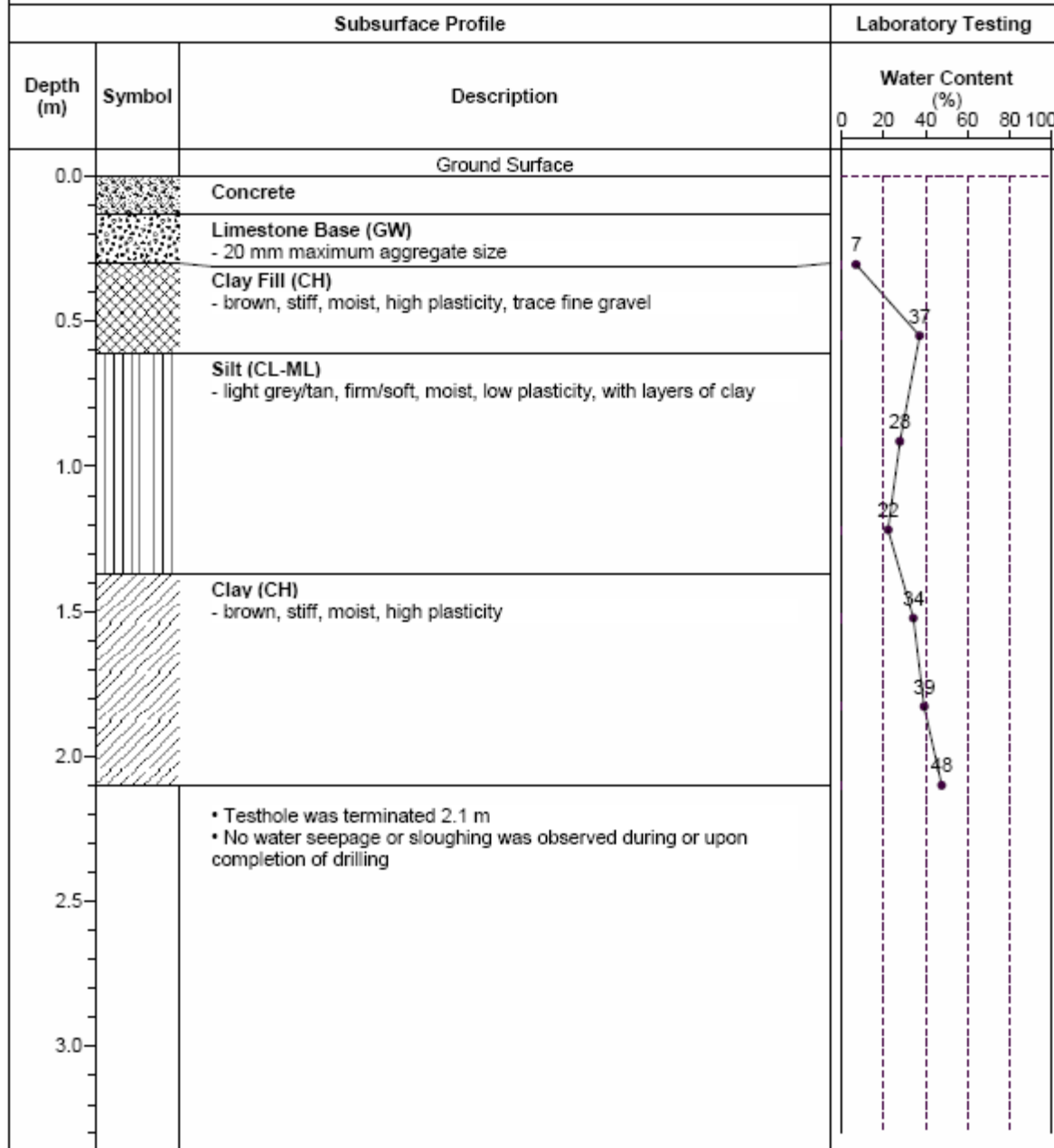


TESTHOLE 2008-H2



Project Name: Bus Rapid Transit System
Client: Dillon Consulting Ltd.
Site: Southwestern Transit Corridor
Testhole Location: 633981 E / 5527097 N - Stradbrook Avenue

Date Drilled: October 30, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski

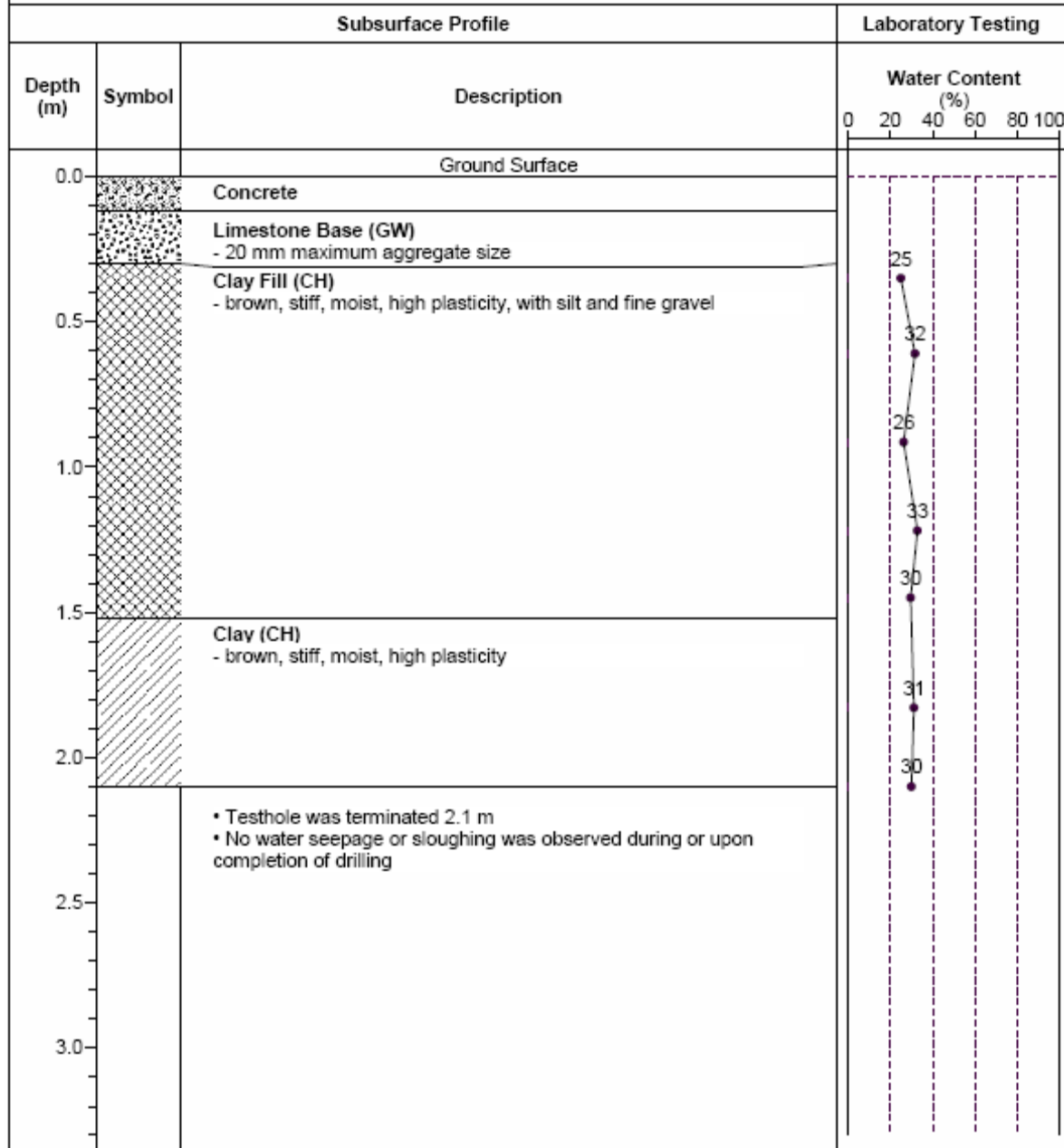


TESTHOLE 2008-H3



Project Name: Bus Rapid Transit System
Client: Dillon Consulting Ltd.
Site: Southwestern Transit Corridor
Testhole Location: 634015 E / 5527134 N - Harkness Avenue

Date Drilled: October 30, 2008
Depth of Testhole: 2.1 m
Logged by: Kurtis Kulchyski



Pavement Core Photos



Pavement core from Testhole TH 2008-8



Pavement core from Testhole TH 2008-D1



Pavement core from Testhole TH 2008-D2



Pavement core from Testhole TH 2008-D3



Pavement core from Testhole TH 2008-D4



Pavement core from Testhole TH 2008-H1



Pavement core from Testhole TH 2008-H2



Pavement core from Testhole TH 2008-H3