

DETERMINATION OF POINT LOAD STRENGTH

In accordance with ISRM 1974-2006

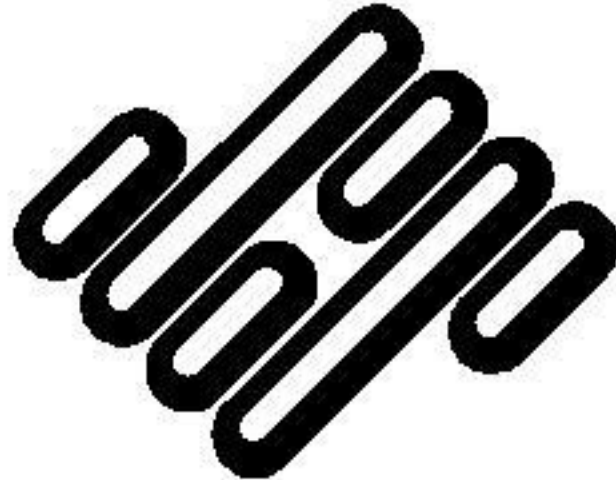
Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D _e) (mm)	Point Load (I _s) (MN/m ²)	Size Factor (F)	Point Load Index (I _{s(50)}) ² (MN/m ²)	Water Content (%)	Rock Type	Lab location
BH106		3.90	[REDACTED]	120	83	0.955	83	0.14	1.26	0.17 (✓)	11	SILTSTONE	B
BH106		3.90		83	45	0.720	69	0.15	1.16	0.17 (✓)	11	SILTSTONE	B

Results

I_s(50) Mean Axial tests = **0.17** MN/m²
I_s(50) Mean Diametral tests = **0.17** MN/m²
I_a(50) Strength Anisotropy Index = **1** (calculated from highest and lowest diametral and axial I_s(50) ratio)
Note: Size Correction Factor (F) calculated using $F = (D_e/50)^{0.45}$ (where D_e is equivalent core diameter).

Key

Type of Test column: A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel, P = Perpendicular, [NS] denotes Non-standard Test.
Point Load Index column: (✓) = included in mean calculations, (✗) = excluded from mean calculations
Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NU), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Contract Ref:	
			Date	562943 
	Contract: HE Northern Arc, Burgess Hill - Freeks Farm GI		23.06.19	

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH101** Sample Ref: **10** Sample Type: **D** Depth (m): **7.70**

Bulk Density (Mg/m ³): 2.25	Dry Density (Mg/m ³): 2.01	Moisture Content (%): 12
Length (mm): 172.24	Diameter (mm): 83.54	Length/Diameter Ratio: 2.06
Test Duration (mins:secs): 3:47	Stress Rate (kN/min): 6.0	Load at Failure (kN): 4.3
UCS (MPa): 0.8	Failure Type: Axial cleavage	

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

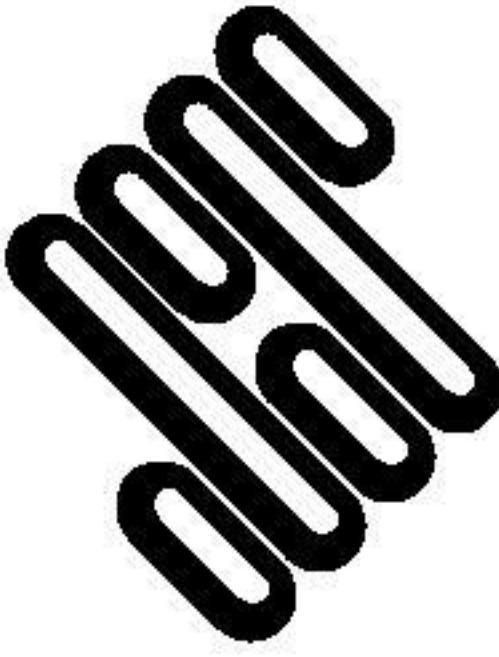


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	CALEB ROWLANDS		23/06/19
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Freaks Farm GI	562943 	

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH101** Sample Ref: **2** Sample Type: **C** Depth (m): **10.00**

Bulk Density (Mg/m ³): 2.26	Dry Density (Mg/m ³): 2.00	Moisture Content (%): 13
Length (mm): 206.29	Diameter (mm): 86.79	Length/Diameter Ratio: 2.38
Test Duration (mins:secs): 8:28	Stress Rate (kN/min): 6.0	Load at Failure (kN): 12.2
UCS (MPa): 2.1	Failure Type: Axial cleavage	

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

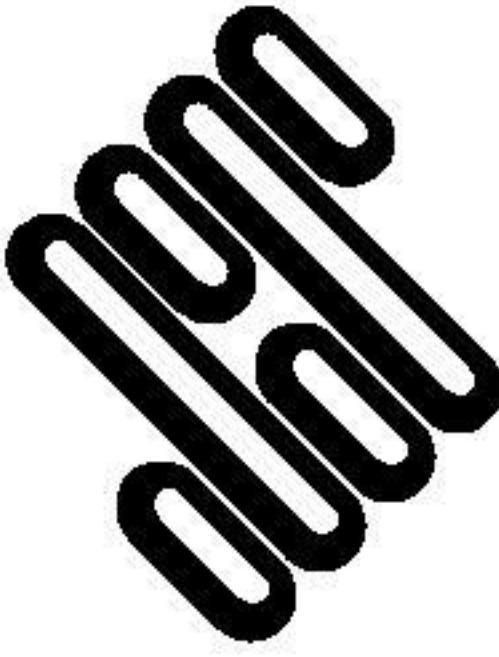


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

	Compiled By		Date
			23/06/19
	Contract		Job No
	HE Northern Arc, Burgess Hill - Freaks Farm gl		562943 

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH101** Sample Ref: **4** Sample Type: **C** Depth (m): **14.70**

Bulk Density (Mg/m³): **2.37** Dry Density (Mg/m³): **2.17** Moisture Content (%): **9.3**
Length (mm): **228.67** Diameter (mm): **85.29** Length/Diameter Ratio: **2.68**
Test Duration (mins:secs): **2:04** Stress Rate (kN/min): **6.0** Load at Failure (kN): **6.6**
UCS (MPa): **1.2** Failure Type: **Shear**

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

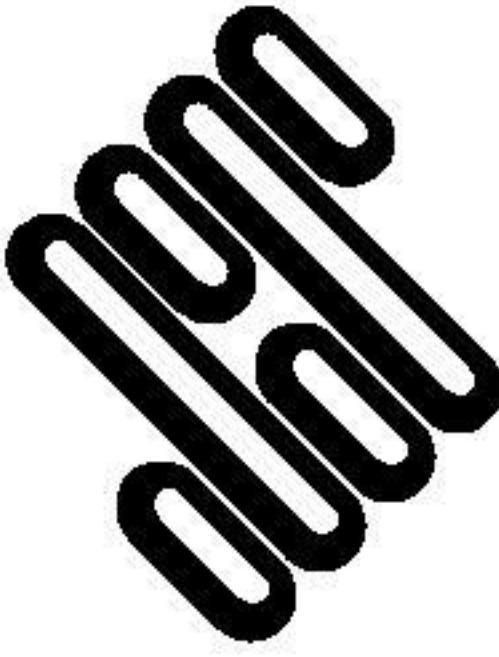


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
		CALEB ROWLANDS	23/06/19
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Freeks Farm GI	562943	
			

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Depth (m): **17.55**

Failure Type: **Axial cleavage**

Remarks: **Sample too soft to perform tolerance checks**



Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures $>4^{\circ}\text{C}$
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076



Date _____

23/06/19

Job No

562943



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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
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Borehole: **BH101** Sample Ref: **6** Sample Type: **C** Depth (m): **18.35**

Bulk Density (Mg/m ³): 2.35	Dry Density (Mg/m ³): 2.15	Moisture Content (%): 9.4
Length (mm): 235.22	Diameter (mm): 86.29	Length/Diameter Ratio: 2.73
Test Duration (mins:secs): 5:57	Stress Rate (kN/min): 6.0	Load at Failure (kN): 13.2
UCS (MPa): 2.3	Failure Type: Axial cleavage	

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

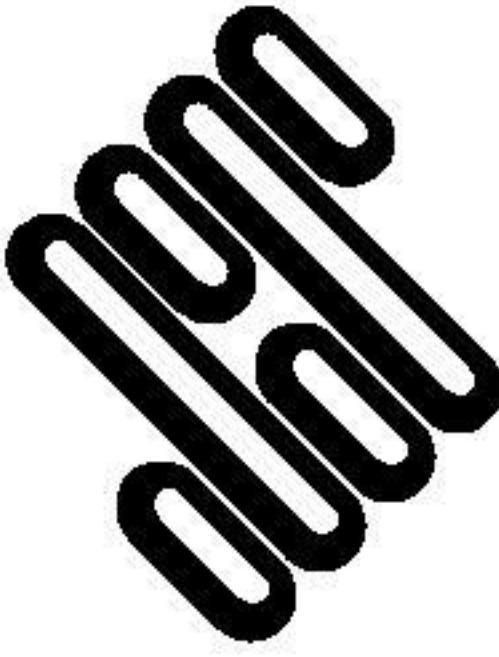


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

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	Contract	Job No	
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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH102** Sample Ref: **2** Sample Type: **C** Depth (m): **6.45**

Bulk Density (Mg/m ³): 2.27	Dry Density (Mg/m ³): 2.02	Moisture Content (%): 12
Length (mm): 191.88	Diameter (mm): 85.98	Length/Diameter Ratio: 2.23
Test Duration (mins:secs): 6:35	Stress Rate (kN/min): 6.0	Load at Failure (kN): 7.0
UCS (MPa): 1.2		Failure Type: Axial cleavage

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

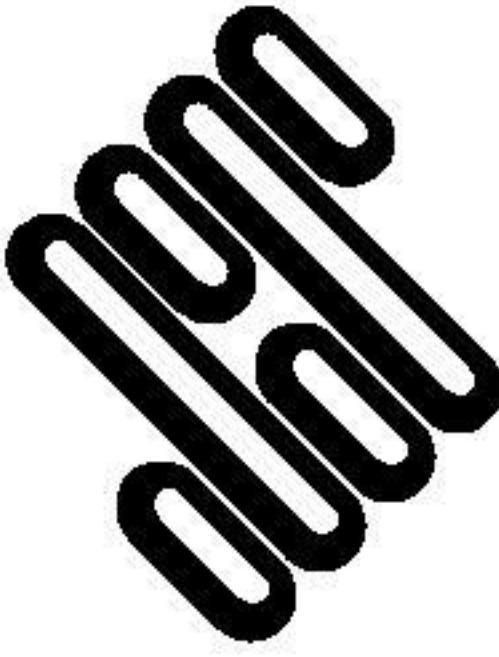


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
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Borehole: **BH102** Sample Ref: **4** Sample Type: **C** Depth (m): **7.90**

Bulk Density (Mg/m³): **2.25** Dry Density (Mg/m³): **2.03** Moisture Content (%): **11**
Length (mm): **202.56** Diameter (mm): **88.10** Length/Diameter Ratio: **2.30**
Test Duration (mins:secs): **5:32** Stress Rate (kN/min): **6.0** Load at Failure (kN): **4.5**
UCS (MPa): **0.7** Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

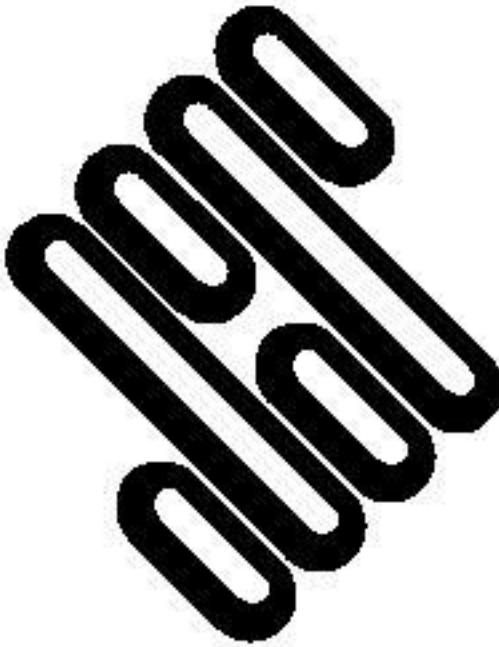


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
			CALEB ROWLANDS
	Contract		Job No
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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH102** Sample Ref: **6** Sample Type: **C** Depth (m): **12.50**

Bulk Density (Mg/m³): **2.34** Dry Density (Mg/m³): **2.16** Moisture Content (%): **8.6**
Length (mm): **235.90** Diameter (mm): **85.97** Length/Diameter Ratio: **2.74**
Test Duration (mins:secs): **7:03** Stress Rate (kN/min): **6.0** Load at Failure (kN): **54.8**
UCS (MPa): **9.4** Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

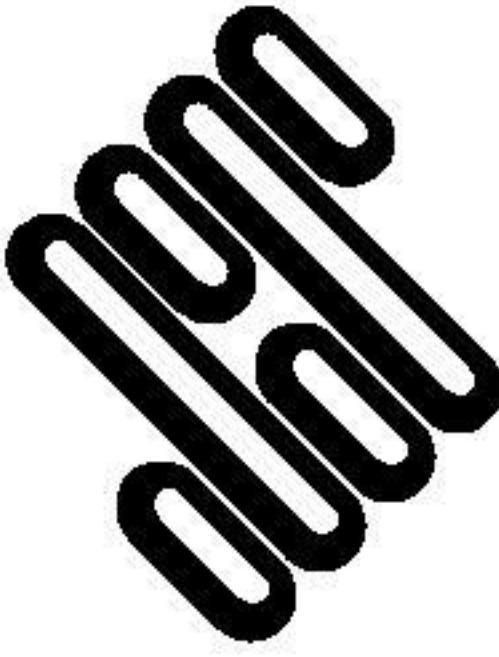


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
			23/06/19
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Freaks Farm GI	562943	

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH102** Sample Ref: **8** Sample Type: **C** Depth (m): **16.15**

Bulk Density (Mg/m ³): 2.36	Dry Density (Mg/m ³): 2.19	Moisture Content (%): 8.1
Length (mm): 225.76	Diameter (mm): 85.52	Length/Diameter Ratio: 2.64
Test Duration (mins:secs): 7:53	Stress Rate (kN/min): 6.0	Load at Failure (kN): 48.4
UCS (MPa): 8.4	Failure Type: Axial cleavage	

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

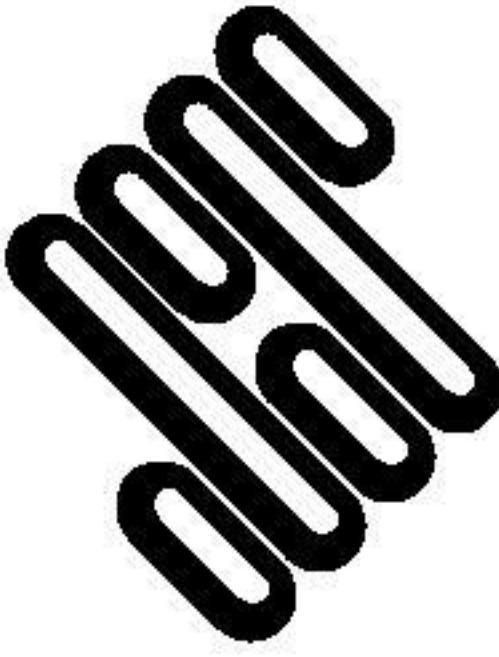


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
		CALEB ROWLANDS	23/06/19
	Contract HE Northern Arc, Burgess Hill - Frees Farm GI	Job No 562943 	

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH102** Sample Ref: **11** Sample Type: **C** Depth (m): **18.75**

Bulk Density (Mg/m³): **2.27** Dry Density (Mg/m³): **2.02** Moisture Content (%): **12**
Length (mm): **235.89** Diameter (mm): **86.83** Length/Diameter Ratio: **2.72**
Test Duration (mins:secs): **5:13** Stress Rate (kN/min): **6.0** Load at Failure (kN): **25.9**
UCS (MPa): **4.4** Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

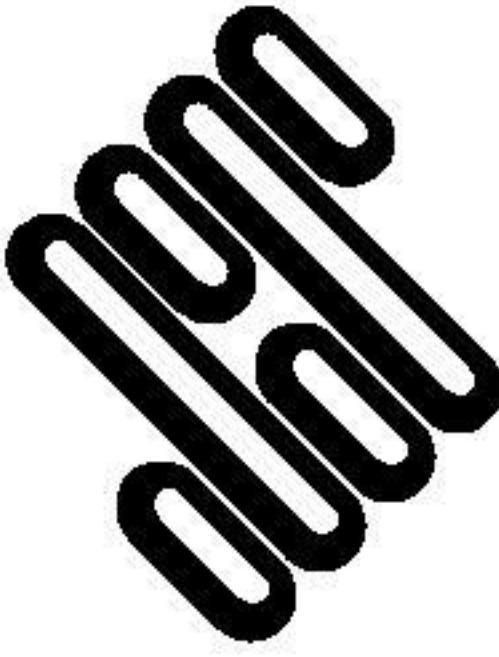


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
		CALEB ROWLANDS	23/06/19
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Frees Farm GI	562943	
			

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH103** Sample Ref: **204** Sample Type: **C** Depth (m): **3.40**

Bulk Density (Mg/m³): **2.20** Dry Density (Mg/m³): **1.93** Moisture Content (%): **14**
Length (mm): **166.67** Diameter (mm): **86.80** Length/Diameter Ratio: **1.92**
Test Duration (mins:secs): **3:43** Stress Rate (kN/min): **6.0** Load at Failure (kN): **4.8**
UCS (MPa): **0.8** Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**
Description: **Orangish brown MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks. Non-standard length/diameter ratio**



Front view (pre-test)



Rear view (pre-test)

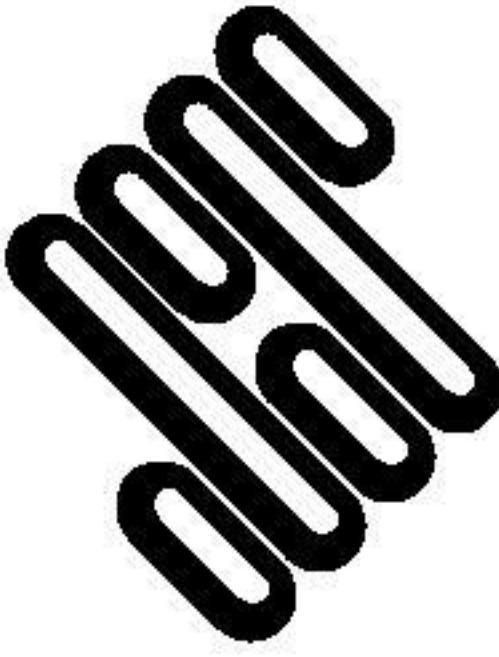


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	CALEB ROWLANDS		23/06/19
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Freaks Farm GI	562943	
			

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Depth (m): **5.80**

Failure Type: **Axial cleavage**

Remarks: **Sample too soft to perform tolerance checks**



Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures $>4^{\circ}\text{C}$
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[REDACTED]		CALEB ROWLANDS
	Contract	Job No	
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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH103** Sample Ref: **209** Sample Type: **C** Depth (m): **9.63**

Bulk Density (Mg/m³): **2.27** Dry Density (Mg/m³): **2.05** Moisture Content (%): **11**
Length (mm): **234.40** Diameter (mm): **86.50** Length/Diameter Ratio: **2.71**
Test Duration (mins:secs): **5:03** Stress Rate (kN/min): **6.0** Load at Failure (kN): **48.6**
UCS (MPa): **8.3** Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

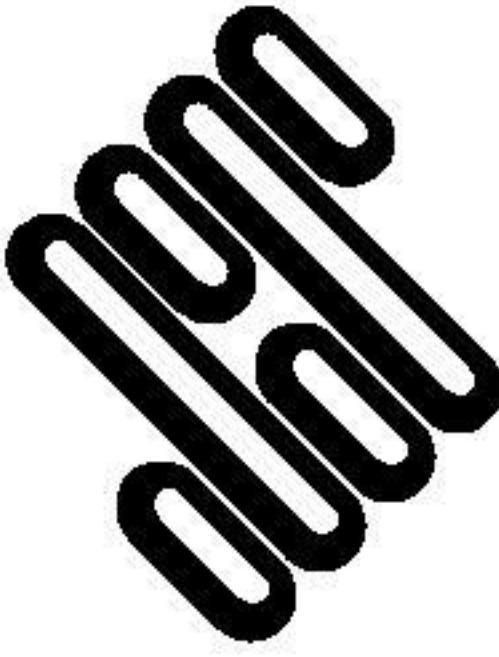


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	CALEB ROWLANDS		23/06/19
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Freaks Farm GI	562943 	

GINT_LIBRARY_v8.07.GLB LibVersion: v8.07_001 PrjVersion: v8.07 | GrcText L - UCS STRESS CONTROL - A4P | 562943 HE_NORTH_ARC_BURGESS_HILL_FREEKS_FARM&LINK_ROAD_GI.GPJ - v8.07.
Structural Soils Ltd, Branch Office - Bristol Office - 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 23/06/19 - 09:02 | AF3 |

UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH103** Sample Ref: **211** Sample Type: **C** Depth (m): **12.58**

Bulk Density (Mg/m ³): 2.33	Dry Density (Mg/m ³): 2.13	Moisture Content (%): 9.4
Length (mm): 232.80	Diameter (mm): 85.68	Length/Diameter Ratio: 2.72
Test Duration (mins:secs): 6:02	Stress Rate (kN/min): 6.0	Load at Failure (kN): 34.1
UCS (MPa): 5.9		Failure Type: Axial cleavage

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

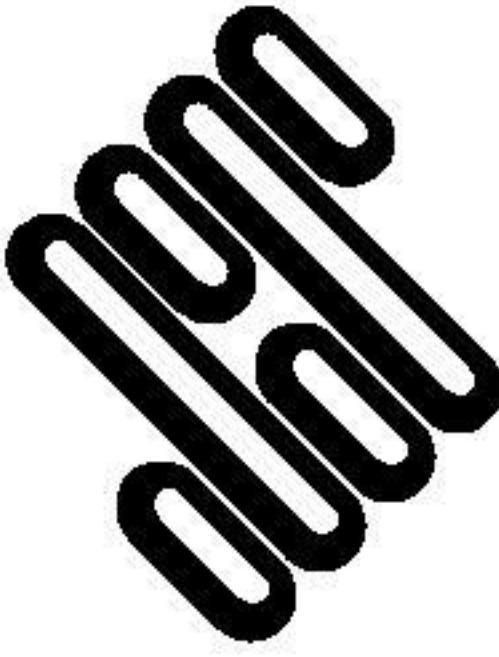


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	CALEB ROWLANDS		23/06/19
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Freaks Farm GI	562943	
			

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrcText L - UCS STRESS CONTROL - A4P | 562943_HE_NORTH_ARC_BURGESS_HILL_FREEKS_FARM&LINK_ROAD_GI.GPJ - v8_07_07 | Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 23/06/19 - 09:02 | AF3 |

UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH105** Sample Ref: Sample Type: **C** Depth (m): **5.80**

Bulk Density (Mg/m ³): 2.26	Dry Density (Mg/m ³): 2.02	Moisture Content (%): 12
Length (mm): 186.50	Diameter (mm): 85.05	Length/Diameter Ratio: 2.19
Test Duration (mins:secs): 5:59	Stress Rate (kN/min): 6.0	Load at Failure (kN): 8.7
UCS (MPa): 1.5	Failure Type: Shear	

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

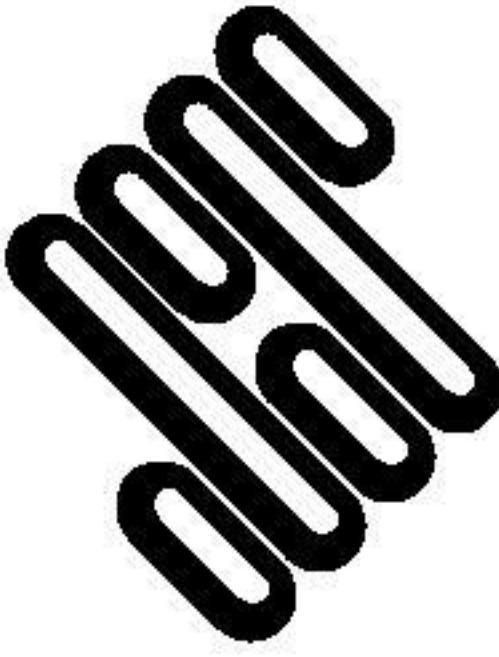


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
			23/06/19
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Freaks Farm GI	562943	

GINT_LIBRARY_V8.07.GLB LibVersion: v8.07_001 PrjVersion: v8.07 | GrcText L - UCS STRESS CONTROL - A4P | 562943_HE_NORTH_ARC_BURGESS_HILL_FREEKS_FARM&LINK_ROAD_GI.GPJ - v8.07. Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 23/06/19 - 09:03 | AF3 |

UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH105** Sample Ref: Sample Type: **C** Depth (m): **7.00**

Bulk Density (Mg/m ³): 2.28	Dry Density (Mg/m ³): 2.08	Moisture Content (%): 10
Length (mm): 233.58	Diameter (mm): 86.12	Length/Diameter Ratio: 2.71
Test Duration (mins:secs): 4:31	Stress Rate (kN/min): 6.0	Load at Failure (kN): 46.2
UCS (MPa): 7.9	Failure Type: Axial cleavage	

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

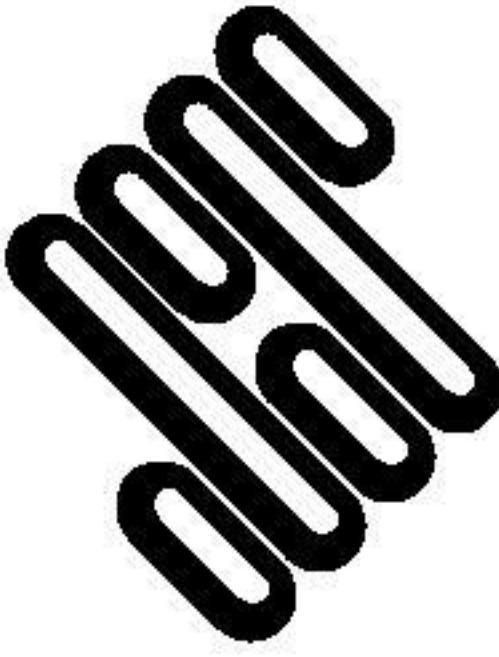


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
			23/06/19
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Frees Farm GI	562943	
			

GINT_LIBRARY_V8.07.GLB LibVersion: v8.07_001 PrjVersion: v8.07 | Gfctext L - UCS STRESS CONTROL - A4P | 562943_HE_NORTH_ARC_BURGESS_HILL_FREEKS_FARM&LINK_ROAD_GI.GPJ - v8.07.
Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk | 23/06/19 - 09:03 | AF3 |

UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH105** Sample Ref: Sample Type: **C** Depth (m): **9.35**

Bulk Density (Mg/m ³): 2.19	Dry Density (Mg/m ³): 1.94	Moisture Content (%): 13
Length (mm): 237.86	Diameter (mm): 87.62	Length/Diameter Ratio: 2.71
Test Duration (mins:secs): 6:13	Stress Rate (kN/min): 6.0	Load at Failure (kN): 3.3
UCS (MPa): 0.5	Failure Type: Axial cleavage	

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

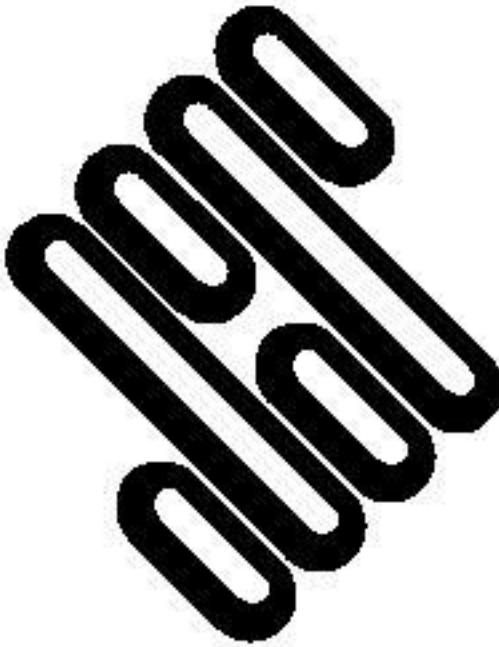


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
			23/06/19
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Frees Farm GI	562943	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrcText L - UCS STRESS CONTROL - A4P | 562943 HE_NORTH_ARC_BURGESS_HILL_FREEKS_FARM&LINK_ROAD_GI.GPJ - v8_07_07 | Structural Soils Ltd, Branch Office - Bristol Office - 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk | 23/06/19 - 09:03 | AF3 |

UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH105** Sample Ref: Sample Type: **D** Depth (m): **11.55**

Bulk Density (Mg/m ³): 2.36	Dry Density (Mg/m ³): 2.16	Moisture Content (%): 9.4
Length (mm): 147.49	Diameter (mm): 85.14	Length/Diameter Ratio: 1.73
Test Duration (mins:secs): 5:40	Stress Rate (kN/min): 6.0	Load at Failure (kN): 35.0
UCS (MPa): 6.1		Failure Type: Axial cleavage

Note: **Axis of loading parallel to core axis**
Description: **Grey SANDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks. Non-standard length/diameter ratio**



Front view (pre-test)



Rear view (pre-test)

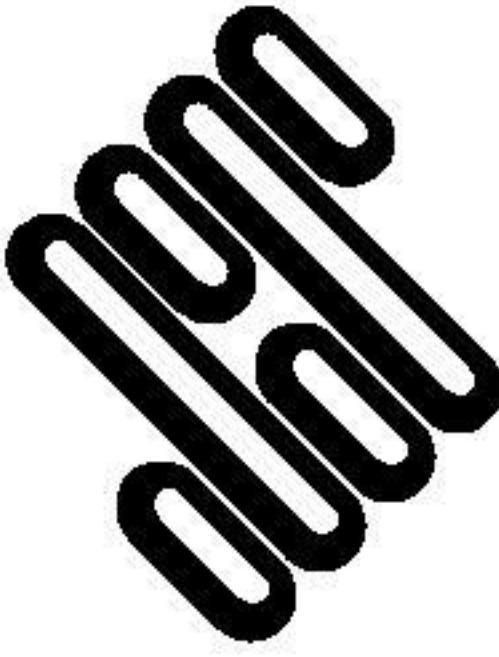


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[REDACTED]		SAMUEL GOOCH
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Freaks Farm GI	562943	
			

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07 | GrcText L - UCS STRESS CONTROL - A4P | 562943_HE_NORTH_ARC_BURGESS_HILL_FREEKS_FARM&LINK_ROAD_GI.GPJ - v8_07.
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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH105** Sample Ref: Sample Type: **C** Depth (m): **12.60**

Bulk Density (Mg/m ³): 2.28	Dry Density (Mg/m ³): 2.07	Moisture Content (%): 9.9
Length (mm): 183.92	Diameter (mm): 86.63	Length/Diameter Ratio: 2.12
Test Duration (mins:secs): 6:19	Stress Rate (kN/min): 6.0	Load at Failure (kN): 21.7
UCS (MPa): 3.7		Failure Type: Axial cleavage

Note: **Axis of loading parallel to core axis**
Description: **Grey SANDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

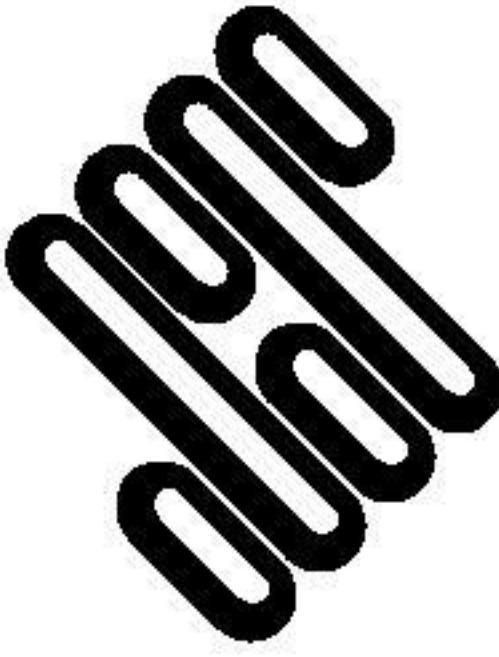


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[REDACTED] SAMUEL GOOCH		23/06/19
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Frees Farm GI	562943 	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07 | GrcText L - UCS STRESS CONTROL - A4P | 562943_HE_NORTH_ARC_BURGESS_HILL_FREEKS_FARM&LINK_ROAD_GI.GPJ - v8_07.
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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH106** Sample Ref: Sample Type: **C** Depth (m): **3.60**

Bulk Density (Mg/m³): **2.31** Dry Density (Mg/m³): **2.04** Moisture Content (%): **13**
Length (mm): **227.63** Diameter (mm): **83.80** Length/Diameter Ratio: **2.72**
Test Duration (mins:secs): **5:18** Stress Rate (kN/min): **6.0** Load at Failure (kN): **8.4**
UCS (MPa): **1.5** Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**
Description: **Brown SILTSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

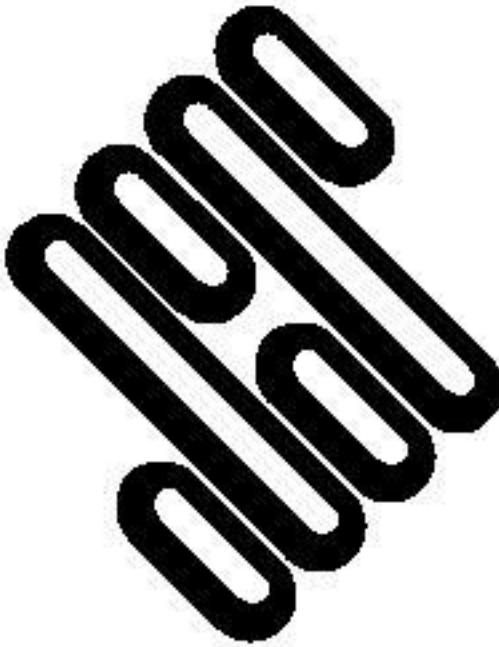
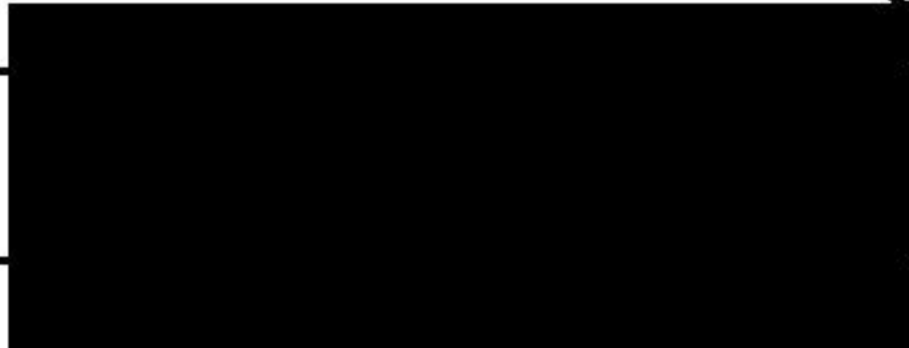


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
			SAMUEL GOOCH
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Frees Farm GI	562943	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrcText L - UCS STRESS CONTROL - A4P | 562943_HE_NORTH_ARC_BURGESS_HILL_FREEKS_FARM&LINK_ROAD_GI.GPJ - v8_07_07
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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH106** Sample Ref: Sample Type: **C** Depth (m): **5.70**

Bulk Density (Mg/m ³): 2.20	Dry Density (Mg/m ³): 1.88	Moisture Content (%): 17
Length (mm): 238.66	Diameter (mm): 86.76	Length/Diameter Ratio: 2.75
Test Duration (mins:secs): 4:31	Stress Rate (kN/min): 6.0	Load at Failure (kN): 3.8
UCS (MPa): 0.6	Failure Type: Axial cleavage	

Note: **Axis of loading parallel to core axis**
Description: **Grey mottled orangish brown MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

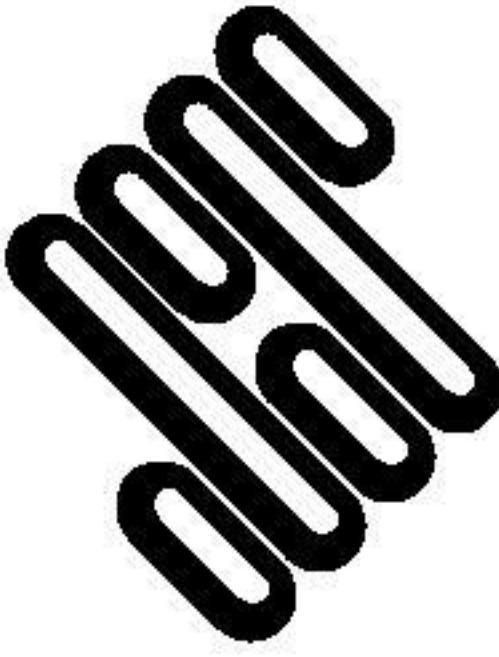


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[REDACTED]		23/06/19
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Freaks Farm GI	562943	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07 | GrcText L - UCS STRESS CONTROL - A4P | 562943_HE_NORTH_ARC_BURGESS_HILL_FREEKS_FARM&LINK_ROAD_GI.GPJ - v8_07.
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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH106** Sample Ref: Sample Type: **C** Depth (m): **7.20**

Bulk Density (Mg/m ³): 2.29	Dry Density (Mg/m ³): 2.06	Moisture Content (%): 11
Length (mm): 233.75	Diameter (mm): 86.08	Length/Diameter Ratio: 2.72
Test Duration (mins:secs): 6:49	Stress Rate (kN/min): 6.0	Load at Failure (kN): 11.4
UCS (MPa): 2.0	Failure Type: Axial cleavage	

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

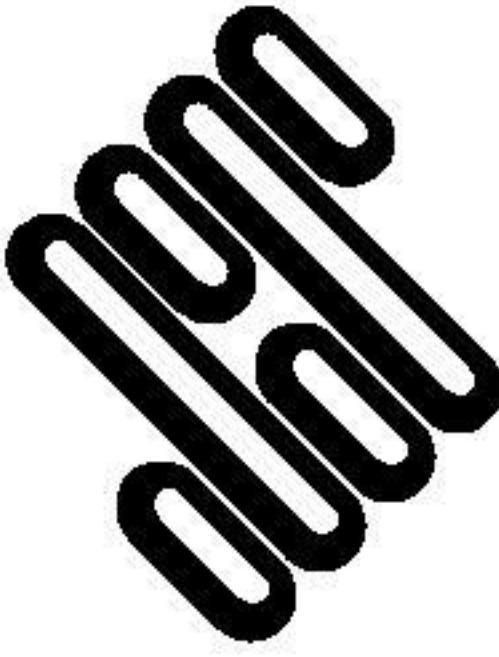


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[REDACTED]		SAMUEL GOOCH
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Freaks Farm GI	562943	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrcText L - UCS STRESS CONTROL - A4P | 562943_HE_NORTH_ARC_BURGESS_HILL_FREEKS_FARM&LINK_ROAD_GI.GPJ - v8_07_07
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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH106** Sample Ref: Sample Type: **C** Depth (m): **10.00**

Bulk Density (Mg/m ³): 2.27	Dry Density (Mg/m ³): 2.03	Moisture Content (%): 12
Length (mm): 233.17	Diameter (mm): 86.44	Length/Diameter Ratio: 2.70
Test Duration (mins:secs): 8:13	Stress Rate (kN/min): 6.0	Load at Failure (kN): 12.8
UCS (MPa): 2.2	Failure Type: Plastic	

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

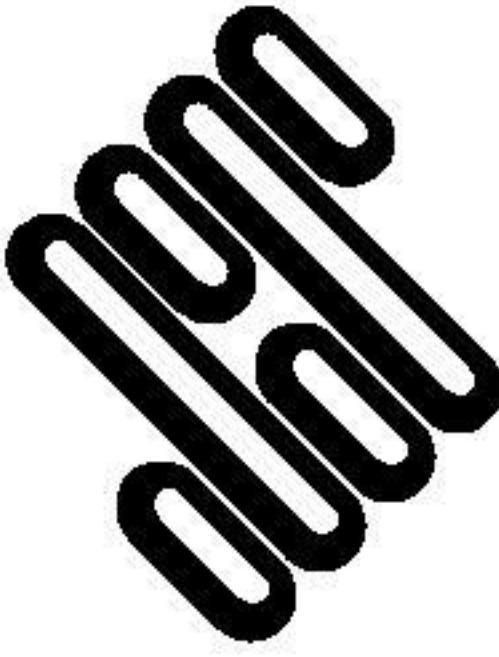


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
			23/06/19
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Frees Farm GI	562943	

GINT_LIBRARY_V8_07.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrcText L - UCS STRESS CONTROL - A4P | 562943_HE_NORTH_ARC_BURGESS_HILL_FREEKS_FARM&LINK_ROAD_GI.GPJ - v8_07_07 | Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk | 23/06/19 - 09:03 | AF3 |

UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-08
Testing in accordance with ISRM 1974-2006

Borehole: **BH106** Sample Ref: Sample Type: **C** Depth (m): **12.15**

Bulk Density (Mg/m ³): 2.30	Dry Density (Mg/m ³): 2.03	Moisture Content (%): 13
Length (mm): 234.41	Diameter (mm): 87.04	Length/Diameter Ratio: 2.69
Test Duration (mins:secs): 2:59	Stress Rate (kN/min): 6.0	Load at Failure (kN): 3.9
UCS (MPa): 0.7	Failure Type: Axial cleavage	

Note: **Axis of loading parallel to core axis**
Description: **Grey MUDSTONE**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.
Remarks: **Sample too soft to perform tolerance checks**



Front view (pre-test)



Rear view (pre-test)

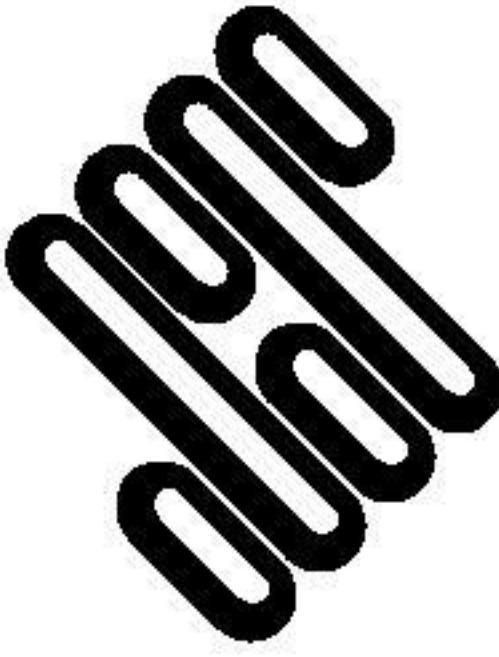


Front view (post-test)



Rear view (post-test)

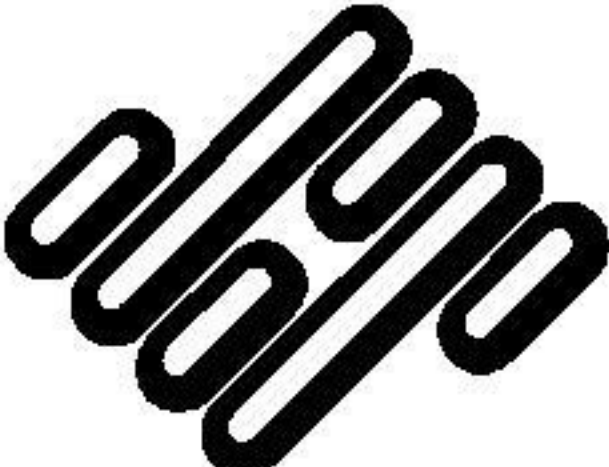
Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
			23/06/19
	Contract	Job No	
	HE Northern Arc, Burgess Hill - Freaks Farm GI	562943	
			

SUMMARY OF CHEMICAL ANALYSES

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Acid Soluble Sulphate (% SO ₄)	Aqueous Extract Sulphate (mg/l SO ₄)	pH	Organic Matter Content (%)	Total Sulphur (%)	Description
BH101	1	B	0.30	0.03	<10	6.24		0.01	Brown sandy SILT
BH101	1	B	0.40	0.03	<10	6.34		0.02	Yellowish brown silty CLAY
BH101	6	D	4.40	0.03	32	5.78		0.02	Orangish brown CLAY
BH101	14	D	19.00	0.04	107	8.50		0.16	Grey MUDSTONE
BH102	3	D	1.10	0.03	11	4.86		0.02	Orangish brown mottled grey slightly sandy CLAY
BH102	6	D	3.95	0.04	84	7.02		0.10	Grey MUDSTONE
BH102	8	D	10.50	0.02	60	6.65		0.15	Grey MUDSTONE
BH102	9	D	15.15	0.05	197	8.63		0.19	Grey MUDSTONE

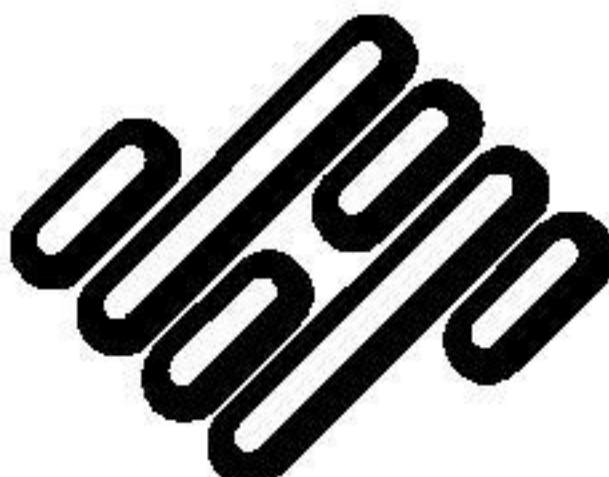
NOTES:- Chemical tests were undertaken by Envirolab

	STRUCTURAL SOILS 18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT		Compiled By		Date		Contract Ref: 562943 
			SHARON CAIRNS		23.06.19		
	Contract:		HE Northern Arc, Burgess Hill - Freeks Farm GI				

SUMMARY OF CHEMICAL ANALYSES

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Acid Soluble Sulphate (% SO ₄)	Aqueous Extract Sulphate (mg/l SO ₄)	pH	Organic Matter Content (%)	Total Sulphur (%)	Description
BH103	202	C	2.75	<0.02	18	6.53		<0.01	Orangish brown MUDSTONE
BH103	210	C	11.00	<0.02	40	6.95		0.08	Grey MUDSTONE
BH105	7	DSPT	4.00	0.03	91	7.01		0.12	Grey mottled greenish grey slightly gravelly silty CLAY
BH105		D	14.50	0.04	67	5.48		0.37	Grey MUDSTONE
BH106	2	D	0.80	0.05	25	5.40		0.03	Brown mottled orange and grey sandy CLAY
BH106		D	4.70	<0.02	37	6.71		<0.01	Grey mottled orangish brown MUDSTONE
BH106		D	11.60	0.05	88	7.03		0.20	Grey MUDSTONE
BH106		D	14.80	0.03	123	8.79		0.06	Grey MUDSTONE

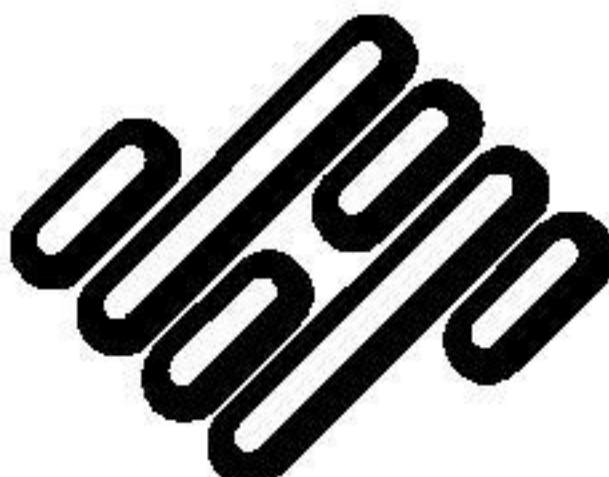
NOTES:- Chemical tests were undertaken by Envirolab

	STRUCTURAL SOILS 18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT		Compiled By		Contract Ref:	
				SHARON CAIRNS	Date	562943
					23.06.19	
			Contract:		HE Northern Arc, Burgess Hill - Freeks Farm GI	
						

SUMMARY OF CHEMICAL ANALYSES

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Acid Soluble Sulphate (% SO ₄)	Aqueous Extract Sulphate (mg/l SO ₄)	pH	Organic Matter Content (%)	Total Sulphur (%)	Description
TP101	17	D	2.10	0.03	12	5.00		0.01	Grey mottled orangish brown slightly gravelly SILT. Gravel is siltstone
TP102	5	D	0.30	<0.02	14	5.54		0.02	Orangish brown mottled grey CLAY
TP103	8	D	0.60	<0.02	<10	6.18		0.01	Brown mottled orange, grey and black slightly gravelly sandy SILT. Gravel is siltstone
TP104	5	D	0.30	<0.02	17	7.16		0.02	Grey mottled orangish brown SILT
TP104	14	D	2.00	<0.02	<10	6.93		<0.01	Brown mottled grey and black slightly gravelly slightly silty SAND
TP105	13	D	2.10	<0.02	<10	5.57		<0.01	Dark brown mottled black slightly gravelly CLAY
TP106	5	D	0.40	<0.02	<10	6.92		<0.01	Brown slightly gravelly sandy SILT
TP107	8	D	0.90	<0.02	<10	7.25		<0.01	Brown mottled grey and orange siltstone GRAVEL

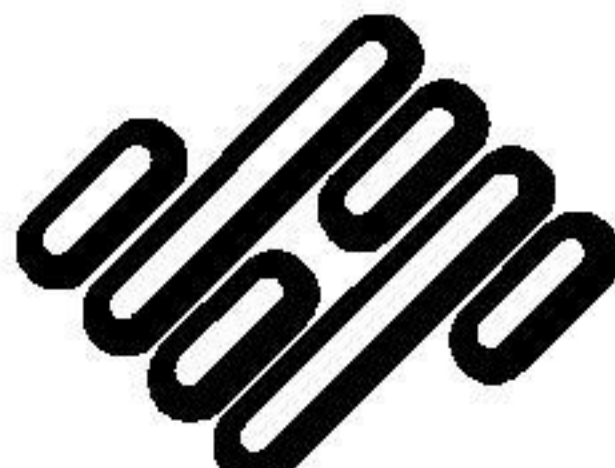
NOTES:- Chemical tests were undertaken by Envirolab

	STRUCTURAL SOILS		Compiled By		Contract Ref:	
	18 Frogmore Road				Date	
	Hemel Hempstead		SHARON CAIRNS		23.06.19	
	Hertfordshire		Contract: HE Northern Arc, Burgess Hill - Freeks Farm GI			
HP3 9RT						
		562943				
						

SUMMARY OF CHEMICAL ANALYSES

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Acid Soluble Sulphate (% SO ₄)	Aqueous Extract Sulphate (mg/l SO ₄)	pH	Organic Matter Content (%)	Total Sulphur (%)	Description
TP110	17	D	2.70	<0.02	<10	7.03		<0.01	Orangish brown sandy SILT
TP111	10	D	0.90	<0.02	<10	7.57		<0.01	Brown mottled orange and grey slightly gravelly sandy SILT. Gravel is siltstone
TP112	8	D	0.70	<0.02	14	7.82		<0.01	Brown mottled orange and grey CLAY
TP112	12	D	1.90	0.02	25	8.17		0.02	Brown mottled grey and yellow slightly gravelly CLAY
TP113	12	D	2.00	0.02	17	8.37		0.01	Brown mottled grey and orange CLAY
TP114	5	D	0.30	0.05	47	5.14		0.03	Orangish brown mottled grey CLAY
TP116	13	D	2.20	0.03	35	7.30		0.01	Brown mottled orange and grey CLAY
WS101	9	ES	1.00	0.06	13	4.73		0.02	Oragnish brown mottled grey SILT

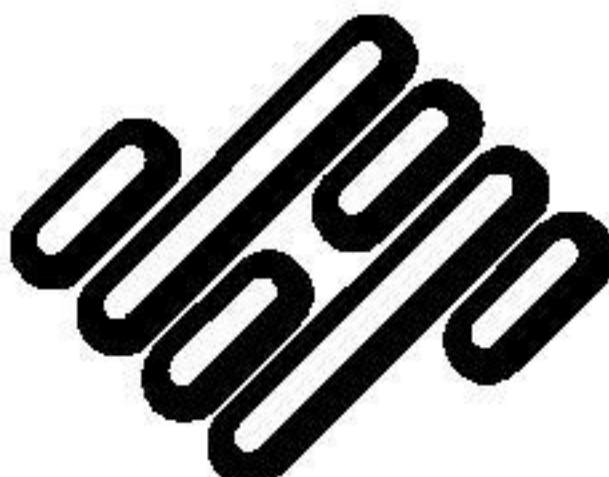
NOTES:- Chemical tests were undertaken by Envirolab

	STRUCTURAL SOILS		Compiled By		Contract Ref:	
	18 Frogmore Road		 SHARON CAIRNS		Date	562943
	Hemel Hempstead				23.06.19	
	Hertfordshire		Contract: HE Northern Arc, Burgess Hill - Freeks Farm GI			
HP3 9RT						
						

SUMMARY OF CHEMICAL ANALYSES

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Acid Soluble Sulphate (% SO ₄)	Aqueous Extract Sulphate (mg/l SO ₄)	pH	Organic Matter Content (%)	Total Sulphur (%)	Description
WS103	12	DSPT	1.20	0.02	<10	5.04		<0.01	Brown mottled light grey and orange slightly sandy SILT
WS104	10	D	1.80	<0.02	<10	5.36		<0.01	Brown mottled grey slightly sandy SILT
WS106	9	D	1.00	0.03	14	4.93		0.02	Brown mottled orange and grey CLAY
WS107	12	D	1.80	0.02	12	4.67		<0.01	Grey mottled orangish brown CLAY
WS108	5	D	0.50	<0.02	18	5.67		0.02	Grey mottled orangish brown SILT
WS110	5	D	0.40	<0.02	12	7.01		0.02	Light brown mottled orange and grey slightly gravelly SILT. Gravel is siltstone
WS112	4	B	0.40	<0.02	<10	7.31		<0.02	Orangish brown mottled grey and red slightly sandy CLAY
WS113	10	D	1.60	<0.02	10	5.57		<0.01	Orangish brown mottled grey slightly sandy SILT

NOTES:- Chemical tests were undertaken by Envirolab

	STRUCTURAL SOILS 18 Frogmore Road Hemel Hempstead Hertfordshire HP3 9RT			Contract Ref:		562943	
	Compiled By			Date			
			SHARON CAIRNS		23.06.19		
			Contract:				
	HE Northern Arc, Burgess Hill - Freeks Farm GI						

APPENDIX E - MONITORING RECORDS

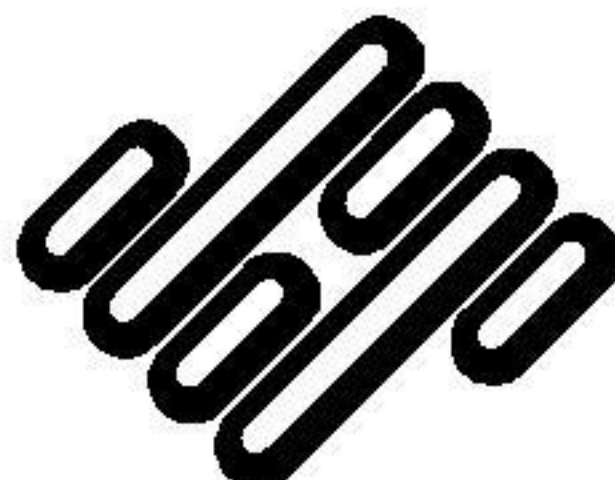
(i) Well Development Results

IN-SITU WATER MONITORING RESULTS

<u>Weather</u>		<u>Ground Conditions</u>	<u>Wind Conditions</u>	<u>Air Temperature (°C)</u>	<u>Equipment Used & Remarks</u>	
Round 1	Cloudy	Dry	Light	10		

Exploratory Position ID	Pipe Ref	Pipe Diameter	Moisture Ratio Test number	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring	Water Depth (mbgl)	pH	Redox (mV)	Eh (mV)	Conductivity (uS/cm)	Temperature (°C)	Dissolved Oxygen (mg/l)	Remarks
BH101	1	50	1 / 1	9.00	7.74	NDA to NDA	29/04/2019 10:25	0.21	---	---	---	---	---	---	
BH101	1	50	1 / 2	9.00	NDA	NDA to NDA	29/04/2019 10:50	---	7.48	-57	188	936	12.0	6.8	Remarks on next line
	General Remarks: Grey, opaque, no odour														
BH102	1	19	1 / 1	2.50	8.41	NDA to NDA	29/04/2019 11:19	1.23	---	---	---	---	---	---	
BH102	1	19	1 / 2	2.50	NDA	NDA to NDA	29/04/2019 11:46	---	7.52	-72	173	790	12.0	4.1	Remarks on next line
	General Remarks: Slightly clearer greyish, no odour														
BH103	2	50	1 / 1	9.00	11.96	NDA to NDA	30/04/2019 10:51	5.11	---	---	---	---	---	---	
BH103	2	50	1 / 2	9.00	11.95	NDA to NDA	30/04/2019 11:51	---	8.22	-159	84	378	13.6	2.9	Remarks on next line
	General Remarks: Grey, opaque, no odour														
BH105	2	50	1 / 1	9.00	9.06	NDA to NDA	30/04/2019 13:25	3.68	---	---	---	---	---	---	
BH105	2	50	1 / 2	9.00	NDA	NDA to NDA	30/04/2019 14:37	---	7.88	-106	137	424	13.6	3.4	Remarks on next line
	General Remarks: Grey opaque, no odour														
BH106	2	50	1 / 1	9.00	8.90	NDA to NDA	30/04/2019 12:09	4.07	---	---	---	---	---	---	
BH106	2	50	1 / 1				30/04/2019 12:45	---	7.21	-70	171	1030	14.5	5.4	Remarks on next line
	General Remarks: Grey opaque, no odour														

Key: NDA denotes 'no data available'.

	Compiled By	Date	Checked By	Date	Contract Ref:
		03/06/19			562943
	Contract:				Page:
HE Northern Arc, Burgess Hill - Freeks Farm & Link Road Gl					1 of 1
					

IN-SITU WATER MONITORING RESULTS

<u>Weather</u>		<u>Ground Conditions</u>	<u>Wind Conditions</u>	<u>Air Temperature (°C)</u>	<u>Equipment Used & Remarks</u>	
Round 1	Cloudy	Dry	Light	10		

Exploratory Position ID	Pipe Ref	Pipe Diameter	Mon Ro Test Number	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring	Water Depth (mbgl)	pH	Redox (mV)	Eh (mV)	Conduc-tivity (uS/cm)	Temp-erature (°C)	Dissolved Oxygen (mg/l)	Remarks
BH101	1	50	1 / 1	9.00	7.74	3.00 to 9.00	29/04/2019 10:25	0.21	---	---	---	---	---	---	
BH101	1	50	1 / 2	9.00	NDA	3.00 to 9.00	29/04/2019 10:50	---	7.48	-57	188	936	12.0	6.8	Remarks on next line
	General Remarks: Grey, opaque, no odour														
BH102	1	19	1 / 1	2.50	8.41	1.00 to 2.50	29/04/2019 11:19	1.23	---	---	---	---	---	---	
BH102	1	19	1 / 2	2.50	NDA	1.00 to 2.50	29/04/2019 11:46	---	7.52	-72	173	790	12.0	4.1	Remarks on next line
	General Remarks: Slightly clearer greyish, no odour														
BH103	2	50	1 / 1	9.00	11.96	3.00 to 9.00	30/04/2019 10:51	5.11	---	---	---	---	---	---	
BH103	2	50	1 / 2	9.00	11.95	3.00 to 9.00	30/04/2019 11:51	---	8.22	-159	84	378	13.6	2.9	Remarks on next line
	General Remarks: Grey, opaque, no odour														
BH105	2	50	1 / 1	9.00	9.06	3.00 to 9.00	30/04/2019 13:25	3.68	---	---	---	---	---	---	
BH105	2	50	1 / 2	9.00	NDA	3.00 to 9.00	30/04/2019 14:37	---	7.88	-106	137	424	13.6	3.4	Remarks on next line
	General Remarks: Grey opaque, no odour														
BH106	2	50	1 / 1	9.00	8.90	3.00 to 9.00	30/04/2019 12:09	4.07	---	---	---	---	---	---	
BH106	2	50	1 / 1				30/04/2019 12:45	---	7.21	-70	171	1030	14.5	5.4	Remarks on next line
	General Remarks: Grey opaque, no odour														

Key: NDA denotes 'no data available'.

	Compiled By		Date	Checked By	Date	Contract Ref:
			12/06/19			562943
Contract:						Page:
HE Northern Arc, Burgess Hill - Freeks Farm & Link Road GI						1 of 1
						AGS

APPENDIX F - CALIBRATION CERTIFICATES

- (i) SPT Calibration Records
- (ii) Hand Vane Calibration Records
- (iii) Photo ionisation Detector (PID) Calibration Records



Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Dynamic sampling uk ltd
5-8 victory parkway
victory road
Derby
DE24 8ZF

Hammer Ref: AR1551
Test Date: 15/02/2019
Report Date: 15/02/2019
File Name: AR1551.spt
Test Operator: TS

Instrumented Rod Data

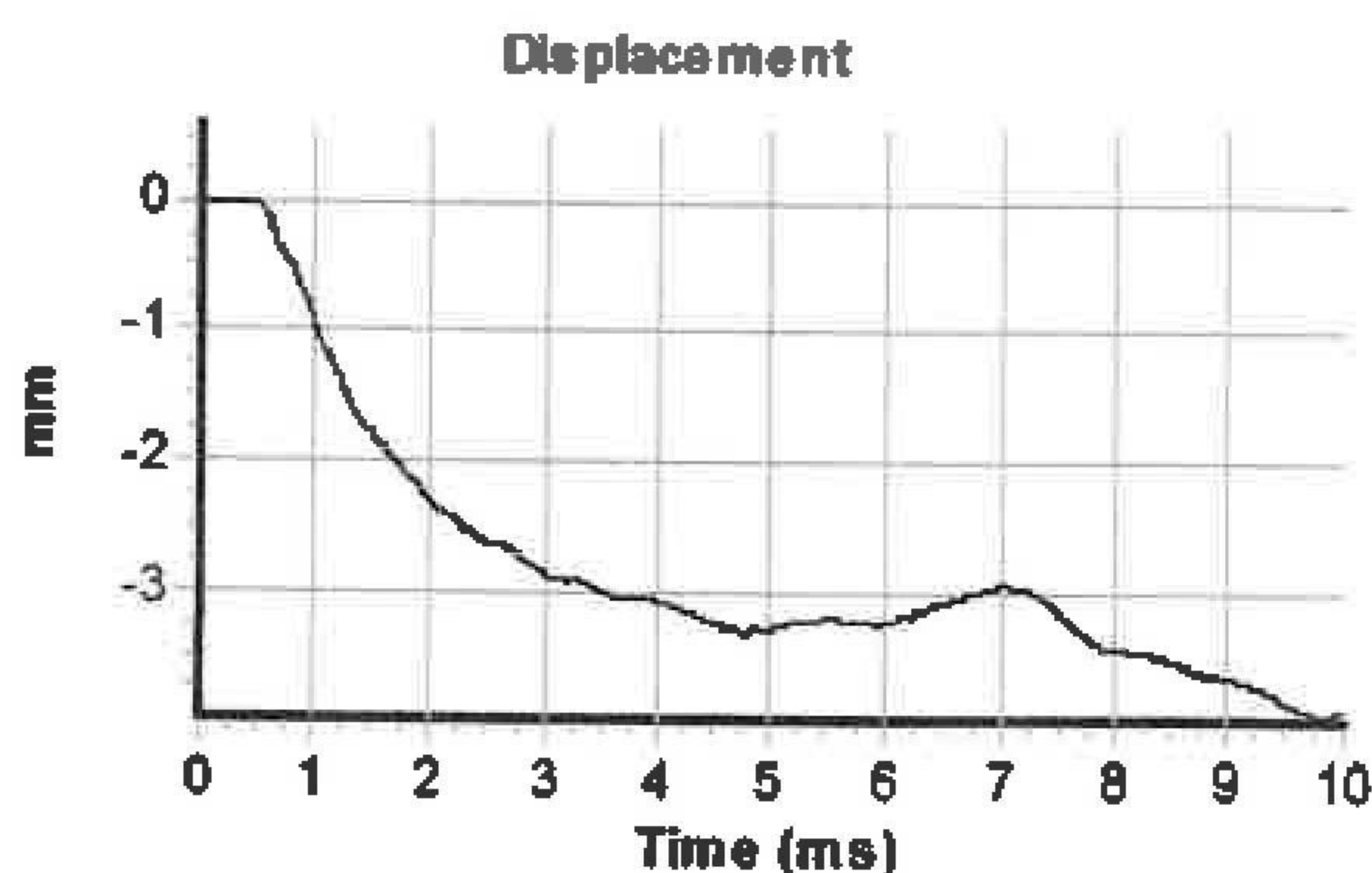
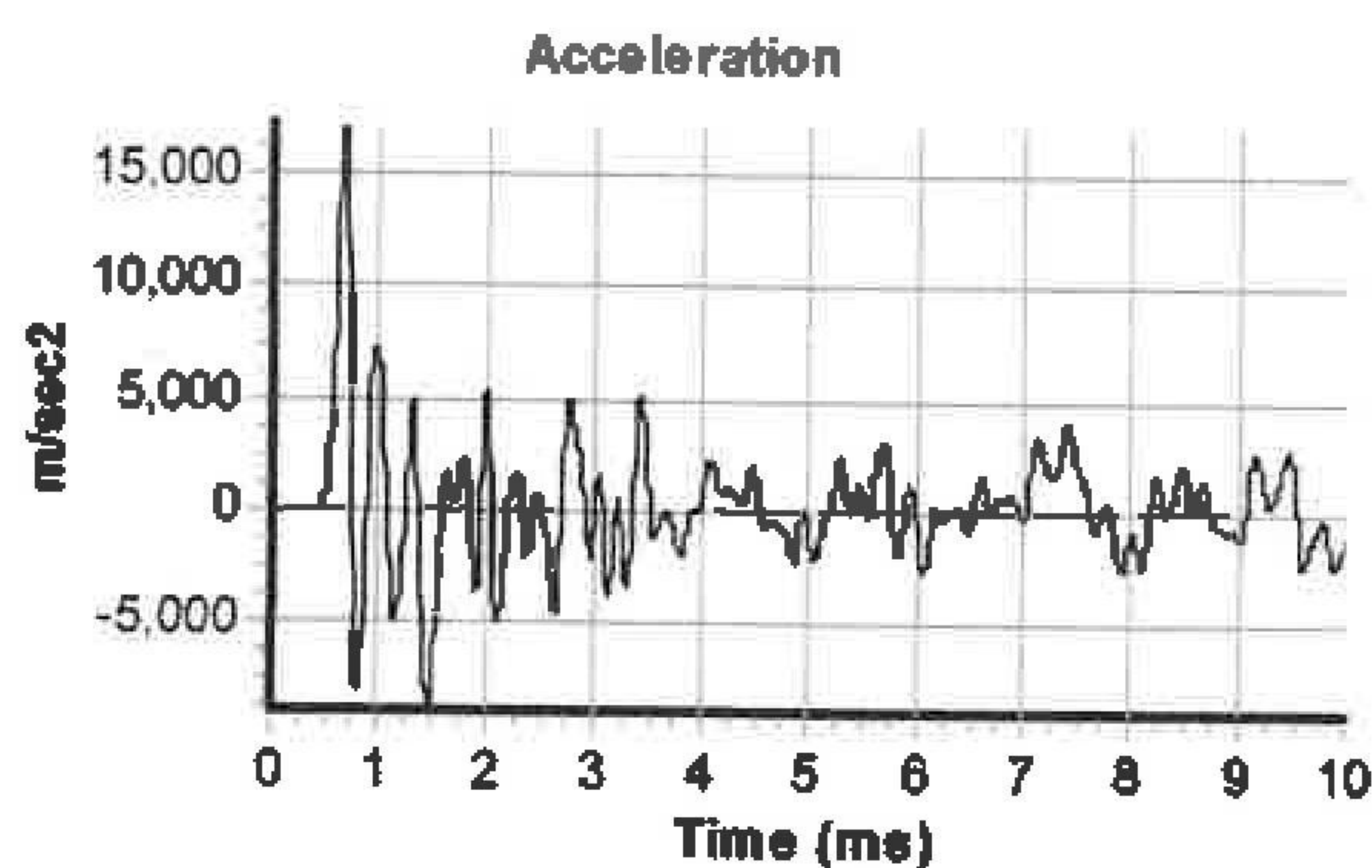
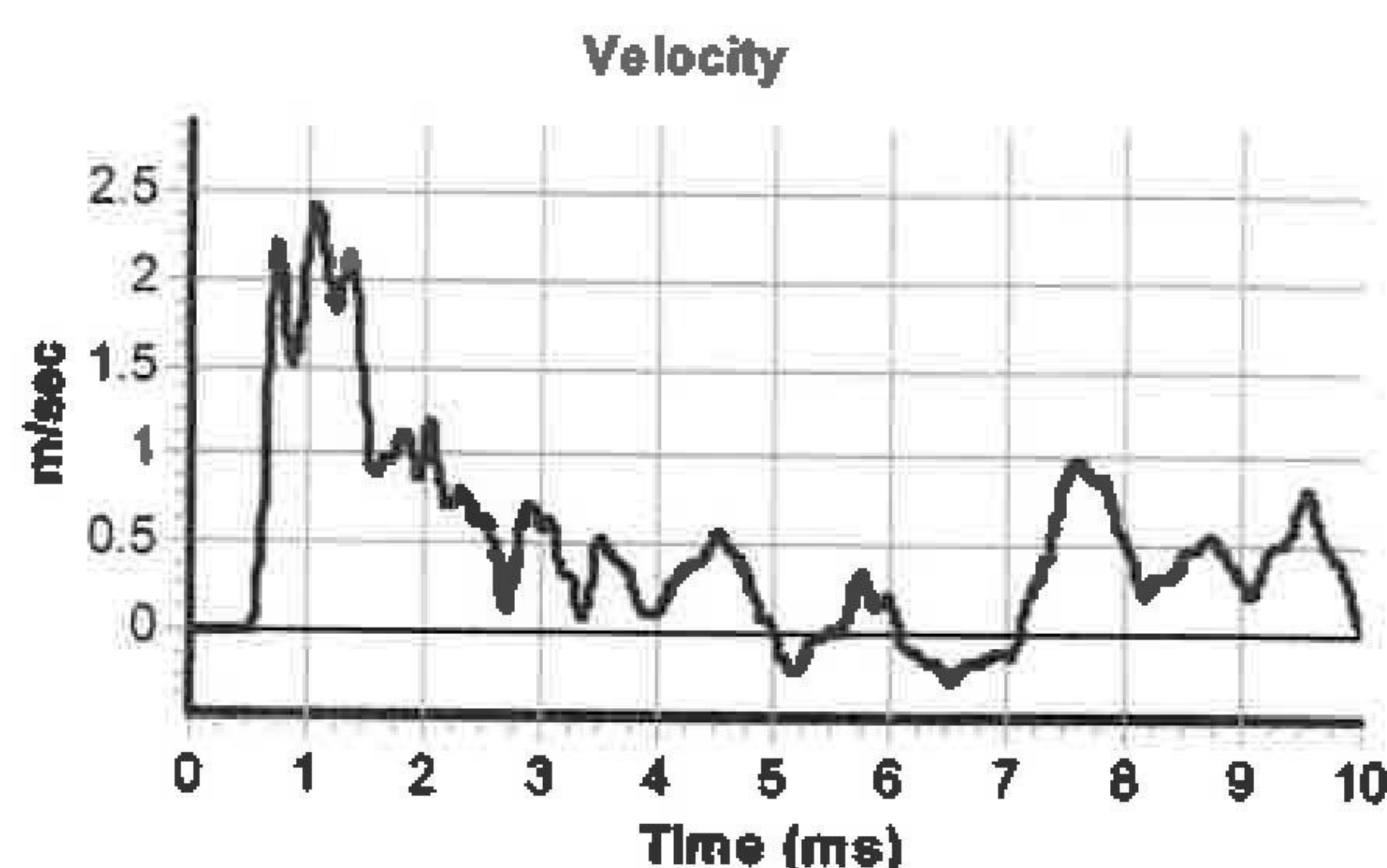
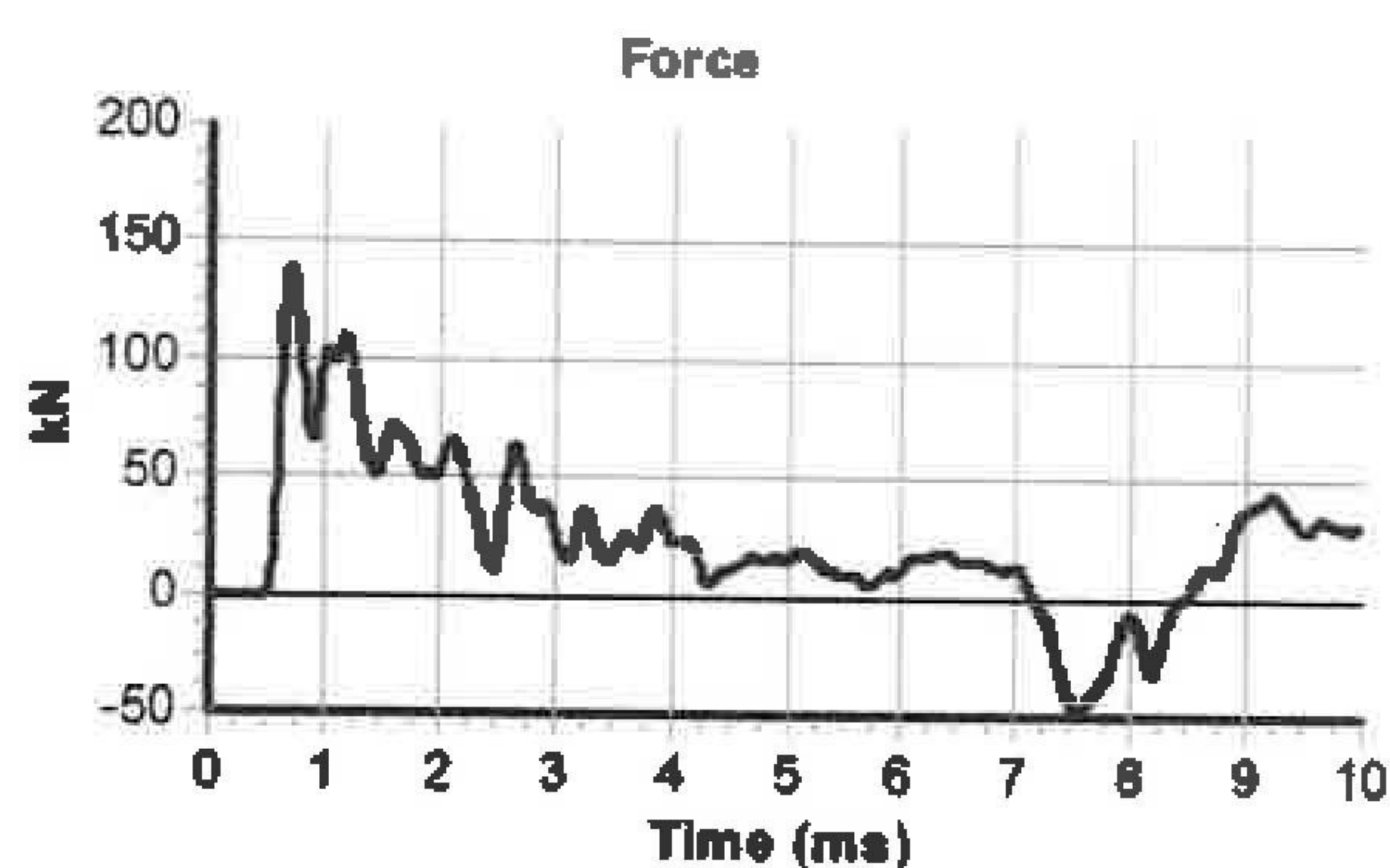
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.7
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 9603
Accelerometer No.2: 6457

Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
String Length L (m): 15.0

Comments / Location

CJ Associates hammer tested at Dynamic samplings yard.



Calculations

Area of Rod A (mm^2): 996
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 293

Energy Ratio E_r (%): **62**

Signed: A.parker.

Title: Associate Director.

The recommended calibration interval is 12 months



Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Dynamic sampling uk ltd
5-8 victory parkway
victory road
Derby
DE24 8ZF

Hammer Ref: CJA.8
Test Date: 30/04/2018
Report Date: 04/05/2018
File Name: CJA.8.spt
Test Operator: TP

Instrumented Rod Data

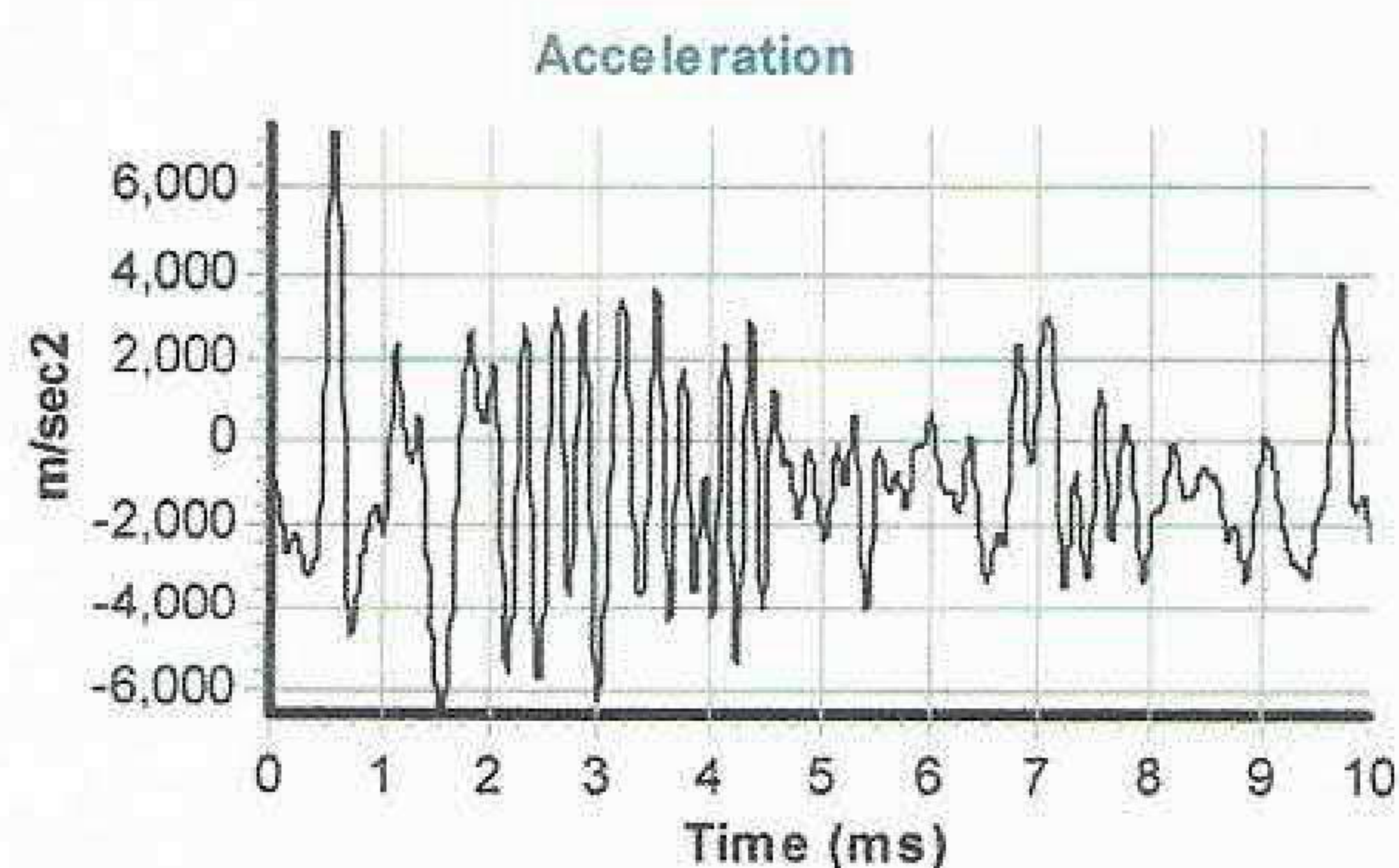
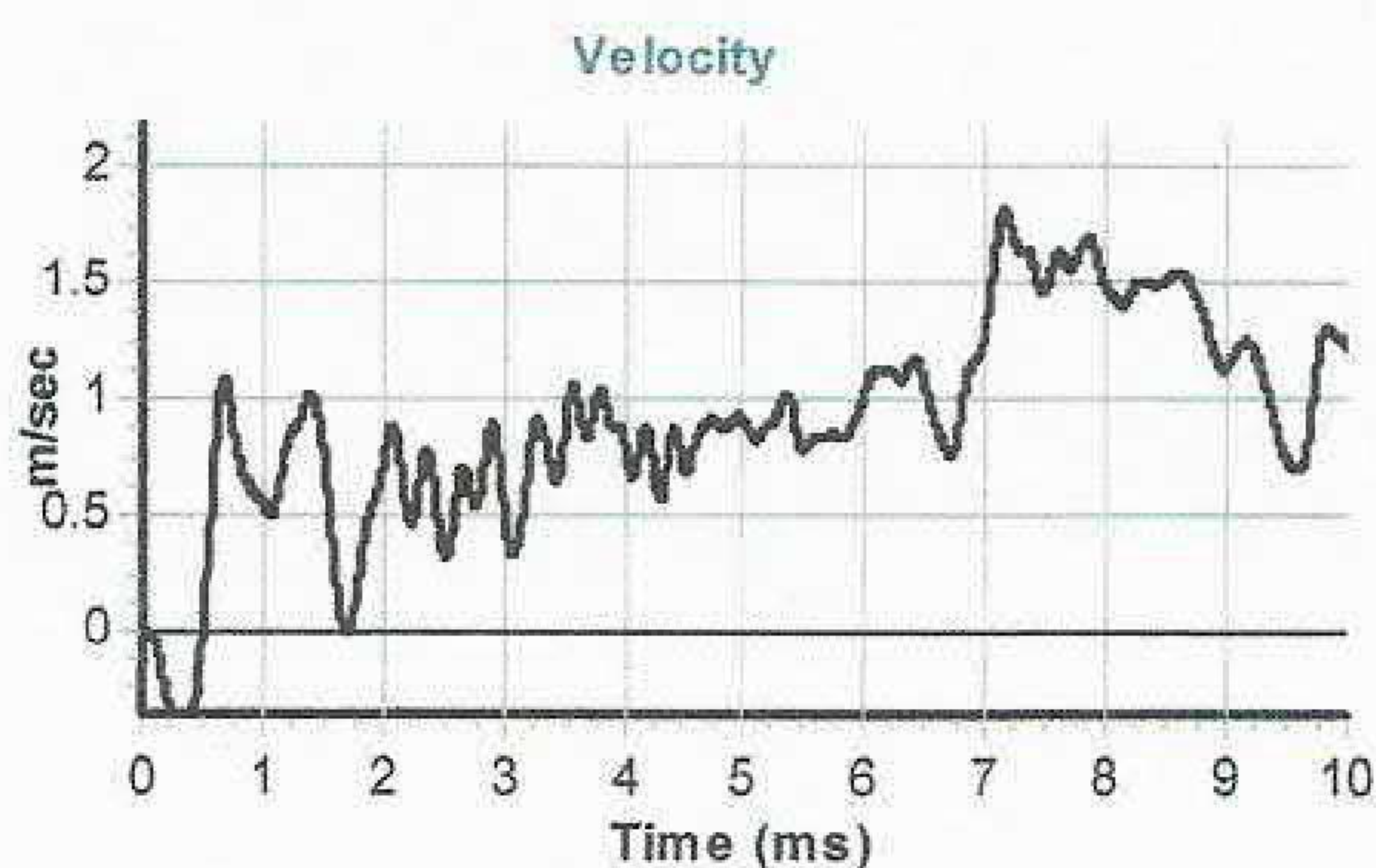
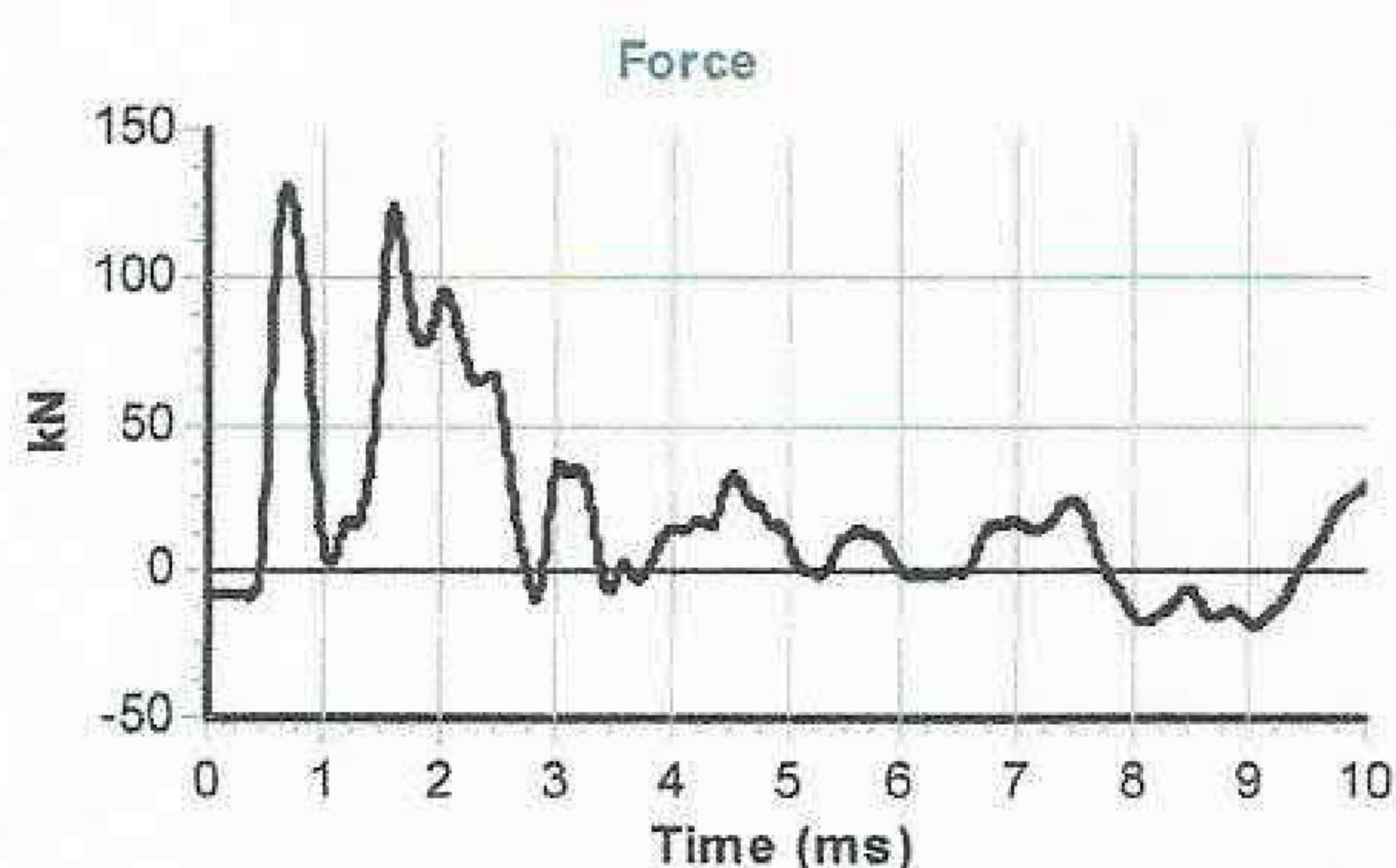
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.9
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 6455
Accelerometer No.2: 6457

Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
String Length L (m): 15.0

Comments / Location

CJ associates hammer tested at Dynamic samplings yard.



Calculations

Area of Rod A (mm²): 1021
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 307

Energy Ratio E_r (%): **65**

Signed: T.parker.
Title: Associate Director.

The recommended calibration interval is 12 months

CERTIFICATE OF CALIBRATION

ISSUED BY: LAMBDA CALIBRATION LTD

DATE OF ISSUE: 9th January 2019

CERTIFICATE No: 534778



Lambda
CALIBRATION LTD

11-13 Chorley Central
Business Park
Stump Lane
Chorley
PR6 0BL
Tel: 0845 241 1533

Page 1 of 1
APPROVED SIGNATORY

W Pope A Scurr P Davies
J Carmichael K Quigley

Customer: Structural Soils Ltd, Hildenborough, TN11 9HU
Item No: 501600
Manufacturer: Geonor
Description: Hand Held Shear Vane
Date of Cal: 09-Jan-19
Basis & Method: The unit under test (UUT) was calibrated by comparison with a digital torque analyser, According to the methodology outlined in BS EN ISO 6789: 2003, at approximately 20%, 60% & 95% of its full scale deflection. Shear strength was then calculated in accordance with BS 1377: 1990 and is reported in the table at the foot of this certificate.
Equipment Used: LTQA-03, LMB-2A-21
Temperature & RH: Start: 20 degC Finish: 20 degC RH: <90%
Axis of Torque: Vertical **Axis of Tool Handle:** Vertical
Visual Examination: Satisfactory
Adjustments: None

Measured Vane Sizes (mm):	Vane 1 (H)	32.0	Vane 1 (D)	16.0
	Vane 2 (H)	40.0	Vane 2 (D)	20.0
	Vane 3 (H)	51.0	Vane 3 (D)	25.4

UUT Dial Readings v Torque Analyser Readings:

						Mean Readings	U (+/-) Nm	k
Actual Torque (N·m)	0.820	0.807	0.790	0.821	0.797	0.807	0.04	2.37
UUT Readings 20%	26.0	26.0	26.0	26.0	26.0	26.00		
Actual Torque (N·m)	2.530	2.486	2.473	2.489	2.495	2.495	0.07	2.09
UUT Readings 60%	78.0	78.0	78.0	78.0	78.0	78.00		
Actual Torque (N·m)	3.879	3.874	3.853	3.838	3.810	3.851	0.10	2.00
UUT Readings 95%	124.0	124.0	124.0	124.0	124.0	124.00		

Calculated Shear
Strength Values:

UUT Mean Dial Readings	Mean Torque (N·m)		Vane 1 Shear Strength (kPa)		Vane 2 Shear Strength (kPa)		Vane 3 Shear Strength (kPa)
26.00	0.807		54		28		13
78.00	2.495		166		85		41
124.00	3.851		257		131		64

1 kPa = 1kN/m² = 0.101972 tonne/m² (1 tonne/m² = 9.80665 kPa)

The reported expanded uncertainty for torque U, is based on a standard uncertainty multiplied by a coverage factor k, providing a level of confidence of approximately 95%.

This certificate provides traceability of measurement to recognised national standards, and to the units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, without the prior written approval of the issuing laboratory.

Delivery / Advice Note

Structural Soils Ltd Anerley Court Half Moon Lane Hildenborough Kent TN11 9HU Contact: Kaite Barnes Tel : 01732 833111 Fax :			Despatched From Lambda Calibration Ltd Units 11-13 Chorley Central Business Park, Stump Lane, Chorley, Lancashire, PR6 0BL. Tel : 0845 241 1533 Fax : 0845 241 1544		
Despatch Date	Job Number	Order Number	No of Boxes	Carrier	Del Note Number
10/01/2019	105753	P0575769			120894

Qty	Description	Range	Codes*	Serial No	Other Id	Cert Ref	Department
1	Carriage ??????			XXXXX		X534780	
1	Shear Vane (soil tester) Calibration			501600		N534778	

Delivery Note

* Codes: Lead, Case, Manual.

Received in good condition

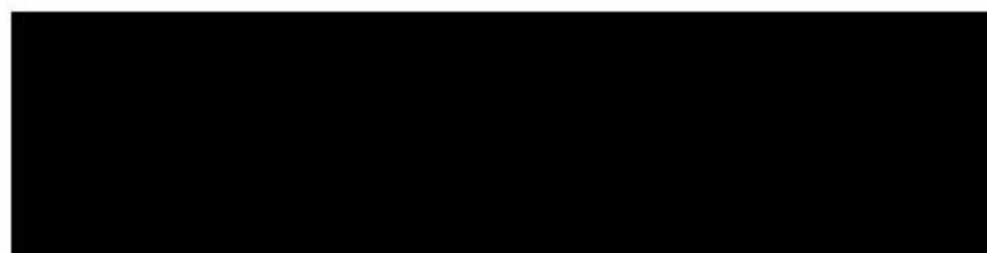
Claims for shortages or damage must be advised in writing within 3 days.
Our standard Conditions of Sale apply and can be downloaded from www.lambda-cal.co.uk
or are available on request.

Signature

Name

Date

CALIBRATION CERTIFICATE NO: 65086

ISSUED BY: SHAWCITY LIMITED
DATE: 21.12.18
APPROVED SIGNATORY: 
NAME: Peter Gunter
CUSTOMER: Shawcity Ltd -Exhibition equipment
INSTRUMENT: Phocheck Tiger
SERIAL NUMBER: T-107240
CALIBRATION METHOD: CM03
AMBIENT CONDITIONS: 20°C ± 2°C and 50% (± 20%) RH

Prior to calibration the instrument was allowed to stabilise in the laboratory for at least 30 minutes.
The instrument was calibrated by exposing the sensor to known values of gas concentrations.
All gases were sampled through the complete probe and in line filter, where applicable.
The reference value is that generated by the certified source and the indicated value is that measured by the instrument.

CALIBRATION RESULTS

GAS	LOT No	REF. VALUE	INDICATED VALUE
Isobutylene	WO189362-4	100 ppm	100 ppm
Isobutylene	WO130990-3	1000 ppm	1000 ppm

COMMENTS:

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor of $k=2$.
This provides a level of confidence of uncertainty of approximately 95%.
The uncertainty of measurement is $\pm 2\%$
The results indicate that the instrument conforms to the applicable parts of the published specification.

HEALTH & SAFETY, OCCUPATIONAL HYGIENE AND ENVIRONMENTAL MONITORING INSTRUMENTS



HE Northern Arc, Burgess Hill - Link Road Ground Investigation

Factual Report on Ground Investigation

Report No: 562943 – 2 (01)

Client: Homes England

JUNE 2019



**STRUCTURAL
SOILS LTD**

DOCUMENT ISSUE RECORD

Project No.:	562943
Report No.:	562943 – 2 (01)
Project Name:	HE Northern Arc, Burgess Hill –Link Road Ground Investigation
Document Title	Factual Report on Ground Investigation
Client:	Homes England
Engineer:	AECOM
Status:	Final
Author	 Alice Hayton

Report Issue Date

26 August 2019

REVISION RECORD

Revision	Date	Description of revisions	Prepared by
Draft	June 2019	Draft Report for Comment	AJKH
Final	July 2019	Edit after AECOM comment	CM / AJKH

STRUCTURAL SOILS LIMITED

Anerley Court
Halfmoon Lane
Hildenborough
Tonbridge
TN11 9HU

Tel: 01732 833 111

Email: ask@soils.co.uk

www.soils.co.uk

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1 INTRODUCTION

This investigation was carried out by Structural Soils Ltd (SSL) on the instructions of AECOM (the Engineer) on behalf of Homes England (the Client) at the site of Freeks Farm, in Burgess Hill, West Sussex.

The purpose of the work was to obtain geotechnical and geoenvironmental information for the proposed Link Road and Bridge across the River Adur connecting the proposed Freeks Farm Development with Isaac's Lane (A273).

The intrusive works included:

- Two rotary cored boreholes to a depth of 35m bgl;
- Six machine excavated trial pits (TP) to a depth of 3.00m bgl;
- One percussive windowless sample (WS) boreholes to approximately 5.00m bgl;
- Installation of installation of groundwater monitoring wells and ground gas monitoring wells in the two rotary cored boreholes;
- TRL DCPs (Transport Research Laboratory Dynamic Cone Penetrometer) Tests to be undertaken adjacent to TP locations.
- Factual reporting of investigation findings.

This report contains a description of the site and the works carried out, the exploratory hole logs, in-situ and laboratory testing results.

The ground investigation has been carried out in accordance with the contract specification, and the general requirements of BS 5930:2015, BS 10175:2011+A2:2017, BS EN 1997-2 (2007), BS EN ISO 22475-1 (2006) and other relevant standards as identified below.

This report presents the factual records of the fieldwork carried out and laboratory testing. Whilst every attempt is made to record full details of the strata encountered in the exploratory holes, techniques of hole formation and sampling will inevitably lead to disturbance, mixing or loss of material in some soils and rocks. All information given in this report is based on the ground conditions encountered during the site work, and on the results of laboratory and field tests performed during the investigation. However, there may be conditions at the site that have not been taken into account, such as unpredictable soil strata, contaminant concentrations, and water conditions between or below exploratory holes.

This report was prepared by SSL for the sole and exclusive use of AECOM / Homes England in response to particular instructions. Any other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded. No liability will be accepted after a period of 6 years from the date of the report.