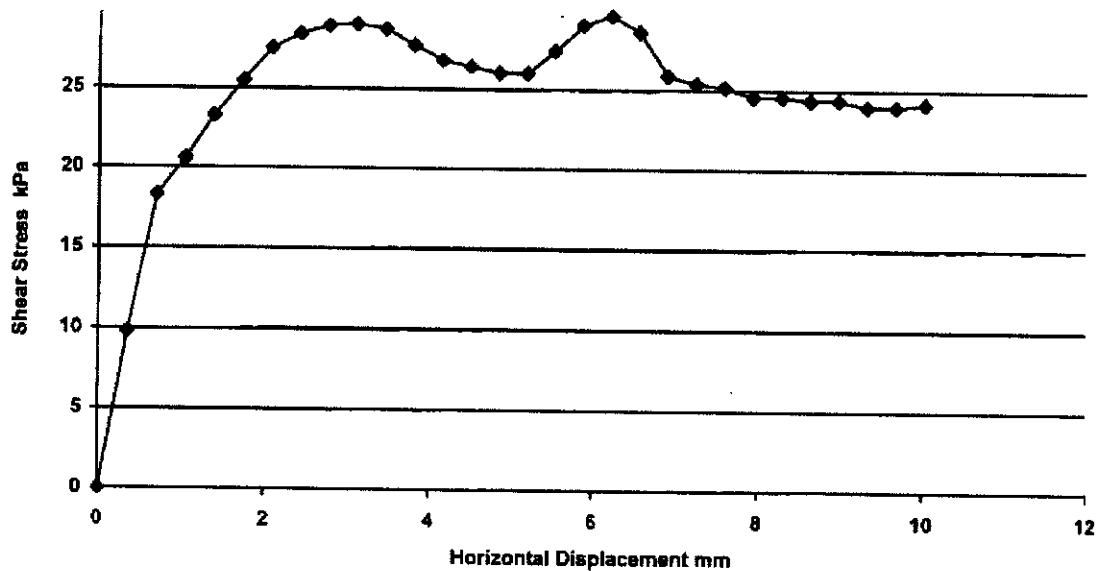


Shear Strength by Direct Shear (Small Shear Box)

Enverity

Client	Ground Engineering	Lab Ref	PL1955-1-4
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH1	Sample	U2

Shear Stress Vs Displacement



**Rates of Horizontal
Displacement**

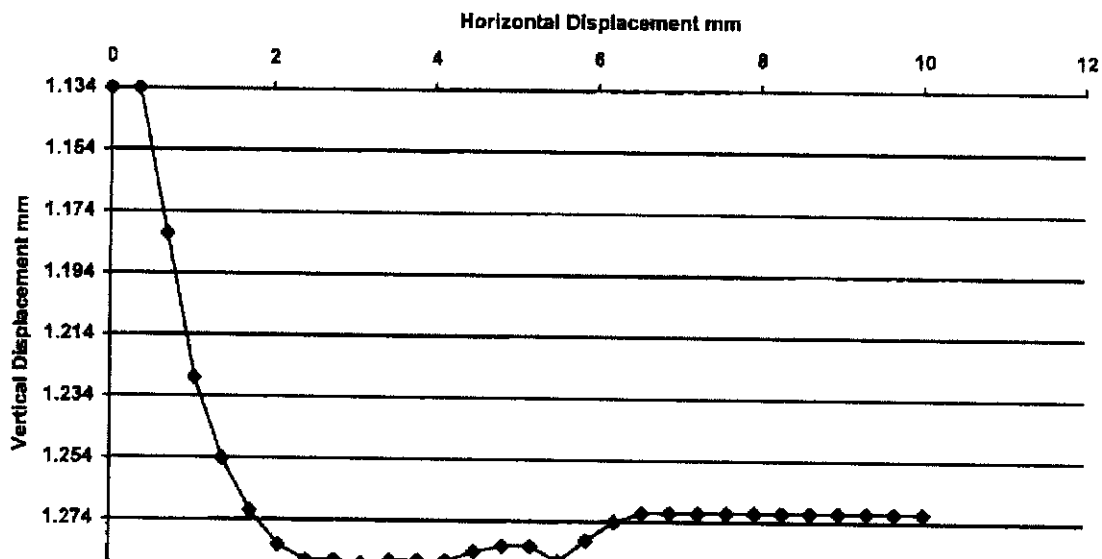
Stage 1: 0.0208mm/min

Shear Strength by Direct Shear (Small Shear Box)

Enverity

Client	Ground Engineering	Lab Ref	PL1955-1-4
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH1	Sample	U2

Change in Specimen Thickness Vs Displacement



Conditions at Failure	
Applied Normal Stress	50.0 kPa
Maximum Shear Stress	29.6 kPa
Horizontal Deformation	6.218 mm
Residual Shear Stress	0.0 kPa
Vertical Deformation	1.274 mm
Cumulative Horizontal Displacement	10.014 mm

Tested By and Date:	MS 27.02.2009
Checked By and Date:	JC 09.03.2009
Approved By and Date:	MH 09.03.2009

Shear Strength by Direct Shear (Small Shear Box)

Enverity

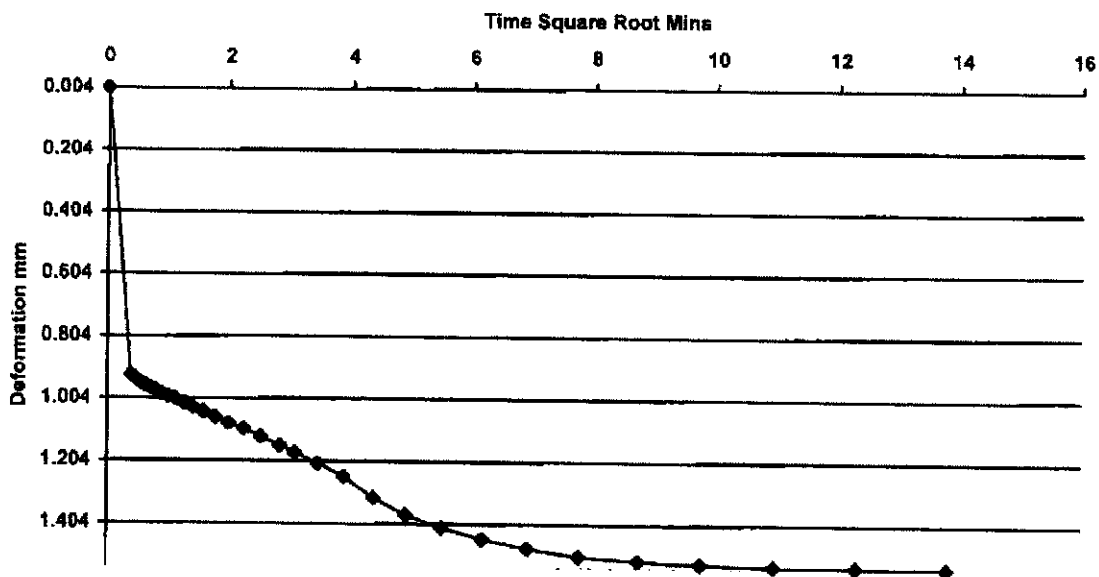
Client	Ground Engineering	Lab Ref	PL1955-1-4
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH1	Sample	U2

Test Details			
Standard	BS 1377 Part 7 :1990 Clause 4	Particle Density	2.73 Mg/m ³
Sample Type	Undisturbed	Single or Multi Stage	Single Stage
Lab. Temperature	22.0 deg.C	Location	BH1
Sample Description	Firm brown orange-brown grey slightly sandy CLAY/SILT		
Variations from procedure	None		

Specimen Details			
Specimen Reference	B	Description	See Above
Depth within Sample	5.00m	Orientation within Sample	N/A
Initial Height	24.000 mm	Area	3600.00 mm ²
Preparation	Remoulded	Initial Moisture Content*	20.0 %
Bulk Density	2.02 Mg/m ³	Dry Density	1.69 Mg/m ³
Initial Voids Ratio	0.6191	Degree of Saturation	88.14 %
Dry or Submerged	Submerged		
Comments			

* Calculated from initial and dry weights of whole specimen

Settlement Vs Square Root Time

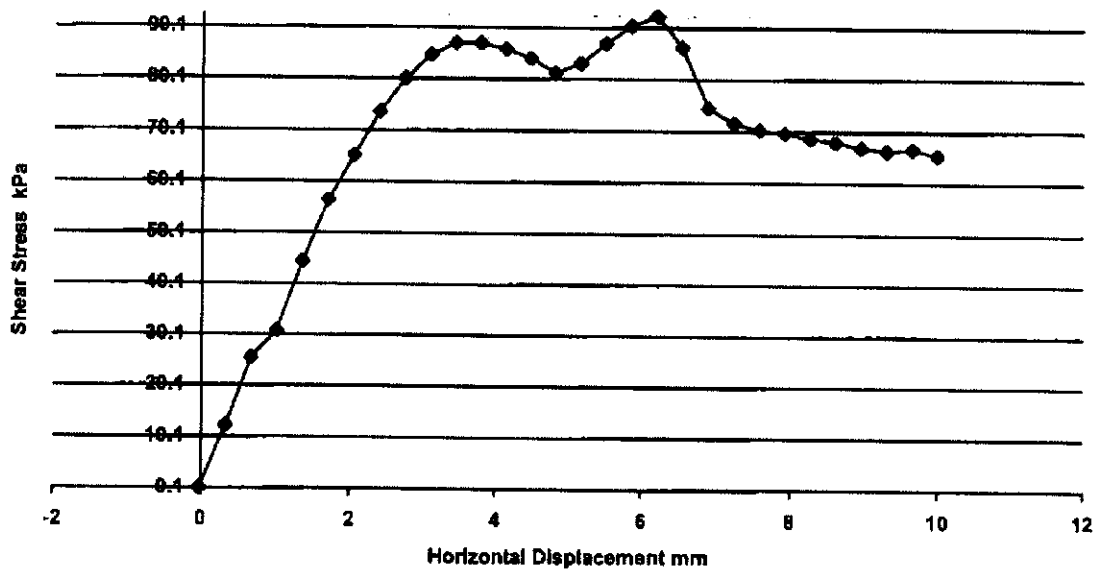


Shear Strength by Direct Shear (Small Shear Box)

Enverity

Client	Ground Engineering	Lab Ref	PL1955-1-4
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH1	Sample	U2

Shear Stress Vs Displacement



**Rates of Horizontal
Displacement**

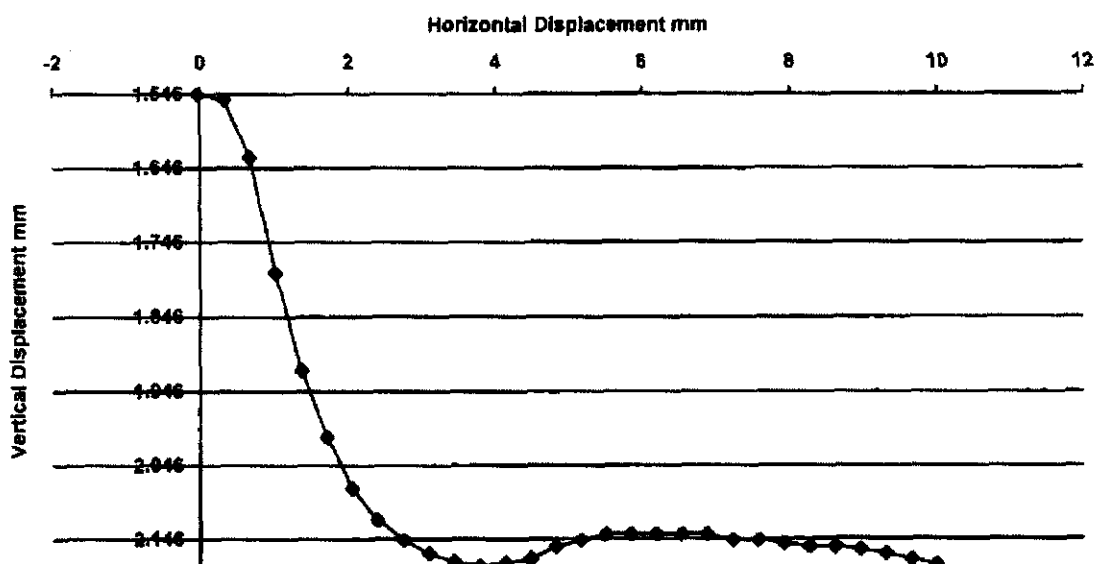
Stage 1: 0.0124mm/min

Shear Strength by Direct Shear (Small Shear Box)

Enverity

Client	Ground Engineering	Lab Ref	PL1955-1-4
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH1	Sample	U2

Change in Specimen Thickness Vs Displacement



Conditions at Failure	
Applied Normal Stress	100.0 kPa
Maximum Shear Stress	92.4 kPa
Horizontal Deformation	6.192 mm
Residual Shear Stress	0.0 kPa
Vertical Deformation	2.139 mm
Cumulative Horizontal Displacement	9.987 mm

Tested By and Date:	MS 27.02.2009
Checked By and Date:	JC 09.03.2009
Approved By and Date:	MH 09.03.2009

Shear Strength by Direct Shear (Small Shear Box)

Enverity

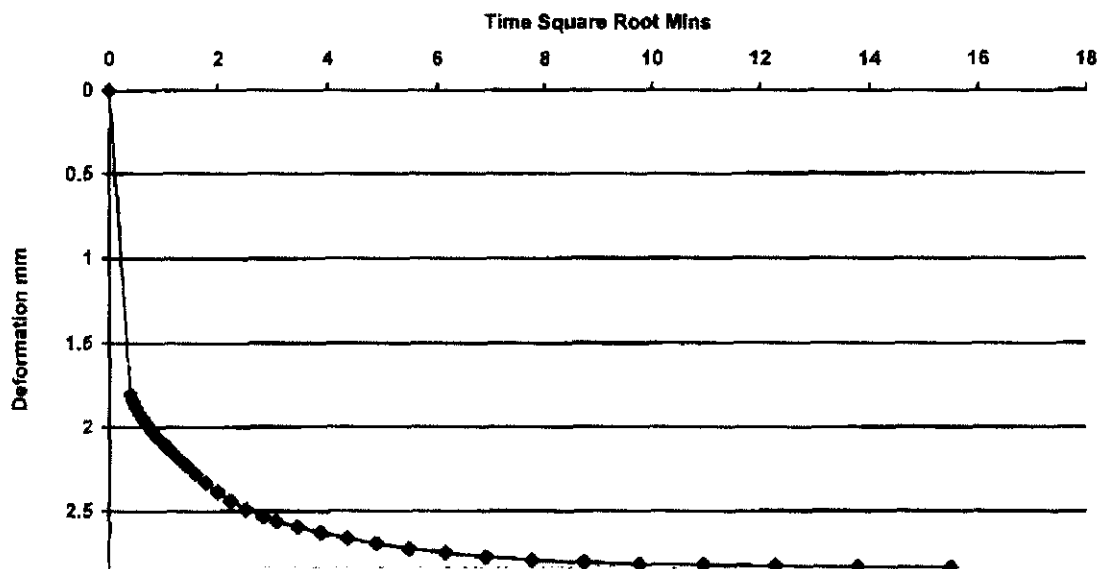
Client	Ground Engineering	Lab Ref	PL1955-1-4
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH1	Sample	U2

Test Details			
Standard	BS 1377 Part 7 :1990 Clause 4	Particle Density	2.73 Mg/m ³
Sample Type	Undisturbed	Single or Multi Stage	Single Stage
Lab. Temperature	22.0 deg.C	Location	BH1
Sample Description	Firm brown orange-brown grey slightly sandy CLAY/SILT		
Variations from procedure	None		

Specimen Details			
Specimen Reference	C	Description	See Above
Depth within Sample	5.00m	Orientation within Sample	N/A
Initial Height	24.000 mm	Area	3600.00 mm ²
Preparation	Remoulded	Initial Moisture Content*	20.0 %
Bulk Density	2.03 Mg/m ³	Dry Density	1.69 Mg/m ³
Initial Voids Ratio	0.6172	Degree of Saturation	88.40 %
Dry or Submerged	Submerged		
Comments			

* Calculated from initial and dry weights of whole specimen

Settlement Vs Square Root Time

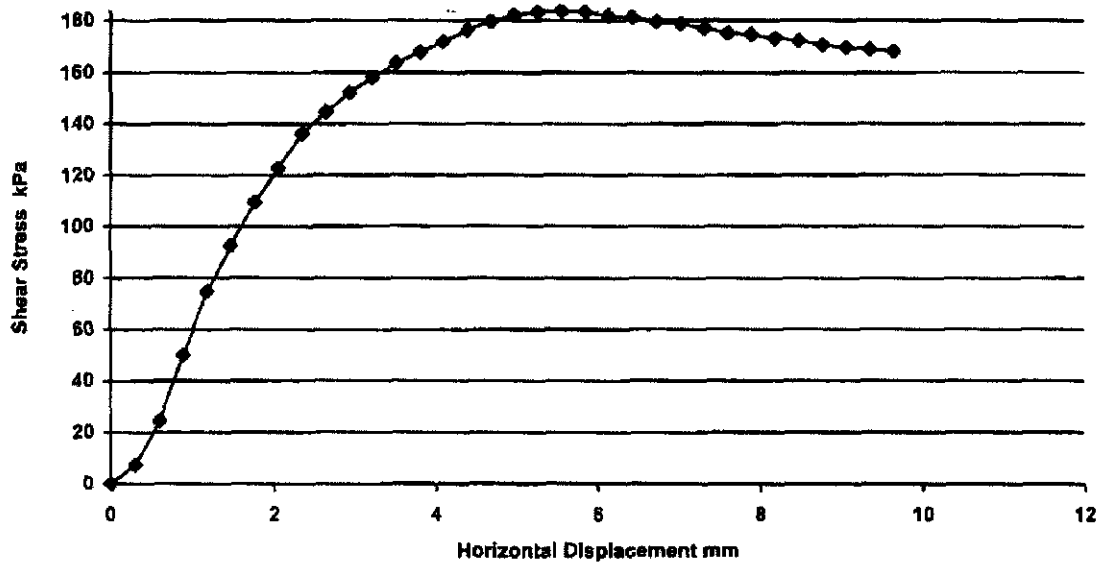


Shear Strength by Direct Shear (Small Shear Box)

Enverity

Client	Ground Engineering	Lab Ref	PL1955-1-4
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH1	Sample	U2

Shear Stress Vs Displacement



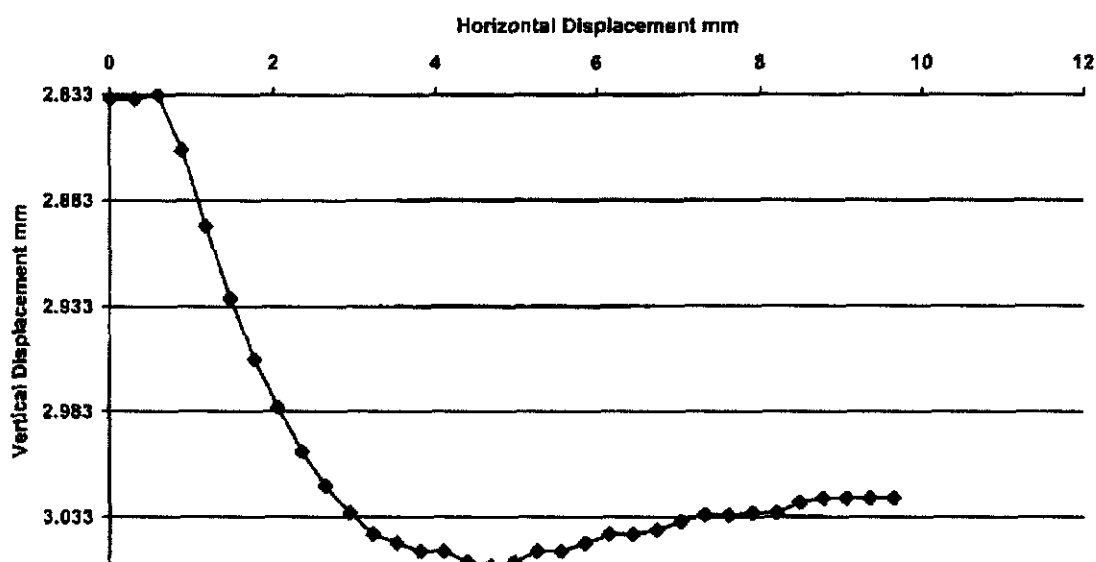
Rates of Horizontal Displacement	Stage 1: 0.0632mm/min
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Shear Strength by Direct Shear (Small Shear Box)

Enverity

Client	Ground Engineering	Lab Ref	PL1955-1-4
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH1	Sample	U2

Change in Specimen Thickness Vs Displacement



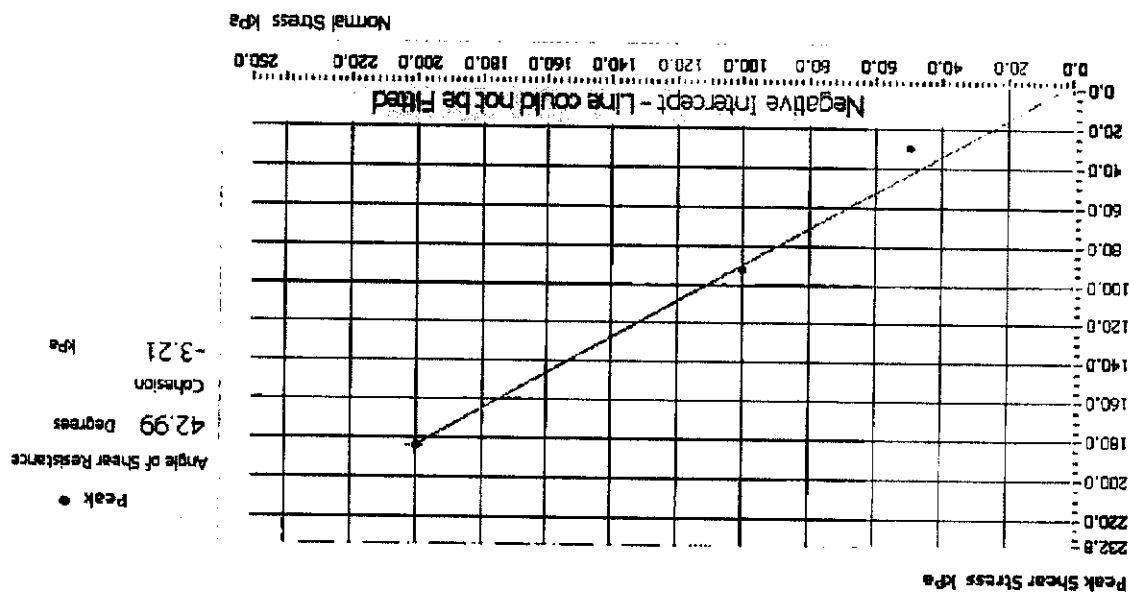
Conditions at Failure	
Applied Normal Stress	200.0 kPa
Maximum Shear Stress	183.8 kPa
Horizontal Deformation	5.560 mm
Residual Shear Stress	0.0 kPa
Vertical Deformation	3.049 mm
Cumulative Horizontal Displacement	9.647 mm

Tested By and Date:	MS 27.02.2009
Checked By and Date:	JC 09.03.2009
Approved By and Date:	MH 09.03.2009

Shear Strength by Direct Shear
(Small Shear Box)

Test Summary					
Reference	A	B	C		
Applied Normal Stress	50.0 kPa	100.0 kPa	200.0 kPa		
Peak Strength	29.6 kPa	92.4 kPa	183.8 kPa		
Corresponding Horizontal Displacement	6.218 mm	6.192 mm	5.560 mm		
Residual Shear Stress	N/A	N/A	N/A		
Rate(s) of Shear Displacement	Stage 1: 0.0208mm/min	Stage 1: 0.0124mm/min	Stage 1: 0.0632mm/min		
Final Height	22.74 mm	21.83 mm	20.98 mm		
Cumulative Displacement	10.014 mm	9.967 mm	9.647 mm		
Number of Traverses	1	1	1		

Maximum Shear Stress vs Normal Stress



Shear Strength by Direct Shear (Small Shear Box)

Enverity

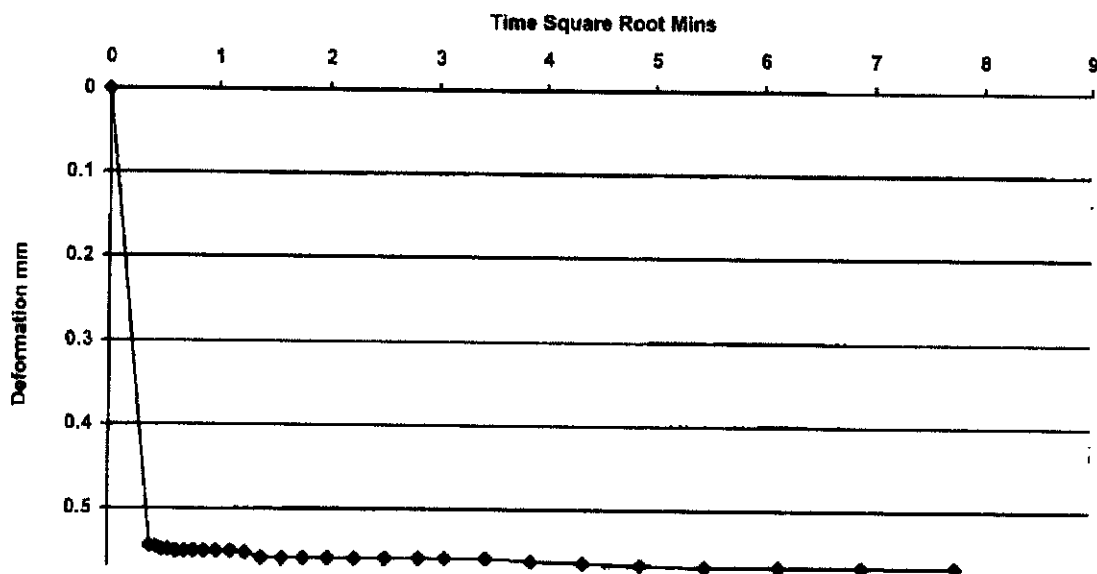
Client	Ground Engineering	Lab Ref	PL1955-1-23
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH3	Sample	U2

Test Details			
Standard	BS 1377 Part 7 :1990 Clause 4	Particle Density	2.65 Mg/m ³
Sample Type	Undisturbed	Single or Multi Stage	Single Stage
Lab. Temperature	22.0 deg.C	Location	BH3
Sample Description	Light-brown orange-brown sandy SILT		
Variations from procedure	None		

Specimen Details			
Specimen Reference	A	Description	See Above
Depth within Sample	5.00m	Orientation within Sample	N/A
Initial Height	24.000 mm	Area	3600.00 mm ²
Preparation	None	Initial Moisture Content*	5.9 %
Bulk Density	1.48 Mg/m ³	Dry Density	1.39 Mg/m ³
Initial Voids Ratio	0.9006	Degree of Saturation	17.42 %
Dry or Submerged	Submerged		
Comments			

* Calculated from initial and dry weights of whole specimen

Settlement Vs Square Root Time

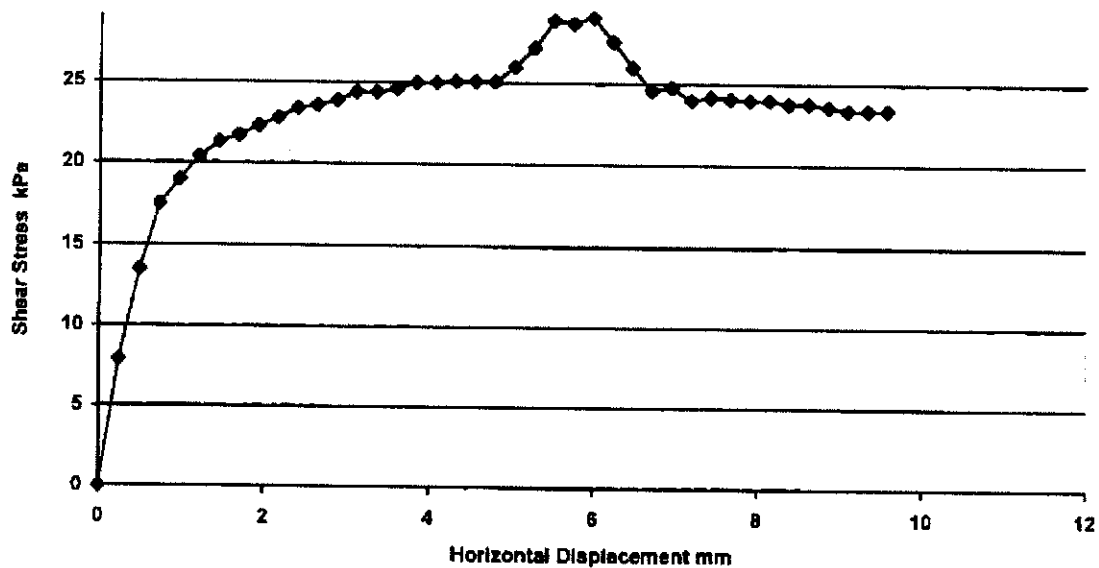


Shear Strength by Direct Shear (Small Shear Box)

Enverity

Client	Ground Engineering	Lab Ref	PL1955-1-23
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH3	Sample	U2

Shear Stress Vs Displacement



**Rates of Horizontal
Displacement**

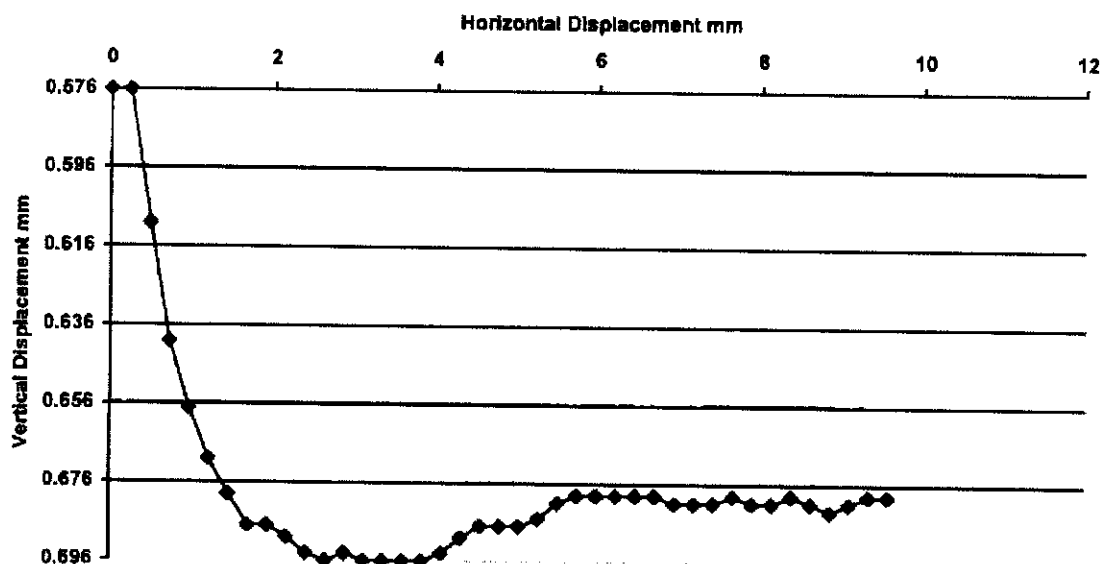
Stage 1: 0.1001mm/min

Shear Strength by Direct Shear (Small Shear Box)

Enverity

Client	Ground Engineering	Lab Ref	PL1955-1-23
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH3	Sample	U2

Change in Specimen Thickness Vs Displacement



Conditions at Failure	
Applied Normal Stress	50.0 kPa
Maximum Shear Stress	29.1 kPa
Horizontal Deformation	5.985 mm
Residual Shear Stress	0.0 kPa
Vertical Deformation	0.679 mm
Cumulative Horizontal Displacement	9.568 mm

Tested By and Date:	MS 05.03.2009
Checked By and Date:	JC 09.03.2009
Approved By and Date:	MH 09.03.2009

Shear Strength by Direct Shear (Small Shear Box)

Enverity

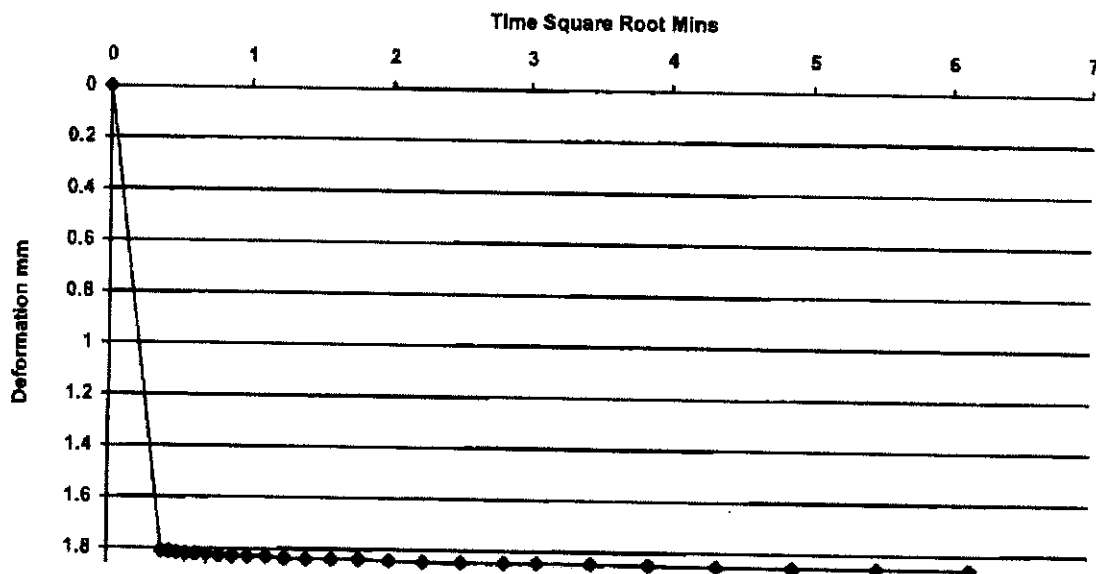
Client	Ground Engineering	Lab Ref	PL1955-1-23
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH3	Sample	U2

Test Details			
Standard	BS 1377 Part 7 :1990 Clause 4	Particle Density	2.65 Mg/m ³
Sample Type	Undisturbed	Single or Multi Stage	Single Stage
Lab. Temperature	22.0 deg.C	Location	BH3
Sample Description	Light-brown orange-brown sandy SILT		
Variations from procedure	None		

Specimen Details			
Specimen Reference	B	Description	See Above
Depth within Sample	5.00m	Orientation within Sample	N/A
Initial Height	24.000 mm	Area	3600.00 mm ²
Preparation	None	Initial Moisture Content*	5.9 %
Bulk Density	1.43 Mg/m ³	Dry Density	1.35 Mg/m ³
Initial Voids Ratio	0.9668	Degree of Saturation	16.22 %
Dry or Submerged	Submerged		
Comments			

* Calculated from initial and dry weights of whole specimen

Settlement Vs Square Root Time

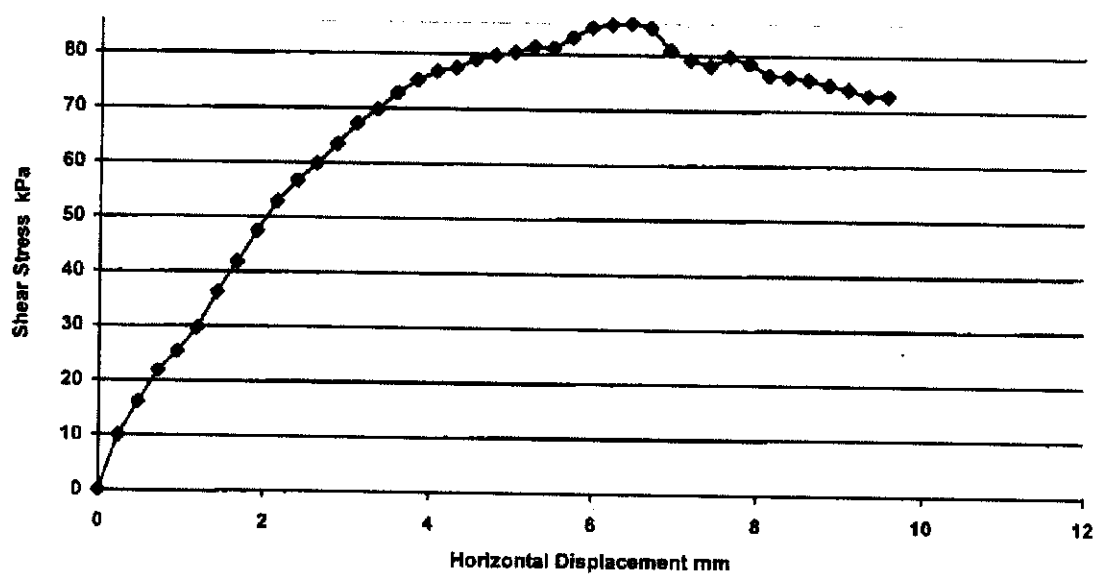


Shear Strength by Direct Shear (Small Shear Box)

Enverity

Client	Ground Engineering	Lab Ref	PL1955-1-23
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH3	Sample	U2

Shear Stress Vs Displacement



**Rates of Horizontal
Displacement**

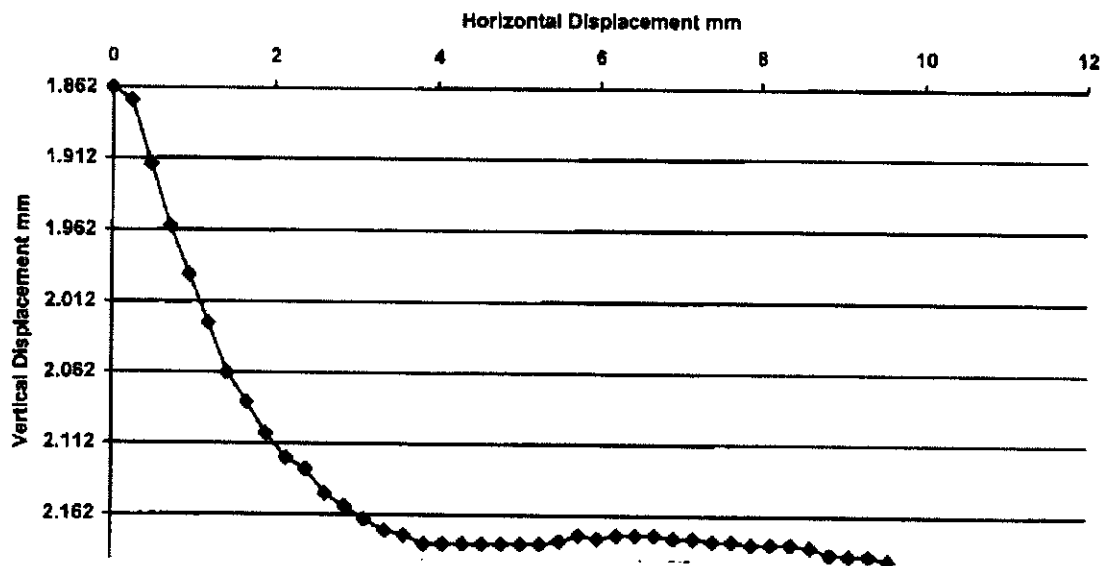
Stage 1: 0.1596mm/min

Shear Strength by Direct Shear (Small Shear Box)

Enverity

Client	Ground Engineering	Lab Ref	PL1955-1-23
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH3	Sample	U2

Change in Specimen Thickness Vs Displacement



Conditions at Failure	
Applied Normal Stress	100.0 kPa
Maximum Shear Stress	85.8 kPa
Horizontal Deformation	6.457 mm
Residual Shear Stress	0.0 kPa
Vertical Deformation	2.176 mm
Cumulative Horizontal Displacement	9.562 mm

Tested By and Date:	MS 05.03.2009
Checked By and Date:	JC 09.03.2009
Approved By and Date:	MH 09.03.2009

Job Name: 41 HIGHGATE Sample No:U1
BH Number: 1 Depth (m):3.00

SPECIMEN DETAILS (TEST #2)

description: Firm grey clay with abundant
(visual) pockets of orange brown sand
preparation: Undisturbed
orientation within original sample: Vertical
test started: 11/03/2009

TEST 2

INITIAL STAGE

type of side drains: Vertical
membrane thickness (mm): 0.3
particle density (Mg/m³): assumed 2.69
voids ratio: 0.62
degree of saturation (%): 95.0

SATURATION STAGE

method: increments of cell and back pressure
final pore water pressure (kPa): 397
final degree of saturation (%): 100.0

CONSOLIDATION STAGE

effective stress (kPa): 60
initial pore water pressure (kPa): 350
final pore water pressure (kPa): 300
pore pressure dissipation (%): 100.0

SHEAR STAGE

failure criterion: maximum deviator stress (kPa)
cell pressure (kPa): 360
initial pore water pressure (kPa): 300
rate of strain (mm/min): 0.012
strain at failure (%): 9.47
volumetric strain at failure (%): 1.91
eff. major principal stress (kPa): 243
eff. minor principal stress (kPa): 60
time to peak dev. stress (min): 594

CONSOLIDATED DRAINED TRIAXIAL TEST
WITH VOLUME CHANGE MEASUREMENT

S · G · C

Survey Geotechnical Consultants Limited

Shear Strength by Direct Shear (Small Shear Box)

Enverity

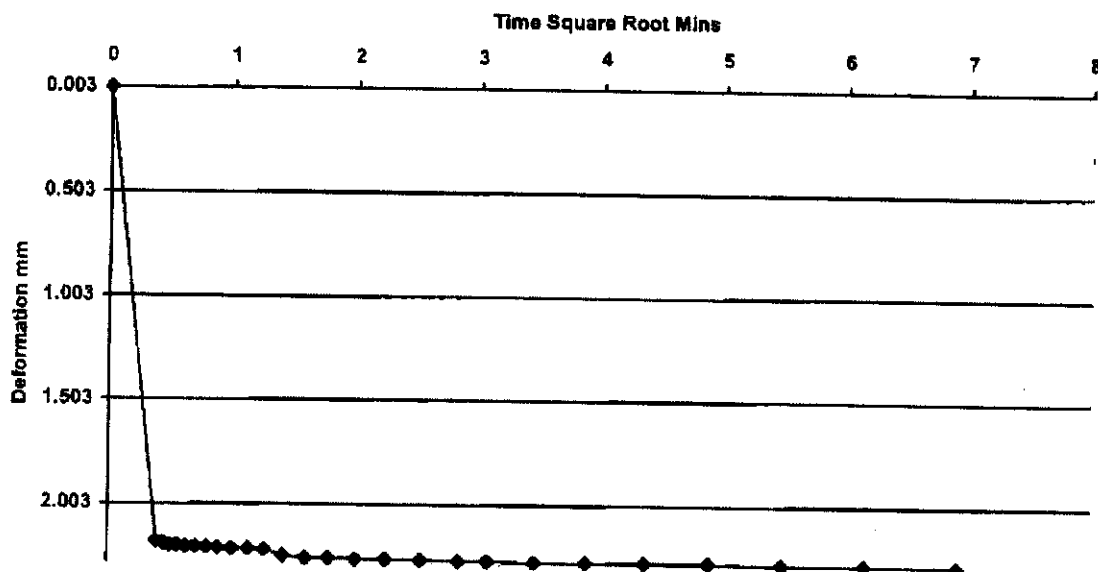
Client	Ground Engineering	Lab Ref	PL1955-1-23
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH3	Sample	U2

Test Details			
Standard	BS 1377 Part 7 :1990 Clause 4	Particle Density	2.65 Mg/m ³
Sample Type	Undisturbed	Single or Multi Stage	Single Stage
Lab. Temperature	22.0 deg.C	Location	BH3
Sample Description	Light-brown orange-brown sandy SILT		
Variations from procedure	None		

Specimen Details			
Specimen Reference	C	Description	See Above
Depth within Sample	5.00m	Orientation within Sample	N/A
Initial Height	24.000 mm	Area	3600.00 mm ²
Preparation	None	Initial Moisture Content*	5.9 %
Bulk Density	1.42 Mg/m ³	Dry Density	1.35 Mg/m ³
Initial Voids Ratio	0.9701	Degree of Saturation	16.17 %
Dry or Submerged	Submerged		
Comments			

* Calculated from initial and dry weights of whole specimen

Settlement Vs Square Root Time

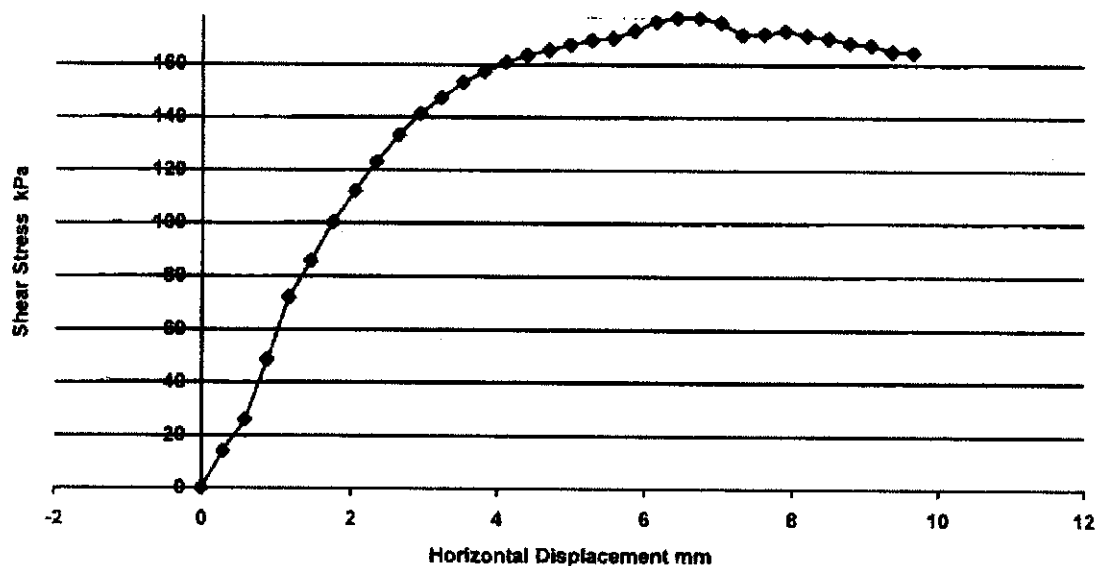


Shear Strength by Direct Shear (Small Shear Box)

Enverity

Client	Ground Engineering	Lab Ref	PL1955-1-23
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH3	Sample	U2

Shear Stress Vs Displacement



Rates of Horizontal
Displacement

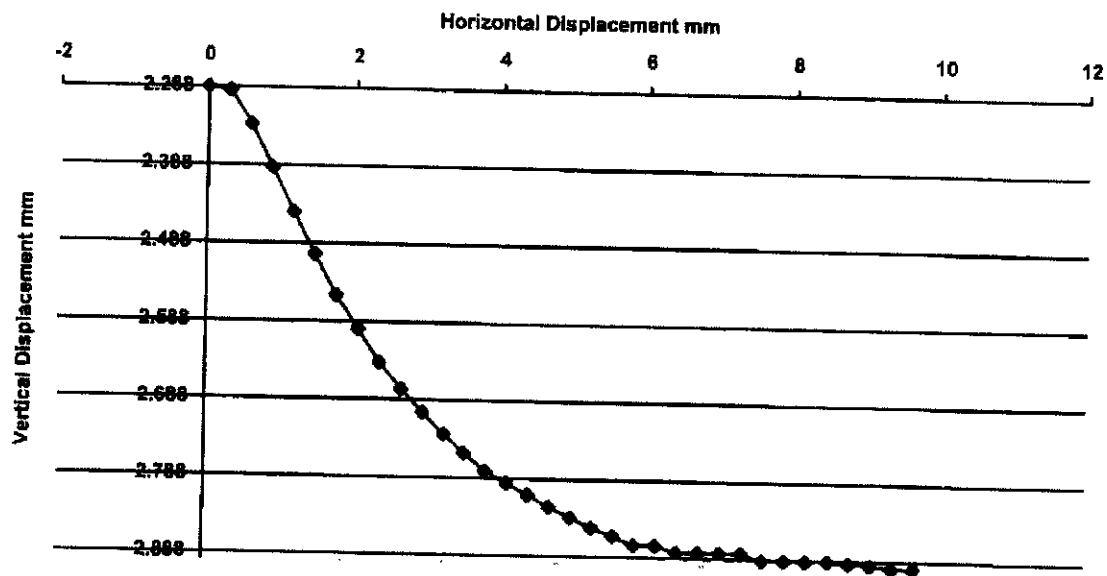
Stage 1: 0.1803mm/min

Shear Strength by Direct Shear (Small Shear Box)

Enverity

Client	Ground Engineering	Lab Ref	PL1955-1-23
Project	Witanhurst C11681	Job	PL1955-1
Borehole	BH3	Sample	U2

Change in Specimen Thickness Vs Displacement



Conditions at Failure	
Applied Normal Stress	200.0 kPa
Maximum Shear Stress	177.6 kPa
Horizontal Deformation	6.444 mm
Residual Shear Stress	0.0 kPa
Vertical Deformation	2.880 mm
Cumulative Horizontal Displacement	9.655 mm

Tested By and Date:	MS 05.03.2009
Checked By and Date:	JC 09.03.2009
Approved By and Date:	MH 09.03.2009

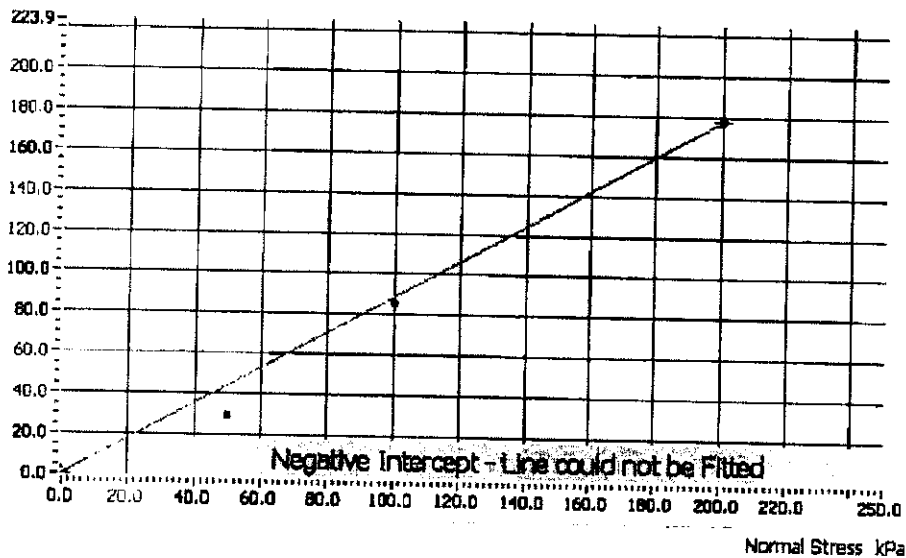
Shear Strength by Direct Shear (Small Shear Box)

Enverity

Test Summary				
Reference	A	B	C	
Applied Normal Stress	50.0 kPa	100.0 kPa	200.0 kPa	
Peak Strength	29.1 kPa	85.8 kPa	177.6 kPa	
Corresponding Horizontal Displacement	5.985 mm	6.457 mm	6.444 mm	
Residual Shear Stress	N/A	N/A	N/A	
Rate(s) of Shear Displacement	Stage 1: 0.1001mm/min	Stage 1: 0.1596mm/min	Stage 1: 0.1803mm/min	
Final Height	23.33 mm	21.81 mm	21.11 mm	
Cumulative Displacement	9.568 mm	9.562 mm	9.655 mm	
Number of Traverses	1	1	1	

Maximum Shear Stress vs Normal Stress

Peak Shear Stress kPa



Peak •

Angle of Shear Resistance

41.61 Degrees

Cohesion

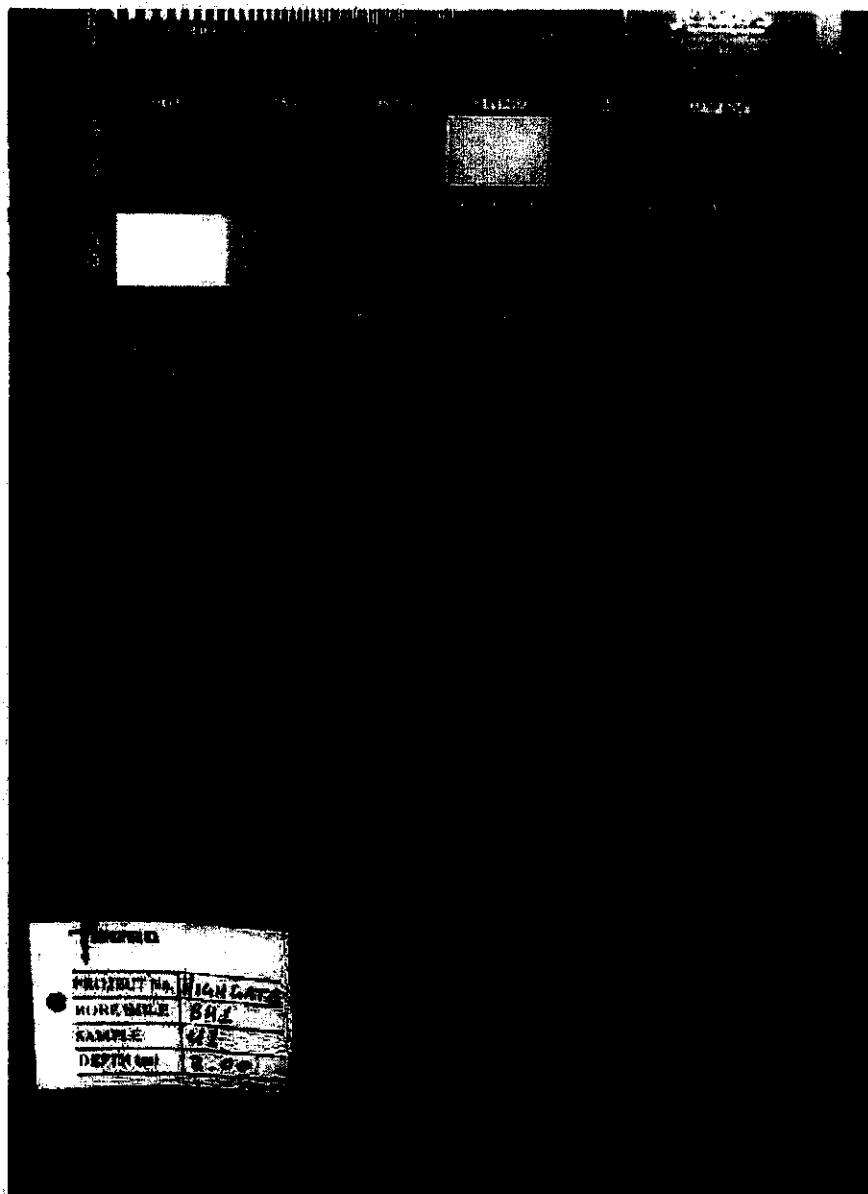
0.00 kPa

**GROUND ENGINEERING
HIGHGATE**

VISUAL DESCRIPTION

Firm very closely fissured grey CLAY with interlaminated orange brown silty SAND and abundant pockets of sand

SPECIMEN PHOTOGRAPHS



Borehole

BH1

Sample

U1

Depth (m)

3.00