

# **APPENDIX 'A'**

# **GEOTECHNICAL REPORT**

## APPENDIX 'A' - GEOTECHNICAL REPORT

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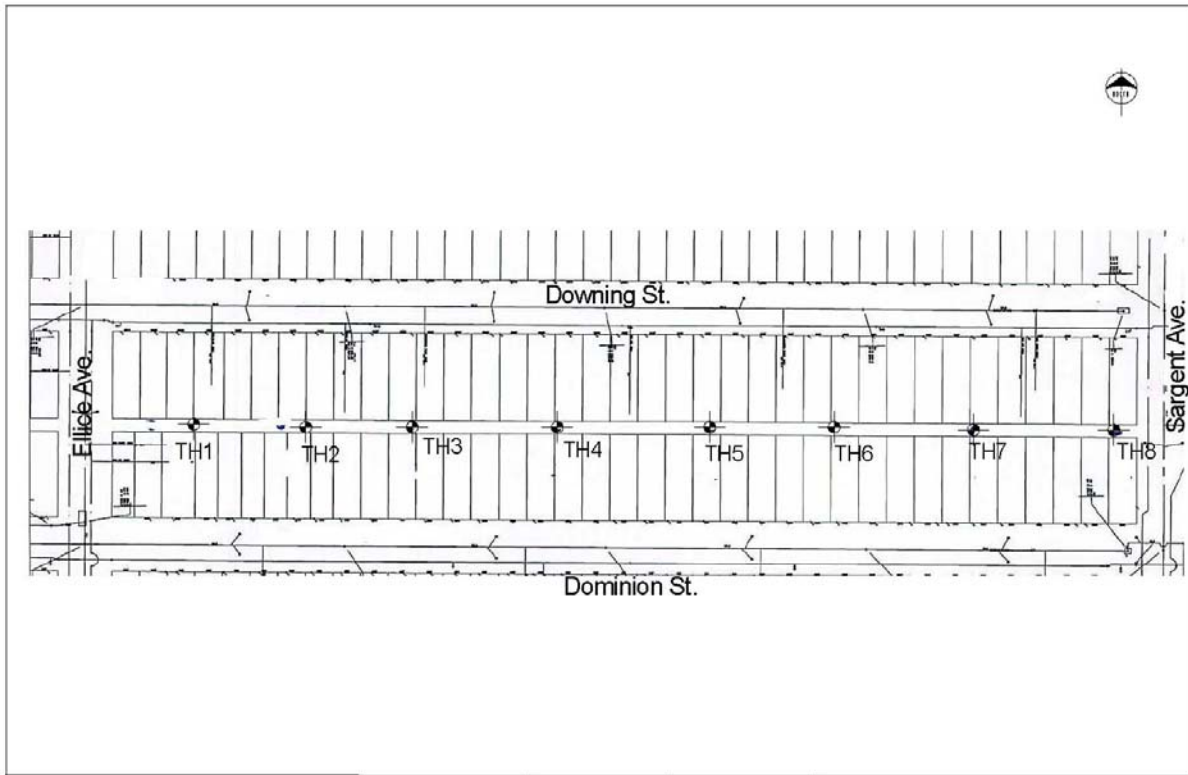
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The geotechnical report is provided to aid in the Contractor's evaluation of the existing pavement structure and/or soil conditions. The information presented is considered accurate at the locations shown on the Drawings and at the time of drilling. 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 Downing St. / Dominion St. Alley

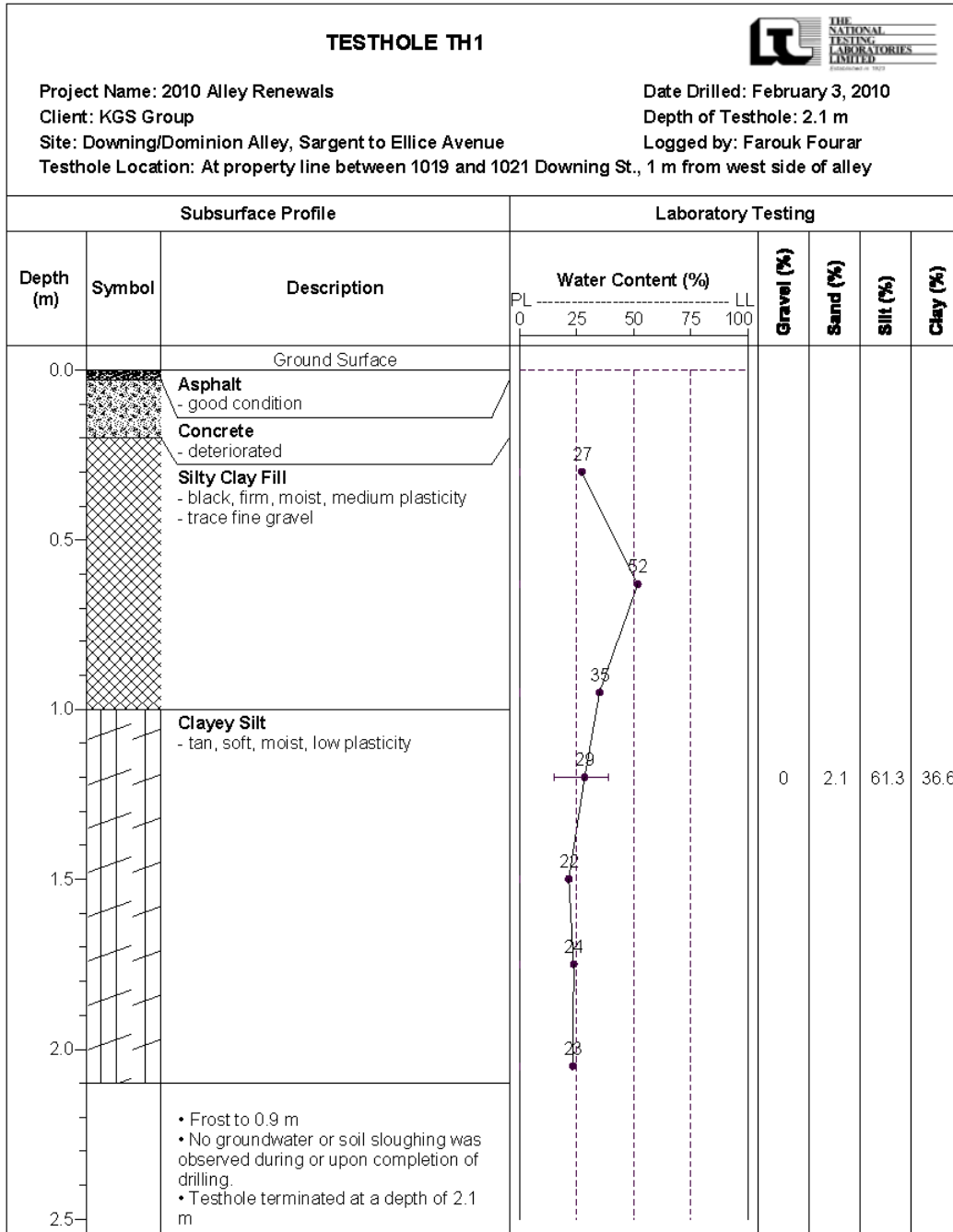
#### Test Hole Locations



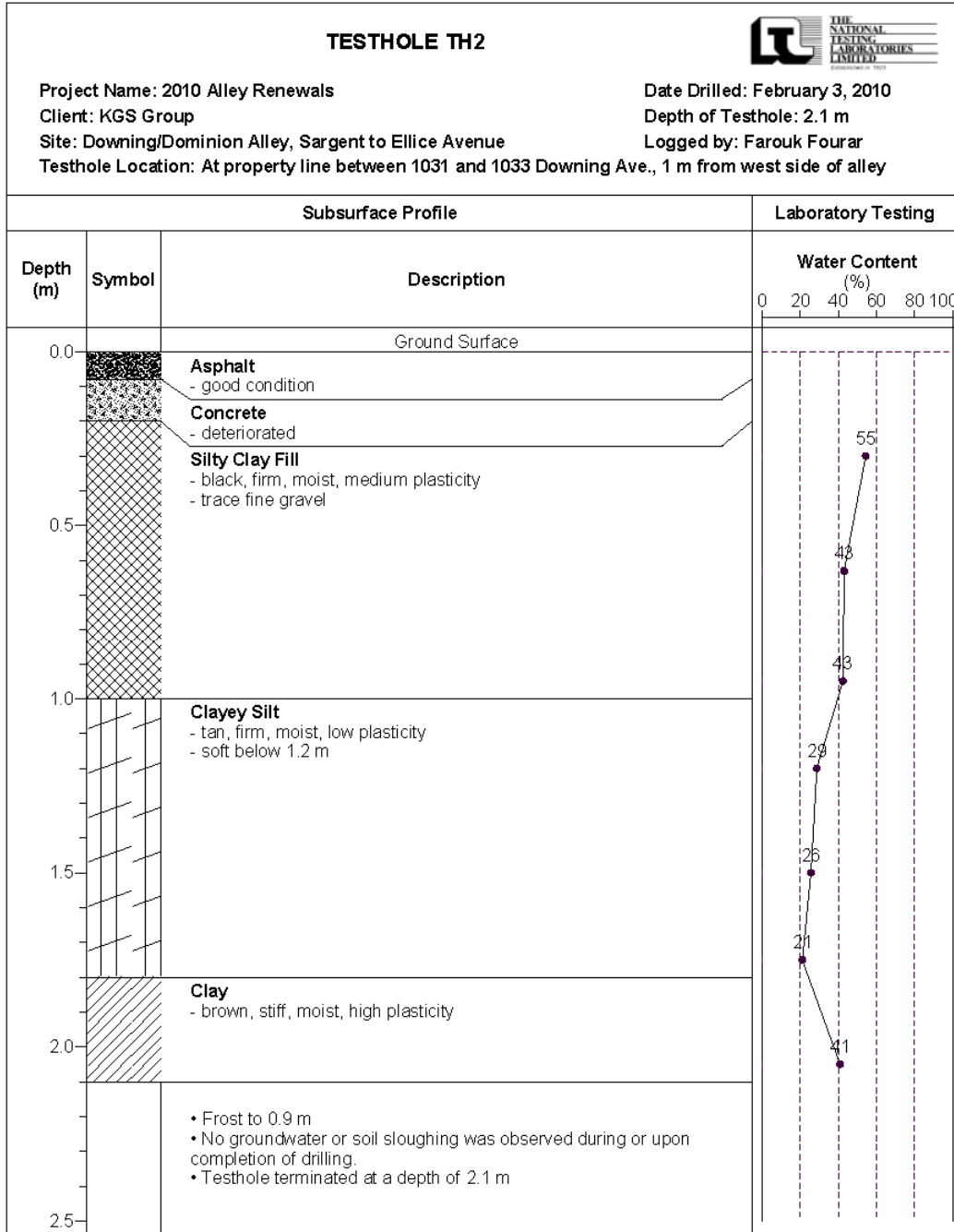
 <p>THE          NATIONAL          TESTING          LABORATORIES          LIMITED          Established in 1923</p>	Project No.KGS-932	Drawn by: G.L	Figure: 1	<b>Testhole Location Plan                  Downing Dominion Alley                  2010 Alley Renewal</b>
	Date: March 15, 2010	Reviewed by: DF	Scale: NTS	



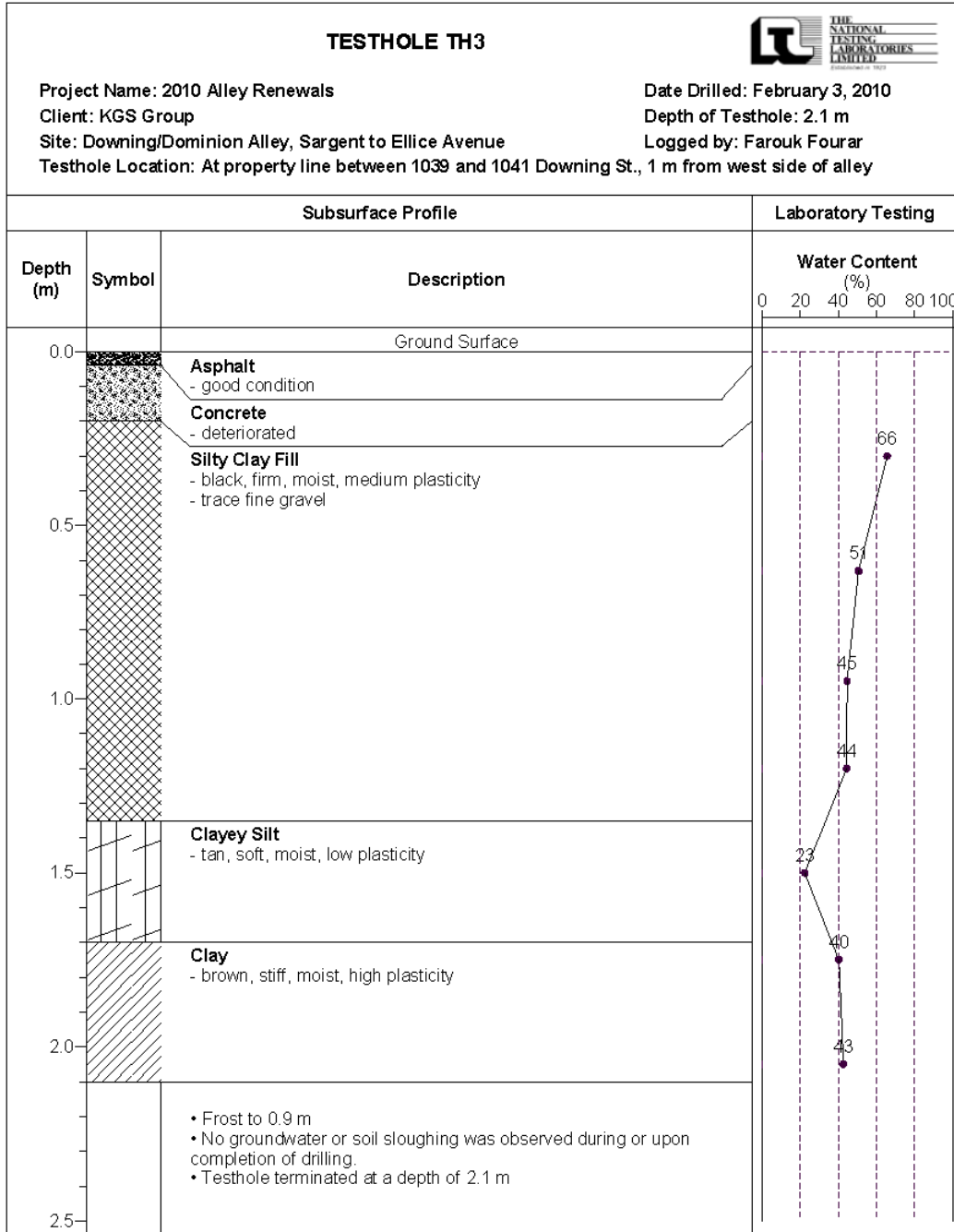
**Test Hole #1 for Downing St. / Dominion St. Alley**



**Test Hole #2 for Downing St. / Dominion St. Alley**

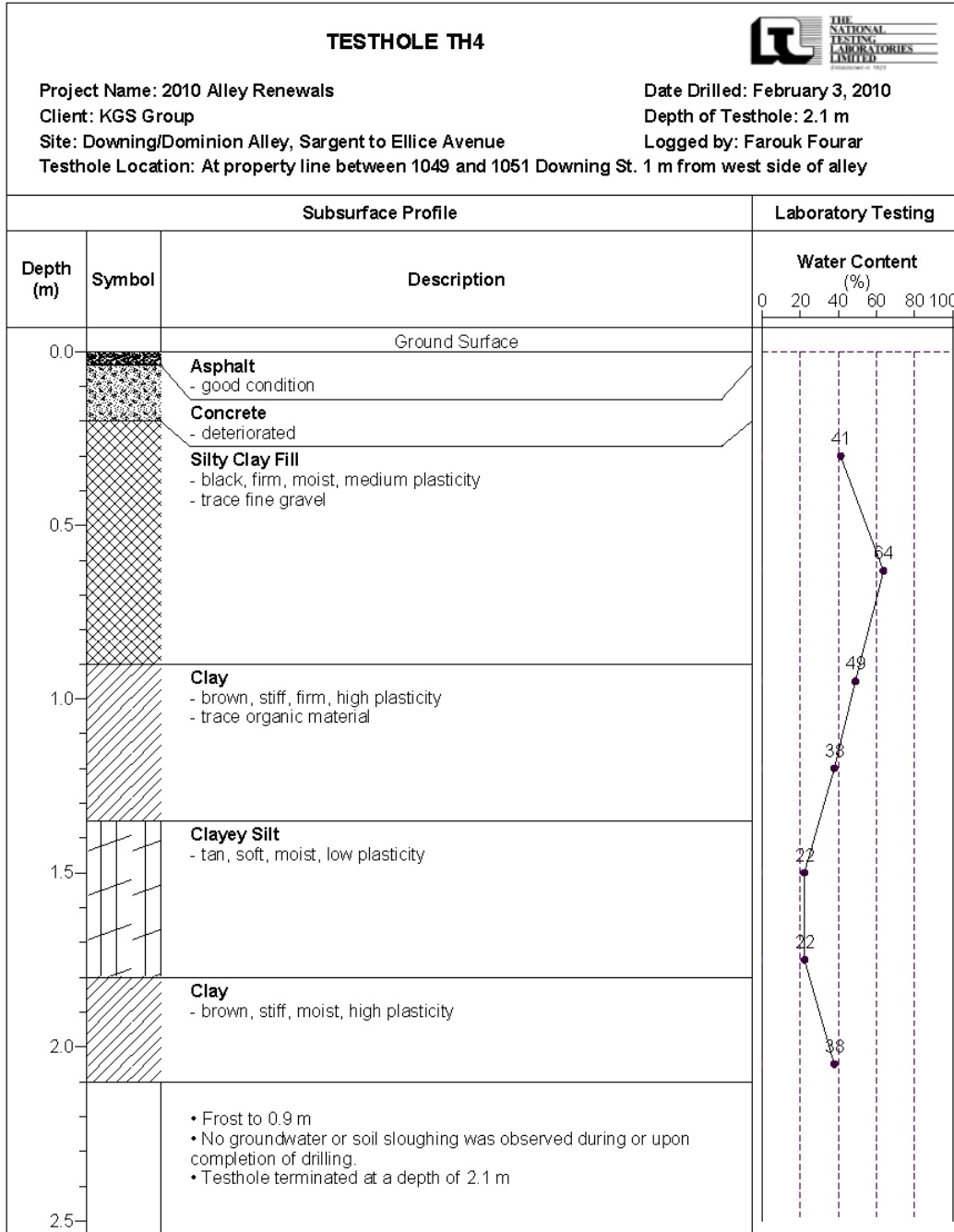


**Test Hole #3 for Downing St. / Dominion St. Alley**

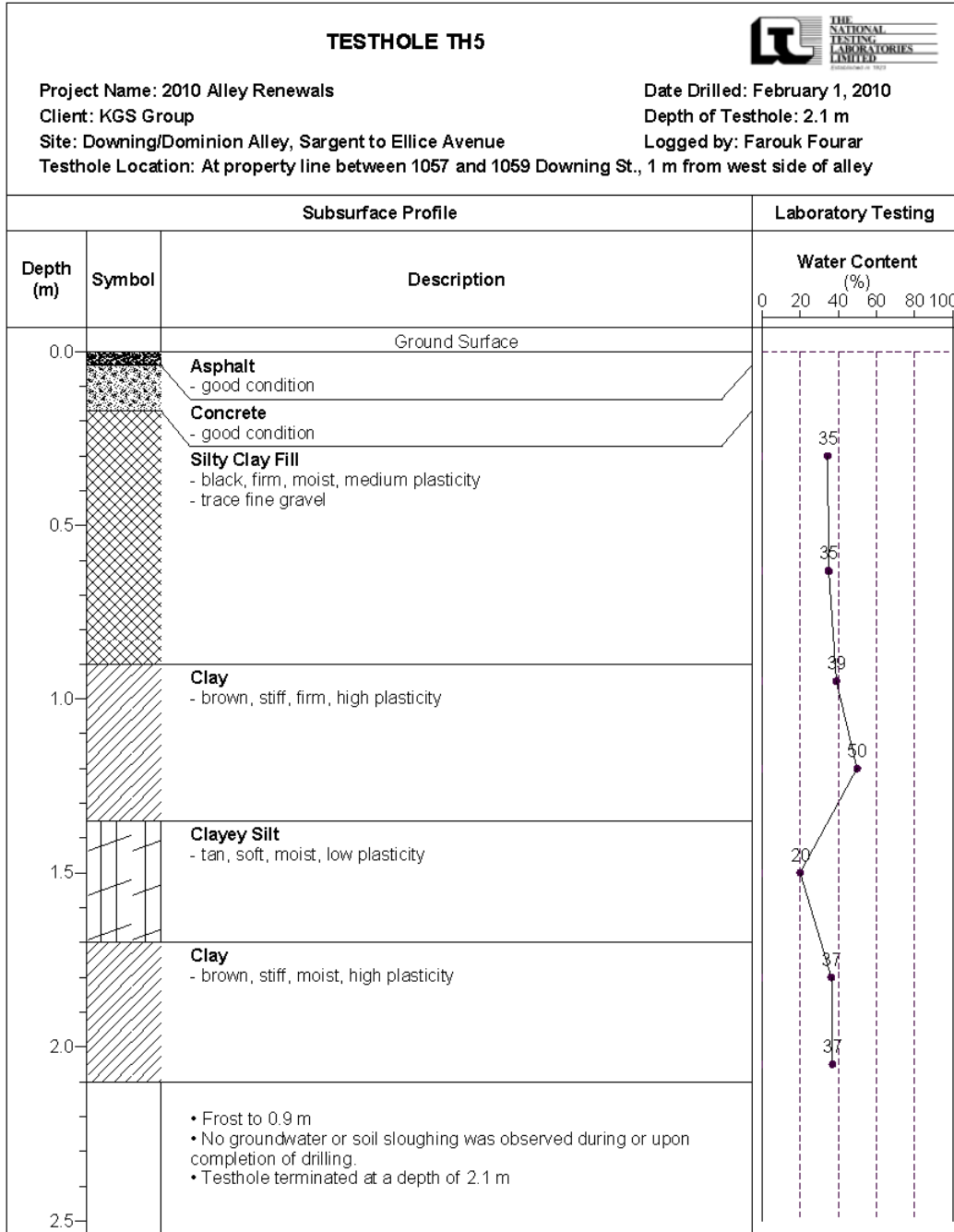




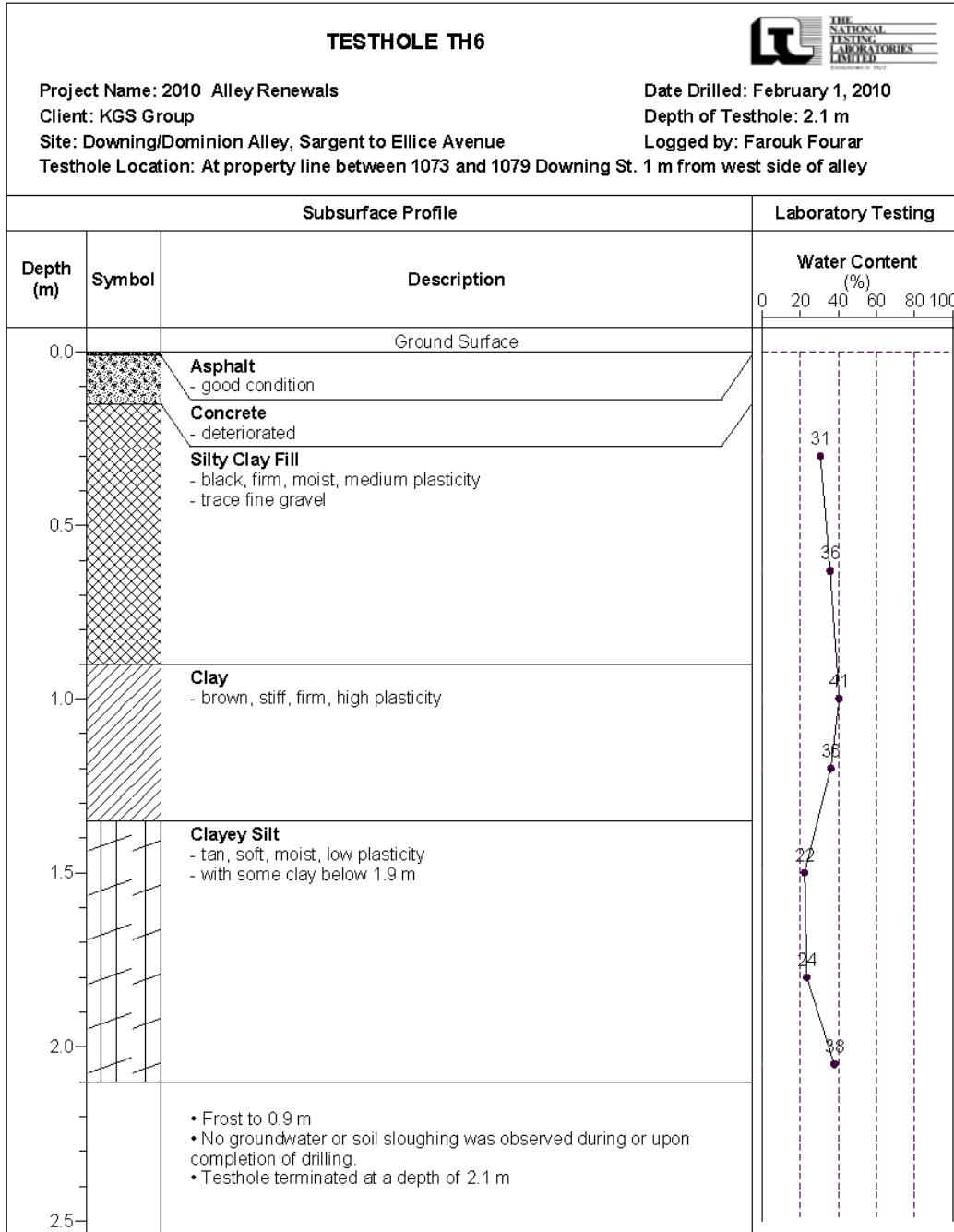
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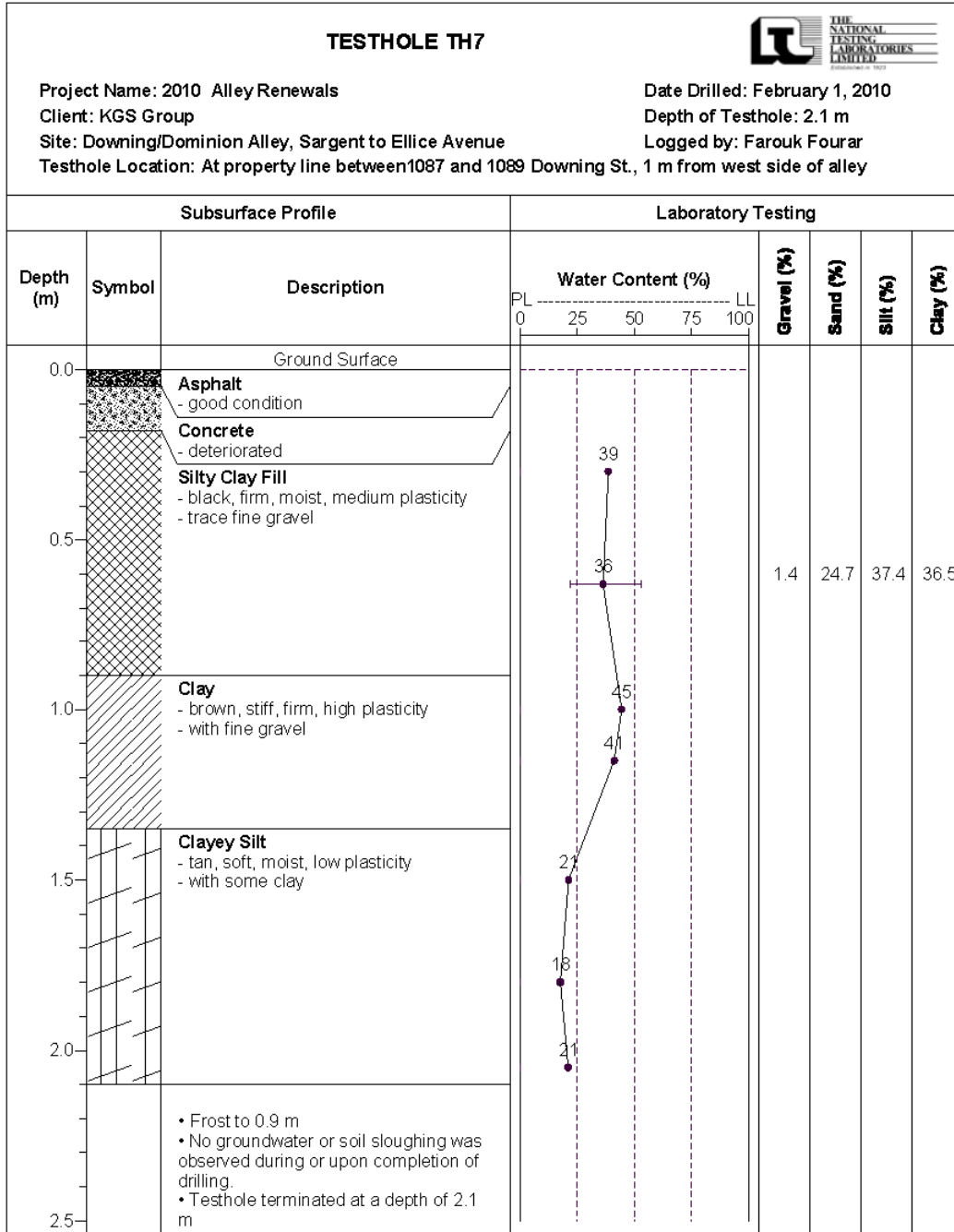
**Test Hole #5 for Downing St. / Dominion St. Alley**



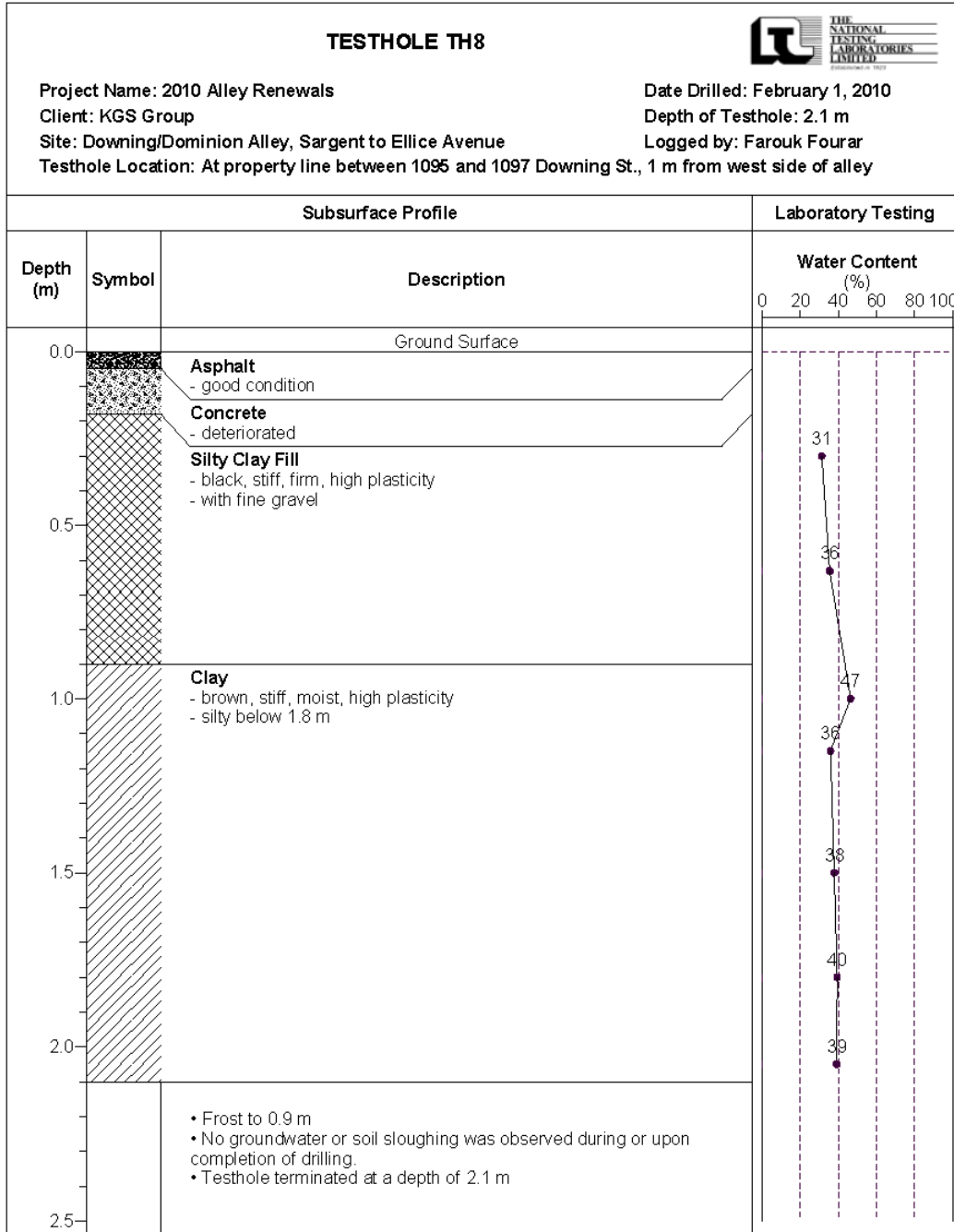
**Test Hole #6 for Downing St. / Dominion St. Alley**



**Test Hole #7 for Downing St. / Dominion St. Alley**



**Test Hole #8 for Downing St. / Dominion St. Alley**



### Pavement Core Photos #1



Core sample from Testhole TH1



Core sample from Testhole TH2

## Pavement Core Photos #2



Core sample from Testhole TH3



Core sample from Testhole TH4

### Pavement Core Photos #3



Core sample from Testhole TH5



Core sample from Testhole TH6



### Pavement Core Photos #4



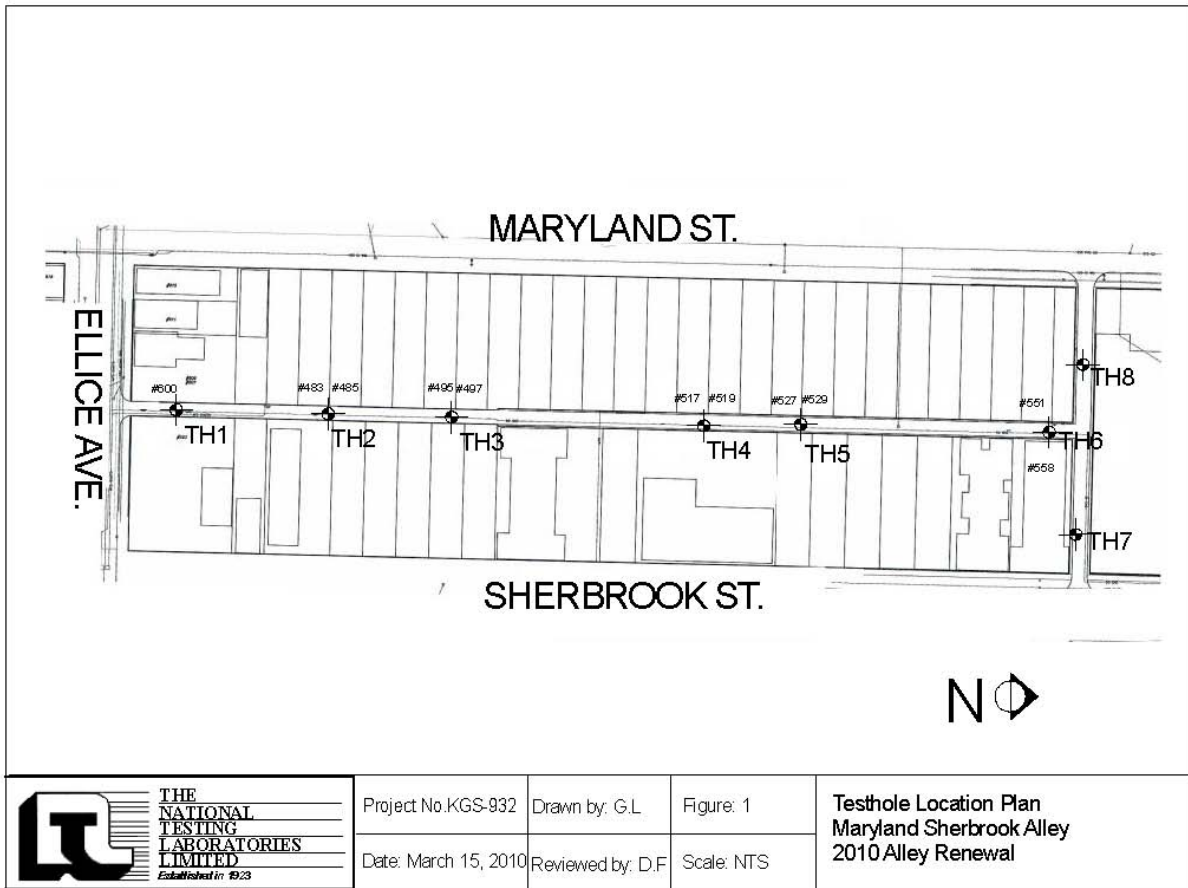
Core sample from Testhole TH7




Core sample from Testhole TH8

**Geotechnical Report for Maryland St. / Sherbrook St. North Alley**

**Test Hole Locations**



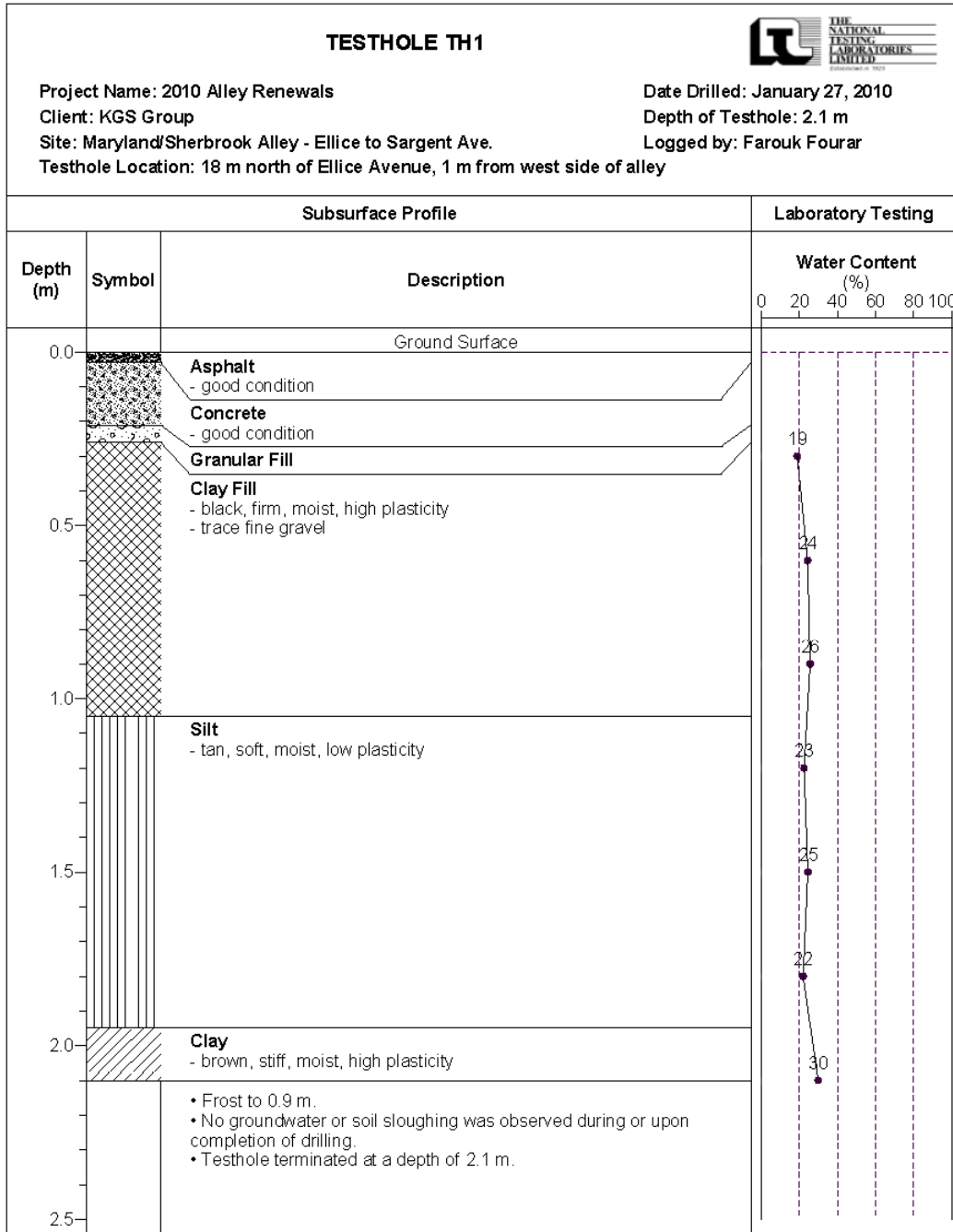
 <p>THE        NATIONAL        TESTING        LABORATORIES        LIMITED  <small>Established in 1923</small></p>	Project No. KGS-932	Drawn by: G.L.	Figure: 1	<b>Testhole Location Plan</b> <b>Maryland Sherbrook Alley</b> <b>2010 Alley Renewal</b>
	Date: March 15, 2010	Reviewed by: D.F.	Scale: NTS	

**Summary of Core Samples**

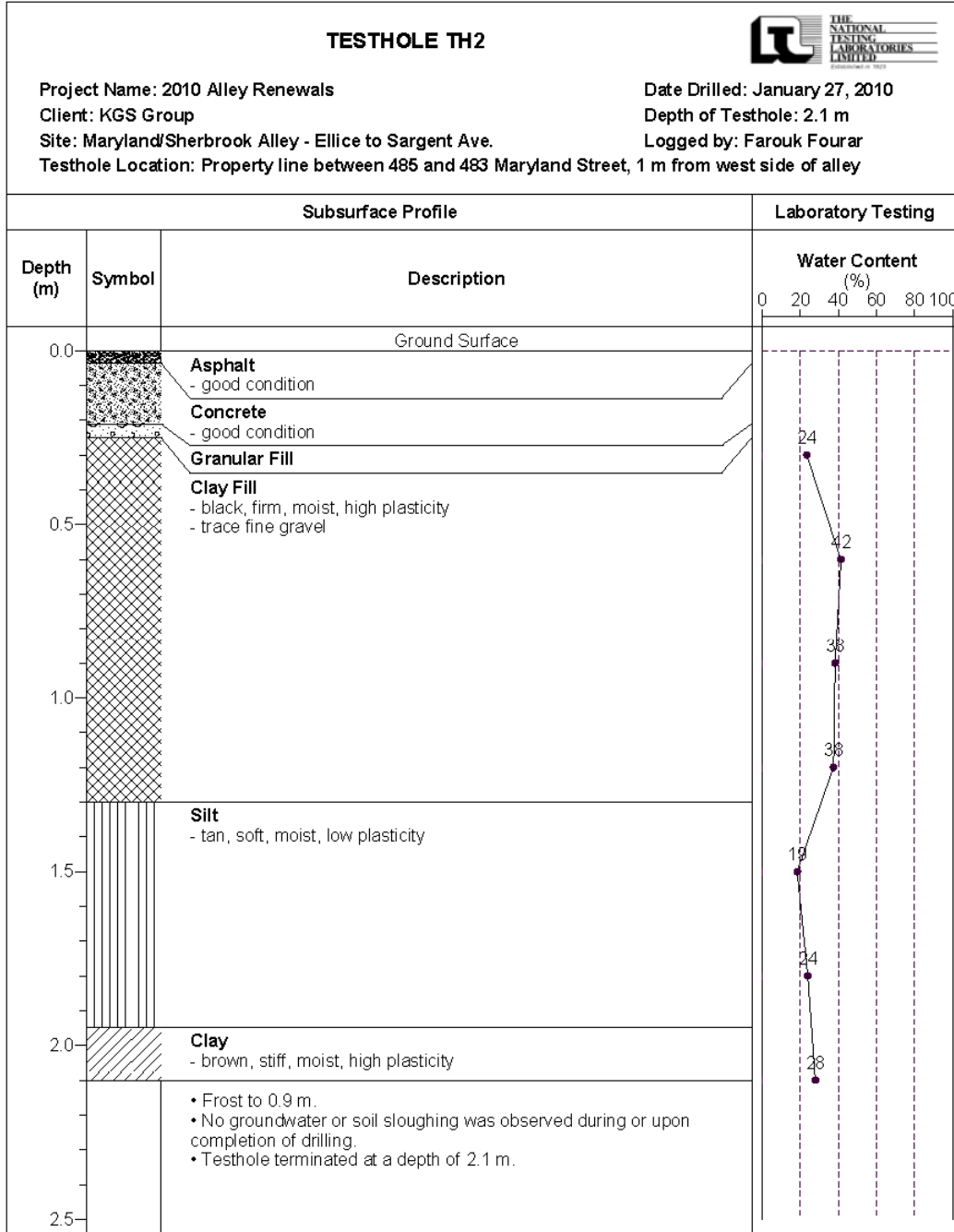
**Maryland Sherbrook Alley  
 Ellice Avenue to Sargent Avenue**

Testhole ID	Testhole Location	Pavement Surface		Pavement Structure Material	
		Type	Thickness (mm)	Type	Thickness (mm)
TH1	18 m north of Ellice Ave. 1 m from west side of alley	Asphalt / Concrete	30 / 180	Granular Fill	50
TH2	Property line between 485 and 483 Maryland St. 1 m from west side of alley	Asphalt / Concrete	35 / 170	Granular Fill	40
TH3	Property line between 497 and 495 Maryland St. 1 m from west side of alley	Asphalt / Concrete	90 / 150	Granular Fill	50
TH4	Property line between 519 and 517 Maryland St. 1 m from west side of alley	Asphalt / Concrete	20 / 165	Granular Fill	40
TH5	Property line between 529 and 527 Maryland St. 1 m from west side of alley	Asphalt / Concrete	30 / 190	Granular Fill	40
TH6	At north property line of 551 Maryland St. 1 m from west of alley	Asphalt / Concrete	110 / 200	Granular Fill	100
TH7	62 m east of Maryland St. 2.5 m south of building	Concrete	180	Granular Fill	1500
TH8	20 m east of Maryland St. 2, 5 m south of building	Concrete	190	Clay and Granular Fill	1100

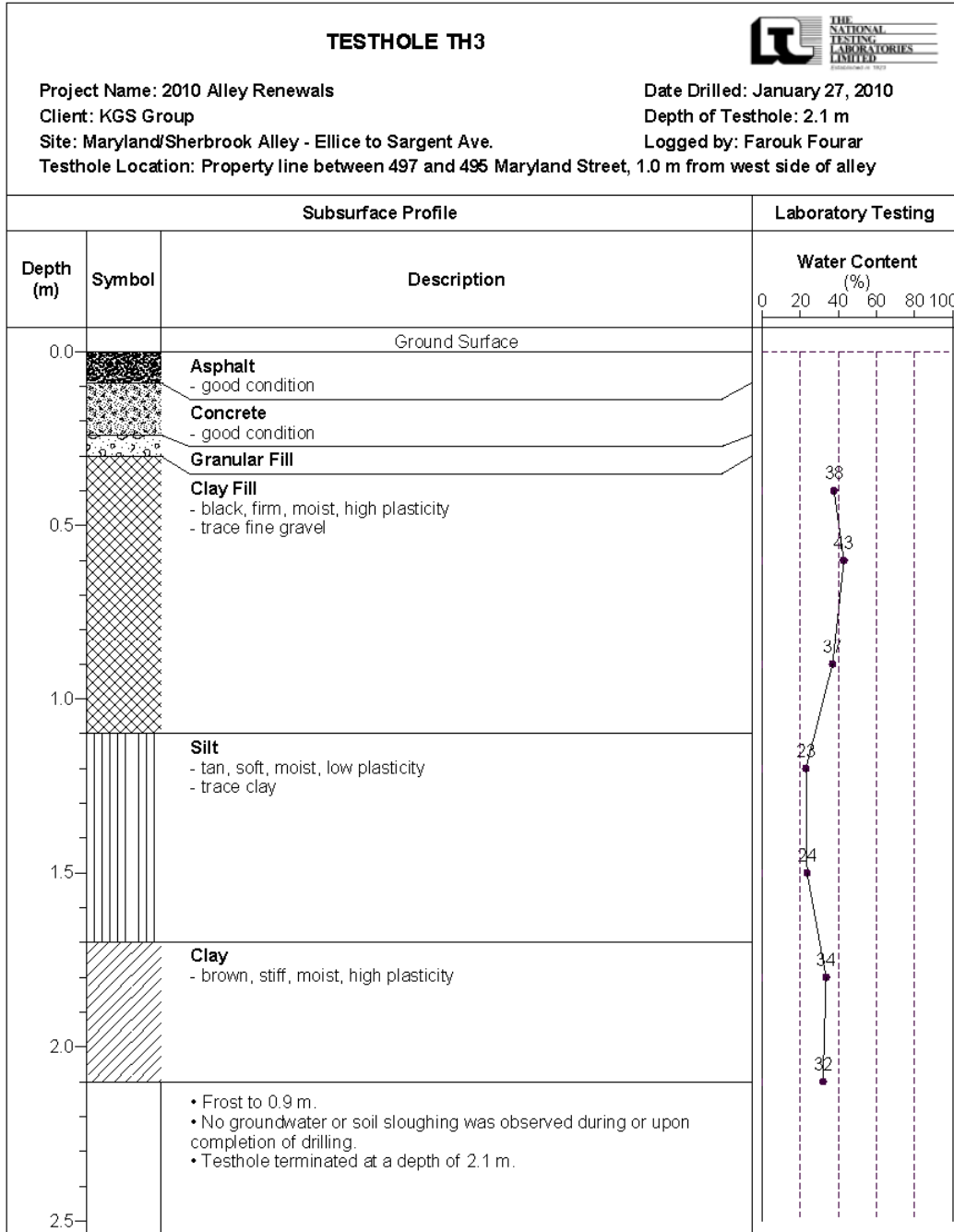
**Test Hole #1 for Maryland St. / Sherbrook St. North Alley**



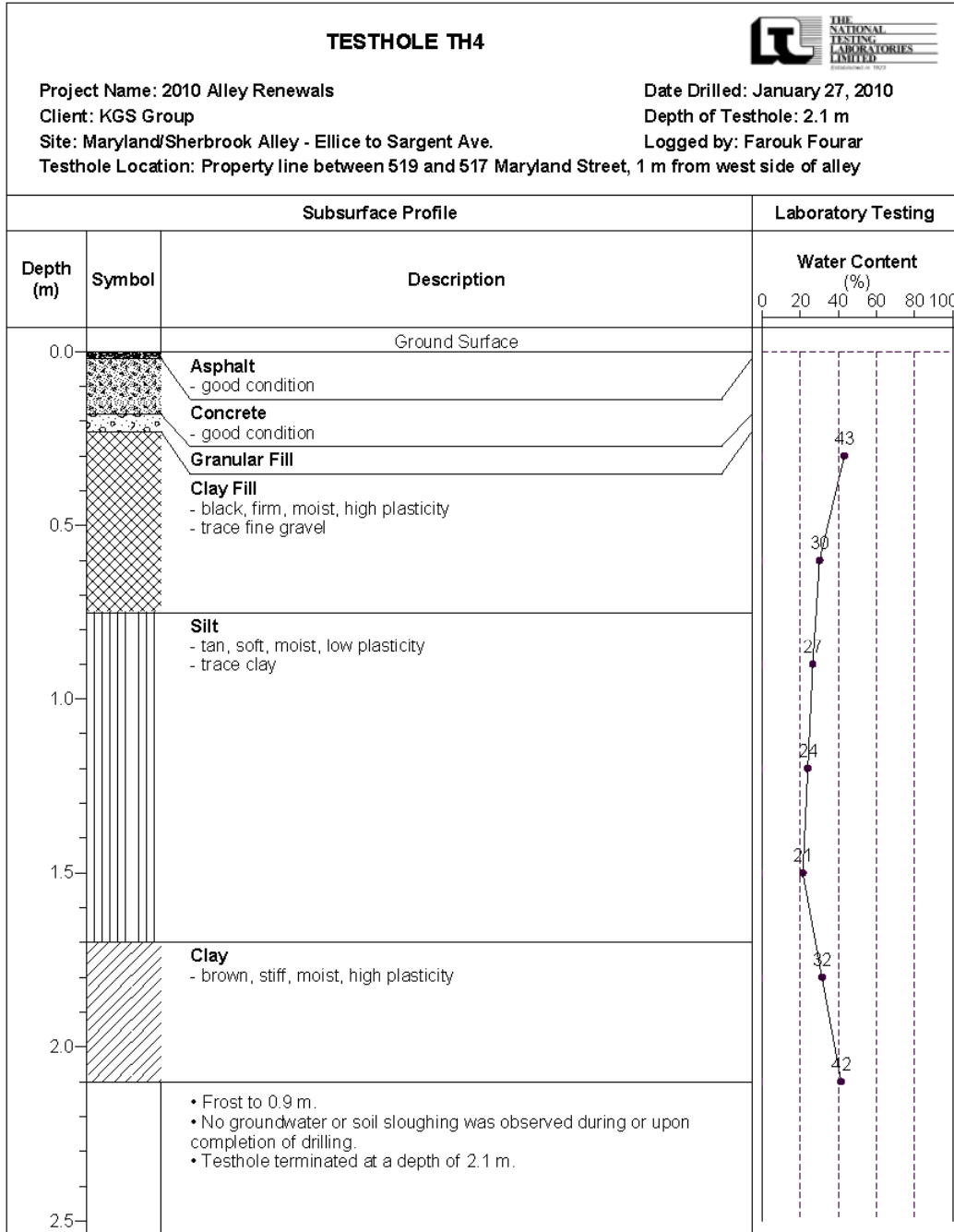
**Test Hole #2 for Maryland St. / Sherbrook St. North Alley**



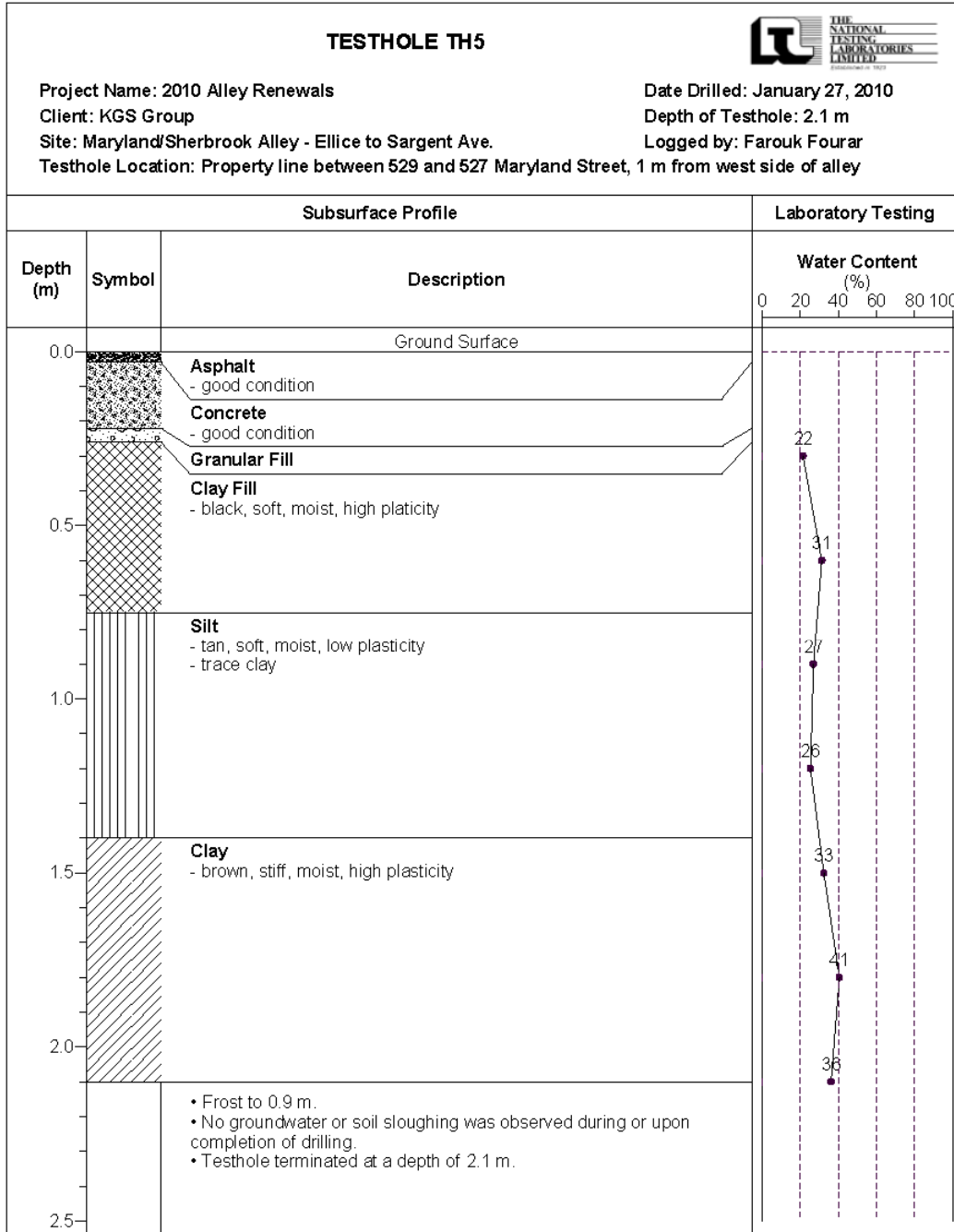
**Test Hole #3 for Maryland St. / Sherbrook St. North Alley**



**Test Hole #4 for Maryland St. / Sherbrook St. North Alley**

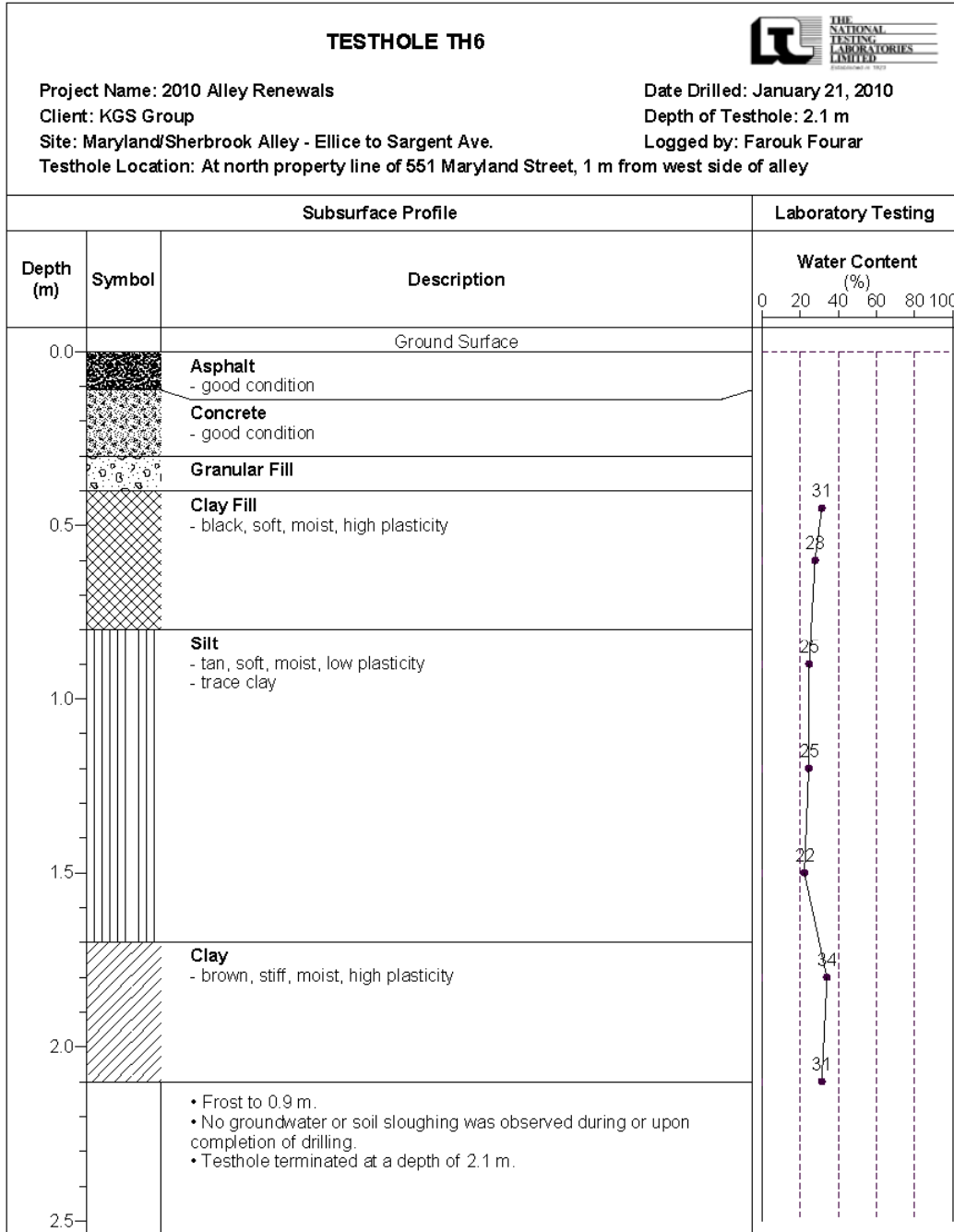


**Test Hole #5 for Maryland St. / Sherbrook St. North Alley**

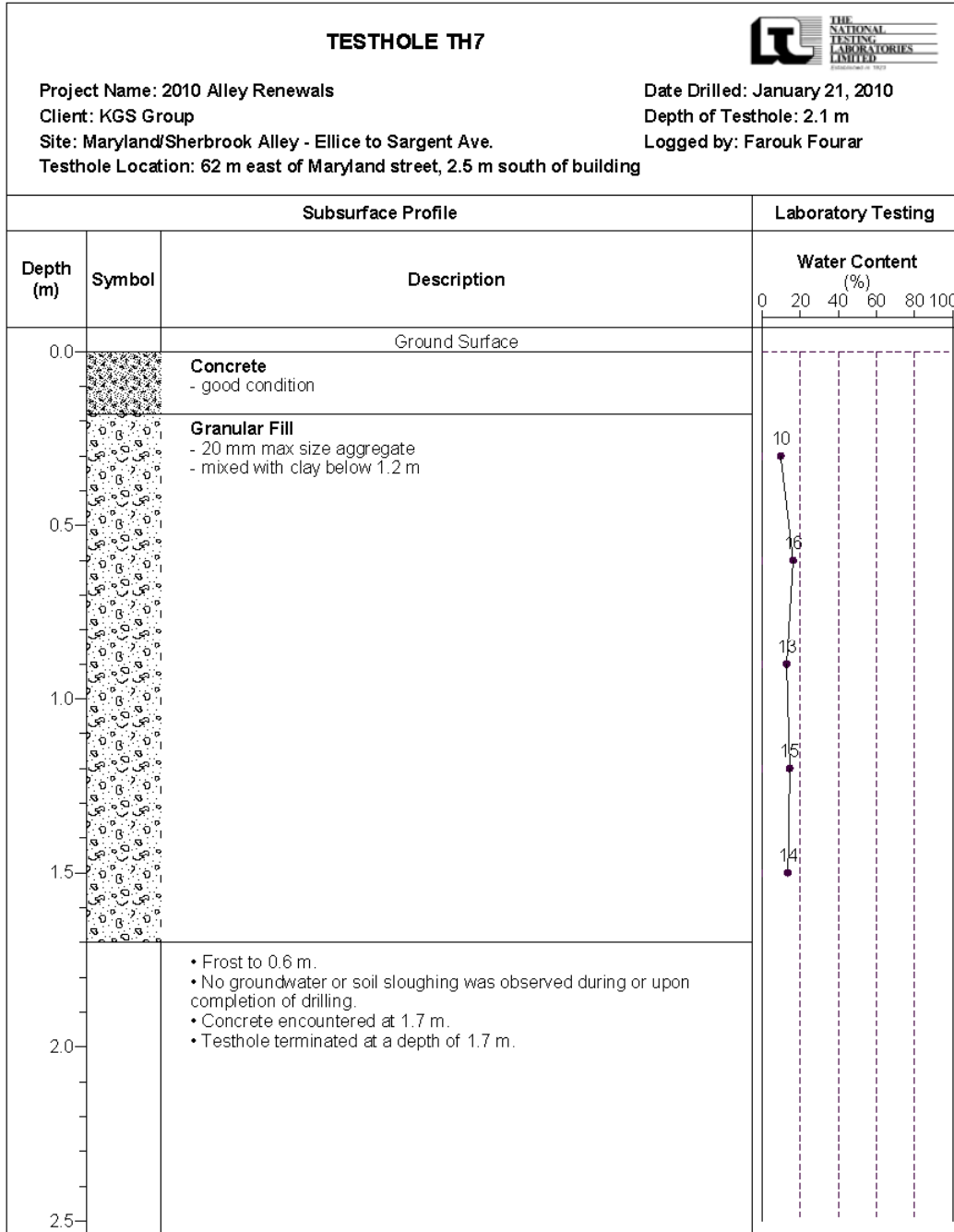




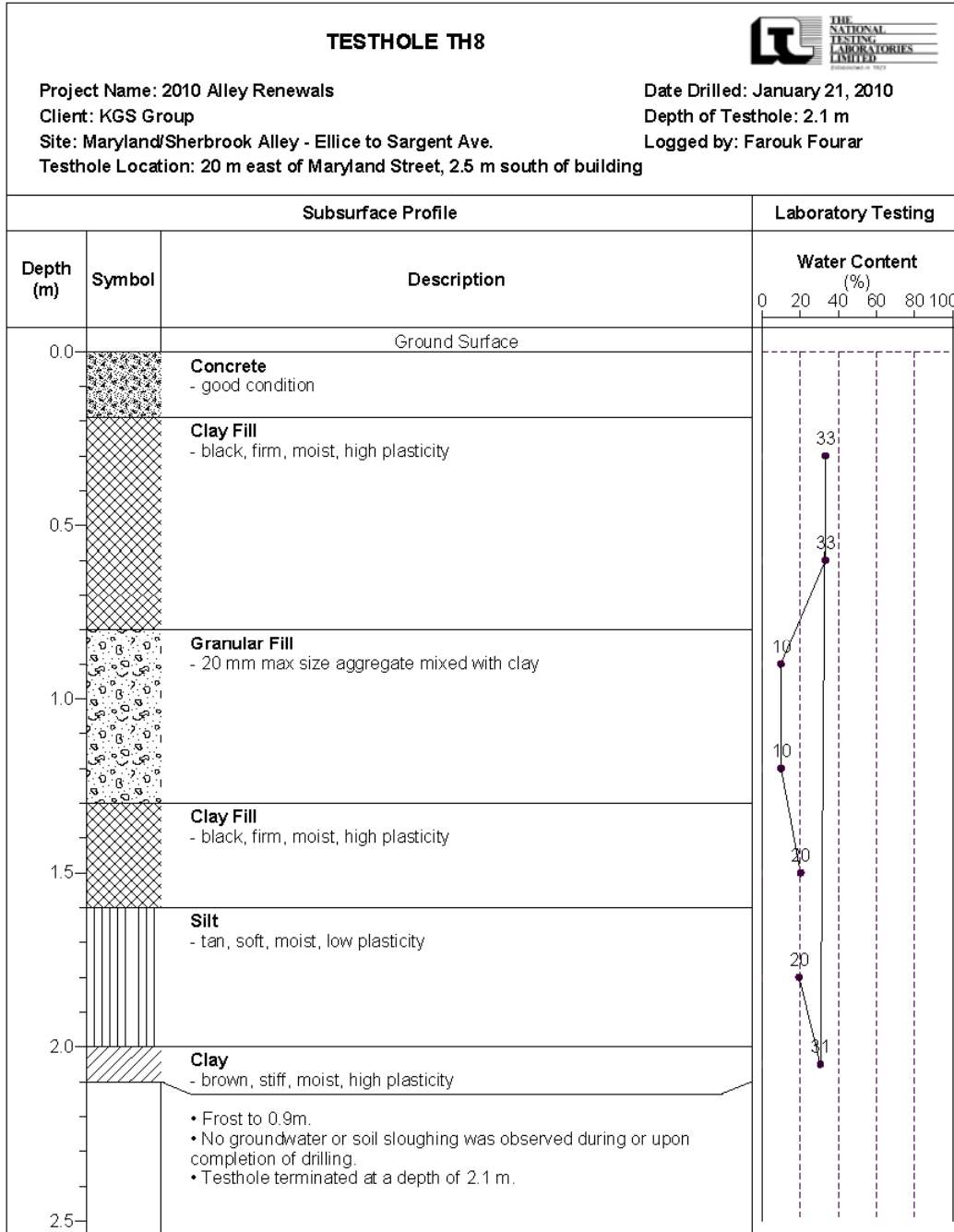
**Test Hole #6 for Maryland St. / Sherbrook St. North Alley**



**Test Hole #7 for Maryland St. / Sherbrook St. North Alley**



**Test Hole #8 for Maryland St. / Sherbrook St. North Alley**



### Pavement Core Photos #1



Core sample from Testhole TH1



Core sample from Testhole TH2

## Pavement Core Photos #2



Core sample From Testhole TH3



Core sample from Testhole TH4

### Pavement Core Photos #3



Core sample from Testhole TH5



Core sample from Testhole TH6

### Pavement Core Photos #4



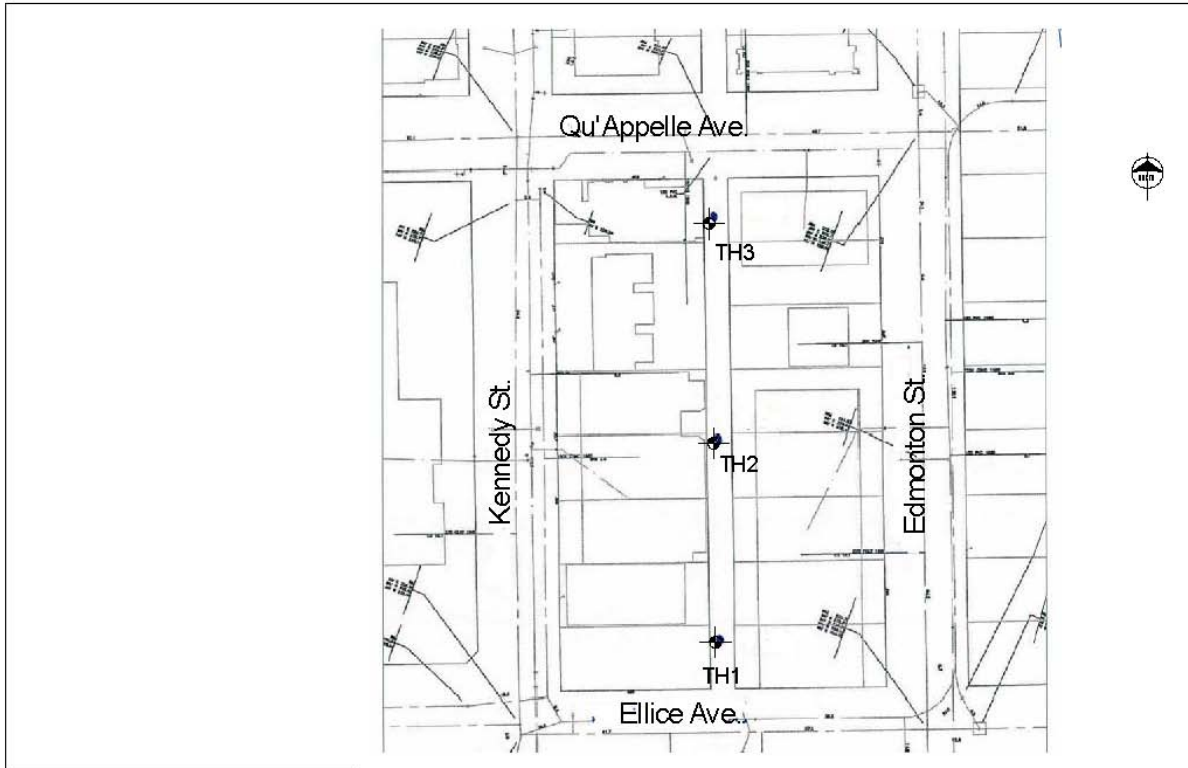
Core sample from Testhole TH7




Core sample from Testhole TH8

### Geotechnical Report for Kennedy St. / Edmonton St. Alley

#### Test Hole Locations



 <b>THE NATIONAL TESTING LABORATORIES LIMITED</b> <i>Established in 1923</i>	Project No. KGS-932	Drawn by: G.L.	Figure: 1	<b>Testhole Location Plan Kennedy Edmonton Alley 2010 Alley Renewal</b>
	Date: March 15, 2010	Reviewed by: DF	Scale: NTS	






## Summary of Core Samples

### Kennedy Edmonton Alley Qu'appelle Avenue to Ellice Avenue




Testhole ID	Testhole Location	Pavement Surface		Pavement Structure Material	
		Type	Thickness (mm)	Type	Thickness (mm)
TH1	At 344 Edmonton Street centreline of alley	Asphalt	90	Granular Fill	N/A
TH2	At property line between 355 and 405 Kennedy Street centreline of alley	Asphalt	115	Granular Fill	N/A
TH3	10 m north of 375 Kennedy Street centreline of alley	Asphalt	90	Granular Fill	N/A

**Note:** Testholes were not drilled beneath the asphalt pavement due the presence of MTS and Manitoba Hydro underground services




**Test Hole #1 for Kennedy St. / Edmonton St. Alley**

<b>TESTHOLE TH1</b>			
Project Name: 2010 Alley Renewals		Date Drilled: January 21, 2010	
Client: KGS Group		Depth of Testhole: 0.2 m	
Site: Kennedy/Edmonton St. Alley, Qu'appelle to Elice Ave.		Logged by: Farouk Fourar	
Testhole Location: At 344 Edmonton St., centre line of alley			
Subsurface Profile			Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%)
			0 20 40 60 80 100
0.0		Ground Surface <b>Asphalt</b> - good condition	
		<b>Granular Fill</b>	
		<ul style="list-style-type: none"> <li>• MTS and Manitoba Hydro did not allow the drilling of this testhole due to presence of underground services.</li> </ul>	
0.5			
1.0			
1.5			
2.0			
2.5			

**Test Hole #2 for Kennedy St. / Edmonton St. Alley**

TESTHOLE TH2			
Project Name: 2010 Alley Renewals		Date Drilled: January 21, 2010	
Client: KGS Group		Depth of Testhole: 0.3 m	
Site: Kennedy/Edmonton St. Alley, Qu'appelle to Elice Ave.		Logged by: Farouk Fourar	
Testhole Location: At property line between 355 and 405 Kennedy St., centre line of alley			
Subsurface Profile			Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%)
0.0		Ground Surface <b>Asphalt</b> - good condition	0 20 40 60 80 100
		<b>Granular Fill</b>	
		<ul style="list-style-type: none"> <li>• MTS and Manitoba Hydro did not allow the drilling of this testhole due to presence of underground services.</li> </ul>	
0.5			
1.0			
1.5			
2.0			
2.5			

**Test Hole #3 for Kennedy St. / Edmonton St. Alley**

TESTHOLE TH3			 <small>THE NATIONAL TESTING LABORATORIES LIMITED</small>
Project Name: 2010 Alley Renewals Client: KGS Group Site: Kennedy/Edmonton St. Alley, Qu'appelle to Elice Ave. Testhole Location: 10 m north of 375 Kennedy St., Centre line of alley		Date Drilled: January 21, 2010 Depth of Testhole: 0.2 m Logged by: Farouk Fourar	
Subsurface Profile			Laboratory Testing
Depth (m)	Symbol	Description	Water Content (%)
0.0		Ground Surface <b>Asphalt</b> - good condition	0 20 40 60 80 100
		<b>Granular Fill</b>	
		<ul style="list-style-type: none"> <li>• MTS and Manitoba Hydro did not allow the drilling of this testhole due to presence of underground services.</li> </ul>	
0.5			
1.0			
1.5			
2.0			
2.5			

### Pavement Core Photos



Core sample from Testhole TH1



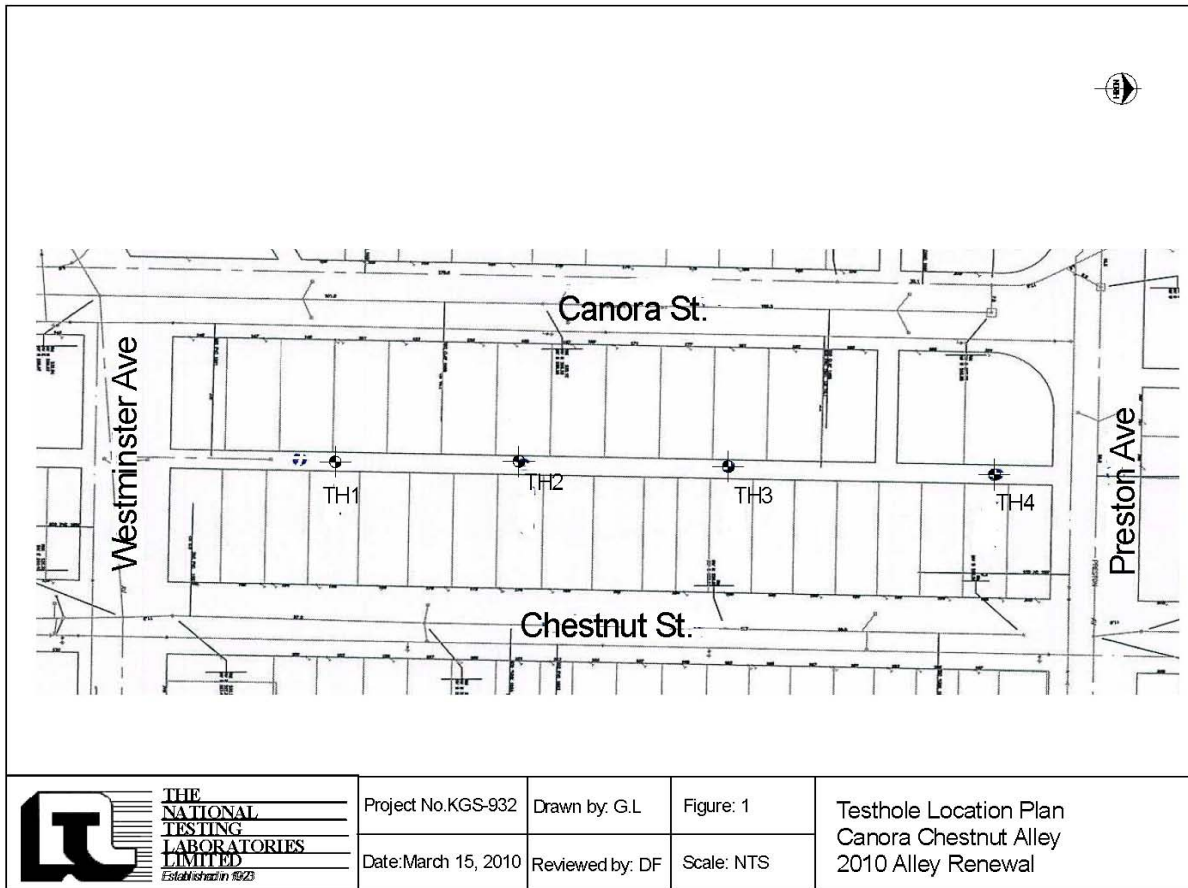
Core sample from Testhole TH2



Core sample from Testhole TH3

### Geotechnical Report for Canora St. / Chestnut St. Alley

#### Test Hole Locations

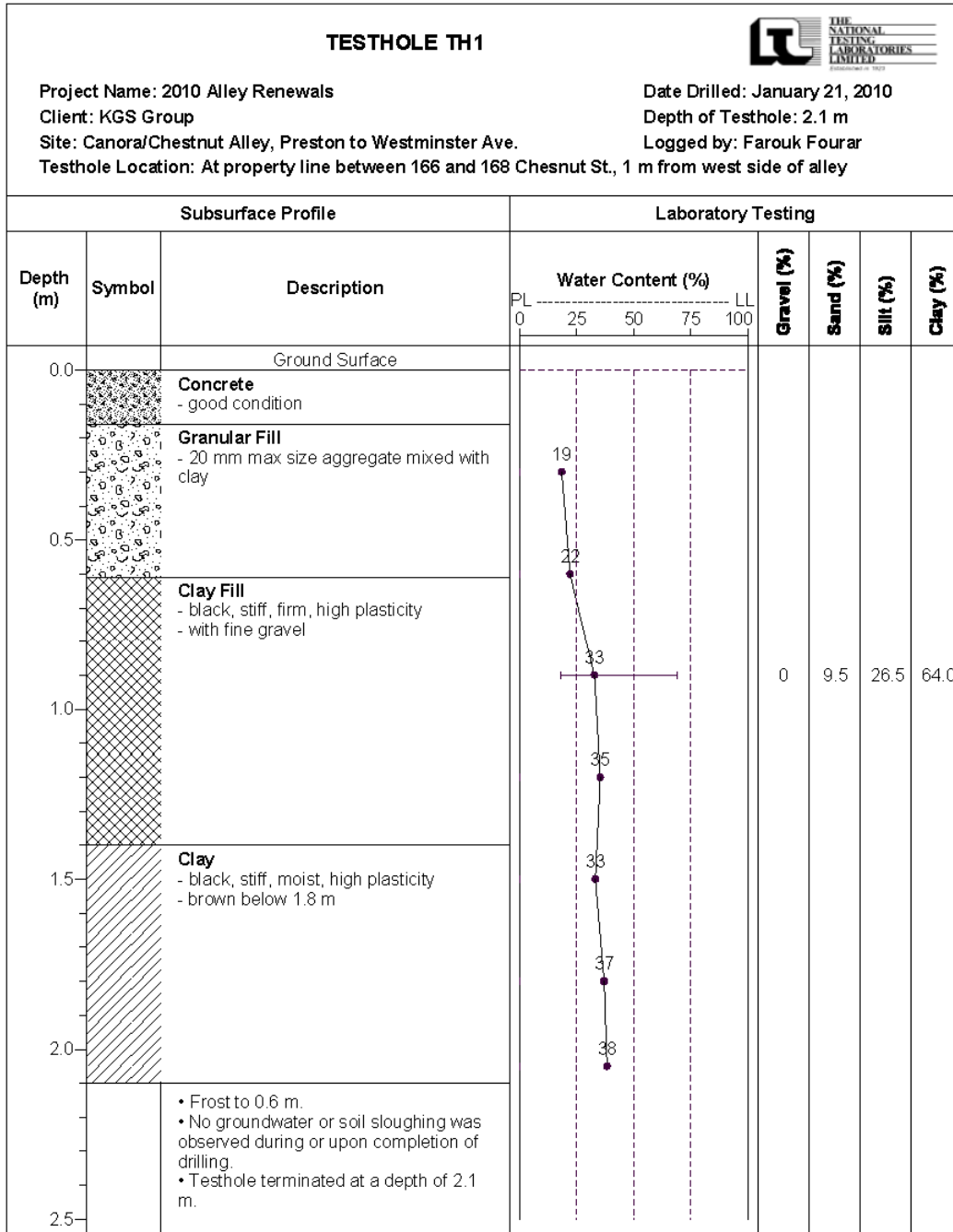


### Summary of Core Samples

**Canora Chestnut Alley  
 Preston to Westminster Ave.**

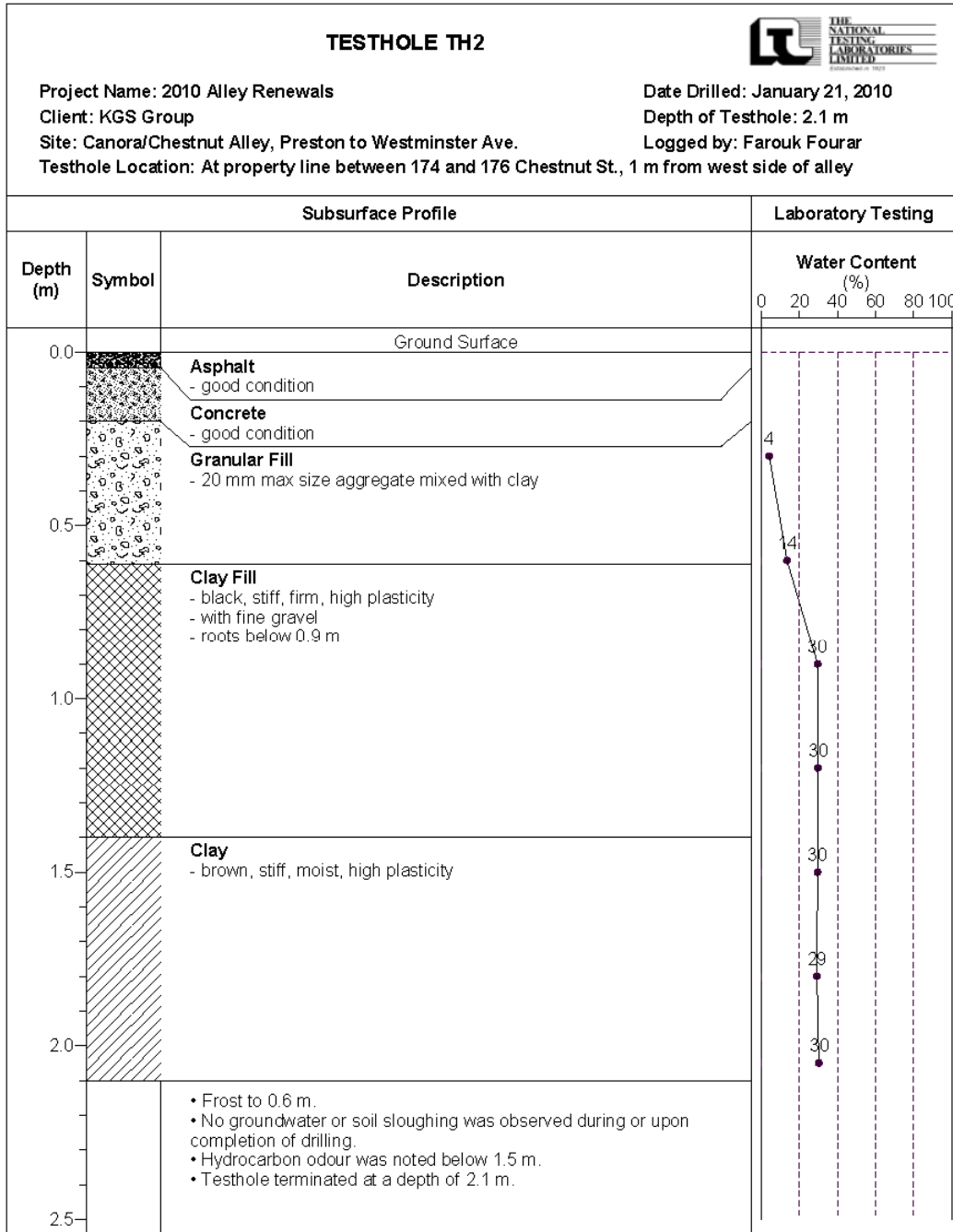
Testhole ID	Testhole Location	Pavement Surface		Pavement Structure Material		Soil Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	At property line between 166 and 188 Chestnut St. 1 m from west side of alley	Concrete	160	Granular Fill	450	Clay Fill	0.9	33	0	9.5	26.5	64.0	69	18	51
TH2	At property line between 174 and 176 Chestnut St. 1 m from west side of alley	Asphalt / Concrete	45 / 155	Granular Fill	410	—	—	—	—	—	—	—	—	—	—
TH3	At property line between 188 and 190 Chestnut St. 1 m from west side of alley	Asphalt / Concrete	50 / 120	Granular Fill	460	—	—	—	—	—	—	—	—	—	—
TH4	At property line between 198 and 200 Chestnut St. 1 m from west side of alley	Asphalt / Concrete	40 / 160	Granular Fill	410	Clayey Silt	1.5	23	0.0	7.4	69.3	23.4	29	17	12

**Test Hole #1 for Canora St. / Chestnut St. Alley**

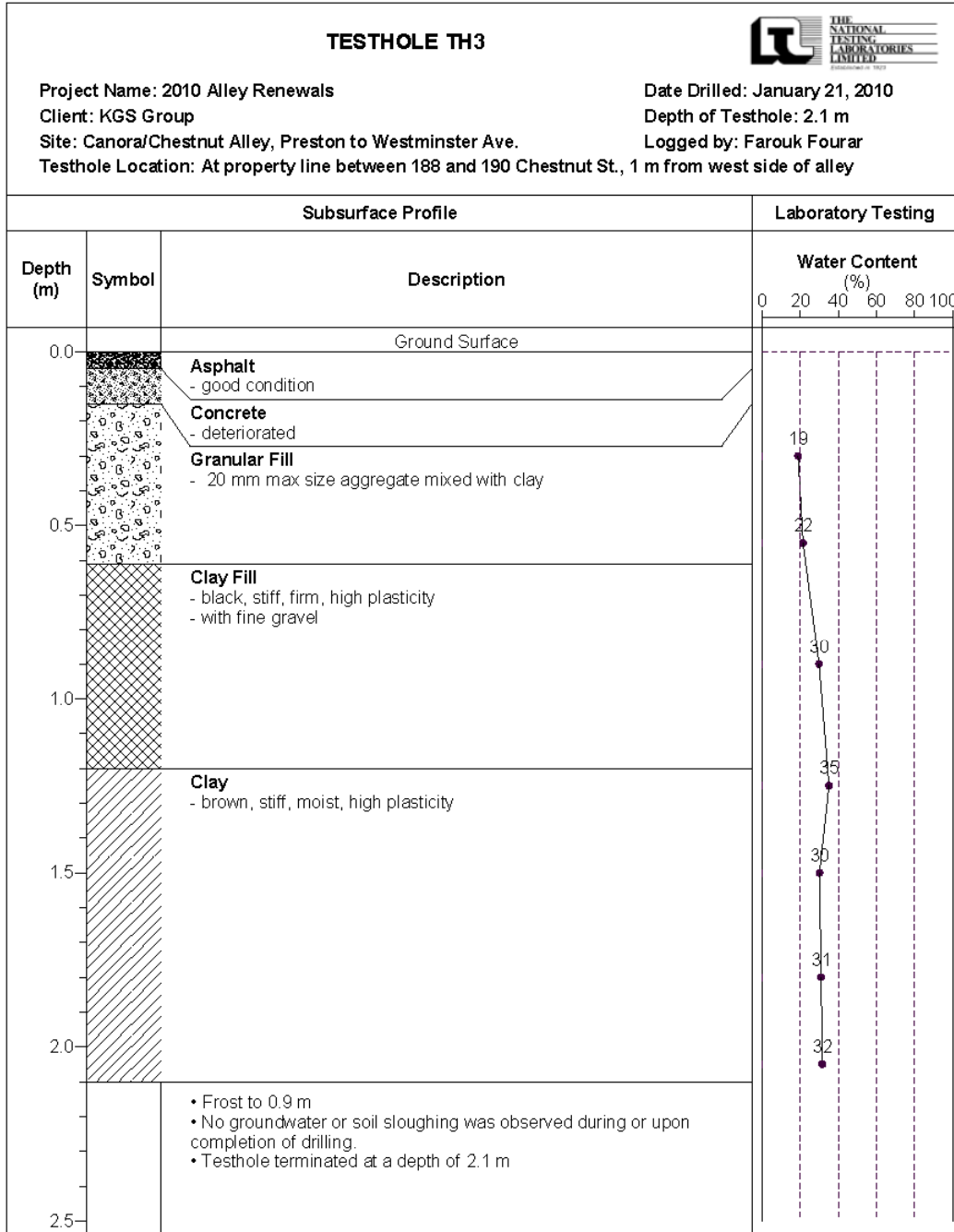




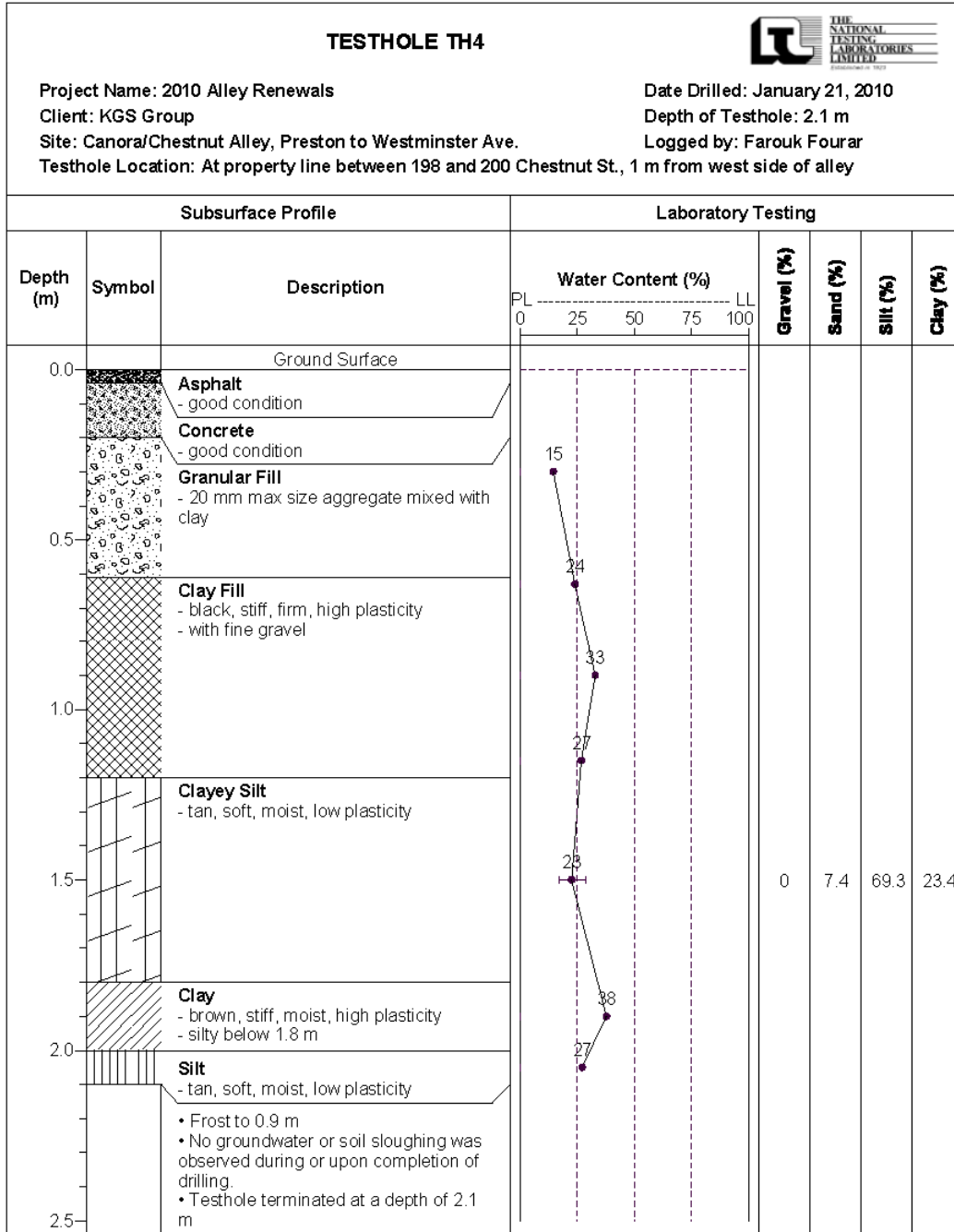
**Test Hole #2 for Canora St. / Chestnut St. Alley**



**Test Hole #3 for Canora St. / Chestnut St. Alley**



**Test Hole #4 for Canora St. / Chestnut St. Alley**



### Pavement Core Photos #1



Core sample from Testhole TH1



Core sample from Testhole TH2

## Pavement Core Photos #2



Core sample from Testhole TH3



Core sample from Testhole TH4

### Geotechnical Report for Maryland St. / Sherbrook St. South Alley

#### Test Hole Locations

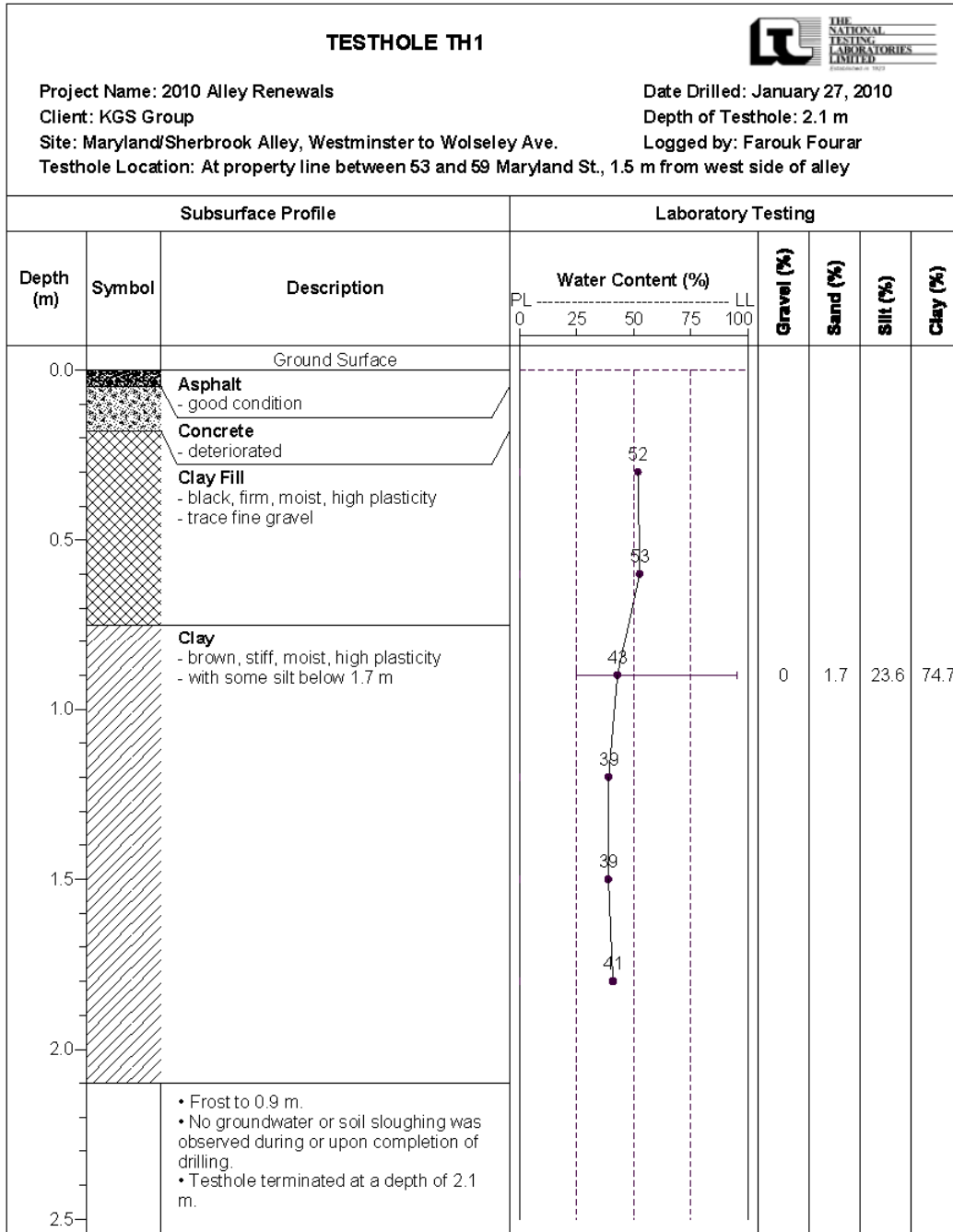


### Summary of Core Samples

**Maryland Sherbrook Alley  
 Westminster Avenue to Wolsey Avenue**

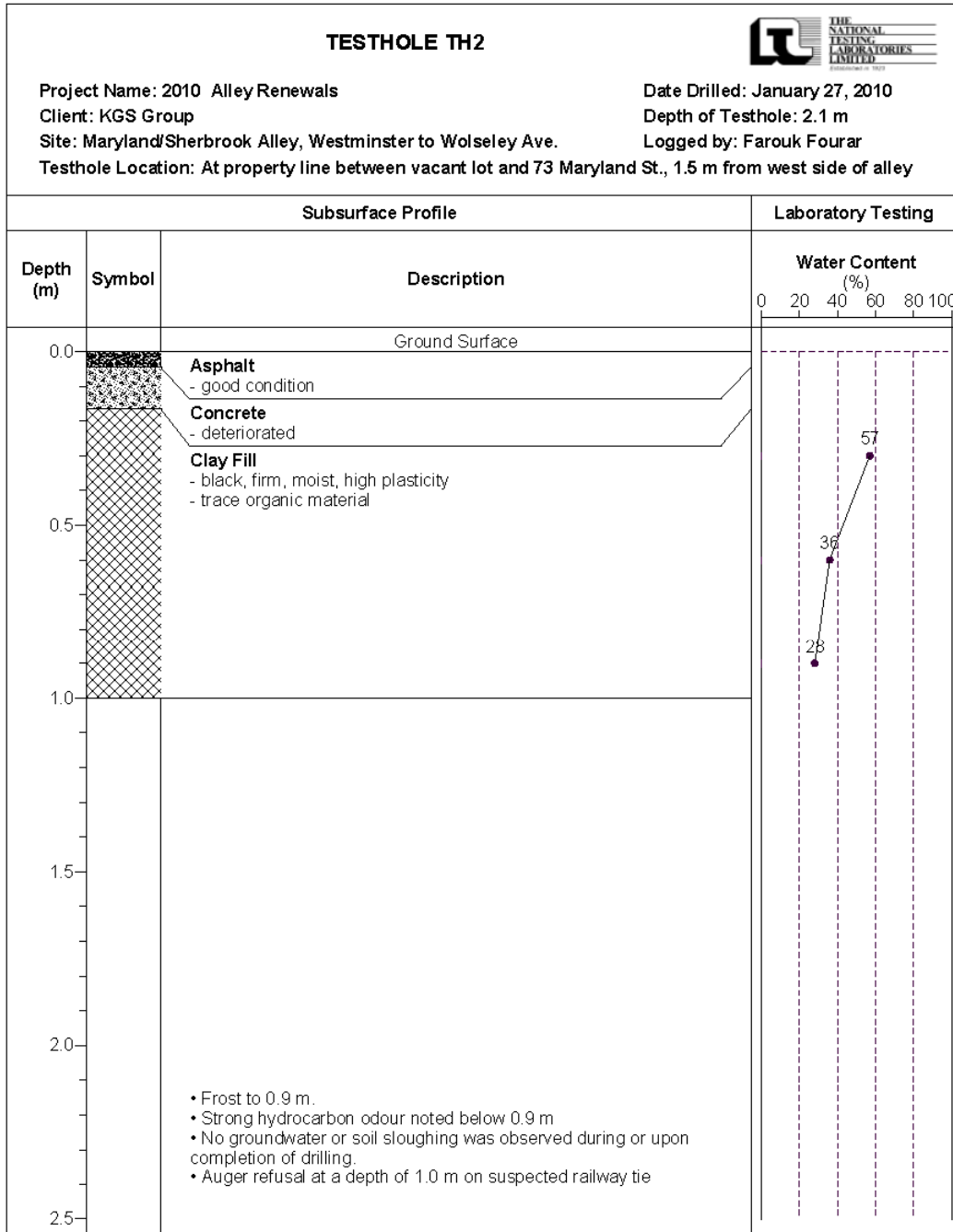
Testhole ID	Testhole Location	Pavement Surface		Pavement Structure Material		Soil Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	At property line between 53 and 59 Maryland St. 1.5 m from west side of alley	Asphalt / Concrete	50 / 130	Clay Fill	570	Clay	0.9	43	0	1.7	23.6	74.7	95	27	68
TH2	At property line between vacant lot and 73 Maryland St. 1.5 m from west side of alley	Asphalt / Concrete	45 / 120	Clay Fill	>800	---	---	---	---	---	---	---	---	---	---
TH3	At property line between 91 and 105 Maryland St. 1.5 m from west side of alley	Asphalt / Concrete	35 / 190	Clay Fill	1180	Clay Fill	0.9	45	0	3.3	18.8	77.9	87	25	62

**Test Hole #1 for Maryland St. / Sherbrook St. South Alley**

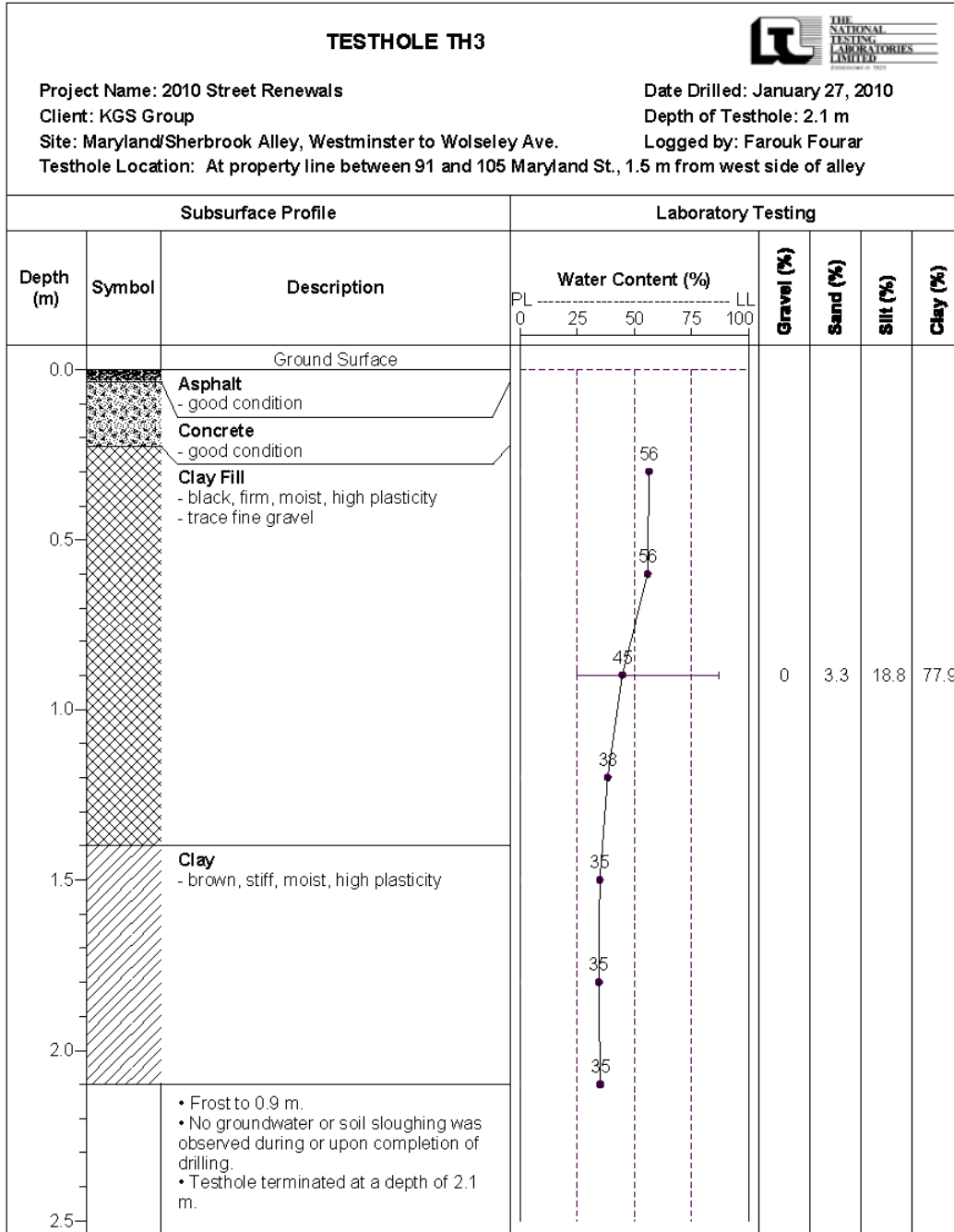




**Test Hole #2 for Maryland St. / Sherbrook St. South Alley**



**Test Hole #3 for Maryland St. / Sherbrook St. South Alley**



### Pavement Core Photos #1



Core sample from Testhole TH1



Core sample from Testhole TH2

## Pavement Core Photos #2



Core sample from Testhole TH3

## Geotechnical Report for Wolever Avenue

### Test Hole Locations

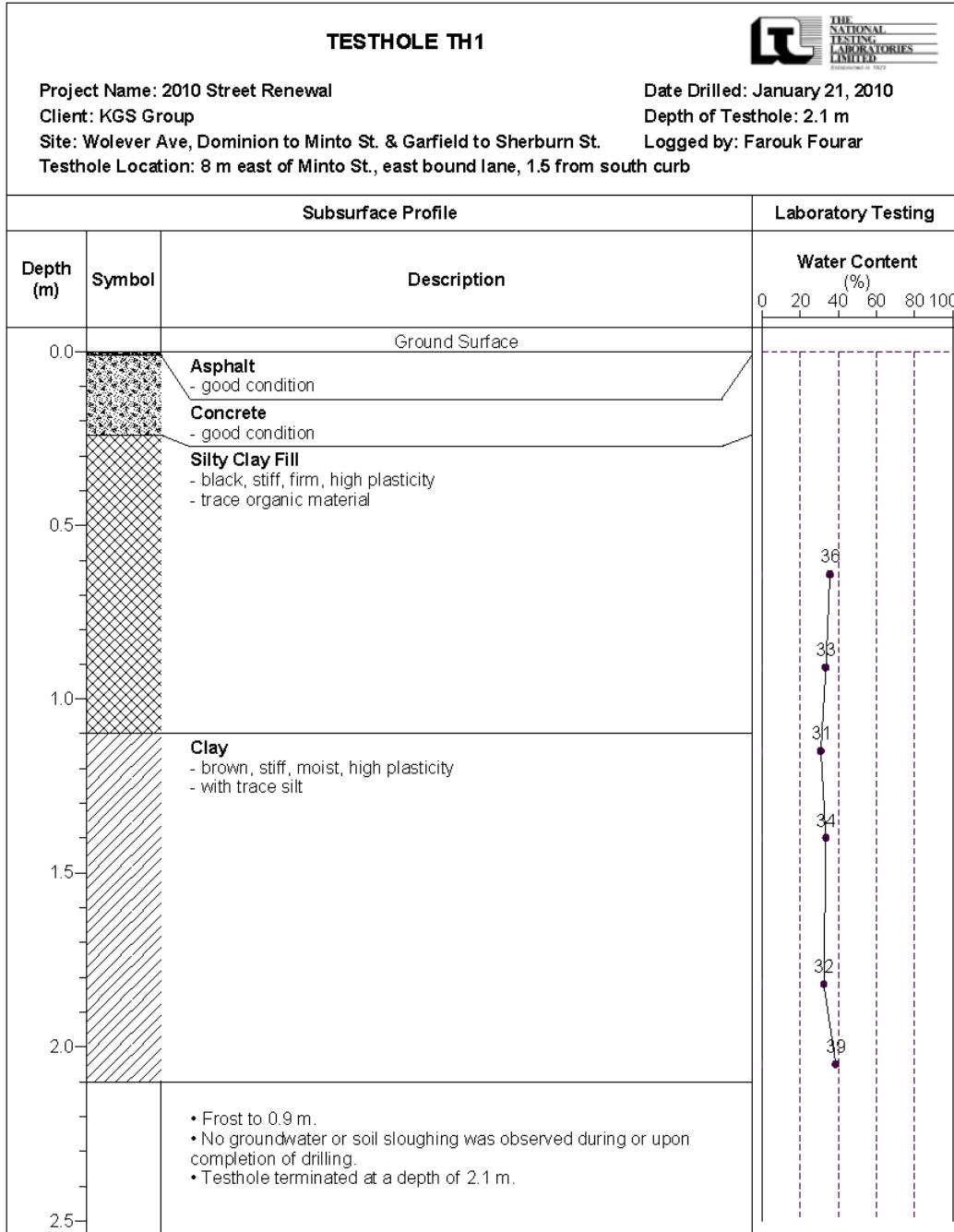


## Summary of Core Samples

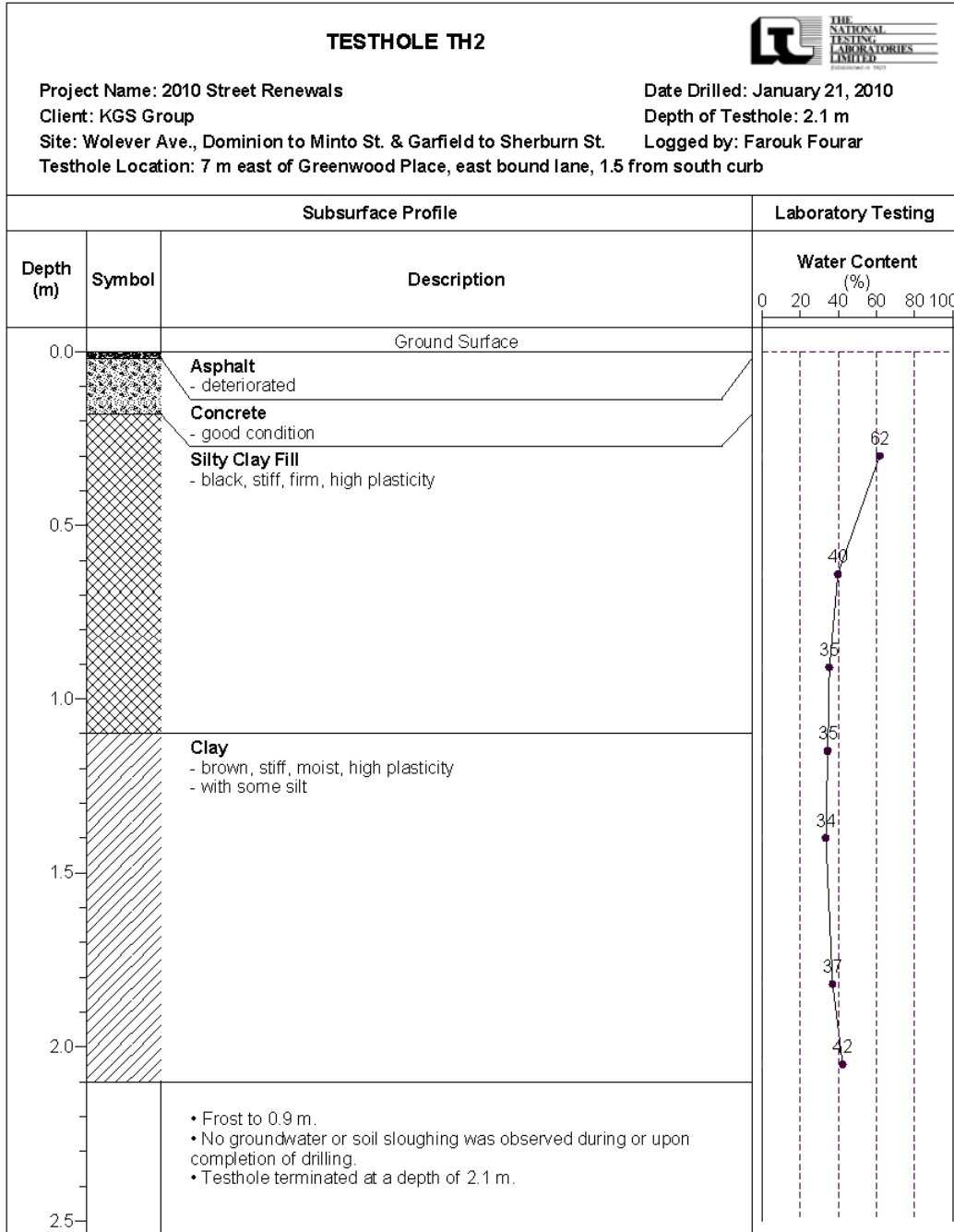
### Wolever Avenue Dominion to Minto St. and Garfield to Sherburn St.

Testhole ID	Testhole Location	Pavement Surface		Pavement Structure Material		Soil Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits			
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index	
TH1	8 m east of Minto Street 1.5 m from south curb	Asphalt / Concrete	10 / 230	Silty Clay Fill	860	—	—	—	—	—	—	—	—	—	—	—
TH2	7 m east of Greenwood Place 1.5 m from south curb	Asphalt / Concrete	20 / 160	Silty Clay Fill	920	—	—	—	—	—	—	—	—	—	—	—
TH3	65 m east of Greenwood Place 1.5 m from south curb	Asphalt / Concrete	80 / 90	Silty Clay Fill	930	Clayey Silt	1.2	23	0	11.9	52.7	35.4	34	13	21	21
TH4	0.1 m west of Garfield Place 1.5 m from south curb	Asphalt / Concrete	20 / 160	Silty Clay Fill	920	—	—	—	—	—	—	—	—	—	—	—
TH5	40 m west of Sherburn Street 1.5 m from south curb	Asphalt / Concrete	85 / 160	Silty Clay Fill	505	—	—	—	—	—	—	—	—	—	—	—
TH6	15 m west of Sherburn St. 1.5 m from south curb	Asphalt / Concrete	75 / 110	Silty Clay Fill	1015	Silty Clay Fill	0.9	34	0	6.8	40.1	53.1	83	22	61	61

**Test Hole #1 for Wolever Avenue**

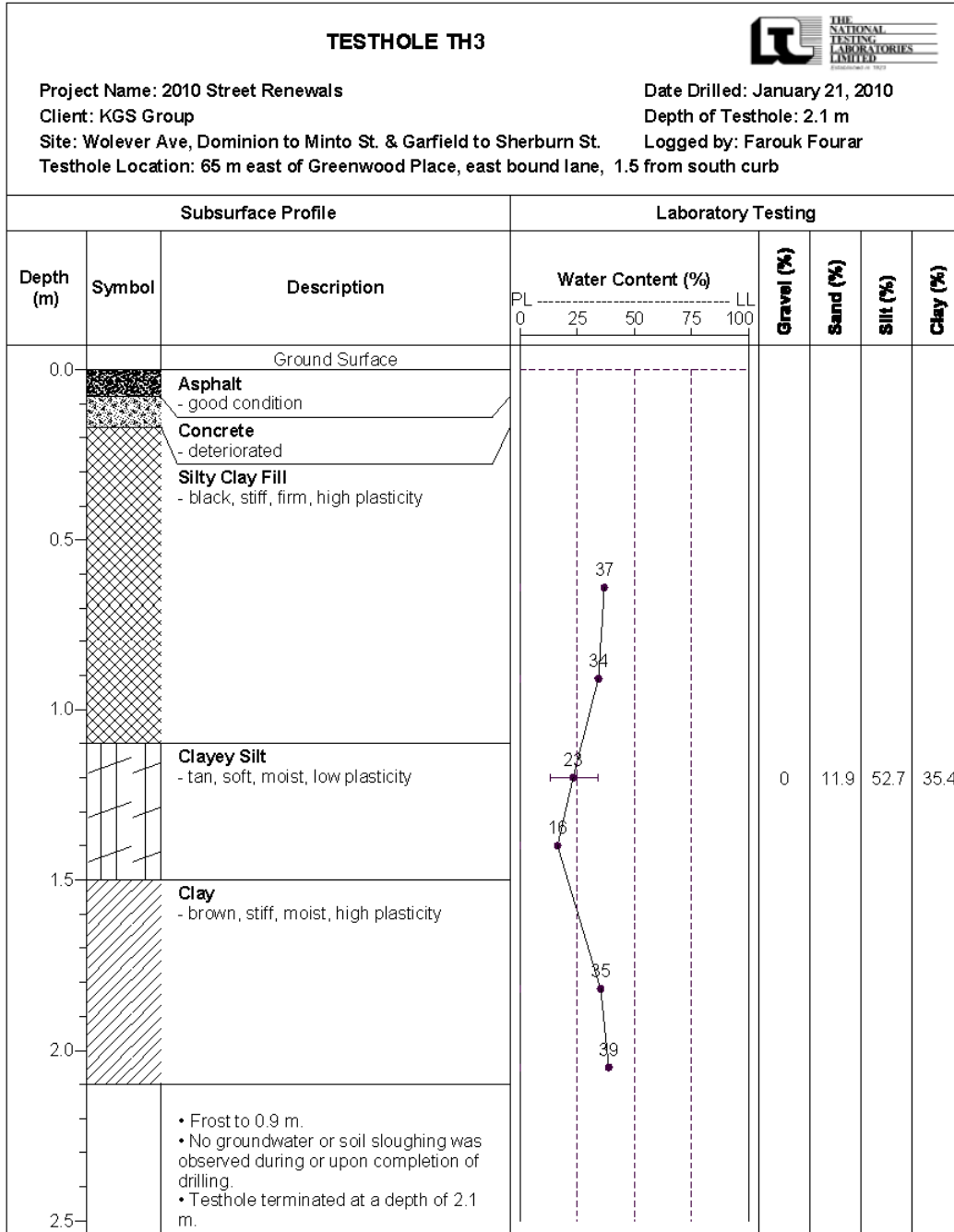


**Test Hole #2 for Wolever Avenue**

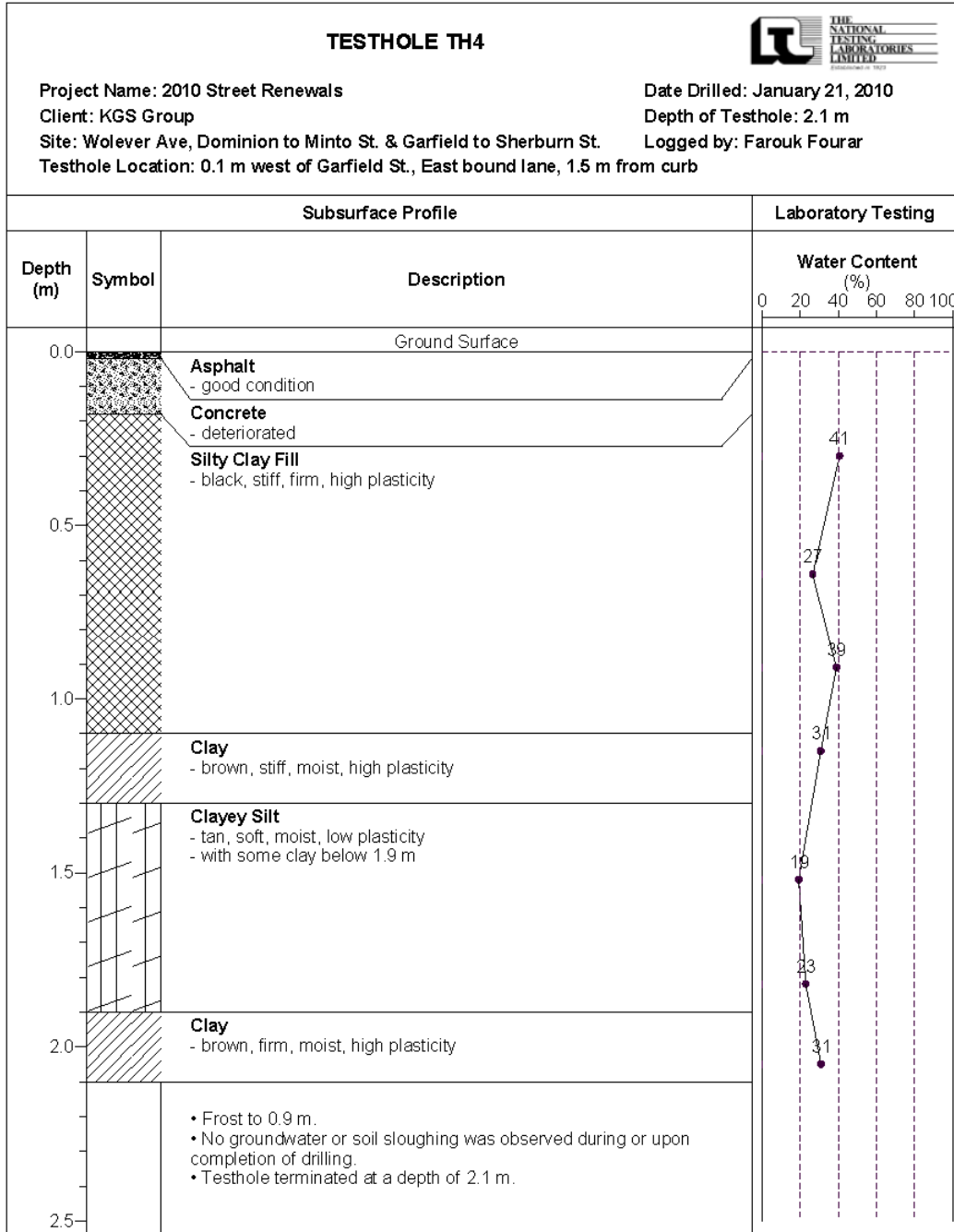




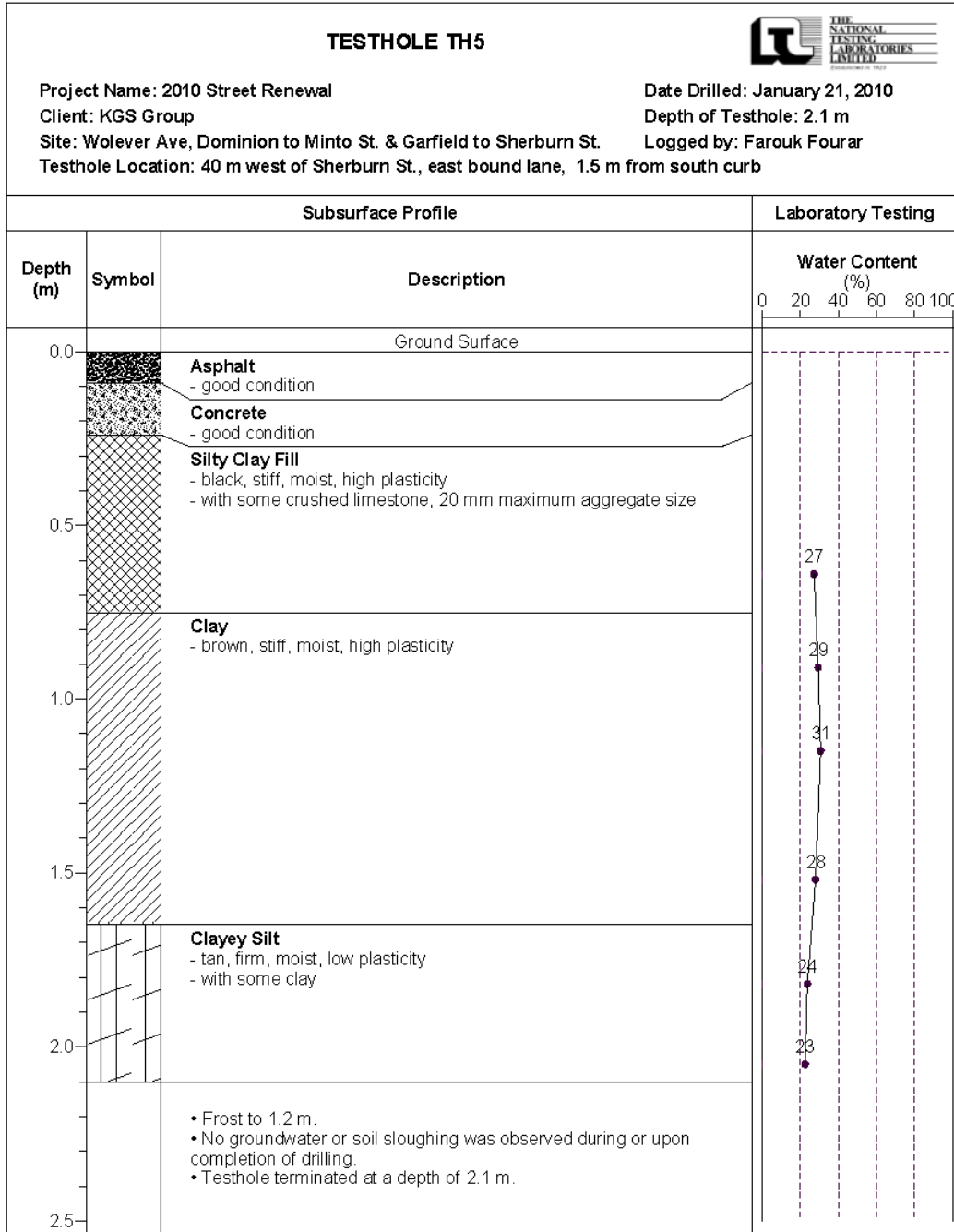
**Test Hole #3 for Wolever Avenue**



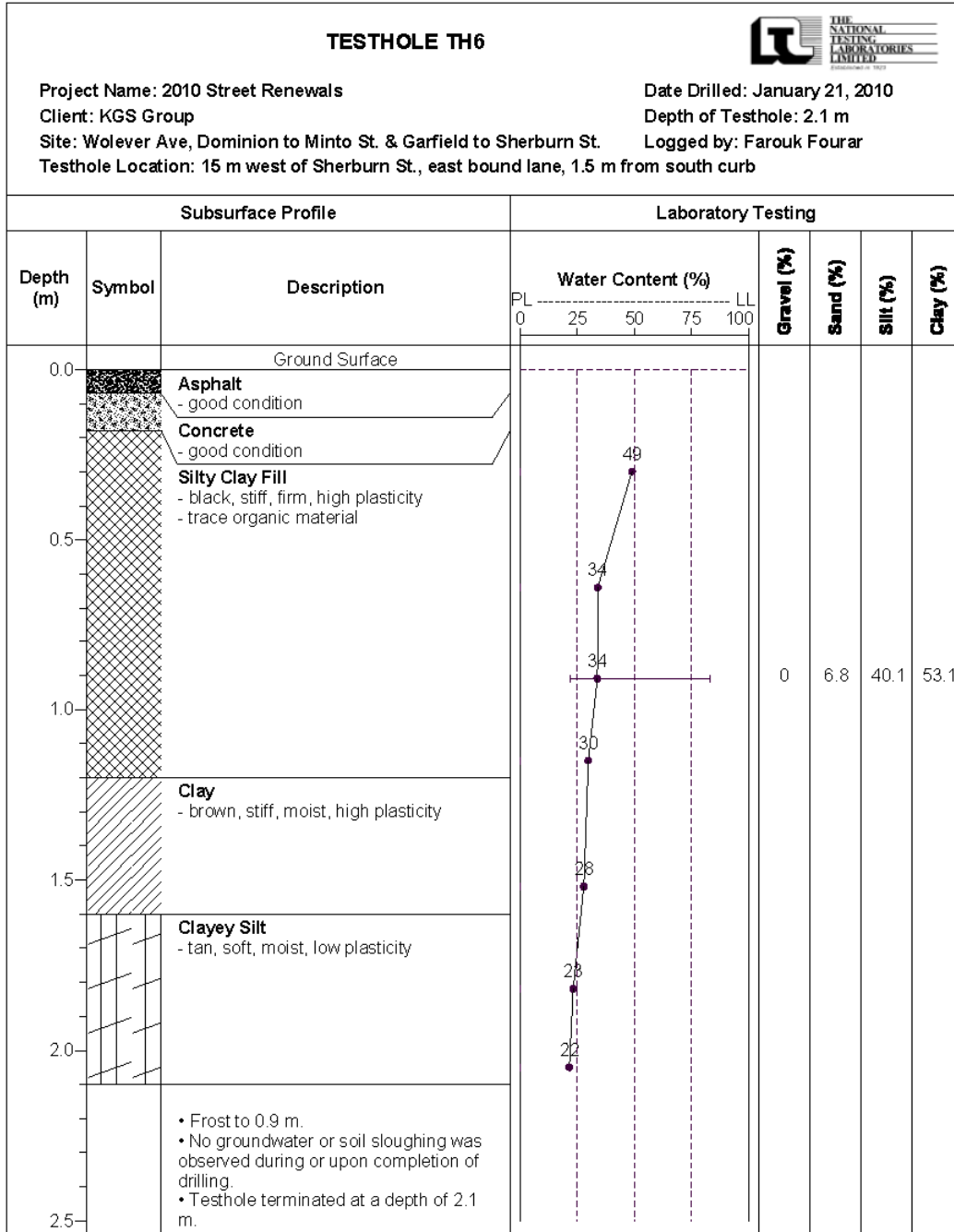
**Test Hole #4 for Wolever Avenue**



**Test Hole #5 for Wolever Avenue**



**Test Hole #6 for Wolever Avenue**



### Pavement Core Photos #1



Core sample from Testhole TH1



Core sample from Testhole TH2

## Pavement Core Photos #2



Core sample from Testhole TH3



Core sample from Testhole TH4

### Pavement Core Photos #3



Core sample from Testhole TH5




Core sample from Testhole TH6

### Geotechnical Report for Preston Avenue

#### Test Hole Locations



 <b>THE NATIONAL TESTING LABORATORIES LIMITED</b> <small>Established in 1923</small>	Project No. KGS-932	Drawn by: G.L.	Figure: 1	<b>Testhole Location Plan</b> <b>Preston Avenue</b> <b>2010 Street Renewal</b>
	Date: March 15, 2010	Reviewed by: DF	Scale: NTS	

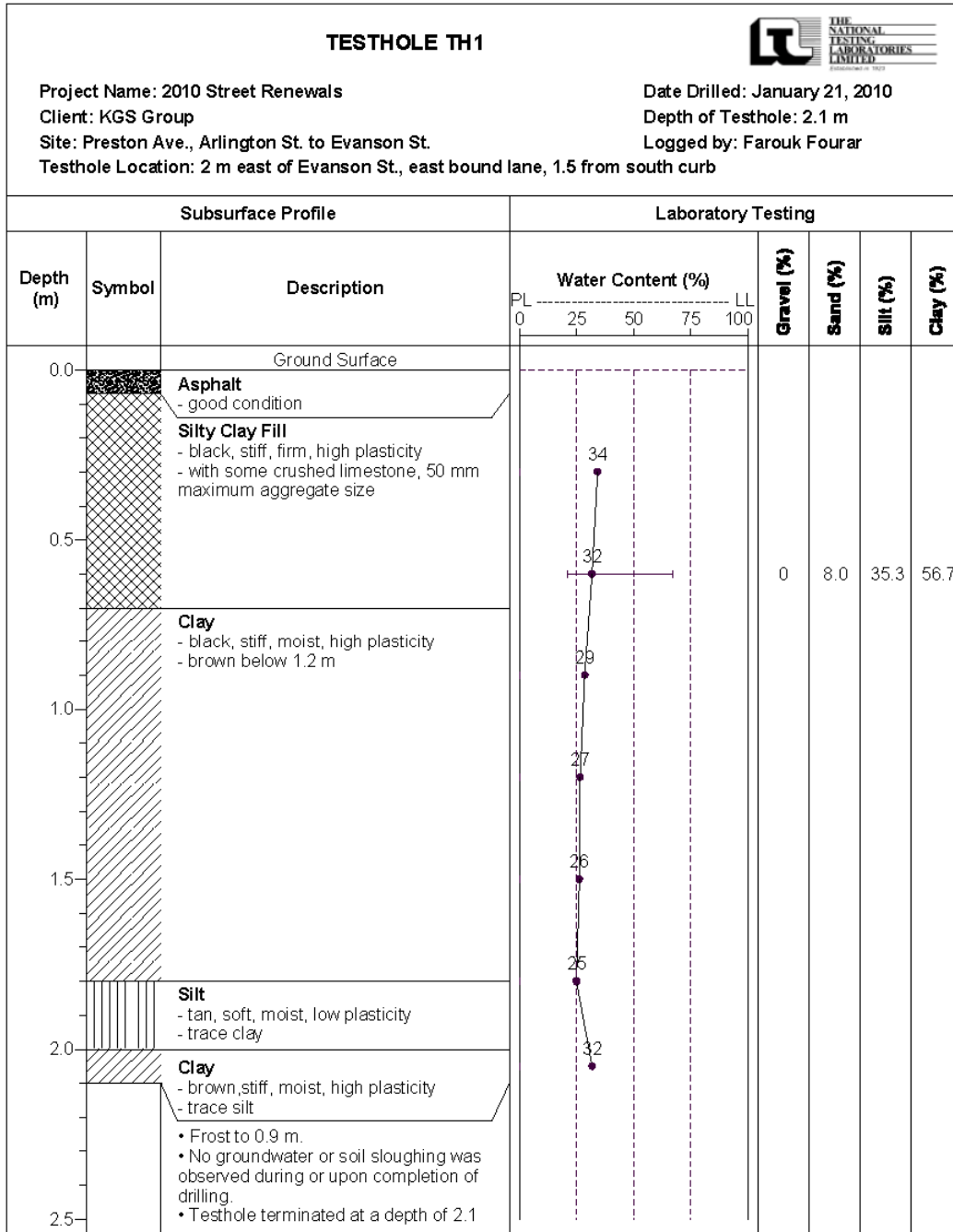


### Summary of Core Samples

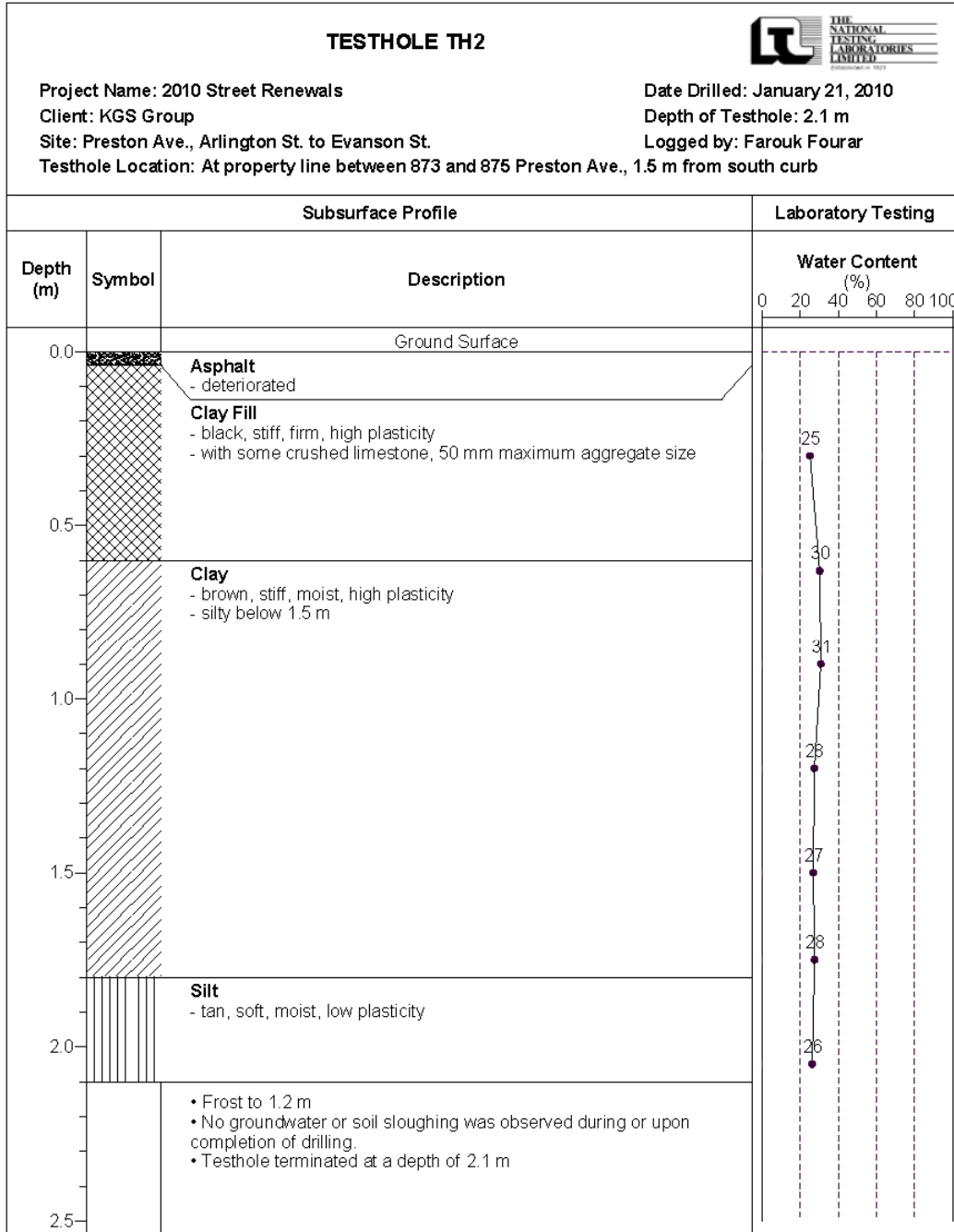
**Preston Avenue  
 Arlington to Evanson Street**

Testhole ID	Testhole Location	Pavement Surface		Pavement Structure Material		Soil Description	Sample Depth (m)	Moisture Content (%)	Particle Size Analysis				Atterberg Limits		
		Type	Thickness (mm)	Type	Thickness (mm)				Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit	Plastic Limit	Plasticity Index
TH1	2 m east of Evanson St. 1.5 m from south curb	Asphalt	70	Silty Clay Fill	630	Silty Clay Fill	0.6	32	0	8.0	35.3	56.7	71	20	51
TH2	At property line between 873 and 875 Preston Ave. 1.5 m from south curb	Asphalt	30	Clay Fill	570	---	---	---	---	---	---	---	---	---	---
TH3	9 m west of Arlington St. 1.5 m from south curb	Asphalt / Concrete	50 / 130	Clay Fill	1020	Clay Fill	0.9	27	0	9.4	26.2	64.4	67	21	46

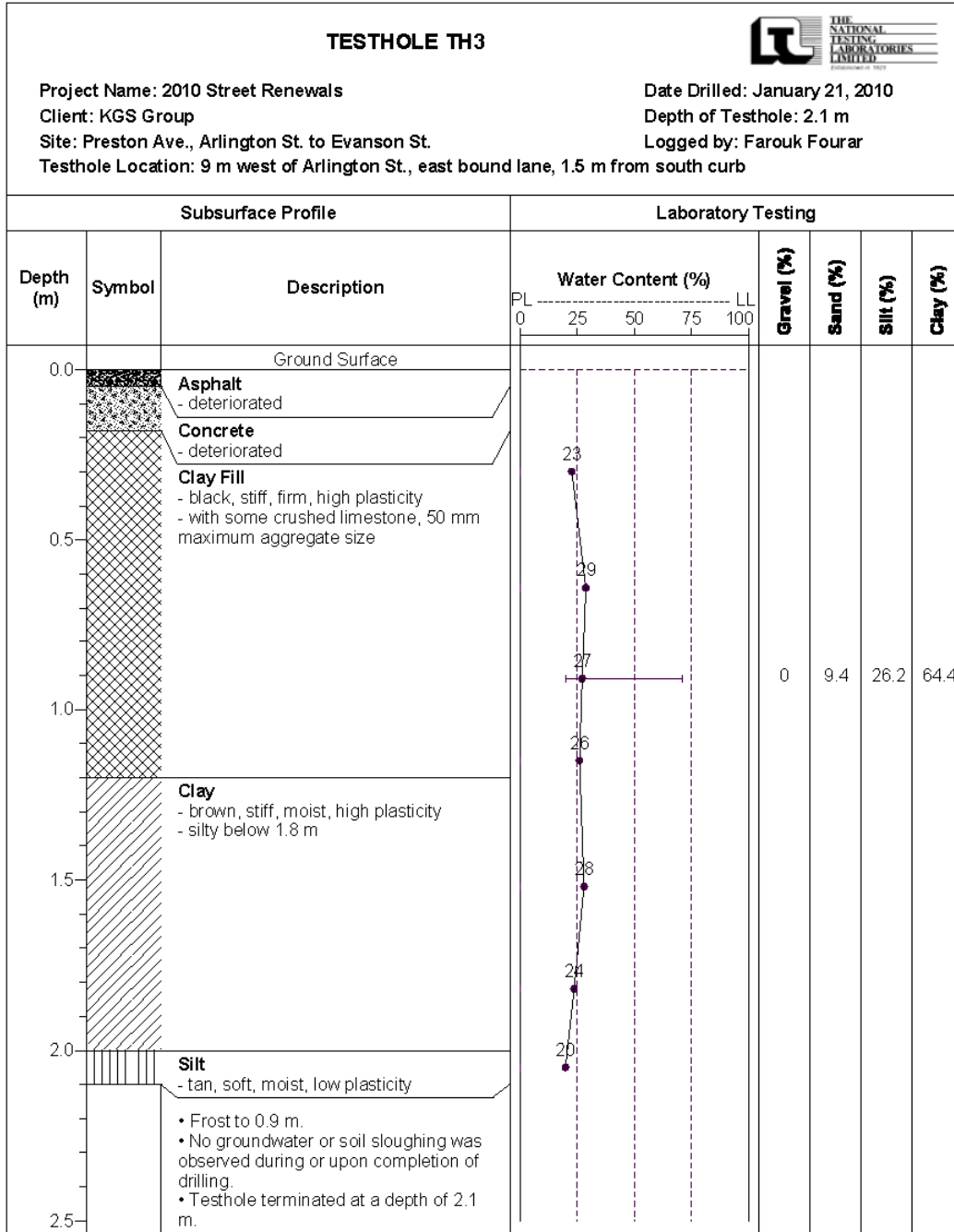
**Test Hole #1 for Preston Avenue**



**Test Hole #2 for Preston Avenue**



### Test Hole #3 for Preston Avenue



### Pavement Core Photos



**Core sample from Testhole TH1**



**Core sample from Testhole TH2**



**Core sample from Testhole TH3**