

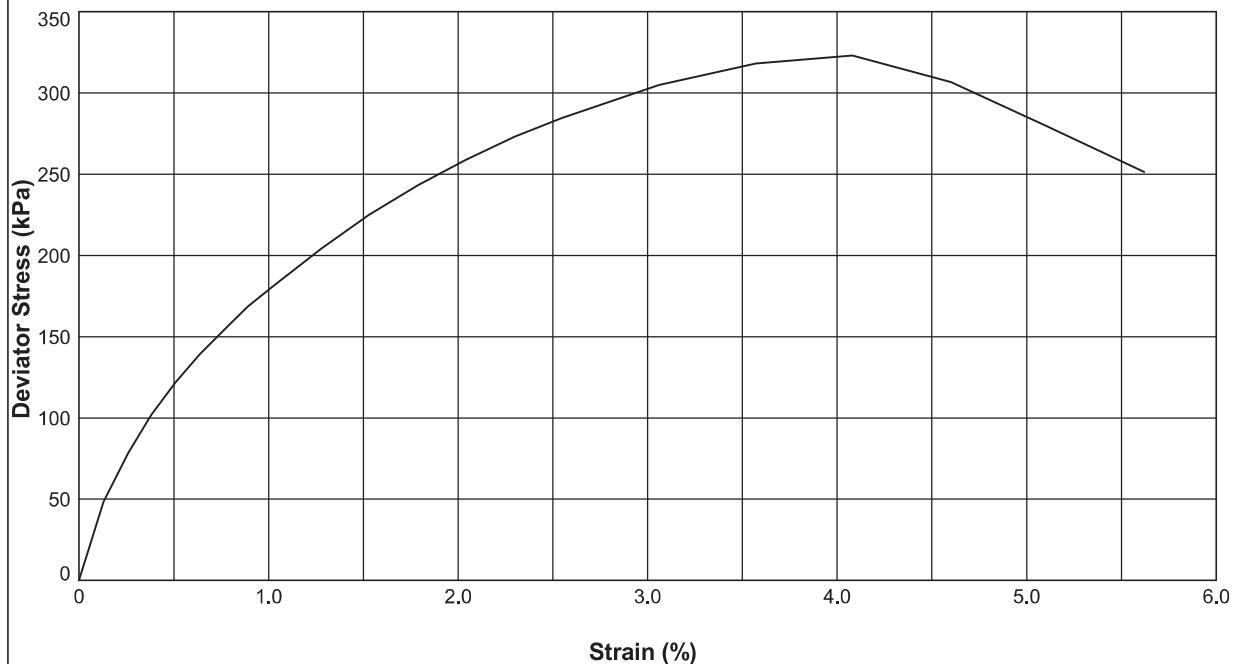
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH13** Sample Ref: **3** Sample Type: **UT** Depth (m): **11.50**

Description : **Dark brown CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	103.30		
	Height (mm)	195.85		
	Moisture Content (%)	29		
	Bulk Density (Mg/m ³)	1.98		
	Dry Density (Mg/m ³)	1.54		
TEST DETAILS	Membrane Thickness (mm)	0.44		
	Rate of Axial Displacement (%/min)	1.00		
	Cell Pressure (kPa)	230		
	Membrane Correction (kPa)	0.48		
	Corrected Deviator Stress (kPa)	323		
	Undrained Shear Strength (kPa)	162		
	Strain at Failure (%)	4.1		
	Mode of Failure	Brittle		



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Ugly Brown Building

Contract Ref:

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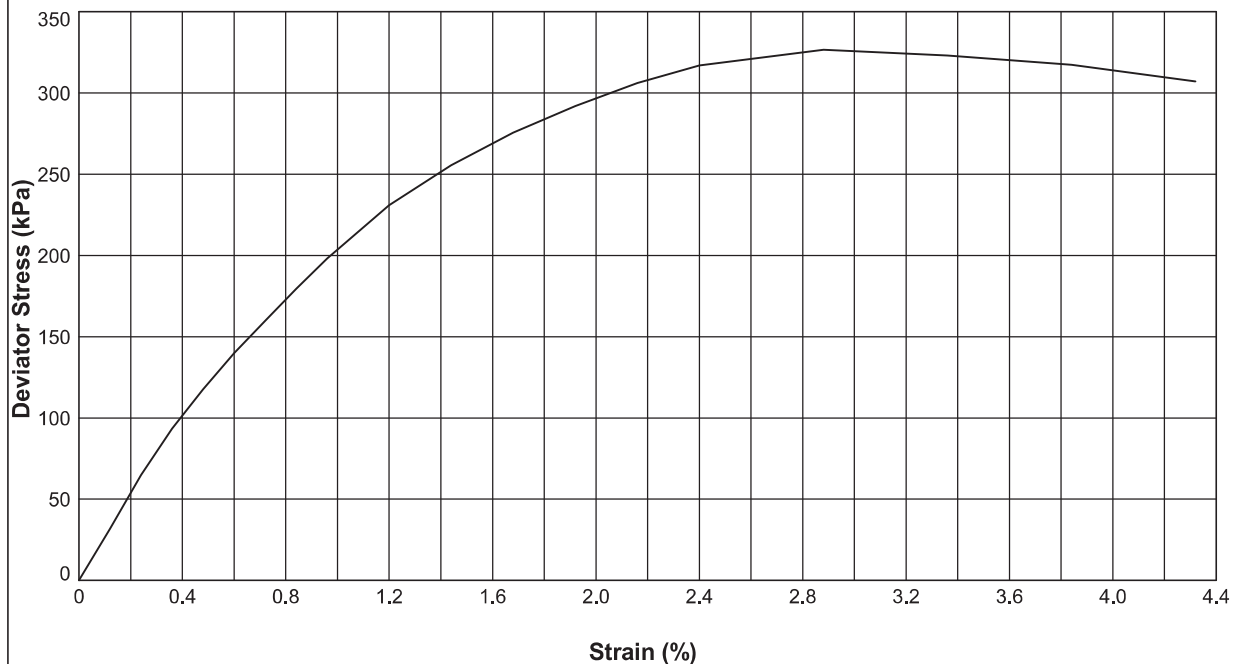
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH13** Sample Ref: **4** Sample Type: **UT** Depth (m): **14.50**

Description : **Dark brown CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	103.83		
	Height (mm)	208.42		
	Moisture Content (%)	26		
	Bulk Density (Mg/m ³)	1.99		
	Dry Density (Mg/m ³)	1.58		
TEST DETAILS	Membrane Thickness (mm)	0.12		
	Rate of Axial Displacement (%/min)	0.94		
	Cell Pressure (kPa)	290		
	Membrane Correction (kPa)	0.09		
	Corrected Deviator Stress (kPa)	327		
	Undrained Shear Strength (kPa)	163		
	Strain at Failure (%)	2.9		
	Mode of Failure	Brittle		



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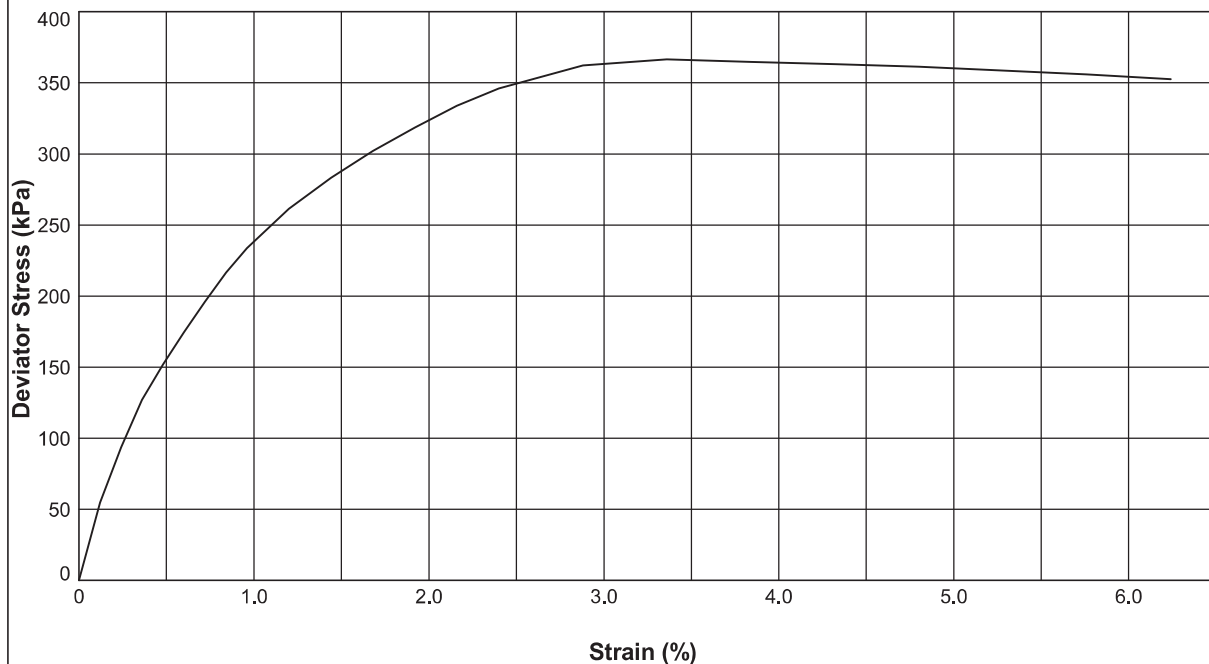
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH13** Sample Ref: **5** Sample Type: **UT** Depth (m): **17.50**

Description : **Dark brown sandy CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	102.89		
	Height (mm)	208.46		
	Moisture Content (%)	23		
	Bulk Density (Mg/m ³)	2.08		
	Dry Density (Mg/m ³)	1.69		
TEST DETAILS	Membrane Thickness (mm)	0.24		
	Rate of Axial Displacement (%/min)	0.91		
	Cell Pressure (kPa)	350		
	Membrane Correction (kPa)	0.22		
	Corrected Deviator Stress (kPa)	366		
	Undrained Shear Strength (kPa)	183		
	Strain at Failure (%)	3.4		
	Mode of Failure	Brittle		



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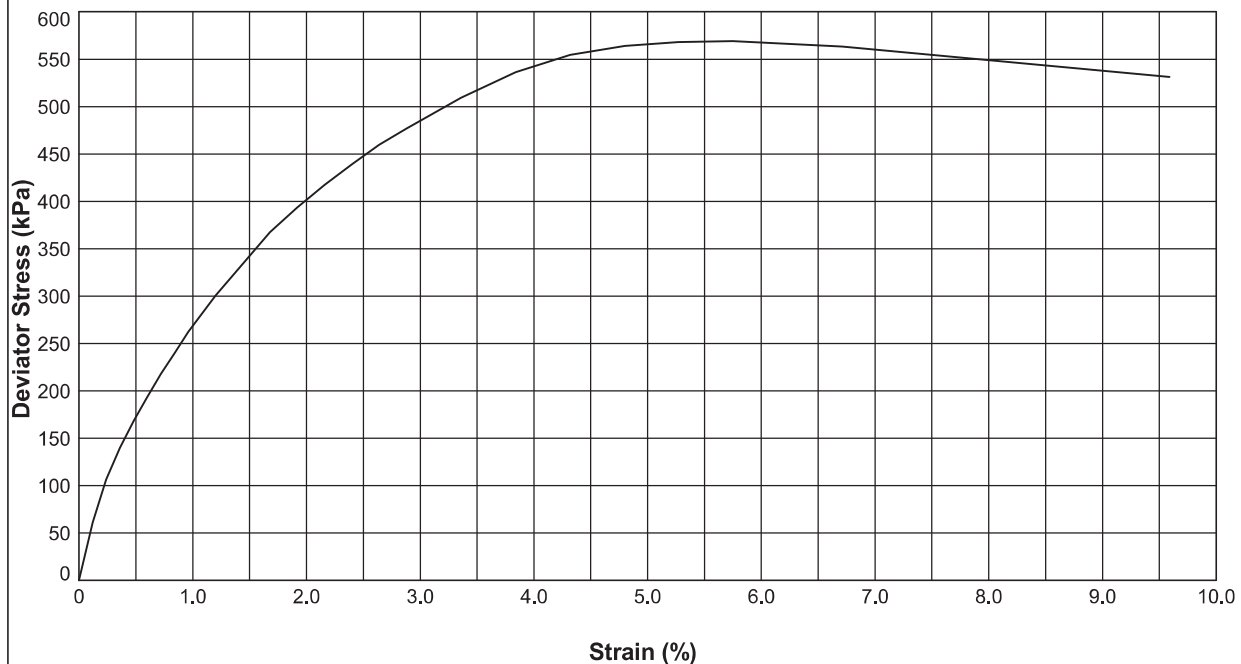
UNCONSOLIDATED QUICK UNDRAINED (SINGLE STAGE) TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH13** Sample Ref: **6** Sample Type: **UT** Depth (m): **20.50**

Description : **Dark brown sandy CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	103.04		
	Height (mm)	208.54		
	Moisture Content (%)	22		
	Bulk Density (Mg/m ³)	2.10		
	Dry Density (Mg/m ³)	1.72		
TEST DETAILS	Membrane Thickness (mm)	0.23		
	Rate of Axial Displacement (%/min)	0.94		
	Cell Pressure (kPa)	410		
	Membrane Correction (kPa)	0.33		
	Corrected Deviator Stress (kPa)	569		
	Undrained Shear Strength (kPa)	285		
	Strain at Failure (%)	5.8		
	Mode of Failure	Compound		



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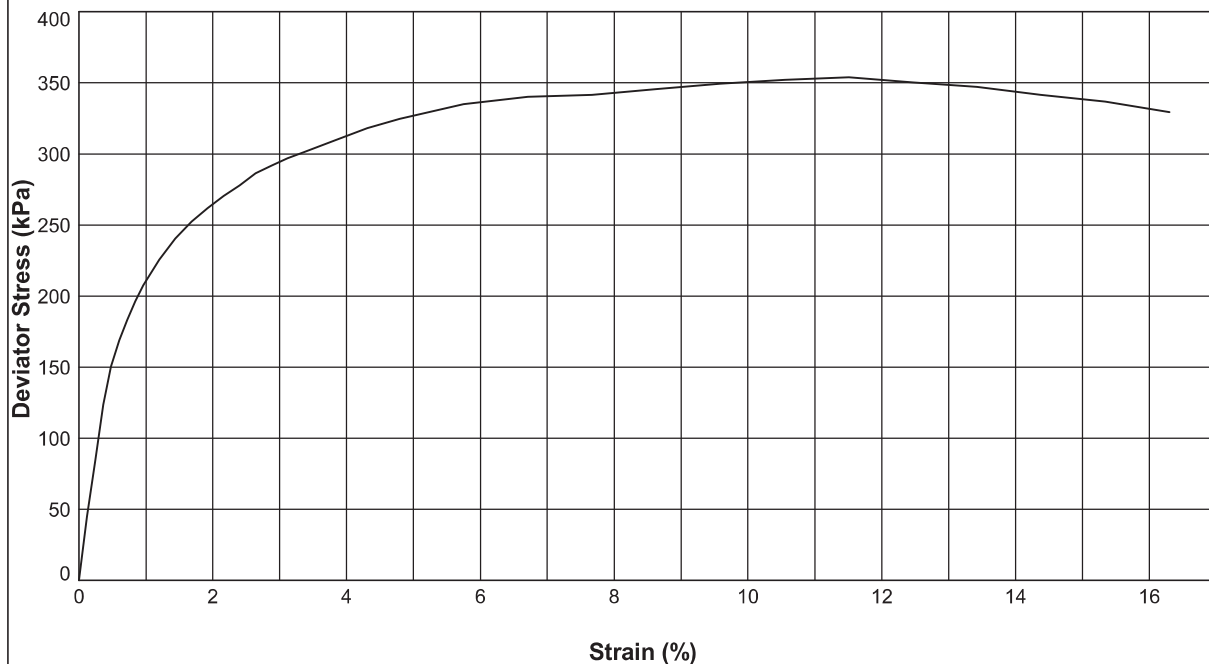
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In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH13** Sample Ref: **8** Sample Type: **UT** Depth (m): **26.50**

Description : **Red mottled grey slightly sandy CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	103.68		
	Height (mm)	208.59		
	Moisture Content (%)	24		
	Bulk Density (Mg/m ³)	2.07		
	Dry Density (Mg/m ³)	1.67		
TEST DETAILS	Membrane Thickness (mm)	0.23		
	Rate of Axial Displacement (%/min)	1.20		
	Cell Pressure (kPa)	530		
	Membrane Correction (kPa)	0.56		
	Corrected Deviator Stress (kPa)	354		
	Undrained Shear Strength (kPa)	177		
	Strain at Failure (%)	11.5		
	Mode of Failure	Brittle		



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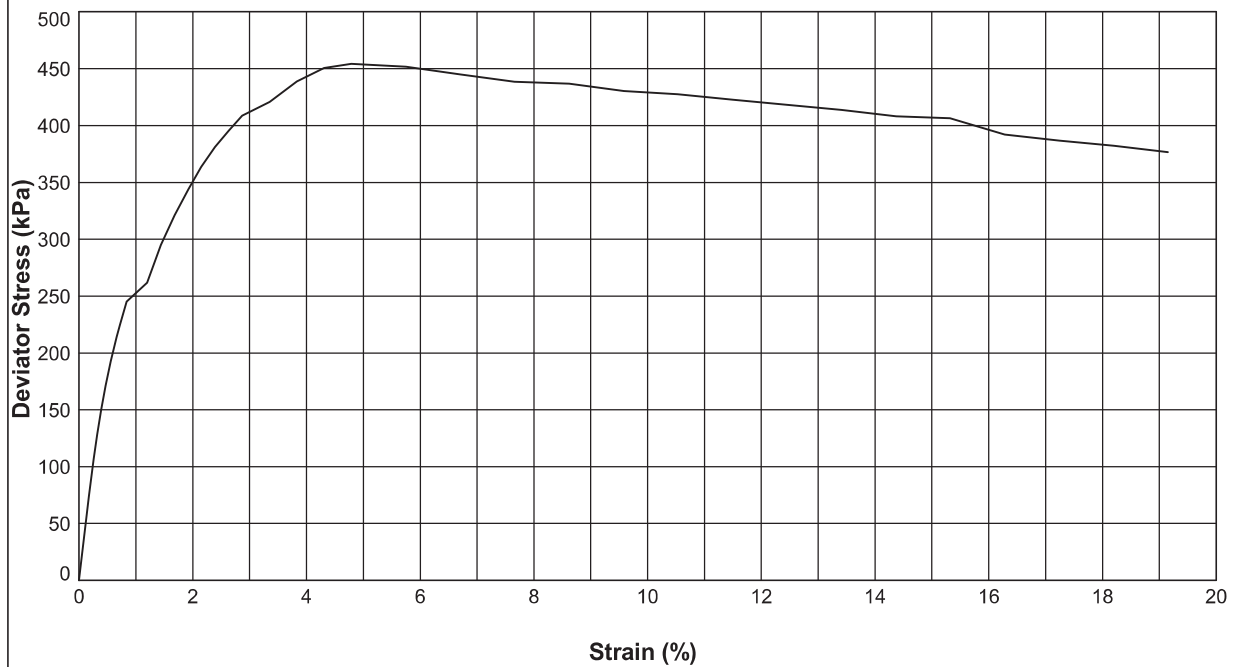
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In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH13** Sample Ref: **9** Sample Type: **UT** Depth (m): **29.50**

Description : **Grey mottled red slightly sandy CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	103.50		
	Height (mm)	208.83		
	Moisture Content (%)	26		
	Bulk Density (Mg/m ³)	1.99		
	Dry Density (Mg/m ³)	1.58		
TEST DETAILS	Membrane Thickness (mm)	0.23		
	Rate of Axial Displacement (%/min)	1.44		
	Cell Pressure (kPa)	590		
	Membrane Correction (kPa)	0.29		
	Corrected Deviator Stress (kPa)	454		
	Undrained Shear Strength (kPa)	227		
	Strain at Failure (%)	4.8		
	Mode of Failure	Compound		



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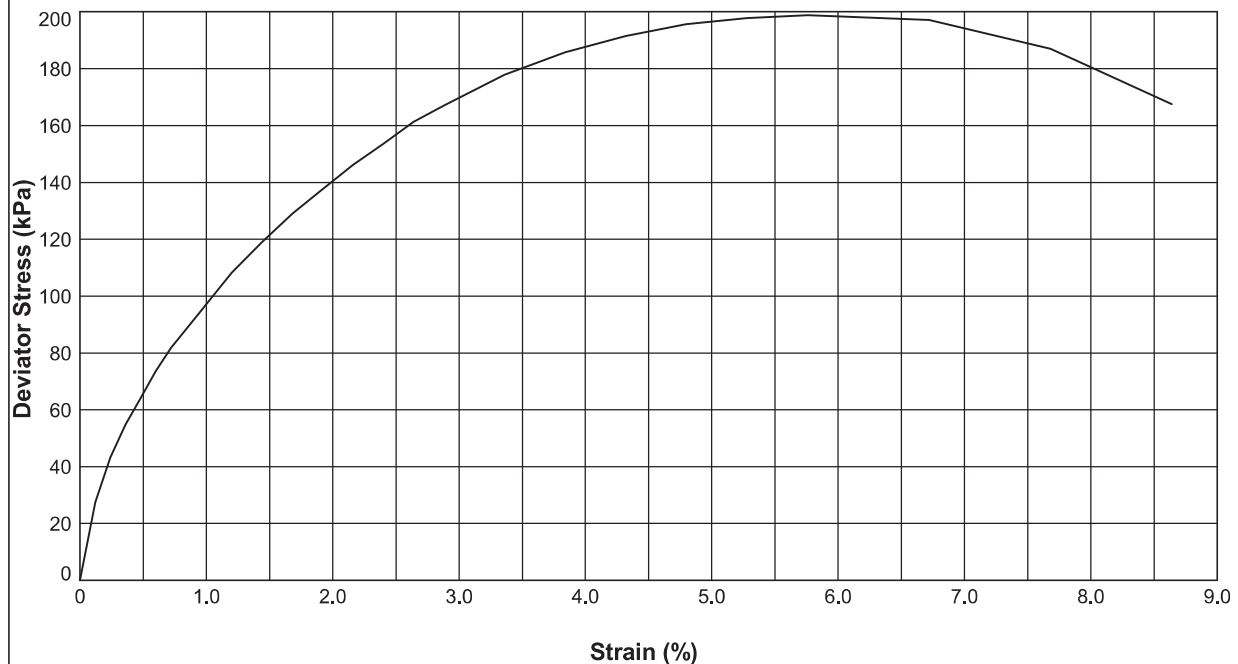
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In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH15** Sample Ref: **7** Sample Type: **UT** Depth (m): **6.00**

Description : **Brown slightly sandy slightly gravelly CLAY with some gypsum**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	103.22		
	Height (mm)	208.23		
	Moisture Content (%)	27		
	Bulk Density (Mg/m ³)	1.97		
	Dry Density (Mg/m ³)	1.55		
TEST DETAILS	Membrane Thickness (mm)	0.20		
	Rate of Axial Displacement (%/min)	0.94		
	Cell Pressure (kPa)	120		
	Membrane Correction (kPa)	0.29		
	Corrected Deviator Stress (kPa)	199		
	Undrained Shear Strength (kPa)	99		
	Strain at Failure (%)	5.8		
	Mode of Failure	Brittle		



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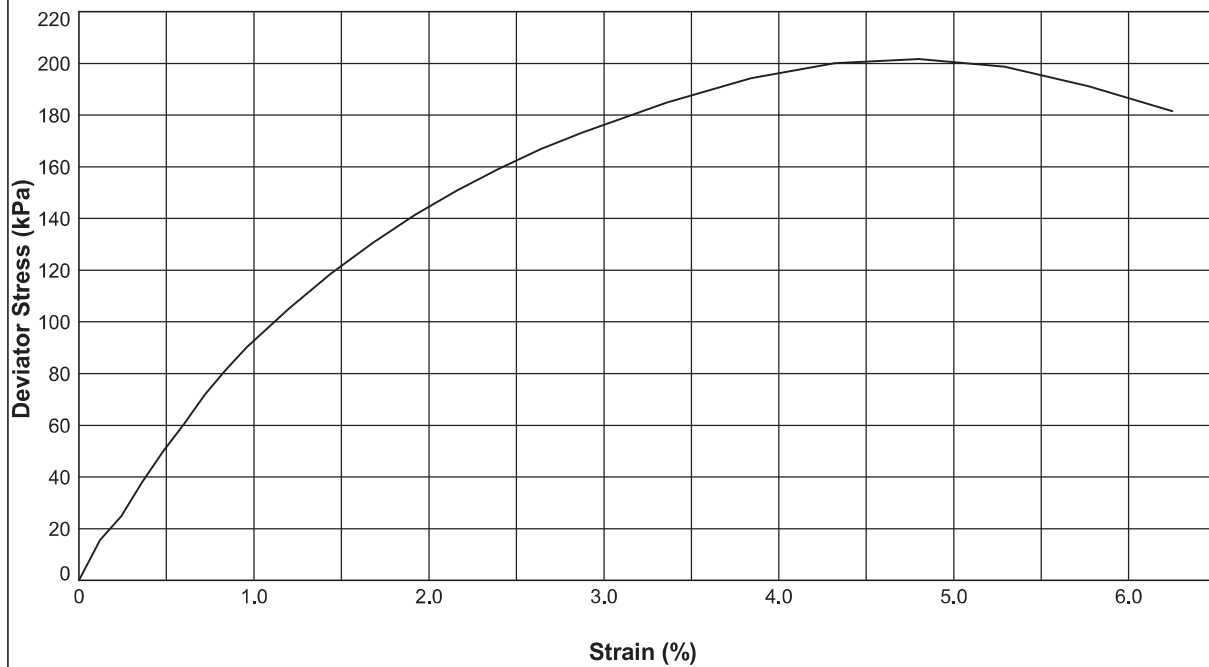
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In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH15** Sample Ref: **10** Sample Type: **UT** Depth (m): **8.00**

Description : **Brown slightly sandy CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	103.49		
	Height (mm)	208.13		
	Moisture Content (%)	28		
	Bulk Density (Mg/m ³)	1.99		
	Dry Density (Mg/m ³)	1.55		
TEST DETAILS	Membrane Thickness (mm)	0.13		
	Rate of Axial Displacement (%/min)	0.94		
	Cell Pressure (kPa)	160		
	Membrane Correction (kPa)	0.16		
	Corrected Deviator Stress (kPa)	202		
	Undrained Shear Strength (kPa)	101		
	Strain at Failure (%)	4.8		
	Mode of Failure	Brittle		



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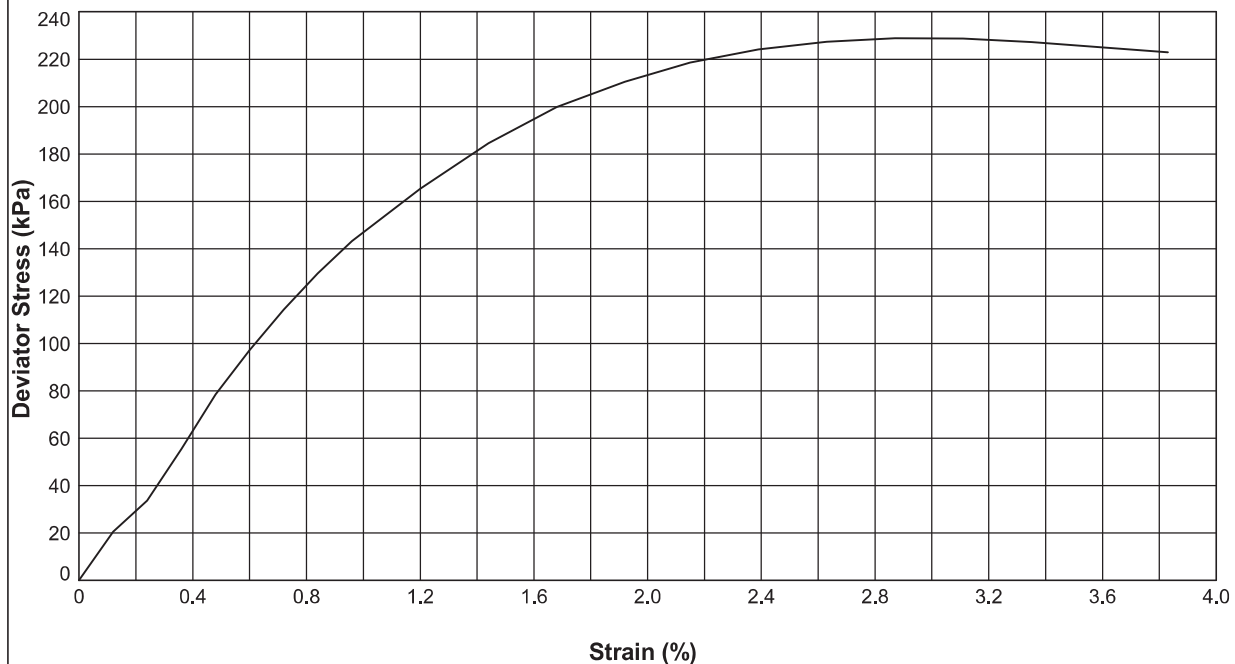
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In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH15** Sample Ref: **18** Sample Type: **UT** Depth (m): **13.50**

Description : **Dark brown slightly sandy CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	102.60		
	Height (mm)	208.83		
	Moisture Content (%)	29		
	Bulk Density (Mg/m ³)	1.99		
	Dry Density (Mg/m ³)	1.54		
TEST DETAILS	Membrane Thickness (mm)	0.11		
	Rate of Axial Displacement (%/min)	0.93		
	Cell Pressure (kPa)	270		
	Membrane Correction (kPa)	0.09		
	Corrected Deviator Stress (kPa)	229		
	Undrained Shear Strength (kPa)	114		
	Strain at Failure (%)	2.9		
	Mode of Failure	Brittle		



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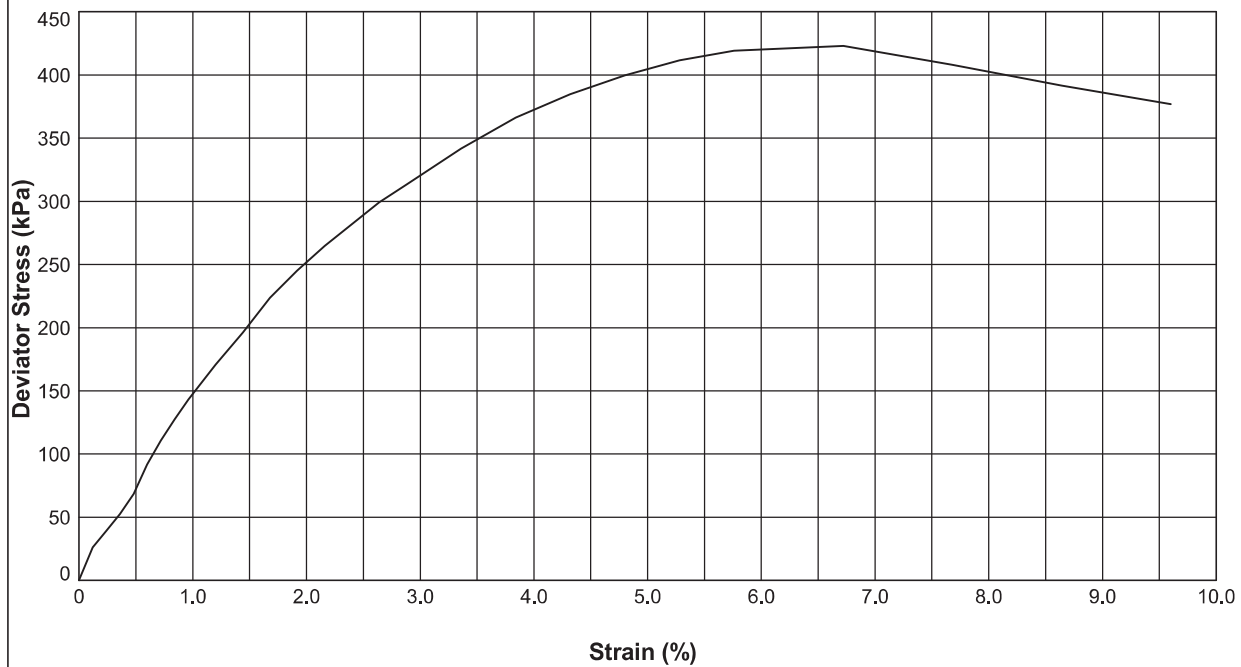
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In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH15** Sample Ref: **26** Sample Type: **UT** Depth (m): **19.50**

Description : **Brown very sandy CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	103.10		
	Height (mm)	208.33		
	Moisture Content (%)	25		
	Bulk Density (Mg/m ³)	2.02		
	Dry Density (Mg/m ³)	1.62		
TEST DETAILS	Membrane Thickness (mm)	0.24		
	Rate of Axial Displacement (%/min)	0.94		
	Cell Pressure (kPa)	390		
	Membrane Correction (kPa)	0.39		
	Corrected Deviator Stress (kPa)	423		
	Undrained Shear Strength (kPa)	212		
	Strain at Failure (%)	6.7		
	Mode of Failure	Brittle		



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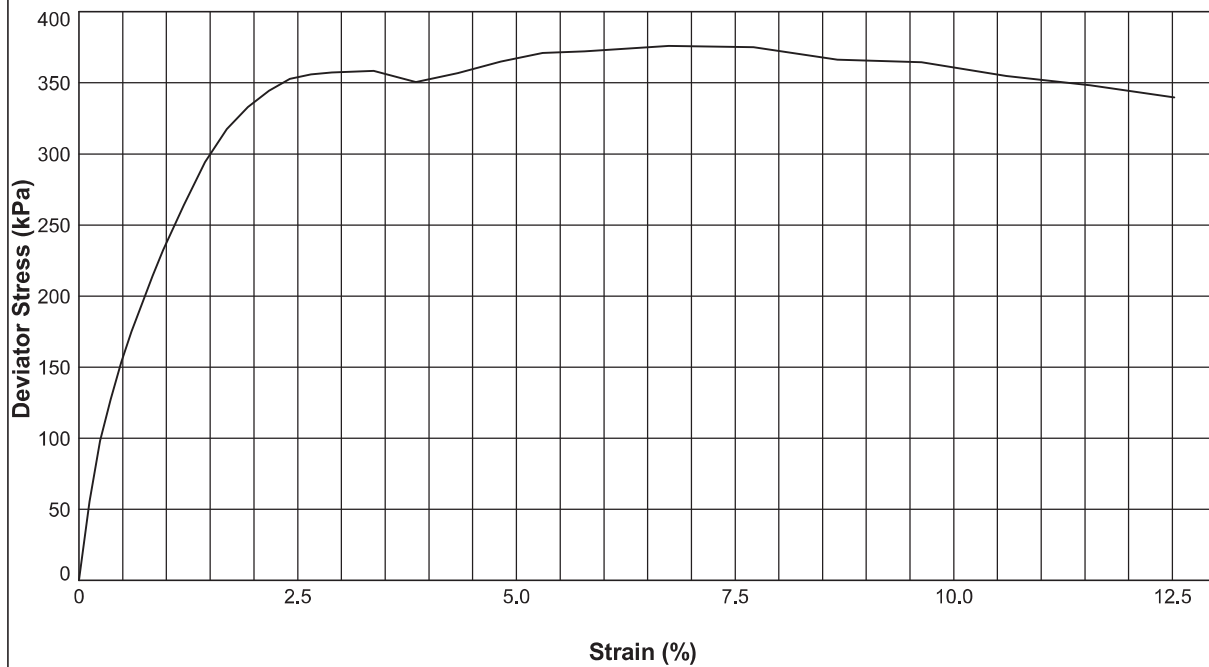
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In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH15** Sample Ref: **34** Sample Type: **UT** Depth (m): **25.50**

Description : **Dark brown slightly sandy CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	103.43		
	Height (mm)	207.63		
	Moisture Content (%)	25		
	Bulk Density (Mg/m ³)	2.03		
	Dry Density (Mg/m ³)	1.63		
TEST DETAILS	Membrane Thickness (mm)	0.20		
	Rate of Axial Displacement (%/min)	1.01		
	Cell Pressure (kPa)	510		
	Membrane Correction (kPa)	0.33		
	Corrected Deviator Stress (kPa)	376		
	Undrained Shear Strength (kPa)	188		
	Strain at Failure (%)	6.7		
	Mode of Failure	Brittle		



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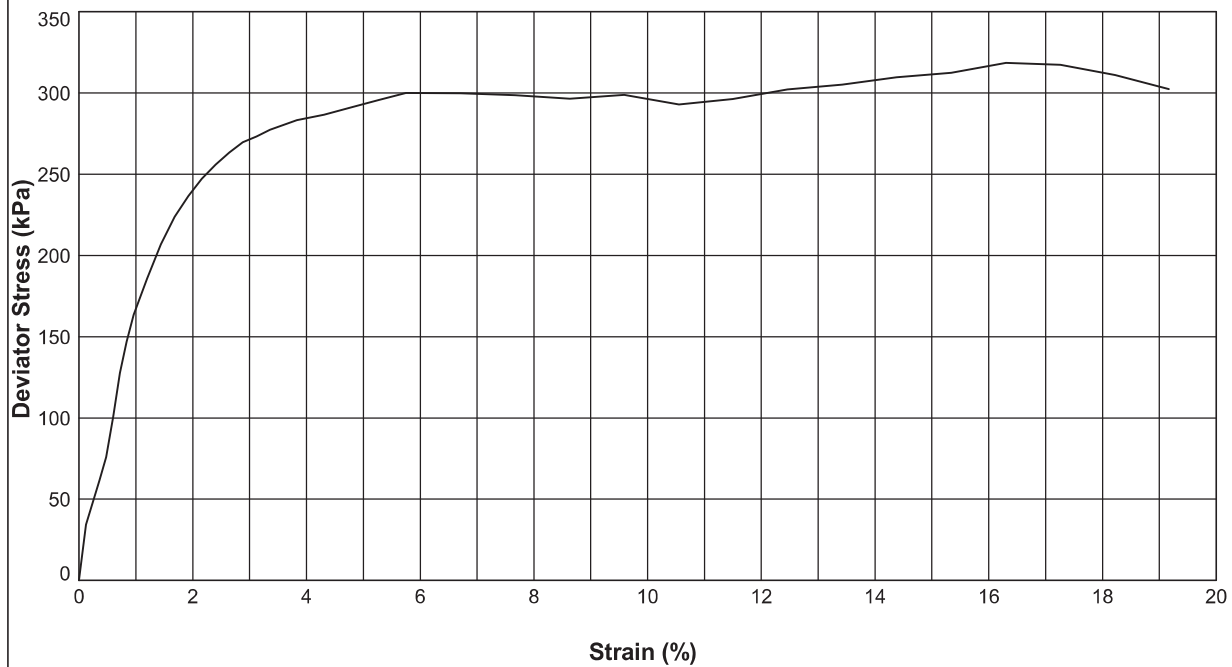
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In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH15** Sample Ref: **39** Sample Type: **UT** Depth (m): **28.50**

Description : **Brown mottled grey and orange slightly sandy CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	103.60		
	Height (mm)	208.62		
	Moisture Content (%)	24		
	Bulk Density (Mg/m ³)	2.07		
	Dry Density (Mg/m ³)	1.67		
TEST DETAILS	Membrane Thickness (mm)	0.24		
	Rate of Axial Displacement (%/min)	1.05		
	Cell Pressure (kPa)	570		
	Membrane Correction (kPa)	0.76		
	Corrected Deviator Stress (kPa)	318		
	Undrained Shear Strength (kPa)	159		
	Strain at Failure (%)	16.3		
	Mode of Failure	Brittle		



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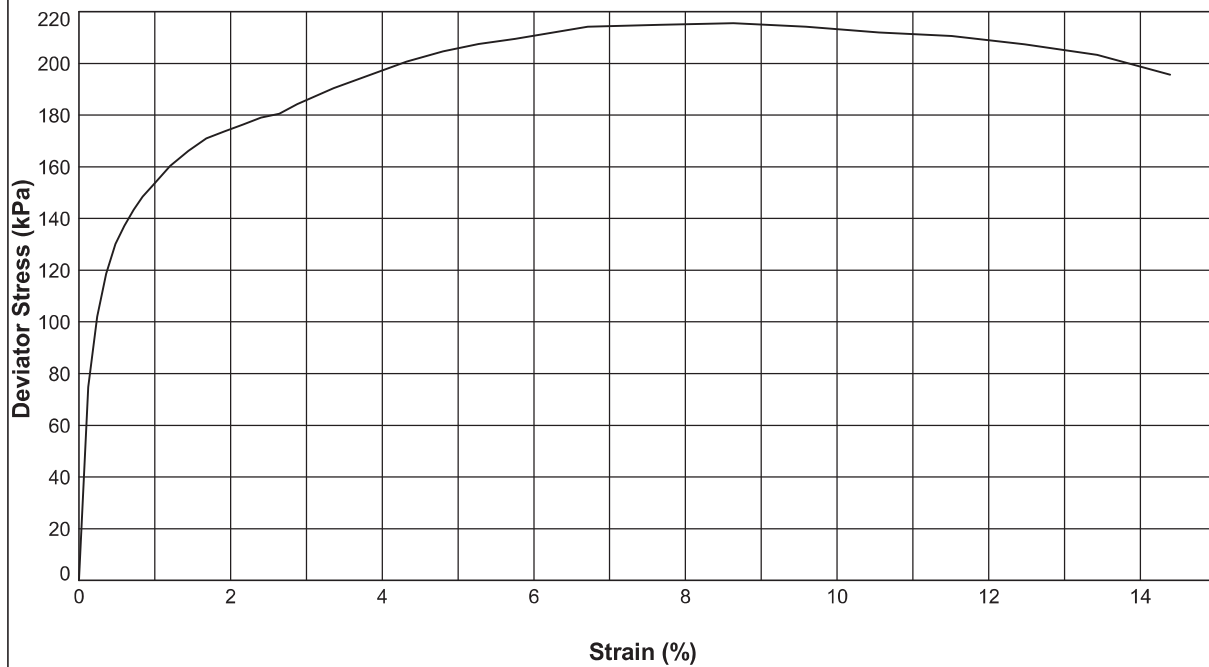
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In accordance with BS1377:Part 7:1990, Clause 8

Borehole: **BH15** Sample Ref: **43** Sample Type: **UT** Depth (m): **31.50**

Description : **Grey mottled red slightly sandy CLAY**

STAGE NUMBER		1	2	3
SAMPLE DETAILS	Sample Condition	Undisturbed		
	Orientation of sample	Vertical		
	Diameter (mm)	103.13		
	Height (mm)	208.55		
	Moisture Content (%)	28		
	Bulk Density (Mg/m ³)	2.00		
	Dry Density (Mg/m ³)	1.57		
TEST DETAILS	Membrane Thickness (mm)	0.12		
	Rate of Axial Displacement (%/min)	1.53		
	Cell Pressure (kPa)	630		
	Membrane Correction (kPa)	0.24		
	Corrected Deviator Stress (kPa)	216		
	Undrained Shear Strength (kPa)	108		
	Strain at Failure (%)	8.6		
	Mode of Failure	Compound		



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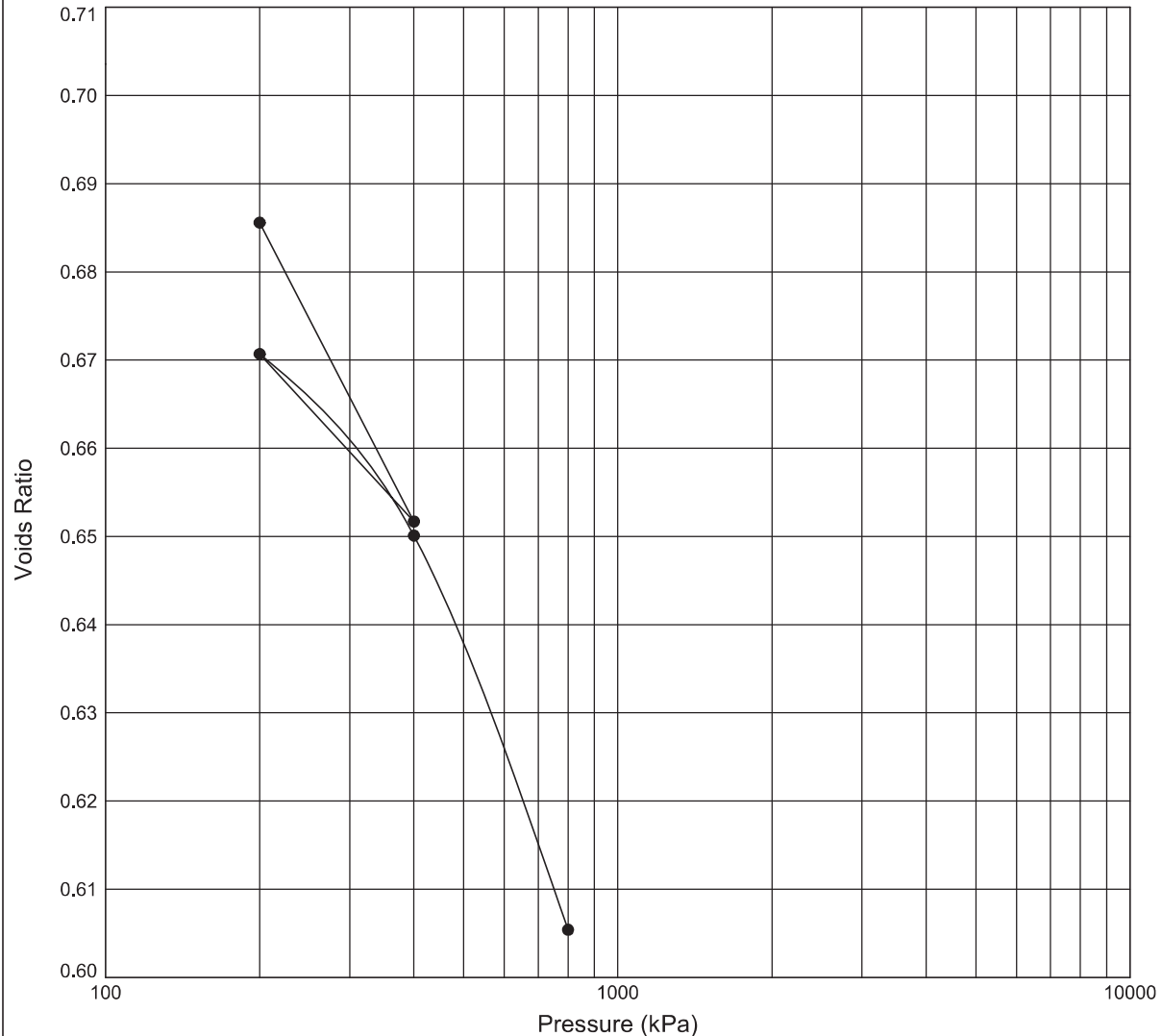
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ONE DIMENSIONAL CONSOLIDATION TEST

In accordance with BS1377:Part 5:1990

Borehole: **BH02** Sample Ref: **2** Sample Type: **UT** Depth (m): **4.07**



Initial Specimen Condition		Final Specimen Condition		Test Results			
Moisture Content (%)	: 27	Moisture Content (%)	: 25	Pressure Range (kPa)	Mv (m²/MN)	Cv (m²/yr)	Voids Ratio
Bulk Density (Mg/m³)	: 1.95	Bulk Density (Mg/m³)	: 2.06	0 - 100	Sample	Swelling	0.7036
Dry Density (Mg/m³)	: 1.54	Dry Density (Mg/m³)	: 1.65	100 - 200	0.11	7.6	0.6856
Void Ratio	: 0.7190	Void Ratio	: 0.6054	200 - 400	0.10	1.7	0.6517
Specimen Details				400 - 200	NA	NA	0.6707
Description	Brown CLAY with occasional lenses of orange silt	Height (mm)	: 19.00	200 - 400	0.061	1.5	0.6501
		Diameter (mm)	: 74.91	400 - 800	0.068	1.1	0.6054
		Particle Density (Mg/m³)	: 2.65				
		(assumed)					
		Swelling Pressure (kPa)	: NA				

Notes: Method of time-setting used: **T90**. Temperature range during test (degC): **18.2 - 21**.



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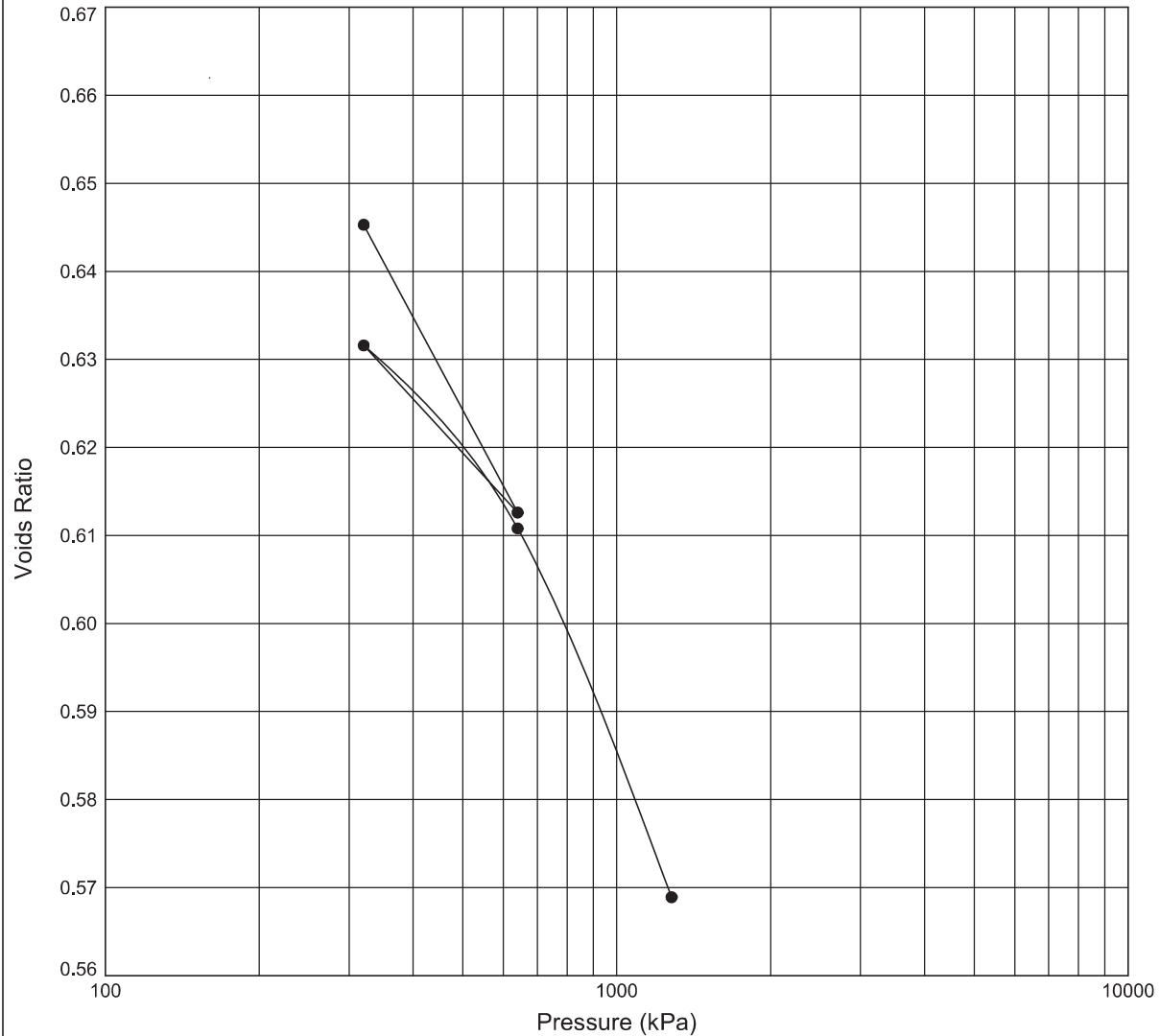
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ONE DIMENSIONAL CONSOLIDATION TEST

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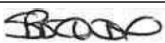
Borehole: **BH02** Sample Ref: **5** Sample Type: **UT** Depth (m): **8.11**



Initial Specimen Condition		Final Specimen Condition		Test Results			
Moisture Content (%)	: 27	Moisture Content (%)	: 26	Pressure Range (kPa)	Mv (m ² /MN)	Cv (m ² /yr)	Voids Ratio
Bulk Density (Mg/m ³)	: 2.00	Bulk Density (Mg/m ³)	: 2.13	0 - 160	Sample	Swelling	0.6620
Dry Density (Mg/m ³)	: 1.58	Dry Density (Mg/m ³)	: 1.69	160 - 320	0.063	5.5	0.6453
Void Ratio	: 0.6803	Void Ratio	: 0.5689	320 - 640	0.062	3.8	0.6126
				640 - 320	NA	NA	0.6316
				320 - 640	0.040	1.7	0.6108
				640 - 1280	0.041	2.7	0.5689

Specimen Details	
Description	Height (mm) : 19.00
Greyish brown CLAY	Diameter (mm) : 74.93
	Particle Density (Mg/m ³) : 2.65 (assumed)
	Swelling Pressure (kPa) : NA

Notes: Method of time-setting used: **T90**. Temperature range during test (degC): **18.2 - 21**.

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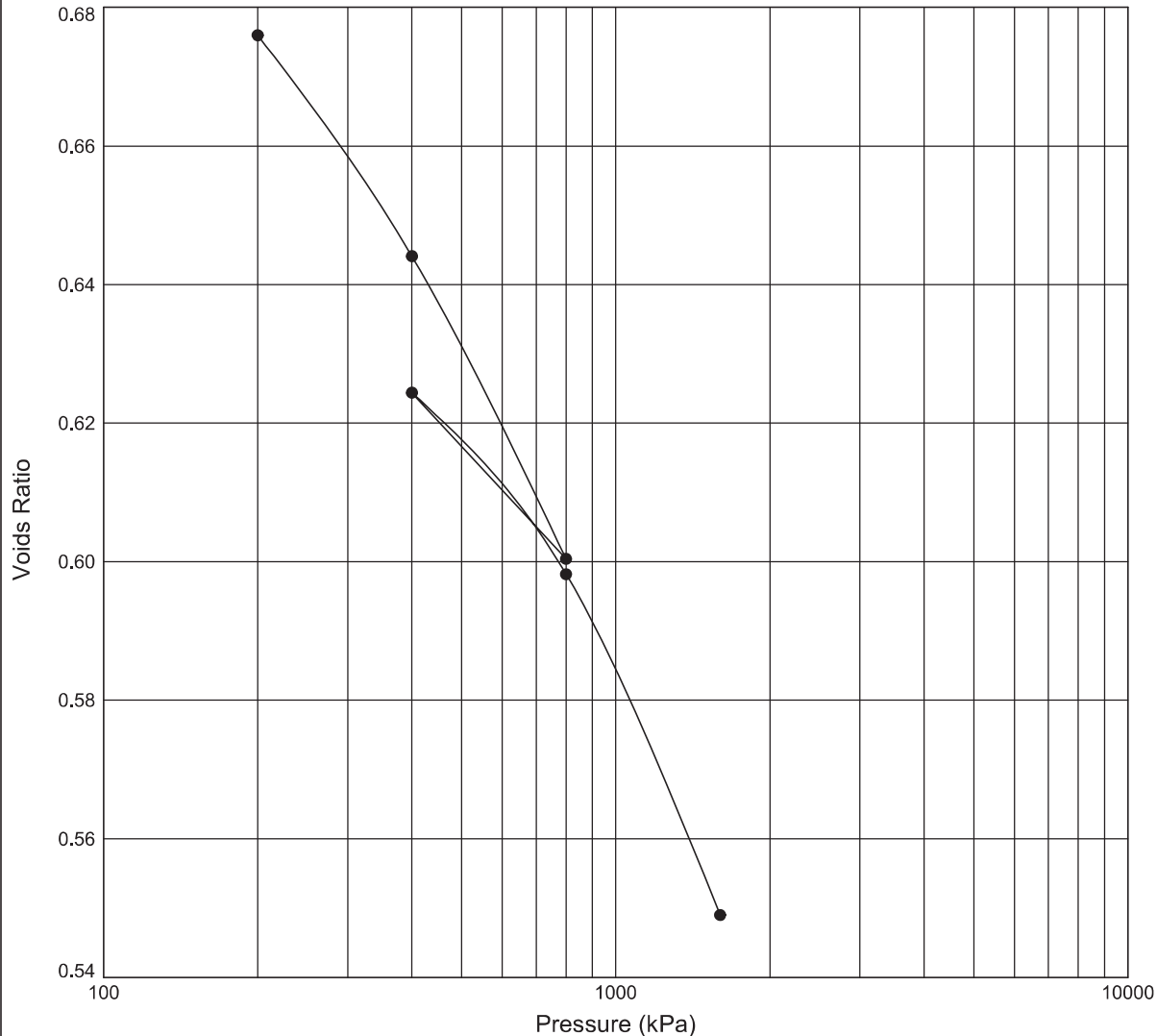
In accordance with BS1377:Part 5:1990

Borehole: **BH03**

Sample Ref: **10**

Sample Type: **UT**

Depth (m): **20.06**



Initial Specimen Condition		Final Specimen Condition		Test Results			
Moisture Content (%)	: 27	Moisture Content (%)	: 26	Pressure Range (kPa)	Mv (m²/MN)	Cv (m²/yr)	Voids Ratio
Bulk Density (Mg/m³)	: 2.00	Bulk Density (Mg/m³)	: 2.15	128 - 200	0.095	2.2	0.6760
Dry Density (Mg/m³)	: 1.57	Dry Density (Mg/m³)	: 1.70	200 - 400	0.095	0.55	0.6441
Void Ratio	: 0.6875	Void Ratio	: 0.5490	400 - 800	0.067	1.0	0.6004
Specimen Details				800 - 400	NA	NA	0.6244
Description		Height (mm)	: 18.86	400 - 800	0.040	0.37	0.5982
Dark brown CLAY		Diameter (mm)	: 74.83	800 - 1600	0.038	0.70	0.5490
		Particle Density (Mg/m³) (assumed)	: 2.65				
		Swelling Pressure (kPa)	: 128				

Notes: Method of time-setting used: **T90**. Temperature range during test (degC): **18.2 - 21.1**.



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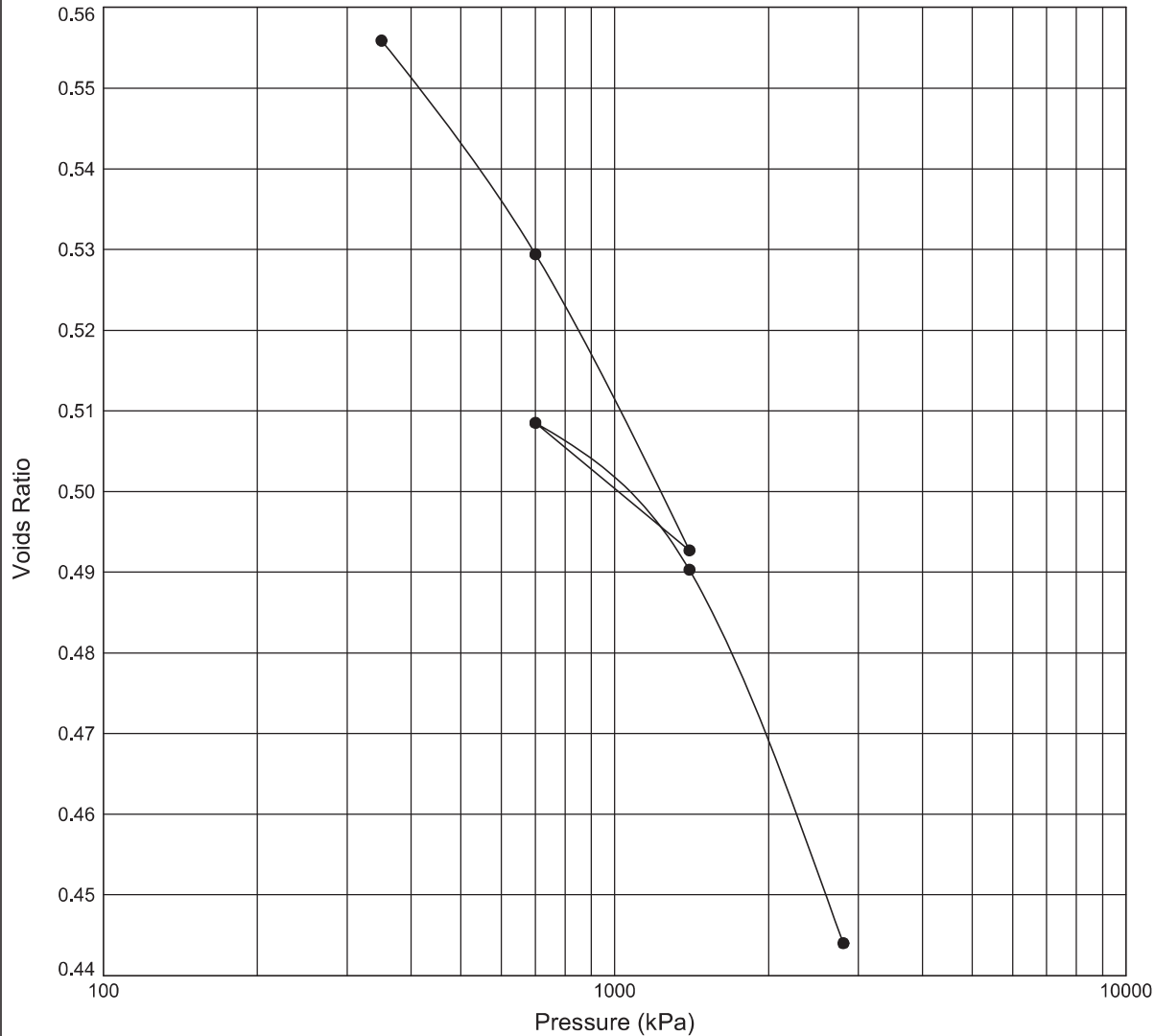
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ONE DIMENSIONAL CONSOLIDATION TEST

In accordance with BS1377:Part 5:1990

Borehole: **BH03** Sample Ref: **15** Sample Type: **UT** Depth (m): **35.15**



Initial Specimen Condition		Final Specimen Condition		Test Results			
Moisture Content (%)	: 22	Moisture Content (%)	: 22	Pressure Range (kPa)	Mv (m ² /MN)	Cv (m ² /yr)	Voids Ratio
Bulk Density (Mg/m ³)	: 2.06	Bulk Density (Mg/m ³)	: 2.24	138 - 350	0.052	33	0.5559
Dry Density (Mg/m ³)	: 1.68	Dry Density (Mg/m ³)	: 1.84	350 - 700	0.049	21	0.5294
Void Ratio	: 0.5732	Void Ratio	: 0.4440	700 - 1400	0.034	4.9	0.4927
Specimen Details Description Light grey mottled purple and orange CLAY Height (mm) 19.00 Diameter (mm) 74.83 Particle Density (Mg/m³) 2.65 (assumed) Swelling Pressure (kPa) 138				1400 - 700	NA	NA	0.5085
				700 - 1400	0.017	2.0	0.4903
				1400 - 2800	0.022	1.6	0.4440

Notes: Method of time-setting used: **T90**. Temperature range during test (degC): **18.2 - 21**.



STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By

Date

Stacey Brown

STACEY BROWN

08/03/19

Contract

Ugly Brown Building

Contract Ref:

584009



MEASUREMENT OF SWELLING TEST

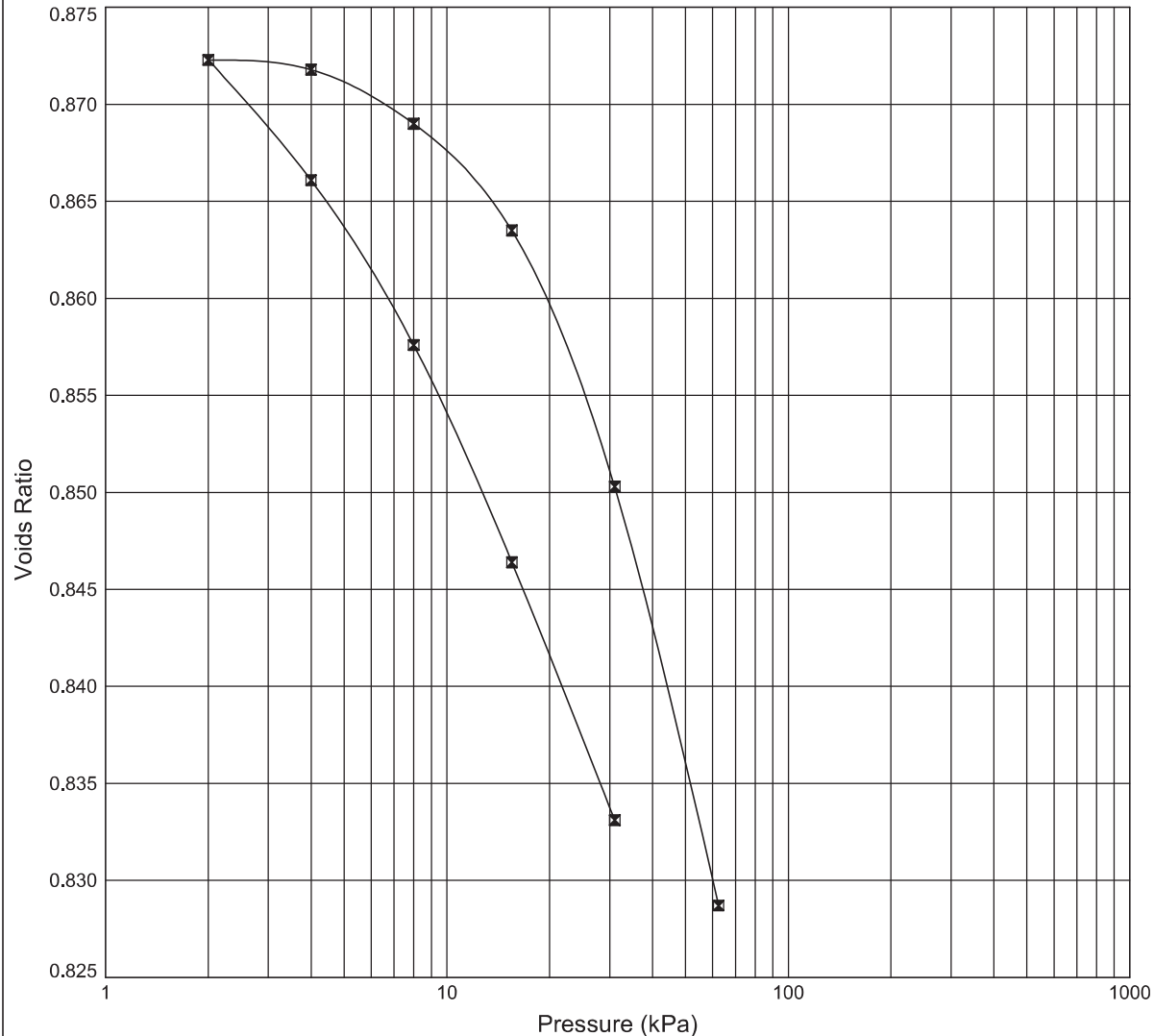
In accordance with BS1377:Part 5:1990

Borehole: **BH02**

Sample Ref: **2**

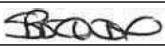
Sample Type: **UT**

Depth (m): **4.02**



Initial Specimen Condition		Final Specimen Condition		Test Results			
Moisture Content (%)	: 31	Moisture Content (%)	: 33	Pressure Range (kPa)	Mv (m ² /MN)	Cv (m ² /yr)	Voids Ratio
Bulk Density (Mg/m ³)	: 1.91	Bulk Density (Mg/m ³)	: 1.93	63 - 31	NA	NA	0.8331
Dry Density (Mg/m ³)	: 1.46	Dry Density (Mg/m ³)	: 1.45	31 - 15.5	NA	NA	0.8464
Voids Ratio	: 0.8179	Voids Ratio	: 0.8287	15.5 - 8	NA	NA	0.8576
				8 - 4	NA	NA	0.8661
				4 - 2	NA	NA	0.8723
				2 - 4	0.13	13	0.8718
				4 - 8	0.37	66	0.8690
				8 - 15.5	0.39	5.4	0.8635
				15.5 - 31	0.46	5.3	0.8503
				31 - 62.5	0.37	1.6	0.8287

Specimen Details	
Description	Height (mm) : 14.94
Brown CLAY with occasional lenses of orange silt	Diameter (mm) : 75.00
	Particle Density (Mg/m ³) : 2.65 (assumed)
	Swelling Pressure (kPa) : 63

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	 STACEY BROWN		08/03/19
	Contract Ugly Brown Building		Contract Ref: 584009 

MEASUREMENT OF SWELLING TEST

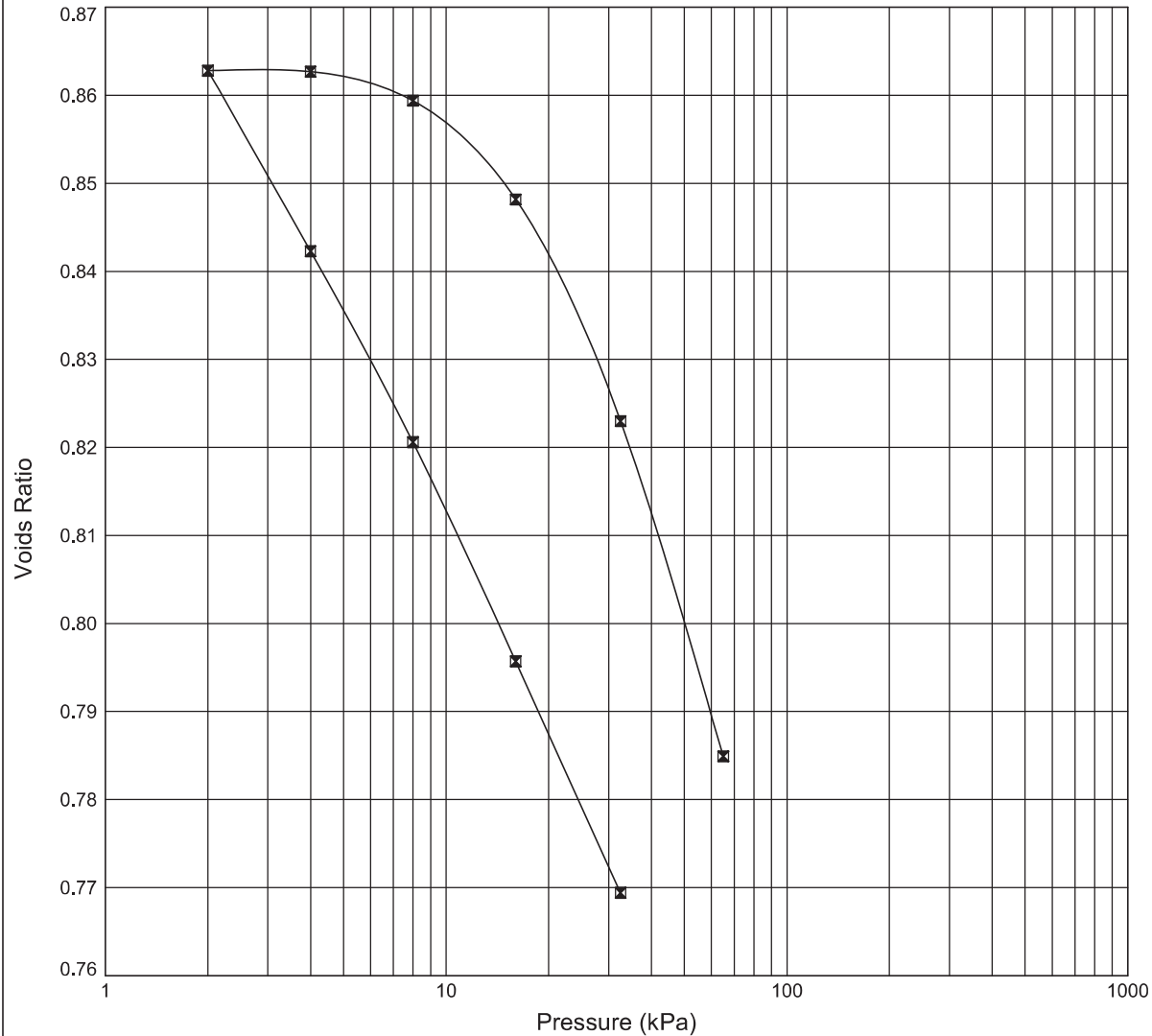
In accordance with BS1377:Part 5:1990

Borehole: **BH02**

Sample Ref: **5**

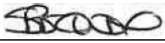
Sample Type: **UT**

Depth (m): **8.03**



Initial Specimen Condition		Final Specimen Condition		Test Results			
Moisture Content (%)	: 30	Moisture Content (%)	: 33	Pressure Range (kPa)	Mv (m ² /MN)	Cv (m ² /yr)	Voids Ratio
Bulk Density (Mg/m ³)	: 1.97	Bulk Density (Mg/m ³)	: 1.97	65 - 32.5	NA	NA	0.7694
Dry Density (Mg/m ³)	: 1.52	Dry Density (Mg/m ³)	: 1.48	32.5 - 16	NA	NA	0.7957
Void Ratio	: 0.7455	Void Ratio	: 0.7849	16 - 8	NA	NA	0.8206
				8 - 4	NA	NA	0.8423
				4 - 2	NA	NA	0.8628
				2 - 4	0.031	57	0.8627
				4 - 8	0.44	2.8	0.8594
				8 - 16	0.76	0.48	0.8482
				16 - 32.5	0.82	0.23	0.8230
				32.5 - 65	0.64	0.22	0.7849

Specimen Details	
Description	Height (mm) : 15.06
Greyish brown CLAY	Diameter (mm) : 75.72
	Particle Density (Mg/m ³) : 2.65 (assumed)
	Swelling Pressure (kPa) : 65

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	 STACEY BROWN		08/03/19
	Contract Ugly Brown Building		Contract Ref: 584009 

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

Borehole : **BH05**

Sample Ref : **2**

Sample Type : **UT**

Depth (m) : **3.76**

Nominal Sample Diameter (mm) : **38.0**

Nominal Sample Height (mm) : **76.0**

Drainage : **Radial + 1 End**

Sample Condition : **Undisturbed**

Description : **Brown mottled orange CLAY**

	SPECIMEN NUMBER	1	2	3
PROPERTIES	Initial Moisture Content (%)	27	27	27
	Initial Bulk Density (Mg/m ³)	1.96	1.96	1.97
	Initial Dry Density (Mg/m ³)	1.54	1.54	1.55
	Final Moisture Content (%)	30	29	28
	Final Bulk Density (Mg/m ³)	2.03	2.04	2.09
	Final Dry Density (Mg/m ³)	1.56	1.58	1.63
SATURATION	Final Back Pressure (kPa)	480	490	440
	Cell Pressure Increment (kPa)	35	50	50
	Pore Pressure Increment (kPa)	33.6	48.5	49.5
	Final Pore Pressure Ratio - B Value	0.96	0.97	0.99
CONSOLIDATION	Cell Pressure (kPa)	515	560	580
	Back Pressure (kPa)	480	490	440
	Effective Cell Pressure (kPa)	35	70	140
	Initial Volume (cm ³)	86.21	86.17	85.87
	Final Volume (cm ³)	85.27	83.84	81.65
	Change in Volume (cm ³)	0.93	2.33	4.22
COMPRESSION	Cell Pressure (kPa)	515	560	580
	Initial Pore Water Pressure (kPa)	480.0	490.2	440.1
	Strain Rate (mm/min)	0.0047	0.0046	0.0036
	Axial Strain at Failure (%)	3.92	3.48	2.60
	Time to Failure (hrs)	10.8	7.0	11.5
	Deviator Stress at Failure (kPa)	72.2	112.3	155.6
	Pore Pressure at Failure (kPa)	490.4	513.7	494.5
	Effective Major Principal Stress (kPa)	96.8	158.6	241.1
	Effective Minor Principal Stress (kPa)	24.6	46.3	85.5
	Effective Principal Stress Ratio	3.93	3.43	2.82
	Pore Pressure Coefficient - A _f	0.14	0.21	0.35
Effective Cohesion (kPa) : 15		Angle of Shear Resistance (degs) : 23		



STRUCTURAL SOILS
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Bedminster
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Compiled By

A.S. Frost

ALAN FROST

Date

08/03/19

Contract

Ugly Brown Building

Job No

584009



CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION - MOHR CIRCLES

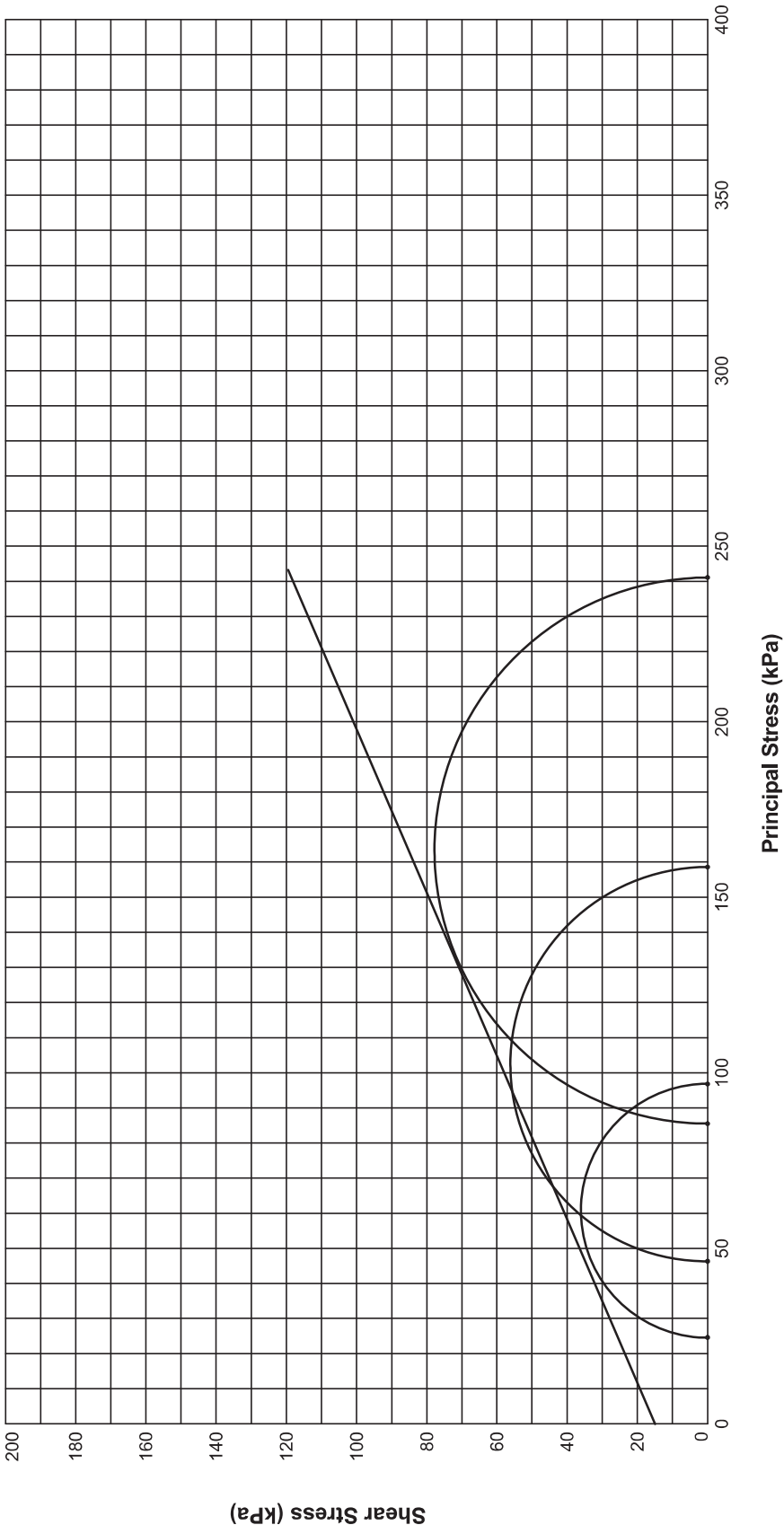
In accordance with BS1377:Part 8:1990

Borehole : BH05

Sample Ref : 2

Sample Type : UT

Depth (m) : 3.76



STRUCTURAL SOILS
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CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

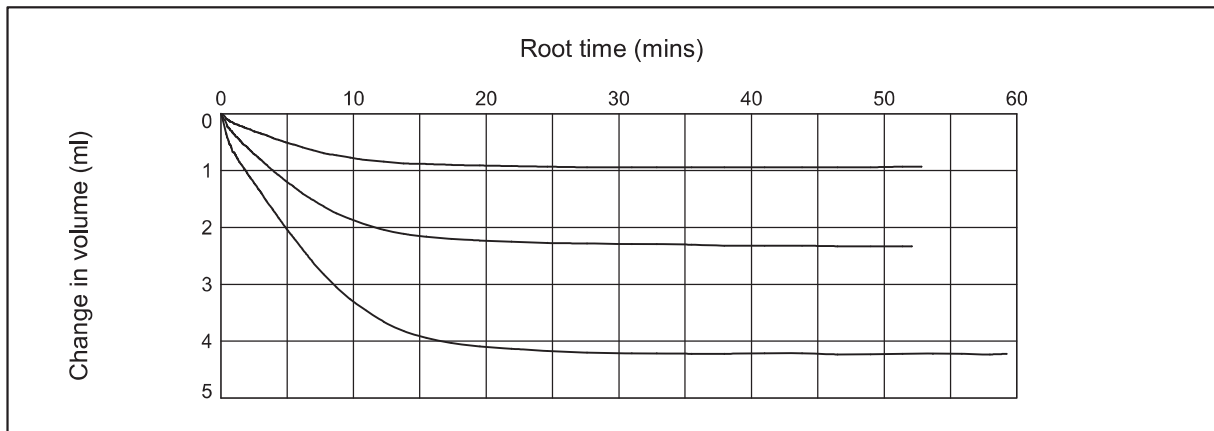
Borehole: **BH05**

Sample Ref: **2**

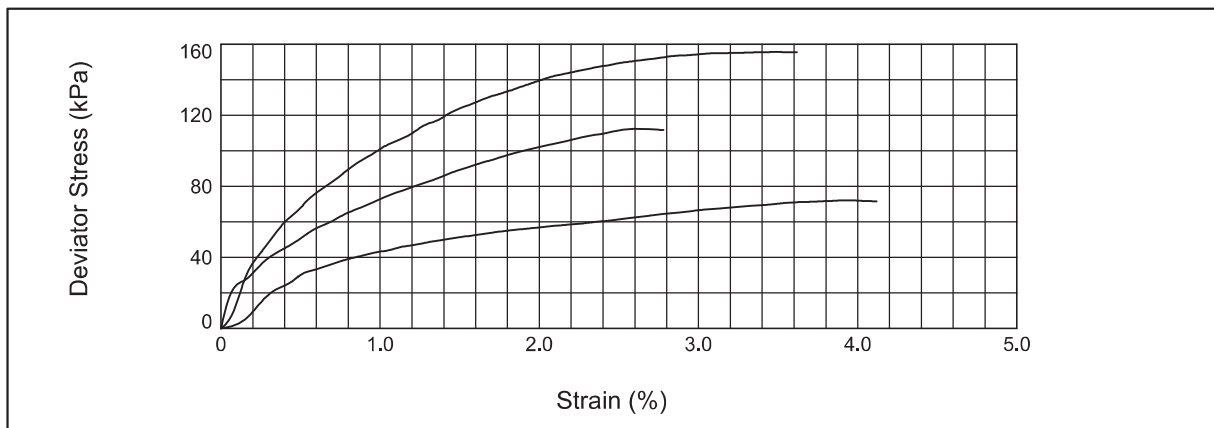
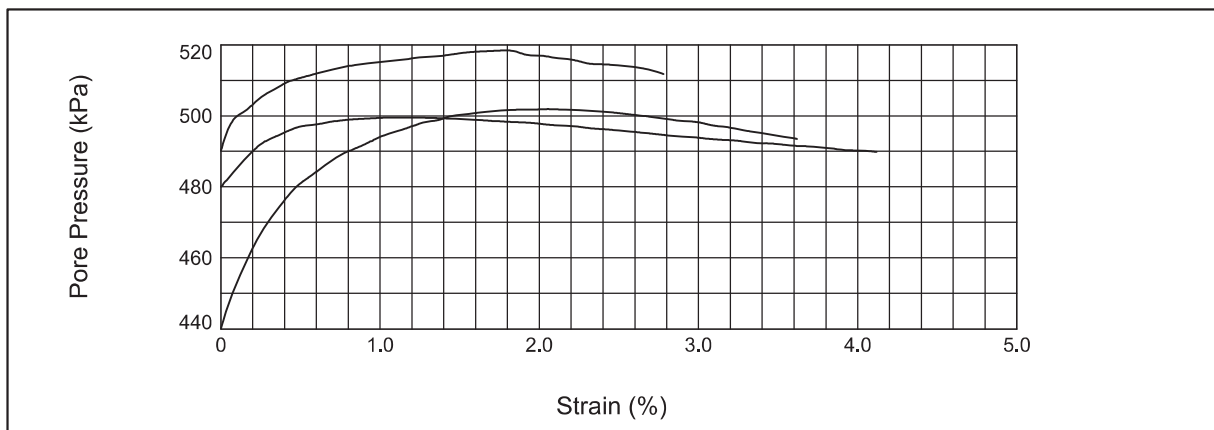
Sample Type: **UT**

Depth (m): **3.76**

CONSOLIDATION STAGE



SHEAR STAGE



STRUCTURAL SOILS
1a Princess Street
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A.S. Frost

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08/03/19

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Contract Ref:

584009

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

Borehole : **BH05**

Sample Ref : **4**

Sample Type : **UT**

Depth (m) : **5.75**

Nominal Sample Diameter (mm) : **38.0**

Nominal Sample Height (mm) : **76.0**

Drainage : **Radial + 1 End**

Sample Condition : **Undisturbed**

Description : **Brown mottled orange CLAY**

	SPECIMEN NUMBER	1	2	3
PROPERTIES	Initial Moisture Content (%)	27	26	27
	Initial Bulk Density (Mg/m ³)	1.97	1.98	1.97
	Initial Dry Density (Mg/m ³)	1.55	1.57	1.56
	Final Moisture Content (%)	31	29	28
	Final Bulk Density (Mg/m ³)	2.08	2.11	2.13
	Final Dry Density (Mg/m ³)	1.59	1.64	1.66
SATURATION	Final Back Pressure (kPa)	390	340	340
	Cell Pressure Increment (kPa)	50	50	50
	Pore Pressure Increment (kPa)	47.5	47.5	47.5
	Final Pore Pressure Ratio - B Value	0.95	0.95	0.95
CONSOLIDATION	Cell Pressure (kPa)	445	450	560
	Back Pressure (kPa)	390	340	340
	Effective Cell Pressure (kPa)	55	110	220
	Initial Volume (cm ³)	86.05	85.55	86.41
	Final Volume (cm ³)	84.15	81.81	80.96
	Change in Volume (cm ³)	1.90	3.74	5.45
COMPRESSION	Cell Pressure (kPa)	445	450	560
	Initial Pore Water Pressure (kPa)	391.8	341.1	342.2
	Strain Rate (mm/min)	0.0042	0.0050	0.0049
	Axial Strain at Failure (%)	2.62	2.65	4.42
	Time to Failure (hrs)	7.9	6.6	11.1
	Deviator Stress at Failure (kPa)	55.8	137.8	203.9
	Pore Pressure at Failure (kPa)	413.0	391.7	425.9
	Effective Major Principal Stress (kPa)	87.8	196.1	338.0
	Effective Minor Principal Stress (kPa)	32.0	58.3	134.1
	Effective Principal Stress Ratio	2.74	3.36	2.52
Effective Cohesion (kPa) : 6		Angle of Shear Resistance (degs) : 25		



STRUCTURAL SOILS
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A.S. Frost

ALAN FROST

Date

08/03/19

Contract

Ugly Brown Building

Job No

584009



CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION - MOHR CIRCLES

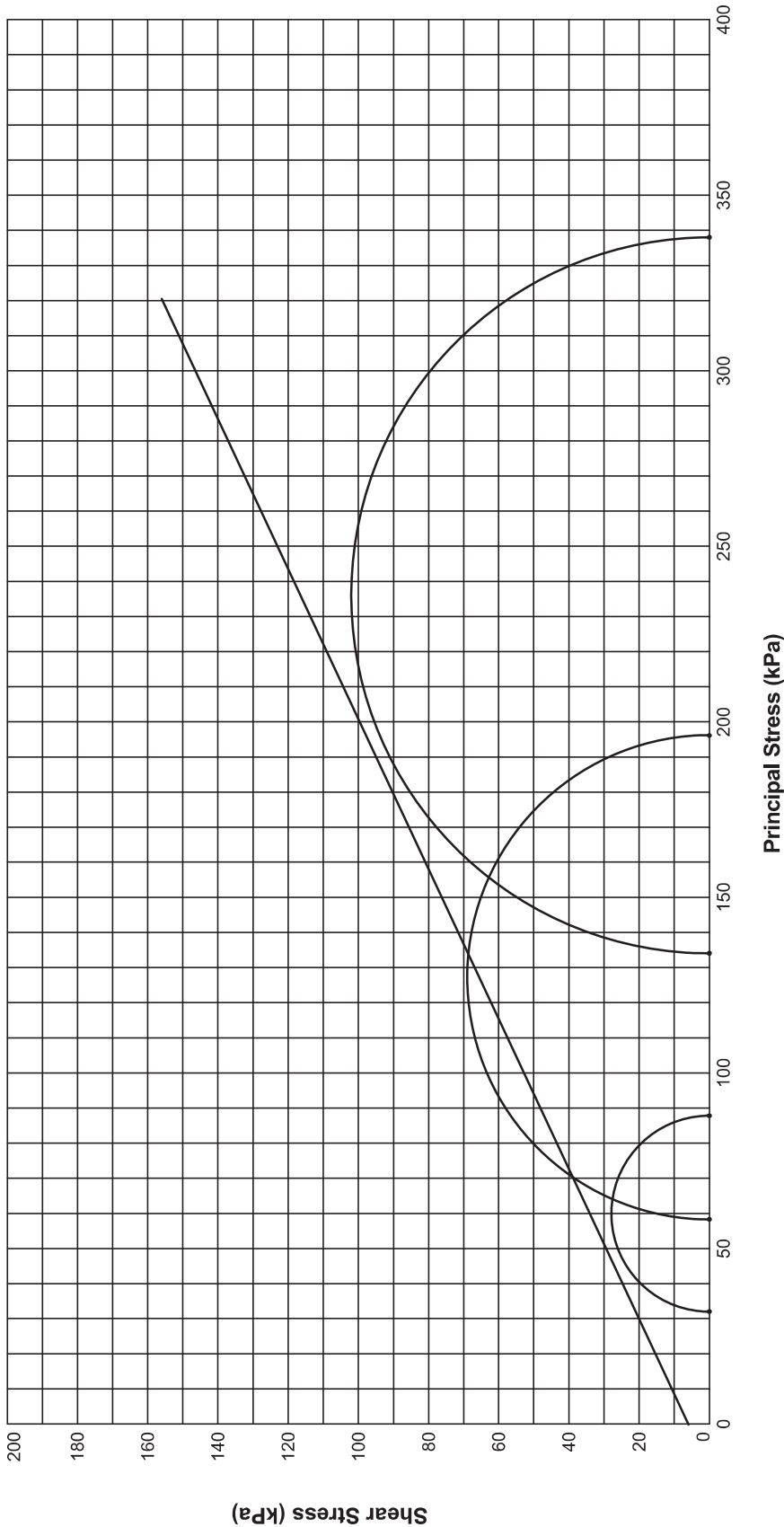
In accordance with BS1377:Part 8:1990

Borehole : **BH05**

Sample Ref : **4**

Sample Type : **UT**

Depth (m) : **5.75**



 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <i>A.S. Frost</i>		Date 08.03.19	Contract Ref: 584009 
	Contract			
	Ugly Brown Building			

CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

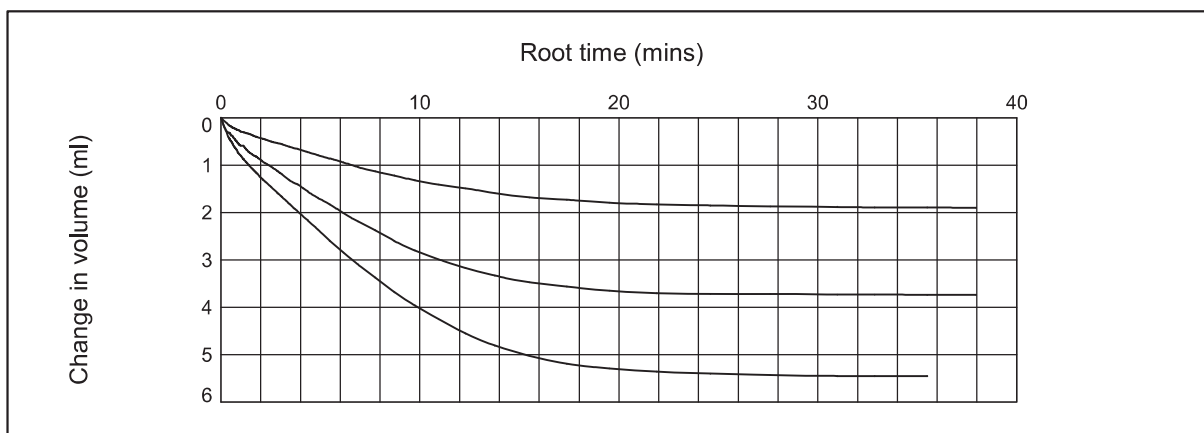
Borehole: **BH05**

Sample Ref: **4**

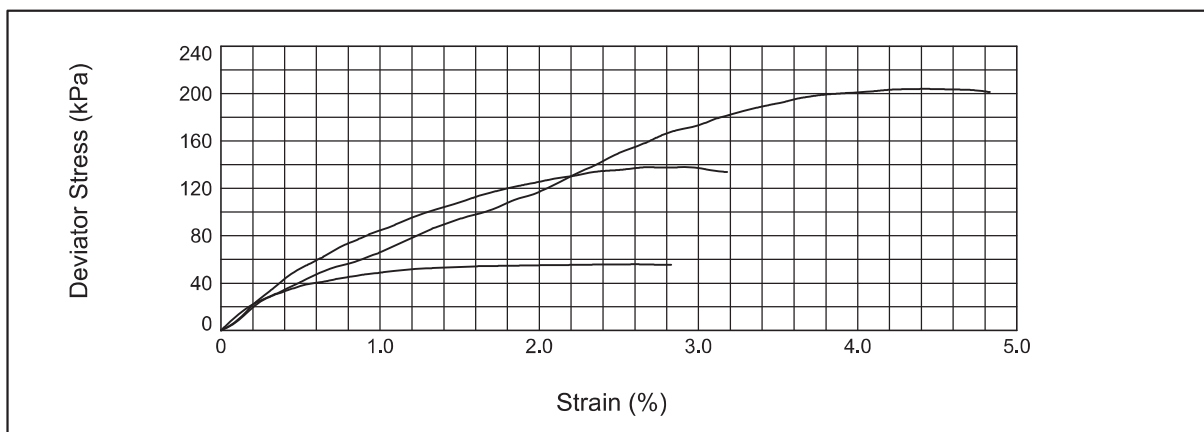
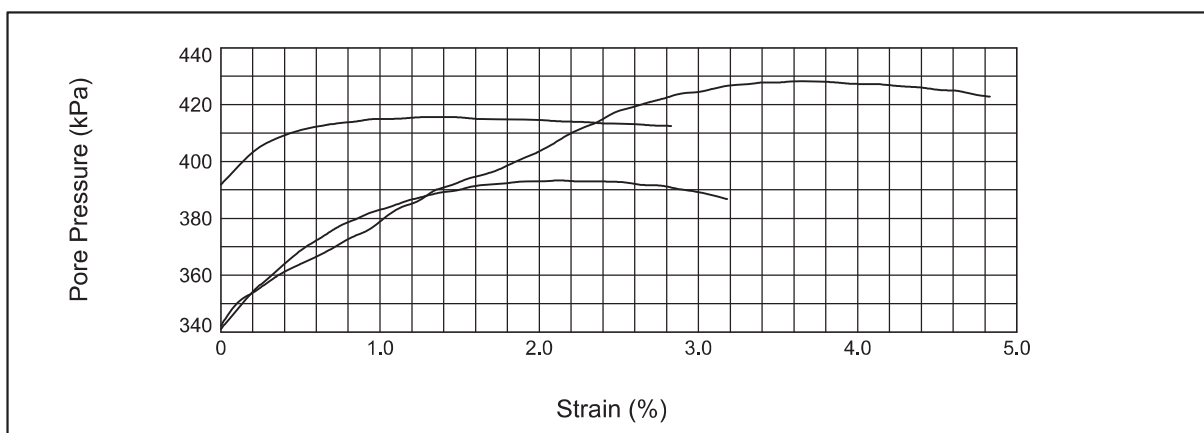
Sample Type: **UT**

Depth (m): **5.75**

CONSOLIDATION STAGE



SHEAR STAGE



STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By

Date

A.S. Frost

ALAN FROST

08/03/19

Contract

Ugly Brown Building

Contract Ref:

584009

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/01756
Issue Number: 1

Date: 07 March, 2019

Client: RSK Environment Ltd Hemel
18 Frogmore Road
Hemel Hempstead
Hertfordshire
UK
HP3 9RT

Project Manager: Claire Siberry/Nigel Austin
Project Name: Ugly Brown Building
Project Ref: 371654
Order No: N/A
Date Samples Received: 21/02/19
Date Instructions Received: 22/02/19
Date Analysis Completed: 06/03/19

Prepared by:



Gill Walker
Director/Laboratory Manager

Approved by:



Danielle Bescoby
Quality Manager

Envirolab Job Number: 19/01756

Client Project Name: Ugly Brown Building

Client Project Ref: 371654

Lab Sample ID	19/01756/1	19/01756/2	19/01756/3	19/01756/4					Units	Method ref
Client Sample No	31	16	27	41						
Client Sample ID	BH10	BH13	BH13	BH15						
Depth to Top	20.50	14.95	23.00	30.00						
Depth To Bottom										
Date Sampled										
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D						
Sample Matrix Code	6	6	6	6						
% Stones >10mm _A	<0.1	<0.1	<0.1	<0.1					% w/w	A-T-044
pH BRE _D ^{M#}	8.57	8.37	8.29	9.39					pH	A-T-031s
Sulphate BRE (water sol 2:1) _D ^{M#}	529	813	667	168					mg/l	A-T-026s
Sulphate BRE (acid sol) _D ^{M#}	0.14	0.22	0.19	0.04					% w/w	A-T-028s
Sulphur BRE (total) _D	0.50	0.54	0.42	0.04					% w/w	A-T-024s

REPORT NOTES

General:

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The results reported herein relate only to the material supplied to the laboratory.

All samples contained within this report, and any received with the same delivery, will be disposed of one month after the date of this report.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921
email. ask@envirolab.co.uk

Client: RSK Environment Ltd Hemel, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, UK, HP3 9RT
Project: Ugly Brown Building
Clients Project No: 371654
Project No: 19/01756
Date Received: 22/02/2019 (am)
Cool Box Temperatures (oC): 11.4

Lab Sample ID	19/01756/1	19/01756/2	19/01756/3	19/01756/4
Client Sample No	31	16	27	41
Client Sample ID/Depth	BH10 20.50m	BH13 14.95m	BH13 23.00m	BH15 30.00m
Date Sampled				
Deviation Code				
E (no date)	✓	✓	✓	✓

Key
E (no date) No sampling date provided (all results affected if not provided)

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

FINAL ANALYTICAL TEST REPORT

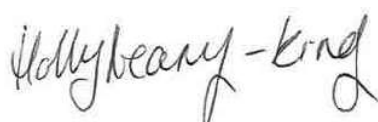
Envirolab Job Number: 19/01698
Issue Number: 1

Date: 06 March, 2019

Client: RSK Environment Ltd Hemel
18 Frogmore Road
Hemel Hempstead
Hertfordshire
UK
HP3 9RT

Project Manager: Claire Siberry/Nigel Austin
Project Name: Ugly Brown Building
Project Ref: 371654
Order No: N/A
Date Samples Received: 21/02/19
Date Instructions Received: 21/02/19
Date Analysis Completed: 06/03/19

Prepared by:



Holly Neary-King
Sales Executive

Approved by:



Alex Murray
Technical Manager

Envirolab Job Number: 19/01698

Client Project Name: Ugly Brown Building

Client Project Ref: 371654

Lab Sample ID	19/01698/1	19/01698/2	19/01698/3	19/01698/4	19/01698/5	19/01698/6	19/01698/7	19/01698/8	Units	Method ref
Client Sample No	2	4	25	4	38	2	11	23		
Client Sample ID	BH10	BH10	BH10	BH13	BH13	BH15	BH15	BH15		
Depth to Top	3.00	4.20	16.25	3.20	30.50	2.50	8.50	17.00		
Depth To Bottom										
Date Sampled										
Sample Type	Soil - D	Solid	Soil - D	Soil - B	Soil - D	Soil - D	Soil - D	Soil - D		
Sample Matrix Code	4A	7	3	6AE	6	4A	6	6A		
% Stones >10mm _A	29.0	<0.1	<0.1	6.0	<0.1	21.5	<0.1	<0.1	% w/w	A-T-044
pH BRE _D ^{MP}	11.78	10.16	8.29	7.97	9.38	9.79	8.14	8.01	pH	A-T-031s
Sulphate BRE (water sol 2:1) _D ^{MP}	258	335	944	1800	126	497	1100	1200	mg/l	A-T-026s
Sulphate BRE (acid sol) _D ^{MP}	0.32	0.18	0.19	1.19	0.03	0.20	0.21	0.33	% w/w	A-T-028s
Sulphur BRE (total) _D	0.16	0.07	0.40	0.60	0.02	0.10	0.53	0.57	% w/w	A-T-024s

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Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921
email. ask@envirolab.co.uk

Client: RSK Environment Ltd Hemel, 18 Frogmore Road, Hemel Hempstead, Hertfordshire, UK, HP3 9RT
Project: Ugly Brown Building
Clients Project No: 371654
Project No: 19/01698
Date Received: 21/02/2019 (am)
Cool Box Temperatures (oC): 10.9

Lab Sample ID	19/01698/1	19/01698/2	19/01698/3	19/01698/4	19/01698/5	19/01698/6	19/01698/7	19/01698/8
Client Sample No	2	4	25	4	38	2	11	23
Client Sample ID/Depth	BH10 3.00m	BH10 4.20m	BH10 16.25m	BH13 3.20m	BH13 30.50m	BH15 2.50m	BH15 8.50m	BH15 17.00m
Date Sampled								
Deviation Code								
E (no date)	✓	✓	✓	✓	✓	✓	✓	✓

Key

E (no date)

No sampling date provided (all results affected if not provided)

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 19/01233
Issue Number: 1
Date: 25 February, 2019

Client: RSK Environment Ltd Hemel
18 Frogmore Road
Hemel Hempstead
Hertfordshire
UK
HP3 9RT

Project Manager: Claire Siberry/Nigel Austin
Project Name: Ugly Brown Building
Project Ref: 371654
Order No: N/A
Date Samples Received: 08/02/19
Date Instructions Received: 08/02/19
Date Analysis Completed: 22/02/19

Prepared by:



Elisha Hartley
Admin Assistant

Approved by:



Gill Walker
Director/Laboratory Manager