

# A303 Amesbury to Berwick Down

**Applicant's provision of technical reports supporting the  
Environmental Information Review**

Ground Investigation - Phase 6 & 7 Factual Report  
Appendix D

Document reference: Redetermination 2.12

Planning Act 2008

The Infrastructure Planning (Examination Procedure) Rules 2010

February 2022



## **APPENDIX D - GEOTECHNICAL LABORATORY TESTING**

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- (i) Laboratory Test Verification Sheet
- (ii) Laboratory Test Results

# TESTING VERIFICATION CERTIFICATE



1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **08/11/2018 08:28:39**.

Testing reported after this date is not covered by this Verification Certificate.



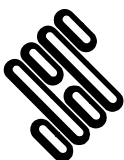
Approved Signatory  
**Alan Frost (Deputy Laboratory Manager)**

(Head Office)  
Bristol Laboratory  
Unit 1A, Princess Street  
Bedminster  
Bristol  
BS3 4AG

Castleford Laboratory  
The Potteries, Pottery Street  
Castleford  
West Yorkshire  
WF10 1NJ

Hemel Laboratory  
18 Frogmore Road  
Hemel Hempstead  
Hertfordshire  
HP3 9RT

Tonbridge Laboratory  
Anerley Court, Half Moon Lane  
Hildenborough  
Tonbridge  
TN11 9HU



**STRUCTURAL  
SOILS LTD**

Contract:

**A303 Stonehenge Phase 6 Ground  
Investigation**

Job No:

**733442**



# TESTING VERIFICATION CERTIFICATE



1774

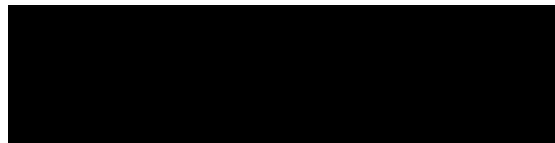
The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **19/02/2019 11:35:54.**

Testing reported after this date is not covered by this Verification Certificate.



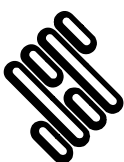
Approved Signatory  
**Alan Frost (Deputy Laboratory Manager)**

(Head Office)  
Bristol Laboratory  
Unit 1A, Princess Street  
Bedminster  
Bristol  
BS3 4AG

Castleford Laboratory  
The Potteries, Pottery Street  
Castleford  
West Yorkshire  
WF10 1NJ

Hemel Laboratory  
18 Frogmore Road  
Hemel Hempstead  
Hertfordshire  
HP3 9RT

Tonbridge Laboratory  
Anerley Court, Half Moon Lane  
Hildenborough  
Tonbridge  
TN11 9HU



**STRUCTURAL  
SOILS LTD**

Contract:

**A303 Stonehenge Phase 7 Ground  
Investigation**

Job No:

**733442**



# STRUCTURAL SOILS LIMITED



733442 - A303 STONEHENGE –  
PHASE 6 & 7 GROUND INVESTIGATION

## GEOTECHNICAL TESTING

Summary of Water Content Tests
Summary of Saturated Moisture Content
Summary Intact Dry Density and Porosity
Particle Size Distribution Test
Determination of Point Load Strength
Consolidated Undrained Triaxial Compression Test
Direct shear Strength of Rock Under Constant Normal Stress
Uniaxial Compressive Strength
Deformability of Rock in Uniaxial Compression
Summary of Indirect Tensile Strength by the Brazil Test
Slake Durability Index
Summary of Chemical Tests

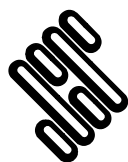


# SUMMARY OF WATER CONTENT TESTS

RT08 Water Content of Rock (in accordance with ISRM 2007)

Exploratory Position ID	Sample Ref	Depth (m)	Sample Type	Water Content (%)	Lab
R618	7	5.80	D	22.2	B
R618	11	9.30	D	25.8	B
R618	14	12.50	D	26.2	B
R618	18	15.40	D	22.4	B
R618	21	17.55	D	24.8	B
R618	29	23.65	D	25.8	B
R618	33	26.28	D	25.9	B
R618	37	29.65	D	24.9	B
R618	40	31.65	U	23.4	B
R618	42	32.80	D	20.6	B
R618	44	34.20	U	21.3	B
R618	46	35.65	U	21.1	B
R618	49	37.90	D	22.8	B
R618	50	38.45	D	22.4	B
R618	53	40.60	U	17.3	B
R618	56	43.10	D	16.4	B
R618	58	44.40	U	20.3	B
R618	60	46.35	D	16.3	B

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)



**STRUCTURAL SOILS**  
1a Princess Street  
Bedminster  
Bristol  
BS3 4AG

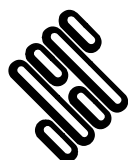
Compiled By		Date
[REDACTED]		24/06/18
Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>		Contract Ref: <b>733442</b>

# SUMMARY OF WATER CONTENT TESTS

RT08 Water Content of Rock (in accordance with ISRM 2007)

Exploratory Position ID	Sample Ref	Depth (m)	Sample Type	Water Content (%)	Lab
R620	6	6.00	D	26.2	B
R620	9	11.65	D	22.3	B
R620	11	14.85	U	27.6	B
R620	12	15.05	D	27.3	B
R620	16	18.05	D	25.6	B
R620	20	20.20	D	23.6	B
R620	25	23.75	D	24.7	B
R620	29	26.70	U	24.7	B
R620	33	29.35	U	24.8	B
R620	37	32.40	D	25.5	B
R620	40	34.75	D	22.3	B
R620	44	37.80	U	23.1	B
R620	47	40.20	D	18.4	B
R620	50	42.30	D	17.9	B
R620	52	44.30	D	20.1	B
R620	56	47.05	D	16.3	B

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)



**STRUCTURAL SOILS**  
1a Princess Street  
Bedminster  
Bristol  
BS3 4AG

Compiled By		Date
[REDACTED]		16/07/18
Contract:		Contract Ref:
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R602	5	D	3.40	1	20	1.93	1.60	25	Off white CHALK	<b>B</b>
R602	8	D	6.20	1	25	1.95	1.56	27	White CHALK	<b>B</b>
R602	10	D	8.50	1	24	2.02	1.63	24	White CHALK	<b>B</b>
R602	12	D	10.10	1	25	1.98	1.58	26	White CHALK	<b>B</b>
R602	14	D	12.15	1	27	1.97	1.54	28	White CHALK	<b>B</b>
R602	19	D	16.70	1	25	2.03	1.62	25	Off white CHALK	<b>B</b>
R602	22	D	18.35	1	27	2.00	1.57	26	Off white CHALK	<b>B</b>
R602	32	D	26.00	1	21	1.97	1.63	24	Off white CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 20px; margin: 5px auto;"></div>	Date <b>28.09.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold; margin-top: 10px;">733442</div>
			Contract: <div style="background-color: black; width: 100px; height: 20px; display: inline-block;"></div> <b>A303 Stonehenge Phase 6 Ground Investigation</b>	







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In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R606	5	D	2.04	1	24	2.02	1.63	24	White CHALK	<b>B</b>
R606	8	D	5.00	1	26	1.96	1.55	27	White CHALK	<b>B</b>
R606	10	D	6.57	1	27	1.96	1.53	28	White CHALK	<b>B</b>
R606	14	D	10.40	1	28	1.96	1.53	28	White CHALK	<b>B</b>
R606	17	D	12.54	1	26	2.01	1.60	26	White CHALK	<b>B</b>
R606	21	D	15.15	1	21	2.07	1.71	21	White CHALK	<b>B</b>
R606	25	D	18.00	1	28	1.95	1.53	28	White CHALK	<b>B</b>
R606	27	D	21.38	1	29	1.93	1.51	29	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 20px; margin: 0 auto;"></div>	Date <b>29.09.18</b>	Contract Ref:  <div style="text-align: center; font-size: 24px; font-weight: bold;">733442</div>
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R606	31	D	24.20	1	27	1.97	1.56	27	White CHALK	<b>B</b>
R606	36	D	27.54	1	26	1.96	1.55	27	White CHALK	<b>B</b>
R606	40	D	30.10	1	26	1.99	1.58	26	White CHALK	<b>B</b>
R606	43	D	33.17	1	24	2.01	1.61	25	White CHALK	<b>B</b>
R606	45	D	36.40	1	25	2.01	1.61	25	White CHALK	<b>B</b>
R606	48	D	38.64	1	24	2.02	1.63	24	White CHALK	<b>B</b>
R606	50	D	40.33	1	25	2.01	1.61	25	White CHALK	<b>B</b>
R606	53	D	42.26	1	21	2.07	1.70	22	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 20px; margin: 0 auto;"></div>	Date <b>29.09.18</b>	Contract Ref:  <div style="font-size: 24px; font-weight: bold; text-align: center;">733442</div>
			Contract: <div style="background-color: black; width: 100px; height: 20px; display: inline-block;"></div> <b>A303 Stonehenge Phase 6 Ground Investigation</b>	


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In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R606	56	D	45.00	1	22	2.05	1.67	23	White CHALK	<b>B</b>
R606	58	D	47.48	1	23	2.04	1.65	24	White CHALK	<b>B</b>
R606	62	D	50.90	1	18	2.12	1.79	19	White CHALK	<b>B</b>
R606	64	D	52.40	1	19	2.12	1.78	19	White CHALK	<b>B</b>
R606	66	D	54.00	1	20	2.07	1.73	21	White CHALK	<b>B</b>
R606	71	D	57.20	1	15	2.17	1.89	16	White CHALK	<b>B</b>
R606	72	D	59.90	1	20	2.08	1.73	21	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 20px; margin: 0 auto;"></div>	Date <b>29.09.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
	Contract: <div style="background-color: black; width: 100px; height: 20px; display: inline-block;"></div>		<b>EMY HOWARD</b>	
<b>A303 Stonehenge Phase 6 Ground Investigation</b>				


# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R607	5	D	4.15	1	28	1.93	1.51	29	White CHALK	<b>B</b>
R607	10	D	7.57	1	27	1.95	1.54	28	White CHALK	<b>B</b>
R607	14	D	10.78	1	27	1.95	1.53	28	White CHALK	<b>B</b>
R607	18	D	13.75	1	24	2.03	1.64	24	White CHALK	<b>B</b>
R607	21	D	15.63	1	26	2.01	1.60	26	White CHALK	<b>B</b>
R607	24	D	17.70	1	27	1.99	1.57	27	White CHALK	<b>B</b>
R607	28	D	21.20	1	28	1.96	1.53	29	White CHALK	<b>B</b>
R607	31	D	22.90	1	26	1.98	1.57	27	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date	Contract Ref:  <span style="font-size: 24pt; font-weight: bold;">733442</span>
	[REDACTED]	<b>CALEB ROWLANDS</b>		<b>02.10.18</b>	
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>				





# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R607	34	D	27.00	1	23	2.03	1.65	24	White CHALK	<b>B</b>
R607	38	D	30.60	1	29	1.93	1.50	30	White CHALK	<b>B</b>
R607	40	D	33.30	1	26	1.98	1.58	26	White CHALK	<b>B</b>
R607	43	D	35.30	1	26	1.97	1.57	27	White CHALK	<b>B</b>
R607	46	D	37.78	1	23	2.04	1.66	23	White CHALK	<b>B</b>
R607	49	D	40.10	1	24	2.02	1.63	24	White CHALK	<b>B</b>
R607	52	D	42.90	1	23	2.04	1.66	23	White CHALK	<b>B</b>
R607	55	D	46.13	1	25	2.00	1.60	25	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date	Contract Ref:
	[REDACTED]	<b>CALEB ROWLANDS</b>	<b>02.10.18</b>		
		Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			<b>733442</b>
					


# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R607	59	D	49.52	1	21	2.06	1.70	22	White CHALK	B
R607	63	D	52.70	1	23	2.01	1.63	24	White CHALK	B
R607	66	D	55.73	1	24	2.02	1.64	24	White CHALK	B
R607	68	D	57.09	1	23	2.03	1.65	23	White CHALK	B
R607	70	D	59.50	1	15	2.19	1.91	15	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By [REDACTED]	Date <b>02.10.18</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			


# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R608	6	D	2.00	3	25*	1.93*	1.54*	28*	White CHALK	B
R608	9	D	5.00	1	24	1.97	1.58	26	White CHALK	B
R608	11	D	7.00	1	23	1.98	1.61	25	White CHALK	B
R608	14	D	9.80	1	24	1.95	1.58	26	White CHALK	B
R608	17	D	12.40	1	27	1.92	1.51	29	White CHALK	B
R608	19	D	14.20	1	26	1.95	1.55	28	White CHALK	B
R608	23	D	17.45	1	23	1.95	1.58	26	White CHALK	B
R608	27	U	20.40	1	24	1.96	1.58	26	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 20px; margin: 0 auto;"></div> <b>ABBY MITCHELL</b>	Date <b>20.10.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold; text-align: center;">733442</div>
	Contract: <div style="background-color: black; width: 100px; height: 20px; display: inline-block;"></div>		<b>A303 Stonehenge Phase 6 Ground Investigation</b>	





# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R608	30	D	23.10	1	22	1.98	1.62	25	White CHALK	<b>B</b>
R608	33	D	25.23	1	25	1.94	1.55	27	White CHALK	<b>B</b>
R608	36	D	27.01	1	25	1.93	1.54	28	White CHALK	<b>B</b>
R608	40	D	30.26	1	25	1.96	1.57	27	White CHALK	<b>B</b>
R608	43	D	32.75	1	27	1.93	1.52	29	White CHALK	<b>B</b>
R608	46	D	34.60	1	25	1.98	1.58	26	White CHALK	<b>B</b>
R608	49	D	36.85	1	22	2.01	1.64	24	White CHALK	<b>B</b>
R608	51	D	39.45	1	25	1.96	1.57	26	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 20px; margin: 5px auto;"></div> <b>ABBY MITCHELL</b>	Date <b>20.10.18</b>	Contract Ref:  <div style="text-align: center; font-size: 1.2em; font-weight: bold;">733442</div>
	Contract: <div style="background-color: black; width: 100px; height: 20px; display: inline-block;"></div> <b>A303 Stonehenge Phase 6 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R608	56	D	42.58	1	23	2.00	1.63	24	White CHALK	<b>B</b>
R608	58	D	45.20	1	24	1.99	1.60	25	White CHALK	<b>B</b>
R608	61	D	47.35	1	26	1.97	1.57	27	White CHALK	<b>B</b>
R608	64	U	50.00	1	19	2.09	1.76	20	White CHALK	<b>B</b>
R608	67	D	51.40	3	19*	2.06*	1.73*	21*	White CHALK	<b>B</b>
R608	71	D	55.40	1	17	2.12	1.80	18	White CHALK	<b>B</b>
R608	73	D	56.80	1	15	2.17	1.89	16	White CHALK	<b>B</b>
R608	76	D	59.13	1	17	2.11	1.79	19	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>ABBY MITCHELL</b>	Date <b>20.10.18</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			


# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R610	6	D	2.44	3	27*	1.97*	1.55*	27*	White CHALK	<b>B</b>
R610	11	D	6.80	1	28	1.93	1.51	29	White CHALK	<b>B</b>
R610	15	D	10.40	1	26	1.97	1.56	27	White CHALK	<b>B</b>
R610	21	D	14.76	1	27	2.02	1.59	26	White CHALK	<b>B</b>
R610	26	D	18.16	1	28	1.98	1.54	28	Off white CHALK	<b>B</b>
R610	36	U	25.64	1	24	2.02	1.63	24	White CHALK	<b>B</b>
R610	41	D	30.33	3	25*	1.98*	1.58*	26*	White CHALK	<b>B</b>
R610	52	U	38.60	1	23	2.03	1.65	23	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 20px; margin: 0 auto;"></div>	Date <b>20.10.18</b>	Contract Ref:  <div style="font-size: 24px; font-weight: bold;">733442</div>
	Contract: <div style="background-color: black; width: 100px; height: 20px; display: inline-block;"></div>		<b>A303 Stonehenge Phase 6 Ground Investigation</b>	





# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R611	5	D	3.20	3	25*	1.90*	1.52*	29*	White CHALK	<b>B</b>
R611	7	D	5.20	1	20	1.86	1.55	28	White CHALK	<b>B</b>
R611	9	D	7.00	3	27*	1.91*	1.50*	30*	White CHALK	<b>B</b>
R611	14	D	10.75	3	24*	1.94*	1.56*	27*	Off white CHALK	<b>B</b>
R611	17	D	13.06	1	29	1.93	1.49	30	White CHALK	<b>B</b>
R611	19	D	15.40	1	27	1.94	1.53	28	White CHALK	<b>B</b>
R611	23	U	17.45	1	26	1.99	1.58	26	White CHALK	<b>B</b>
R611	27	D	20.40	1	26	1.94	1.53	28	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>EMY HOWARD</b>	Date <b>06.11.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R611	30	D	23.25	1	25	1.94	1.55	27	White CHALK	<b>B</b>
R611	32	D	24.90	1	23	2.02	1.65	24	White CHALK	<b>B</b>
R611	35	D	27.30	1	25	1.97	1.57	27	White CHALK	<b>B</b>
R611	40	D	30.20	1	24	1.99	1.61	25	White CHALK	<b>B</b>
R611	43	D	32.25	1	26	1.96	1.55	27	White CHALK	<b>B</b>
R611	47	U	35.80	1	26	1.96	1.55	27	White CHALK	<b>B</b>
R611	49	D	37.37	1	24	2.00	1.61	25	White CHALK	<b>B</b>
R611	54	D	40.85	1	23	2.01	1.63	24	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>EMY HOWARD</b>	Date <b>06.11.18</b>	Contract Ref:  <b>733442</b>
			Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>	


# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R611	58	D	43.80	1	23	2.00	1.63	24	White CHALK	<b>B</b>
R611	61	D	45.84	1	25	1.98	1.59	26	White CHALK	<b>B</b>
R611	63	D	47.00	1	24	1.98	1.60	25	White CHALK	<b>B</b>
R611	65	D	49.70	1	18	2.10	1.79	19	White CHALK	<b>B</b>
R611	68	D	52.45	1	22	2.02	1.65	23	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date	Contract Ref:  <b>733442</b>
		[REDACTED]	<b>EMY HOWARD</b>	<b>06.11.18</b>	
		Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			





# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R612	8	D	6.90	1	26	1.96	1.56	27	White CHALK	<b>B</b>
R612	12	D	10.30	1	25	1.94	1.55	27	White CHALK	<b>B</b>
R612	15	D	13.05	1	27	1.97	1.56	27	White CHALK	<b>B</b>
R612	17	D	14.80	1	27	1.96	1.55	28	White CHALK	<b>B</b>
R612	21	D	17.40	1	20	1.77	1.47	31	White CHALK	<b>B</b>
R612	25	D	20.60	1	24	2.00	1.61	25	White CHALK	<b>B</b>
R612	28	D	23.75	1	25	1.98	1.58	26	White CHALK	<b>B</b>
R612	33	U	27.80	1	25	1.94	1.56	27	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>CALEB ROWLANDS</b>	Date <b>06.11.18</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			





# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R612	37	D	31.38	1	23	1.90	1.54	28	White CHALK	B
R612	39	D	32.20	1	23	1.95	1.58	26	White CHALK	B
R612	42	U	34.50	1	21	2.03	1.67	23	White CHALK	B
R612	45	D	37.28	1	20	2.05	1.72	21	White CHALK	B
R612	48	U	39.70	1	23	2.00	1.63	24	White CHALK	B
R612	52	D	42.35	1	26	1.97	1.56	27	White CHALK	B
R612	55	D	44.75	1	23	1.99	1.61	25	White CHALK	B
R612	59	D	47.92	1	22	2.03	1.66	23	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <b>CALEB ROWLANDS</b>	Date <b>06.11.18</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			


# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R612	62	D	50.30	1	20	2.03	1.70	22	White CHALK	<b>B</b>
R612	65	D	53.35	1	18	1.98	1.67	23	White CHALK	<b>B</b>
R612	68	D	55.35	1	22	2.01	1.64	24	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date	Contract Ref:  <b>733442</b>
		<b>CALEB ROWLANDS</b>	<b>06.11.18</b>		
		Contract:		<b>A303 Stonehenge Phase 6 Ground Investigation</b>	





# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R613	5	D	1.50	3	17*	1.90*	1.63*	24*	White CHALK	<b>B</b>
R613	7	D	4.80	1	27	1.91	1.50	30	White CHALK	<b>B</b>
R613	10	D	8.50	1	26	1.98	1.57	27	White CHALK	<b>B</b>
R613	14	D	11.40	1	27	1.97	1.55	27	Off white CHALK	<b>B</b>
R613	18	D	14.10	1	19	2.12	1.77	19	White CHALK	<b>B</b>
R613	21	D	16.65	1	28	1.98	1.55	28	White CHALK	<b>B</b>
R613	25	D	19.45	1	22	2.03	1.66	23	Off white CHALK	<b>B</b>
R613	27	D	21.30	1	26	1.98	1.57	27	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <b>EMY HOWARD</b>	Date <b>07.11.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R613	31	U	24.20	1	25	1.95	1.56	27	White CHALK	<b>B</b>
R613	34	D	26.35	1	25	2.00	1.60	25	White CHALK	<b>B</b>
R613	38	D	29.20	1	28	1.94	1.52	29	White CHALK	<b>B</b>
R613	43	D	32.30	1	27	1.98	1.56	27	White CHALK	<b>B</b>
R613	47	D	34.70	1	25	2.01	1.62	25	White CHALK	<b>B</b>
R613	49	D	36.40	1	27	1.96	1.55	27	White CHALK	<b>B</b>
R613	56	D	42.35	1	22	2.05	1.68	22	White CHALK	<b>B</b>
R613	59	D	44.56	1	23	2.01	1.63	24	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>EMY HOWARD</b>	Date <b>07.11.18</b>	Contract Ref:  <div style="font-size: 24px; font-weight: bold; margin: 10px auto;">733442</div>
	Contract: <div style="font-weight: bold; margin: 5px auto;">A303 Stonehenge Phase 6 Ground Investigation</div>			


# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R613	62	D	46.67	1	22	2.00	1.64	24	White CHALK	<b>B</b>
R613	65	D	48.80	1	20	2.01	1.67	23	White CHALK	<b>B</b>
R613	69	D	51.66	1	25	1.99	1.59	26	White CHALK	<b>B</b>
R613	73	D	54.30	1	14	1.92	1.69	22	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 20px; margin: 5px auto;"></div> <b>EMY HOWARD</b>	Date <b>07.11.18</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R614	5	D	2.20	1	21	1.90	1.56	27	White CHALK	<b>B</b>
R614	8	D	5.10	1	21	1.96	1.61	25	White CHALK	<b>B</b>
R614	11	D	7.10	1	25	1.99	1.59	26	White CHALK	<b>B</b>
R614	16	U	10.50	1	25	1.96	1.57	27	White CHALK	<b>B</b>
R614	19	D	13.30	1	27	1.88	1.48	31	White CHALK	<b>B</b>
R614	22	D	15.15	1	23	2.02	1.64	24	White CHALK	<b>B</b>
R614	26	D	17.80	1	22	2.02	1.65	23	White CHALK	<b>B</b>
R614	30	D	20.85	1	23	2.00	1.63	24	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>EMY HOWARD</b>	Date <b>07.11.18</b>	Contract Ref:  <div style="font-size: 24px; font-weight: bold; margin: 10px auto;">733442</div>
	Contract: <div style="font-size: 18px; font-weight: bold; margin: 5px auto;">A303 Stonehenge Phase 6 Ground Investigation</div>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R614	34	D	23.48	1	28	1.96	1.54	28	White CHALK	<b>B</b>
R614	38	D	26.64	1	27	1.96	1.55	28	White CHALK	<b>B</b>
R614	44	D	30.55	1	20	1.98	1.65	24	White CHALK	<b>B</b>
R614	46	D	32.55	1	22	2.05	1.68	22	White CHALK	<b>B</b>
R614	50	U	34.05	1	23	2.01	1.63	24	White CHALK	<b>B</b>
R614	56	U	38.05	1	21	2.05	1.70	22	White CHALK	<b>B</b>
R614	60	D	40.75	1	25	1.95	1.57	27	White CHALK	<b>B</b>
R614	63	D	43.20	1	20	2.04	1.70	22	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>EMY HOWARD</b>	Date <b>07.11.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
	Contract: <div style="font-size: 18pt; font-weight: bold;">A303 Stonehenge Phase 6 Ground Investigation</div>			

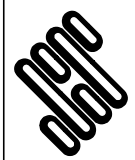
# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R614	67	D	46.34	1	21	1.99	1.64	24	White CHALK	B
R614	69	D	47.35	1	20	1.94	1.62	25	White CHALK	B
R614	72	D	49.68	1	22	2.00	1.64	24	White CHALK	B
R614	77	D	53.83	1	20	2.01	1.68	22	White CHALK	B
R614	80	D	55.45	1	15	1.93	1.68	22	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)



**STRUCTURAL SOILS**  
 1a Princess Street  
 Bedminster  
 Bristol  
 BS3 4AG

Compiled By		Date	Contract Ref:  <b>733442</b>
[REDACTED]	<b>EMY HOWARD</b>	<b>07.11.18</b>	
Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			







# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R615	5	D	2.80	3	25*	1.96*	1.56*	27*	White CHALK	<b>B</b>
R615	9	D	7.37	1	25	2.02	1.61	25	White CHALK	<b>B</b>
R615	21	D	15.21	1	24	2.06	1.67	23	White CHALK	<b>B</b>
R615	25	D	18.14	1	24	2.02	1.63	24	Off white CHALK	<b>B</b>
R615	28	D	21.30	1	23	2.00	1.62	25	White CHALK	<b>B</b>
R615	33	D	25.15	1	23	2.03	1.65	24	White CHALK	<b>B</b>
R615	36	D	27.27	1	26	1.92	1.52	29	White CHALK	<b>B</b>
R615	39	D	30.91	1	25	1.99	1.59	26	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>EMY HOWARD</b>	Date <b>07.11.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			


# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R615	41	D	32.11	1	25	1.96	1.56	27	White CHALK	<b>B</b>
R615	46	D	36.28	1	25	1.98	1.58	26	White CHALK	<b>B</b>
R615	51	D	40.80	1	23	2.00	1.63	24	White CHALK	<b>B</b>
R615	55	U	43.60	1	24	2.01	1.62	25	White CHALK	<b>B</b>
R615	57	D	45.40	1	20	2.08	1.73	21	White CHALK	<b>B</b>
R615	59	D	47.10	1	19	2.04	1.72	21	White CHALK	<b>B</b>
R615	63	D	50.90	1	25	1.98	1.58	26	White CHALK	<b>B</b>
R615	66	D	53.70	1	21	2.03	1.67	23	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <b>EMY HOWARD</b>	Date <b>07.11.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
	Contract: <div style="font-size: 18pt; font-weight: bold;">A303 Stonehenge Phase 6 Ground Investigation</div>			



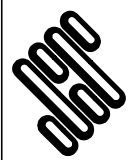
# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R615	69	D	55.55	1	17	2.13	1.81	18	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)



**STRUCTURAL SOILS**  
 1a Princess Street  
 Bedminster  
 Bristol  
 BS3 4AG

Compiled By		Date	Contract Ref:
██████████		07.11.18	
Contract:			
<b>A303 Stonehenge Phase 6 Ground Investigation</b>			<b>733442</b>



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R616	5	D	3.00	3	18*	1.91*	1.62*	25*	White CHALK	B
R616	8	D	6.20	3	25*	1.97*	1.57*	27*	White CHALK	B
R616	11	D	8.80	1	25	1.95	1.57	27	White CHALK	B
R616	13	D	10.80	1	16	1.87	1.61	25	White CHALK	B
R616	15	D	12.50	1	23	1.94	1.58	26	White CHALK	B
R616	17	D	14.60	3	18*	1.98*	1.68*	23*	White CHALK	B
R616	21	D	17.20	1	26	1.97	1.56	27	White CHALK	B
R616	26	D	20.20	1	24	1.99	1.60	25	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

 <p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date	Contract Ref:  <b>733442</b>
	[REDACTED]	<b>EMY HOWARD</b>	<b>07.11.18</b>	
Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>				



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R616	30	D	23.05	1	21	1.97	1.63	24	White CHALK	B
R616	33	D	25.08	1	26	1.94	1.54	28	White CHALK	B
R616	36	D	27.13	1	25	1.99	1.60	26	White CHALK	B
R616	41	D	30.20	1	19	1.89	1.59	26	White CHALK	B
R616	44	D	32.70	1	24	2.02	1.63	24	White CHALK	B
R616	47	D	34.00	1	23	2.01	1.63	24	White CHALK	B
R616	51	D	37.35	1	25	1.97	1.59	26	White CHALK	B
R616	56	D	40.50	1	24	2.00	1.62	25	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>EMY HOWARD</b>	Date <b>07.11.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R616	60	D	42.71	1	23	1.99	1.62	25	White CHALK	<b>B</b>
R616	63	D	45.22	1	11	1.94	1.74	20	White CHALK	<b>B</b>
R616	65	D	46.68	1	16	1.94	1.67	23	White CHALK	<b>B</b>
R616	70	D	50.39	1	21	2.03	1.68	23	White CHALK	<b>B</b>
R616	73	D	52.08	1	21	2.07	1.70	22	White CHALK	<b>B</b>
R616	76	D	54.74	1	15	2.14	1.87	17	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date	Contract Ref:
		<div style="background-color: black; width: 100px; height: 20px; margin: 0 auto;"></div>	<b>EMY HOWARD</b>	<b>07.11.18</b>	
Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>					<b>733442</b>
					



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R618	5	D	3.40	3	26*	1.93*	1.53*	28*	White CHALK	<b>B</b>
R618	7	D	5.80	1	22	1.97	1.61	25	White CHALK	<b>B</b>
R618	11	D	9.30	1	26	1.98	1.57	27	White CHALK	<b>B</b>
R618	14	D	12.50	1	26	1.95	1.55	28	White CHALK	<b>B</b>
R618	18	D	15.40	1	22	1.92	1.57	27	White CHALK	<b>B</b>
R618	21	D	17.55	1	25	1.99	1.60	26	White CHALK	<b>B</b>
R618	29	D	23.65	1	26	1.97	1.56	27	White CHALK	<b>B</b>
R618	33	D	26.28	1	26	1.93	1.54	28	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>CALEB ROWLANDS</b>	Date <b>24.06.18</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			


# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R618	37	D	29.65	1	25	1.97	1.58	26	White CHALK	B
R618	40	U	31.65	1	23	1.99	1.62	25	White CHALK	B
R618	42	D	32.80	1	21	2.05	1.70	22	White CHALK	B
R618	44	U	34.20	1	21	2.05	1.69	22	White CHALK	B
R618	46	U	35.65	1	21	2.05	1.69	22	White CHALK	B
R618	49	D	37.90	1	23	1.95	1.59	26	White CHALK	B
R618	50	D	38.45	1	22	2.00	1.63	24	White CHALK	B
R618	53	U	40.60	1	17	2.12	1.81	18	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date	Contract Ref:  <b>733442</b>
	[REDACTED]	<b>CALEB ROWLANDS</b>		<b>24.06.18</b>	
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>				





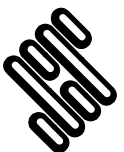
# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R618	56	D	43.10	1	16	2.12	1.82	18	White CHALK	B
R618	58	U	44.40	1	20	2.05	1.71	22	White CHALK	B
R618	60	D	46.35	1	16	2.12	1.82	18	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date	Contract Ref:	
		[REDACTED]		CALEB ROWLANDS		24.06.18
		Contract:		A303 Stonehenge Phase 6 Ground Investigation		733442




# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R619	5	D	2.50	3	25*	1.99*	1.59*	26*	White CHALK	B
R619	7	D	5.50	3	23*	1.96*	1.59*	26*	White CHALK	B
R619	8	D	10.80	3	22*	1.99*	1.62*	25*	White CHALK	B
R619	10	D	12.00	3	24*	1.97*	1.58*	26*	White CHALK	B
R619	12	D	14.80	1	24	2.00	1.61	25	White CHALK	B
R619	15	D	17.25	2	22*	2.01*	1.64*	24*	White CHALK	B
R619	20	D	20.10	1	22	2.01	1.64	24	White CHALK	B
R619	23	U	22.75	1	25	1.99	1.59	26	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date	Contract Ref:
		<div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div>	<b>CALEB ROWLANDS</b>	<b>26.06.18</b>	
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>				



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R619	26	D	25.00	1	24	2.01	1.61	25	White CHALK	<b>B</b>
R619	29	D	27.30	1	24	1.99	1.60	25	White CHALK	<b>B</b>
R619	33	D	29.80	1	24	2.00	1.61	25	White CHALK	<b>B</b>
R619	35	D	31.40	1	23	2.01	1.63	24	White CHALK	<b>B</b>
R619	40	U	35.50	1	22	2.06	1.69	22	White CHALK	<b>B</b>
R619	44	D	37.30	1	23	2.02	1.64	24	White CHALK	<b>B</b>
R619	46	D	40.50	1	13	2.19	1.93	15	White CHALK	<b>B</b>
R619	47	D	43.00	1	20	2.08	1.74	20	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>CALEB ROWLANDS</b>	Date <b>26.06.18</b>	Contract Ref:  <div style="font-size: 24px; font-weight: bold; margin: 10px auto;">733442</div>
	Contract: <div style="font-weight: bold; margin: 5px auto;">A303 Stonehenge Phase 6 Ground Investigation</div>			

# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R619	50	D	44.90	1	17	2.15	1.84	17	White CHALK	<b>B</b>
R619	53	D	47.60	1	19	2.10	1.77	19	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

<p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date	Contract Ref:  <b>733442</b>
	<b>[REDACTED]</b>	<b>CALEB ROWLANDS</b>	<b>26.06.18</b>	
Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>				



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
RZ603	1	D	2.70	3	23*	2.02*	1.65*	24*	White CHALK	<b>B</b>
RZ603	5	D	4.90	1	26	1.99	1.57	27	White CHALK	<b>B</b>
RZ603	8	D	7.31	1	27	1.99	1.57	27	White CHALK	<b>B</b>
RZ603	10	D	8.94	1	28	1.97	1.54	28	White CHALK	<b>B</b>
RZ603	15	D	12.57	1	24	2.01	1.62	25	White CHALK	<b>B</b>
RZ603	18	D	14.56	1	26	2.04	1.62	25	White CHALK	<b>B</b>
RZ603	21	D	16.98	1	24	2.05	1.65	24	White CHALK	<b>B</b>
RZ603	24	D	19.32	1	26	2.06	1.63	24	Off white CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <b>ABBY MITCHELL</b>	Date <b>07.11.18</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
RZ603	29	D	23.15	1	23	2.04	1.67	23	White CHALK	B
RZ603	32	D	25.39	1	26	2.07	1.65	24	White CHALK	B
RZ603	38	D	30.09	1	27	1.98	1.56	27	White CHALK	B
RZ603	41	D	32.22	1	26	2.00	1.59	26	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

 <p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date	Contract Ref:
	[REDACTED]	<b>ABBY MITCHELL</b>	<b>07.11.18</b>	
	Contract:			<b>733442</b>
<b>A303 Stonehenge Phase 6 Ground Investigation</b>				




# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71805	6	D	3.15	1	27	1.97	1.56	27	White CHALK	<b>B</b>
R71805	8	D	6.02	1	25	1.99	1.59	26	White CHALK	<b>B</b>
R71805	10	D	8.92	1	27	1.96	1.54	28	White CHALK	<b>B</b>
R71805	13	D	12.43	1	25	2.01	1.62	25	White CHALK	<b>B</b>
R71805	18	D	15.60	1	27	1.97	1.55	27	White CHALK	<b>B</b>
R71805	21	D	18.43	1	28	1.95	1.53	28	White CHALK	<b>B</b>
R71805	25	D	21.56	1	27	1.97	1.55	27	White CHALK	<b>B</b>
R71805	28	D	24.90	1	25	2.00	1.59	26	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date	Contract Ref:  <b>733442</b>
			<b>ABBY MITCHELL</b>	<b>19.12.18</b>	
		Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71805	31	D	27.70	1	27	1.97	1.55	27	White CHALK	<b>B</b>
R71805	37	D	33.50	1	25	2.00	1.60	25	White CHALK	<b>B</b>
R71805	39	D	35.80	1	26	2.00	1.59	26	White CHALK	<b>B</b>
R71805	47	D	40.00	1	25	2.00	1.60	26	White CHALK	<b>B</b>
R71805	49	D	42.70	1	21	2.08	1.72	21	White CHALK	<b>B</b>
R71805	50	D	45.40	1	22	2.04	1.68	23	White CHALK	<b>B</b>
R71809	6	D	2.10	3	25*	2.01*	1.60*	25*	White CHALK	<b>B</b>
R71809	8	D	6.40	1	21	2.07	1.71	22	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <b>ABBY MITCHELL</b>	Date <b>19.12.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			





# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71809	12	D	9.20	1	26	2.00	1.59	26	White CHALK	B
R71809	14	D	12.27	1	27	1.99	1.57	27	White CHALK	B
R71809	16	D	18.60	1	27	1.98	1.55	27	White CHALK	B
R71809	20	D	21.20	1	25	2.02	1.62	25	White CHALK	B
R71809	24	D	24.95	1	25	2.01	1.61	25	White CHALK	B
R71809	26	D	27.00	1	24	2.02	1.63	24	White CHALK	B
R71809	29	D	30.30	1	24	2.02	1.62	25	White CHALK	B
R71809	32	D	32.00	1	21	2.07	1.70	22	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By [REDACTED] <b>ABBY MITCHELL</b>	Date <b>19.12.18</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71809	36	D	36.20	1	22	2.05	1.68	22	White CHALK	<b>B</b>
R71809	41	D	39.83	1	23	2.05	1.67	23	White CHALK	<b>B</b>
R71809	45	D	43.00	1	22	2.06	1.68	23	White CHALK	<b>B</b>
R71906	5	D	3.00	3	25*	1.98*	1.58*	26*	CHALK	<b>B</b>
R71906	9	D	9.55	3	26*	1.99*	1.58*	26*	White CHALK	<b>B</b>
R71906	12	D	11.50	1	25	2.01	1.61	25	White CHALK	<b>B</b>
R71906	14	D	13.25	1	26	1.98	1.57	27	White CHALK	<b>B</b>
R71906	17	D	15.15	1	25	2.01	1.61	25	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>ABBY MITCHELL</b>	Date <b>19.12.18</b>	Contract Ref:  <div style="text-align: center; font-size: 24px; font-weight: bold;">733442</div> <div style="text-align: right; font-size: 18px; font-weight: bold;">  </div>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71906	20	D	17.40	1	25	1.99	1.58	26	White CHALK	<b>B</b>
R71906	22	D	18.90	1	24	2.01	1.62	25	White CHALK	<b>B</b>
R71906	25	D	21.80	1	23	2.03	1.65	24	White CHALK	<b>B</b>
R71906	26B	D	22.80	1	21	2.06	1.70	22	White CHALK	<b>B</b>
R71906	30	D	25.83	1	24	2.00	1.61	25	White CHALK	<b>B</b>
R71906	33	D	27.35	1	26	1.98	1.57	27	White CHALK	<b>B</b>
R71906	36	D	29.60	1	24	2.01	1.62	25	White CHALK	<b>B</b>
R71906	40	D	32.53	1	19	2.11	1.78	19	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <b>ABBY MITCHELL</b>	Date <b>19.12.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71906	42	D	33.95	1	23	2.03	1.65	24	White CHALK	<b>B</b>
R71906	44	D	35.25	1	22	2.05	1.69	22	White CHALK	<b>B</b>
R71906	47	D	36.98	1	19	2.11	1.77	19	White CHALK	<b>B</b>
R71906	54	D	41.05	1	18	2.13	1.81	18	White CHALK	<b>B</b>
R71906	58	D	42.95	1	18	2.10	1.78	19	White CHALK	<b>B</b>
R71906	62	D	45.45	1	20	2.09	1.74	20	White CHALK	<b>B</b>
R71906	64	D	47.42	1	18	2.13	1.80	18	White CHALK	<b>B</b>
R71906	67	D	49.70	1	17	2.14	1.83	18	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>ABBY MITCHELL</b>	Date <b>19.12.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold; text-align: center;">733442</div> <div style="text-align: right; font-weight: bold; font-size: 12pt;">  </div>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71906	70	D	51.90	1	17	2.13	1.82	18	White CHALK	<b>B</b>
R71906	72	D	53.15	1	19	2.11	1.78	19	White CHALK	<b>B</b>
R71907	1	D	1.80	3	29*	1.93*	1.50*	30*	White CHALK	<b>B</b>
R71907	6	D	6.45	1	28	1.95	1.52	29	White CHALK	<b>B</b>
R71907	11	D	10.35	1	26	1.98	1.58	26	White CHALK	<b>B</b>
R71907	17	D	14.45	1	30	1.93	1.49	30	White CHALK	<b>B</b>
R71907	22	D	18.90	1	24	2.02	1.63	24	White CHALK	<b>B</b>
R71907	26	D	21.90	1	27	1.96	1.54	28	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <b>ABBY MITCHELL</b>	Date <b>19.12.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
	Contract: <div style="font-size: 18pt; font-weight: bold;">A303 Stonehenge Phase 7 Ground Investigation</div>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71907	32	D	27.10	3	24*	2.00*	1.61*	25*	White CHALK	<b>B</b>
R71907	36	D	30.64	1	25	1.98	1.58	26	White CHALK	<b>B</b>
R71907	41	D	34.00	1	27	1.97	1.55	28	White CHALK	<b>B</b>
R71907	46	D	38.00	1	27	1.97	1.55	27	White CHALK	<b>B</b>
R71907	52	D	42.54	1	24	2.01	1.62	25	White CHALK	<b>B</b>
R71907	58	D	46.25	1	26	1.98	1.57	26	White CHALK	<b>B</b>
R71907	64	D	50.40	1	25	1.99	1.59	26	White CHALK	<b>B</b>
R71907	68	D	53.80	1	23	2.02	1.64	24	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

 <p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date	Contract Ref:  <b>733442</b>
	[REDACTED]	<b>ABBY MITCHELL</b>	<b>19.12.18</b>	
Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>				



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71907	73	D	57.61	1	23	2.00	1.63	24	White CHALK	<b>B</b>
R71907	80	D	63.00	1	20	2.08	1.74	20	White CHALK	<b>B</b>
R71907	85	D	66.64	1	15	2.18	1.90	15	White CHALK	<b>B</b>
R71909	7	D	3.70	1	28	1.95	1.52	29	White CHALK	<b>B</b>
R71909	10	D	6.60	1	28	1.96	1.53	28	White CHALK	<b>B</b>
R71909	14	D	8.65	1	29	1.93	1.49	30	White CHALK	<b>B</b>
R71909	19	D	12.75	1	27	1.94	1.52	29	White CHALK	<b>B</b>
R71909	23	D	15.90	1	27	1.97	1.56	27	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <b>ABBY MITCHELL</b>	Date <b>19.12.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71909	26	D	17.62	1	25	2.00	1.60	25	White CHALK	<b>B</b>
R71909	31	D	21.70	1	27	1.97	1.55	28	White CHALK	<b>B</b>
R71909	33	D	23.70	1	27	1.98	1.56	27	White CHALK	<b>B</b>
R71909	38	D	26.80	1	28	1.95	1.53	28	White CHALK	<b>B</b>
R71909	41	D	29.55	1	25	2.00	1.59	26	White CHALK	<b>B</b>
R71909	46	D	33.90	1	26	2.00	1.59	26	White CHALK	<b>B</b>
R71909	49	D	36.42	1	26	1.99	1.58	26	White CHALK	<b>B</b>
R71909	51	D	39.15	1	26	1.97	1.56	27	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>ABBY MITCHELL</b>	Date <b>19.12.18</b>	Contract Ref:  <div style="text-align: center; font-size: 1.2em; font-weight: bold;">733442</div> <div style="text-align: right; font-size: 0.8em;">  </div>
	Contract: <div style="text-align: center; font-weight: bold; font-size: 1.1em;">A303 Stonehenge Phase 7 Ground Investigation</div>			





# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71909	56	D	44.60	1	25	2.00	1.59	26	White CHALK	<b>B</b>
R71909	60	D	47.70	1	25	2.01	1.62	25	White CHALK	<b>B</b>
R71909	64	U	50.32	1	26	1.99	1.58	26	White CHALK	<b>B</b>
R71909	67	D	52.93	1	24	2.02	1.62	25	White CHALK	<b>B</b>
R71909	70	D	55.50	1	24	2.01	1.62	25	White CHALK	<b>B</b>
R71909	76	D	59.60	1	24	2.02	1.63	24	White CHALK	<b>B</b>
R71909	81	D	63.40	1	25	2.00	1.60	25	White CHALK	<b>B</b>
R71909	84	D	65.67	1	22	2.06	1.69	22	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <b>ABBY MITCHELL</b>	Date <b>19.12.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold; text-align: center;">733442</div>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71909	89	D	69.67	1	21	2.07	1.70	22	White CHALK	<b>B</b>
R71911	5	D	2.90	1	27	1.90	1.50	30	White CHALK	<b>B</b>
R71911	10	D	7.06	1	25	2.01	1.61	25	White CHALK	<b>B</b>
R71911	17	D	12.17	1	29	1.93	1.50	30	White CHALK	<b>B</b>
R71911	24	D	16.33	1	29	1.93	1.49	30	White CHALK	<b>B</b>
R71911	33	D	21.40	1	28	1.96	1.53	28	White CHALK	<b>B</b>
R71911	37	D	24.00	1	28	1.95	1.53	28	White CHALK	<b>B</b>
R71911	42	D	26.92	1	22	2.02	1.66	23	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>ABBY MITCHELL</b>	Date <b>19.12.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
			Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>	



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71911	46	Us	29.35	1	26	1.99	1.59	26	White CHALK	<b>B</b>
R71911	54	D	34.37	1	27	1.97	1.55	27	White CHALK	<b>B</b>
R71911	59	Us	37.50	1	26	1.98	1.57	27	White CHALK	<b>B</b>
R71911	65	D	41.92	1	27	1.95	1.54	28	White CHALK	<b>B</b>
R71911	72	D	45.60	1	28	1.94	1.52	29	White CHALK	<b>B</b>
R71911	75	U	47.00	1	26	1.96	1.55	27	White CHALK	<b>B</b>
R71911	76	D	48.00	1	26	1.96	1.55	27	White CHALK	<b>B</b>
R71911	83	D	52.37	1	27	1.98	1.56	27	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>ABBY MITCHELL</b>	Date <b>19.12.18</b>	Contract Ref:  <div style="text-align: center; font-size: 1.2em; font-weight: bold;">733442</div> <div style="text-align: right; font-size: 0.8em;">  </div>
	Contract: <div style="text-align: center; font-weight: bold; font-size: 1.1em;">A303 Stonehenge Phase 7 Ground Investigation</div>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71911	89	D	55.70	1	27	1.96	1.55	28	White CHALK	<b>B</b>
R71911	95	D	59.84	1	24	1.98	1.59	26	White CHALK	<b>B</b>
R71911	102	D	64.30	1	22	2.02	1.65	24	White CHALK	<b>B</b>
R71911	107	D	67.15	1	25	1.99	1.60	25	White CHALK	<b>B</b>
R71913	5	D	2.00	1	23	1.96	1.59	26	White CHALK	<b>B</b>
R71913	9	D	4.35	1	28	1.93	1.50	29	White CHALK	<b>B</b>
R71913	14	D	8.36	1	26	1.96	1.55	27	White CHALK	<b>B</b>
R71913	21	D	12.32	1	26	1.96	1.56	27	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By [REDACTED] <b>ABBY MITCHELL</b>	Date <b>19.12.18</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71913	27	D	17.37	1	29	1.92	1.49	30	White CHALK	<b>B</b>
R71913	32	D	20.30	1	28	1.93	1.51	29	White CHALK	<b>B</b>
R71913	40	D	24.88	1	25	1.98	1.58	26	White CHALK	<b>B</b>
R71913	44	D	28.30	1	26	1.97	1.57	27	White CHALK	<b>B</b>
R71913	47	D	30.76	1	27	1.94	1.52	29	White CHALK	<b>B</b>
R71913	51	D	32.81	1	22	2.03	1.66	23	White CHALK	<b>B</b>
R71913	56	D	35.70	1	24	2.00	1.61	25	White CHALK	<b>B</b>
R71913	65	D	40.53	1	26	1.93	1.53	28	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <b>ABBY MITCHELL</b>	Date <b>19.12.18</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71913	71	D	44.35	1	24	2.00	1.61	25	White CHALK	<b>B</b>
R71913	79	D	49.78	1	25	1.98	1.58	26	White CHALK	<b>B</b>
R72002	7	D	3.00	3	20*	1.86*	1.55*	27*	White CHALK	<b>B</b>
R72002	9	D	5.70	1	27	1.98	1.56	27	White CHALK	<b>B</b>
R72002	13	D	9.00	1	26	2.00	1.58	26	White CHALK	<b>B</b>
R72002	17	D	12.10	1	26	1.99	1.58	26	White CHALK	<b>B</b>
R72002	21	D	15.50	1	28	1.97	1.54	28	White CHALK	<b>B</b>
R72002	25	D	18.45	1	25	2.02	1.61	25	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <b>ABBY MITCHELL</b>	Date <b>19.12.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
	Contract: <div style="font-size: 18pt; font-weight: bold;">A303 Stonehenge Phase 7 Ground Investigation</div>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R72002	28	D	20.80	1	27	1.94	1.52	29	White CHALK	<b>B</b>
R72002	32	D	24.00	1	28	1.97	1.53	28	White CHALK	<b>B</b>
R72002	39	D	30.00	1	29	1.97	1.53	28	White CHALK	<b>B</b>
R72002	43	D	32.70	1	24	2.04	1.64	24	White CHALK	<b>B</b>
R72002	47	D	36.00	1	27	1.95	1.54	28	White CHALK	<b>B</b>
R72002	51	D	38.90	1	28	1.97	1.54	28	White CHALK	<b>B</b>
R72002	55	D	41.78	1	26	1.97	1.56	27	White CHALK	<b>B</b>
R72002	60	D	45.86	1	18	2.13	1.81	18	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>ABBY MITCHELL</b>	Date <b>19.12.18</b>	Contract Ref:  <div style="text-align: center; font-size: 24px; font-weight: bold;">733442</div> <div style="text-align: right; font-size: 18px; font-weight: bold;">  </div>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R72002	64	D	48.60	1	25	2.00	1.60	26	White CHALK	<b>B</b>
R72002	67	D	50.73	1	25	2.01	1.61	25	White CHALK	<b>B</b>
R72002	72	D	54.55	1	22	2.06	1.68	22	White CHALK	<b>B</b>
R72002	75	D	57.00	1	23	2.01	1.64	24	White CHALK	<b>B</b>
R72002	79	D	59.78	1	18	2.16	1.83	17	White CHALK	<b>B</b>
R72003	5	D	1.30	3	5.5*	1.61*	1.52*	29*	White CHALK	<b>B</b>
R72003	8	D	5.40	1	29	1.93	1.49	30	White CHALK	<b>B</b>
R72003	13	D	9.30	1	26	1.97	1.56	27	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <b>ABBY MITCHELL</b>	Date <b>19.12.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			





# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R72003	17	D	12.40	1	27	1.96	1.55	28	White CHALK	<b>B</b>
R72003	21	D	15.68	1	26	1.97	1.57	27	White CHALK	<b>B</b>
R72003	24	D	18.92	1	25	1.99	1.59	26	White CHALK	<b>B</b>
R72003	28	D	21.50	1	27	1.96	1.55	28	White CHALK	<b>B</b>
R72003	32	D	24.60	1	25	2.00	1.60	26	White CHALK	<b>B</b>
R72003	40	D	30.00	1	29	1.93	1.50	29	White CHALK	<b>B</b>
R72003	44	D	34.70	1	24	2.01	1.63	24	White CHALK	<b>B</b>
R72003	47	D	36.87	1	24	2.01	1.63	24	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By A - <span style="background-color: black; color: black;">XXXXXXXXXX</span>	Date <b>19.12.18</b>	Contract Ref:  <b>733442</b>
			Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>	


# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R72003	50	D	39.80	1	24	2.00	1.61	25	White CHALK	B
R72003	53	D	42.20	1	27	1.96	1.54	28	White CHALK	B
R72003	56	D	44.94	1	23	2.01	1.64	24	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

 <p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date	Contract Ref:  <b>733442</b>	
	<div style="background-color: black; width: 100px; height: 20px; display: inline-block;"></div>		<b>ABBY MITCHELL</b>		<b>19.12.18</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>				





# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71801	5	D	2.47	1	24	1.99	1.60	25	White CHALK	B
R71801	8	D	5.50	1	22	2.05	1.67	23	White CHALK	B
R71801	11	D	7.50	1	24	2.01	1.63	24	White CHALK	B
R71801	14	D	11.68	1	26	1.98	1.57	27	White CHALK	B
R71801	19	D	14.68	1	25	2.01	1.60	25	White CHALK	B
R71801	24	D	17.25	1	26	1.99	1.59	26	White CHALK	B
R71801	28	D	20.65	1	26	2.00	1.59	26	White CHALK	B
R71801	31	D	23.34	1	26	1.98	1.57	26	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By [REDACTED] <b>ABBY MITCHELL</b>	Date <b>20.02.19</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71801	36	D	26.80	1	24	2.01	1.61	25	White CHALK	<b>B</b>
R71801	40	D	29.90	1	27	1.97	1.55	27	White CHALK	<b>B</b>
R71801	44	D	32.80	1	27	1.96	1.54	28	White CHALK	<b>B</b>
R71801	47	D	34.88	1	26	1.99	1.59	26	White CHALK	<b>B</b>
R71801	52	D	38.72	1	24	2.04	1.65	24	White CHALK	<b>B</b>
R71801	56	D	42.27	1	19	2.09	1.76	20	White CHALK	<b>B</b>
R71801	59	D	44.00	1	21	2.05	1.70	22	White CHALK	<b>B</b>
R71801	63	U	47.00	1	20	2.09	1.75	20	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By [REDACTED] <b>ABBY MITCHELL</b>	Date <b>20.02.19</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



## SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71801	68	D	51.27	1	23	2.03	1.64	24	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date	Contract Ref:  <b>733442</b>
		<b>ABBY MITCHELL</b>	<b>20.02.19</b>		
Contract:			<b>A303 Stonehenge Phase 7 Ground Investigation</b>		
					



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71805	6	D	3.15	1	27	1.97	1.56	27	White CHALK	<b>B</b>
R71805	8	D	6.02	1	25	1.99	1.59	26	White CHALK	<b>B</b>
R71805	10	D	8.92	1	27	1.96	1.54	28	White CHALK	<b>B</b>
R71805	13	D	12.43	1	25	2.01	1.62	25	White CHALK	<b>B</b>
R71805	18	D	15.60	1	27	1.97	1.55	27	White CHALK	<b>B</b>
R71805	21	D	18.43	1	28	1.95	1.53	28	White CHALK	<b>B</b>
R71805	25	D	21.56	1	27	1.97	1.55	27	White CHALK	<b>B</b>
R71805	28	D	24.90	1	25	2.00	1.59	26	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date	Contract Ref:
		<div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div>	<b>ABBY MITCHELL</b>	<b>20.02.19</b>	
		Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			<b>733442</b>
					



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71805	31	D	27.70	1	27	1.97	1.55	27	White CHALK	B
R71805	37	D	33.50	1	25	2.00	1.60	25	White CHALK	B
R71805	39	D	35.80	1	26	2.00	1.59	26	White CHALK	B
R71805	47	D	40.00	1	25	2.00	1.60	26	White CHALK	B
R71805	49	D	42.70	1	21	2.08	1.72	21	White CHALK	B
R71805	50	D	45.40	1	22	2.04	1.68	23	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

 <b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date	Contract Ref:  <b>733442</b>
	[REDACTED] <b>ABBY MITCHELL</b>		<b>20.02.19</b>	
Contract:				
<b>A303 Stonehenge Phase 7 Ground Investigation</b>				



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71809	6	D	2.10	3	25*	2.01*	1.60*	25*	White CHALK	<b>B</b>
R71809	8	D	6.40	1	21	2.07	1.71	22	White CHALK	<b>B</b>
R71809	12	D	9.20	1	26	2.00	1.59	26	White CHALK	<b>B</b>
R71809	14	D	12.27	1	27	1.99	1.57	27	White CHALK	<b>B</b>
R71809	16	D	18.60	1	27	1.98	1.55	27	White CHALK	<b>B</b>
R71809	20	D	21.20	1	25	2.02	1.62	25	White CHALK	<b>B</b>
R71809	24	D	24.95	1	25	2.01	1.61	25	White CHALK	<b>B</b>
R71809	26	D	27.00	1	24	2.02	1.63	24	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date	Contract Ref:  <b>733442</b>
		<div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div>	<b>ABBY MITCHELL</b>	<b>20.02.19</b>	
		Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			






# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71809	29	D	30.30	1	24	2.02	1.62	25	White CHALK	<b>B</b>
R71809	32	D	32.00	1	21	2.07	1.70	22	White CHALK	<b>B</b>
R71809	36	D	36.20	1	22	2.05	1.68	22	White CHALK	<b>B</b>
R71809	41	D	39.83	1	23	2.05	1.67	23	White CHALK	<b>B</b>
R71809	45	D	43.00	1	22	2.06	1.68	23	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date	Contract Ref:
		<b>ABBY MITCHELL</b>	<b>20.02.19</b>	<b>733442</b>	
		Contract:			
		<b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71817	6	D	1.20	3	23*	2.00*	1.63*	24*	White CHALK	<b>B</b>
R71817	8	D	3.90	1	23	2.04	1.66	23	White CHALK	<b>B</b>
R71817	10	D	7.60	1	21	2.07	1.70	22	White CHALK	<b>B</b>
R71817	13	D	9.70	3	27*	1.97*	1.55*	28*	White CHALK	<b>B</b>
R71817	18	D	13.50	1	25	2.00	1.60	25	White CHALK	<b>B</b>
R71817	22	D	16.20	1	23	2.05	1.67	23	White CHALK	<b>B</b>
R71817	27	D	20.40	1	25	2.02	1.61	25	White CHALK	<b>B</b>
R71817	29	D	23.35	1	24	1.97	1.59	26	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

 <p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date	Contract Ref:  <b>733442</b>
	[REDACTED]	<b>ABBY MITCHELL</b>	<b>20.02.19</b>	
Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>				




# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71817	34	D	26.90	1	24	2.04	1.65	24	White CHALK	B
R71817	37	D	29.10	1	23	2.05	1.67	23	White CHALK	B
R71817	40	D	32.80	1	26	1.98	1.57	27	White CHALK	B
R71817	43	D	35.30	1	25	2.02	1.61	25	White CHALK	B
R71817	47	U	38.90	1	23	2.05	1.67	23	White CHALK	B
R71817	53	D	43.20	1	25	2.02	1.63	24	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

 <p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date	Contract Ref:  <b>733442</b>
	 <b>ABBY MITCHELL</b>		<b>20.02.19</b>	
Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>				



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71822	5	D	1.80	3	28*	1.94*	1.51*	29*	White CHALK	B
R71822	8	D	5.20	1	25	2.01	1.61	25	White CHALK	B
R71822	11	D	7.90	1	27	1.98	1.55	27	White CHALK	B
R71822	13	D	10.70	1	24	2.03	1.63	24	White CHALK	B
R71822	16	D	13.95	1	24	2.03	1.64	24	White CHALK	B
R71822	19	D	16.23	1	25	2.01	1.61	25	White CHALK	B
R71822	24	D	20.75	1	28	1.97	1.55	28	White CHALK	B
R71822	27	D	22.80	1	26	2.00	1.59	26	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By [REDACTED] <b>ABBY MITCHELL</b>	Date <b>20.02.19</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71822	30	D	26.20	1	24	2.01	1.63	24	White CHALK	B
R71822	33	D	29.40	1	25	1.98	1.58	26	White CHALK	B
R71822	36	D	31.75	1	26	2.00	1.60	26	White CHALK	B
R71822	40	D	35.37	1	25	2.01	1.61	25	White CHALK	B
R71822	57	D	38.57	1	24	2.02	1.62	25	White CHALK	B
R71822	47	D	41.40	1	25	2.01	1.61	25	White CHALK	B
R71822	50	D	43.70	1	24	2.03	1.63	24	White CHALK	B
R71822	54	D	47.07	1	24	2.02	1.62	25	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By [REDACTED] <b>ABBY MITCHELL</b>	Date <b>20.02.19</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			

# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71822	58	D	49.43	1	24	2.03	1.63	24	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

<p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date	Contract Ref:  <b>733442</b> 
		<b>ABBY MITCHELL</b>	<b>20.02.19</b>	
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71906	5	D	3.00	3	25*	1.98*	1.58*	26*	CHALK	B
R71906	9	D	9.55	3	26*	1.99*	1.58*	26*	White CHALK	B
R71906	12	D	11.50	1	25	2.01	1.61	25	White CHALK	B
R71906	14	D	13.25	1	26	1.98	1.57	27	White CHALK	B
R71906	17	D	15.15	1	25	2.01	1.61	25	White CHALK	B
R71906	20	D	17.40	1	25	1.99	1.58	26	White CHALK	B
R71906	22	D	18.90	1	24	2.01	1.62	25	White CHALK	B
R71906	25	D	21.80	1	23	2.03	1.65	24	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By [REDACTED] <b>ABBY MITCHELL</b>	Date <b>20.02.19</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71906	26B	D	22.80	1	21	2.06	1.70	22	White CHALK	<b>B</b>
R71906	30	D	25.83	1	24	2.00	1.61	25	White CHALK	<b>B</b>
R71906	33	D	27.35	1	26	1.98	1.57	27	White CHALK	<b>B</b>
R71906	36	D	29.60	1	24	2.01	1.62	25	White CHALK	<b>B</b>
R71906	40	D	32.53	1	19	2.11	1.78	19	White CHALK	<b>B</b>
R71906	42	D	33.95	1	23	2.03	1.65	24	White CHALK	<b>B</b>
R71906	44	D	35.25	1	22	2.05	1.69	22	White CHALK	<b>B</b>
R71906	47	D	36.98	1	19	2.11	1.77	19	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <b>ABBY MITCHELL</b>	Date <b>20.02.19</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
	Contract: <div style="font-size: 18pt; font-weight: bold;">A303 Stonehenge Phase 7 Ground Investigation</div>			





# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71906	54	D	41.05	1	18	2.13	1.81	18	White CHALK	<b>B</b>
R71906	58	D	42.95	1	18	2.10	1.78	19	White CHALK	<b>B</b>
R71906	62	D	45.45	1	20	2.09	1.74	20	White CHALK	<b>B</b>
R71906	64	D	47.42	1	18	2.13	1.80	18	White CHALK	<b>B</b>
R71906	67	D	49.70	1	17	2.14	1.83	18	White CHALK	<b>B</b>
R71906	70	D	51.90	1	17	2.13	1.82	18	White CHALK	<b>B</b>
R71906	72	D	53.15	1	19	2.11	1.78	19	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By [REDACTED] <b>ABBY MITCHELL</b>	Date <b>20.02.19</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71907	1	D	1.80	3	29*	1.93*	1.50*	30*	White CHALK	<b>B</b>
R71907	6	D	6.45	1	28	1.95	1.52	29	White CHALK	<b>B</b>
R71907	11	D	10.35	1	26	1.98	1.58	26	White CHALK	<b>B</b>
R71907	17	D	14.45	1	30	1.93	1.49	30	White CHALK	<b>B</b>
R71907	22	D	18.90	1	24	2.02	1.63	24	White CHALK	<b>B</b>
R71907	26	D	21.90	1	27	1.96	1.54	28	White CHALK	<b>B</b>
R71907	32	D	27.10	3	24*	2.00*	1.61*	25*	White CHALK	<b>B</b>
R71907	36	D	30.64	1	25	1.98	1.58	26	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>ABBY MITCHELL</b>	Date <b>20.02.19</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
	Contract: <div style="font-weight: bold; font-size: 14pt;">A303 Stonehenge Phase 7 Ground Investigation</div>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71907	41	D	34.00	1	27	1.97	1.55	28	White CHALK	<b>B</b>
R71907	46	D	38.00	1	27	1.97	1.55	27	White CHALK	<b>B</b>
R71907	52	D	42.54	1	24	2.01	1.62	25	White CHALK	<b>B</b>
R71907	58	D	46.25	1	26	1.98	1.57	26	White CHALK	<b>B</b>
R71907	64	D	50.40	1	25	1.99	1.59	26	White CHALK	<b>B</b>
R71907	68	D	53.80	1	23	2.02	1.64	24	White CHALK	<b>B</b>
R71907	73	D	57.61	1	23	2.00	1.63	24	White CHALK	<b>B</b>
R71907	80	D	63.00	1	20	2.08	1.74	20	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By [REDACTED] <b>ABBY MITCHELL</b>	Date <b>20.02.19</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			


# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71907	85	D	66.64	1	15	2.18	1.90	15	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <b>ABBY MITCHELL</b>	Date <b>20.02.19</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71909	7	D	3.70	1	28	1.95	1.52	29	White CHALK	B
R71909	10	D	6.60	1	28	1.96	1.53	28	White CHALK	B
R71909	14	D	8.65	1	29	1.93	1.49	30	White CHALK	B
R71909	19	D	12.75	1	27	1.94	1.52	29	White CHALK	B
R71909	23	D	15.90	1	27	1.97	1.56	27	White CHALK	B
R71909	26	D	17.62	1	25	2.00	1.60	25	White CHALK	B
R71909	31	D	21.70	1	27	1.97	1.55	28	White CHALK	B
R71909	33	D	23.70	1	27	1.98	1.56	27	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By [REDACTED] <b>ABBY MITCHELL</b>	Date <b>20.02.19</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71909	38	D	26.80	1	28	1.95	1.53	28	White CHALK	<b>B</b>
R71909	41	D	29.55	1	25	2.00	1.59	26	White CHALK	<b>B</b>
R71909	46	D	33.90	1	26	2.00	1.59	26	White CHALK	<b>B</b>
R71909	49	D	36.42	1	26	1.99	1.58	26	White CHALK	<b>B</b>
R71909	51	D	39.15	1	26	1.97	1.56	27	White CHALK	<b>B</b>
R71909	56	D	44.60	1	25	2.00	1.59	26	White CHALK	<b>B</b>
R71909	60	D	47.70	1	25	2.01	1.62	25	White CHALK	<b>B</b>
R71909	64	U	50.32	1	26	1.99	1.58	26	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> ABBY MITCHELL	Date 20.02.19	Contract Ref:  <b>733442</b>
			Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>	



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In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71909	67	D	52.93	1	24	2.02	1.62	25	White CHALK	<b>B</b>
R71909	70	D	55.50	1	24	2.01	1.62	25	White CHALK	<b>B</b>
R71909	76	D	59.60	1	24	2.02	1.63	24	White CHALK	<b>B</b>
R71909	81	D	63.40	1	25	2.00	1.60	25	White CHALK	<b>B</b>
R71909	84	D	65.67	1	22	2.06	1.69	22	White CHALK	<b>B</b>
R71909	89	D	69.67	1	21	2.07	1.70	22	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <b>ABBY MITCHELL</b>	Date <b>20.02.19</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71911	5	D	2.90	1	27	1.90	1.50	30	White CHALK	B
R71911	10	D	7.06	1	25	2.01	1.61	25	White CHALK	B
R71911	17	D	12.17	1	29	1.93	1.50	30	White CHALK	B
R71911	24	D	16.33	1	29	1.93	1.49	30	White CHALK	B
R71911	33	D	21.40	1	28	1.96	1.53	28	White CHALK	B
R71911	37	D	24.00	1	28	1.95	1.53	28	White CHALK	B
R71911	42	D	26.92	1	22	2.02	1.66	23	White CHALK	B
R71911	46	Us	29.35	1	26	1.99	1.59	26	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By [REDACTED] <b>ABBY MITCHELL</b>	Date <b>20.02.19</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			





# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71911	54	D	34.37	1	27	1.97	1.55	27	White CHALK	<b>B</b>
R71911	59	Us	37.50	1	26	1.98	1.57	27	White CHALK	<b>B</b>
R71911	65	D	41.92	1	27	1.95	1.54	28	White CHALK	<b>B</b>
R71911	72	D	45.60	1	28	1.94	1.52	29	White CHALK	<b>B</b>
R71911	75	U	47.00	1	26	1.96	1.55	27	White CHALK	<b>B</b>
R71911	76	D	48.00	1	26	1.96	1.55	27	White CHALK	<b>B</b>
R71911	83	D	52.37	1	27	1.98	1.56	27	White CHALK	<b>B</b>
R71911	89	D	55.70	1	27	1.96	1.55	28	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By [REDACTED] <b>ABBY MITCHELL</b>	Date <b>20.02.19</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71911	95	D	59.84	1	24	1.98	1.59	26	White CHALK	<b>B</b>
R71911	102	D	64.30	1	22	2.02	1.65	24	White CHALK	<b>B</b>
R71911	107	D	67.15	1	25	1.99	1.60	25	White CHALK	<b>B</b>

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Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

 <p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date	Contract Ref:  <b>733442</b>  
	[REDACTED]	<b>ABBY MITCHELL</b>	<b>20.02.19</b>	
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71813	5	D	2.40	3	25*	2.01*	1.61*	25*	White CHALK	<b>B</b>
R71813	7	D	5.00	3	27*	1.96*	1.55*	27*	White CHALK	<b>B</b>
R71813	9	D	7.87	1	26	1.98	1.58	26	White CHALK	<b>B</b>
R71813	11	D	11.40	1	24	2.02	1.63	24	White CHALK	<b>B</b>
R71813	14	D	14.25	1	25	2.01	1.61	25	White CHALK	<b>B</b>
R71813	18	D	17.36	1	25	2.01	1.61	25	White CHALK	<b>B</b>
R71813	22	D	20.26	1	25	1.99	1.59	26	White CHALK	<b>B</b>
R71813	25	D	23.30	1	17	1.98	1.69	22	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

 <p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date	Contract Ref:  <b>733442</b>
	[REDACTED]	<b>ABBY MITCHELL</b>	<b>20.02.19</b>	
Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>				



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R71813	30	D	26.34	1	26	1.98	1.57	27	White CHALK	<b>B</b>
R71813	33	D	28.72	1	24	2.03	1.64	24	White CHALK	<b>B</b>
R71813	37	D	32.06	1	20	2.09	1.74	20	White CHALK	<b>B</b>
R71813	41	D	35.32	1	23	2.00	1.62	25	White CHALK	<b>B</b>
R71813	45	D	38.08	1	24	2.01	1.62	25	White CHALK	<b>B</b>
R71813	49	D	41.40	1	23	2.05	1.67	23	White CHALK	<b>B</b>
R71813	52	D	43.20	1	24	2.02	1.63	24	White CHALK	<b>B</b>
R71813	55	D	45.64	1	20	2.07	1.72	21	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By [REDACTED] <b>ABBY MITCHELL</b>	Date <b>20.02.19</b>	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R72002	7	D	3.00	3	20*	1.86*	1.55*	27*	White CHALK	<b>B</b>
R72002	9	D	5.70	1	27	1.98	1.56	27	White CHALK	<b>B</b>
R72002	13	D	9.00	1	26	2.00	1.58	26	White CHALK	<b>B</b>
R72002	17	D	12.10	1	26	1.99	1.58	26	White CHALK	<b>B</b>
R72002	21	D	15.50	1	28	1.97	1.54	28	White CHALK	<b>B</b>
R72002	25	D	18.45	1	25	2.02	1.61	25	White CHALK	<b>B</b>
R72002	28	D	20.80	1	27	1.94	1.52	29	White CHALK	<b>B</b>
R72002	32	D	24.00	1	28	1.97	1.53	28	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> ABBY MITCHELL	Date 20.02.19	Contract Ref:  <b>733442</b>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R72002	36	D	27.78	1	29	1.94	1.51	29	White CHALK	<b>B</b>
R72002	39	D	30.00	1	29	1.97	1.53	28	White CHALK	<b>B</b>
R72002	43	D	32.70	1	24	2.04	1.64	24	White CHALK	<b>B</b>
R72002	47	D	36.00	1	27	1.95	1.54	28	White CHALK	<b>B</b>
R72002	51	D	38.90	1	28	1.97	1.54	28	White CHALK	<b>B</b>
R72002	55	D	41.78	1	26	1.97	1.56	27	White CHALK	<b>B</b>
R72002	60	D	45.86	1	18	2.13	1.81	18	White CHALK	<b>B</b>
R72002	64	D	48.60	1	25	2.00	1.60	26	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 5px auto;"></div> <b>ABBY MITCHELL</b>	Date <b>20.02.19</b>	Contract Ref:  <div style="text-align: center; font-size: 24px; font-weight: bold;">733442</div>
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			


# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R72002	67	D	50.73	1	25	2.01	1.61	25	White CHALK	<b>B</b>
R72002	72	D	54.55	1	22	2.06	1.68	22	White CHALK	<b>B</b>
R72002	75	D	57.00	1	23	2.01	1.64	24	White CHALK	<b>B</b>
R72002	79	D	59.78	1	18	2.16	1.83	17	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

 <p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date	Contract Ref:  <b>733442</b>
	[REDACTED]	<b>ABBY MITCHELL</b>	<b>20.02.19</b>	
	Contract: <b>A303 Stonehenge Phase 7 Ground Investigation</b>			





# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R72003	5	D	1.30	3	5.5*	1.61*	1.52*	29*	White CHALK	<b>B</b>
R72003	8	D	5.40	1	29	1.93	1.49	30	White CHALK	<b>B</b>
R72003	13	D	9.30	1	26	1.97	1.56	27	White CHALK	<b>B</b>
R72003	17	D	12.40	1	27	1.96	1.55	28	White CHALK	<b>B</b>
R72003	21	D	15.68	1	26	1.97	1.57	27	White CHALK	<b>B</b>
R72003	24	D	18.92	1	25	1.99	1.59	26	White CHALK	<b>B</b>
R72003	28	D	21.50	1	27	1.96	1.55	28	White CHALK	<b>B</b>
R72003	32	D	24.60	1	25	2.00	1.60	26	White CHALK	<b>B</b>

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div>	Date <b>20.02.19</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold; margin: 0 auto;">733442</div>
			Contract: <div style="font-weight: bold; margin: 0 auto;">A303 Stonehenge Phase 7 Ground Investigation</div>	





# SUMMARY OF SATURATED MOISTURE CONTENT OF CHALK TESTS

In accordance with clause 3.3 of BS1377:Part 2:1990

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Number of Lumps	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Saturated Moisture Content %	Description of Sample	Lab location
R72003	40	D	30.00	1	29	1.93	1.50	29	White CHALK	B
R72003	44	D	34.70	1	24	2.01	1.63	24	White CHALK	B
R72003	47	D	36.87	1	24	2.01	1.63	24	White CHALK	B
R72003	50	D	39.80	1	24	2.00	1.61	25	White CHALK	B
R72003	53	D	42.20	1	27	1.96	1.54	28	White CHALK	B
R72003	56	D	44.94	1	23	2.01	1.64	24	White CHALK	B

\* denotes the average values from multiple lumps

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date	Contract Ref:
		<div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div>	ABBY MITCHELL	20.02.19	
		Contract:			733442
		<b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# SUMMARY OF INTACT DRY DENSITY AND POROSITY TESTS

RT02 Porosity Saturation and Buoyancy Method (in accordance with ISRM 2007)

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Dry Density kg/m <sup>3</sup>	Porosity %	Test Method	Description	Lab location
R618	7	D	5.80	1600	41	Clause 3	White CHALK	<b>B</b>
R618	11	D	9.30	1580	42	Clause 3	White CHALK	<b>B</b>
R618	14	D	12.50	1530	44	Clause 3	White CHALK	<b>B</b>
R618	18	D	15.40	1600	41	Clause 3	White CHALK	<b>B</b>
R618	21	D	17.55	1620	40	Clause 3	White CHALK	<b>B</b>
R618	29	D	23.65	1600	41	Clause 3	White CHALK	<b>B</b>
R618	33	D	26.28	1570	41	Clause 3	White CHALK	<b>B</b>
R618	37	D	29.65	1600	41	Clause 3	White CHALK	<b>B</b>
R618	40	U	31.65	1680	39	Clause 3	White CHALK	<b>B</b>

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

Key: Clause 3 = Saturation and buoyancy method

 <p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date	Contract Ref:  <b>733442</b>
	[REDACTED]	<b>CALEB ROWLANDS</b>	<b>24.06.18</b>	
Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>				



# SUMMARY OF INTACT DRY DENSITY AND POROSITY TESTS

RT02 Porosity Saturation and Buoyancy Method (in accordance with ISRM 2007)

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Dry Density kg/m <sup>3</sup>	Porosity %	Test Method	Description	Lab location
R618	42	D	32.80	1680	38	Clause 3	White CHALK	<b>B</b>
R618	44	U	34.20	1720	37	Clause 3	White CHALK	<b>B</b>
R618	46	U	35.65	1660	39	Clause 3	White CHALK	<b>B</b>
R618	49	D	37.90	1610	40	Clause 3	White CHALK	<b>B</b>
R618	50	D	38.45	1680	38	Clause 3	White CHALK	<b>B</b>
R618	53	U	40.60	1830	32	Clause 3	White CHALK	<b>B</b>
R618	56	D	43.10	1800	34	Clause 3	White CHALK	<b>B</b>
R618	58	U	44.40	1740	35	Clause 3	White CHALK	<b>B</b>
R618	60	D	46.35	1860	31	Clause 3	White CHALK	<b>B</b>

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

Key: Clause 3 = Saturation and buoyancy method

 <p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date	Contract Ref:  <b>733442</b>
	[REDACTED]	<b>CALEB ROWLANDS</b>	<b>24.06.18</b>	
Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>				



# SUMMARY OF INTACT DRY DENSITY AND POROSITY TESTS

RT02 Porosity Saturation and Buoyancy Method (in accordance with ISRM 2007)

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Dry Density kg/m <sup>3</sup>	Porosity %	Test Method	Description	Lab location
R620	9	D	11.65	1570	42	Clause 3	White CHALK	B
R620	11	U	14.85	1560	43	Clause 3	White CHALK	B
R620	12	D	15.00	1550	43	Clause 3	White CHALK	B
R620	16	D	18.05	1560	42	Clause 3	White CHALK	B
R620	20	D	20.20	1620	40	Clause 3	White CHALK	B
R620	25	D	23.75	1560	42	Clause 3	White CHALK	B
R620	29	U	26.70	1590	41	Clause 3	White CHALK	B
R620	33	U	29.35	1620	41	Clause 3	White CHALK	B
R620	37	D	32.40	1610	41	Clause 3	White CHALK	B

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

Key: Clause 3 = Saturation and buoyancy method

 <p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date	Contract Ref:  <b>733442</b>
	[REDACTED]	<b>CALEB ROWLANDS</b>	<b>16.07.18</b>	
Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>				



# SUMMARY OF INTACT DRY DENSITY AND POROSITY TESTS

RT02 Porosity Saturation and Buoyancy Method (in accordance with ISRM 2007)

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Dry Density kg/m <sup>3</sup>	Porosity %	Test Method	Description	Lab location
R620	40	D	34.75	1690	38	Clause 3	White CHALK	<b>B</b>
R620	44	U	37.80	1630	40	Clause 3	White CHALK	<b>B</b>
R620	47	D	40.20	1830	32	Clause 3	White CHALK	<b>B</b>
R620	50	D	42.30	1770	34	Clause 3	White CHALK	<b>B</b>
R620	52	D	44.30	1740	36	Clause 3	White CHALK	<b>B</b>
R620	56	D	47.05	1900	30	Clause 3	White CHALK	<b>B</b>

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

Key: Clause 3 = Saturation and buoyancy method

 <p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date	Contract Ref:  <b>733442</b>
	<div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <p><b>CALEB ROWLANDS</b></p>		<b>16.07.18</b>	
Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>				

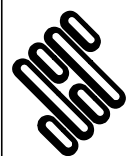
# SUMMARY OF POROSITY TESTS

RT02 Porosity Saturation and Buoyancy Method (in accordance with ISRM 2007)

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Dry Density kg/m³	Porosity %	Test Method	Description	Lab location
R606	28	D	21.95	1500	45	Clause 3	White CHALK	<b>B</b>

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

Key: Clause 3 = Saturation and buoyancy method



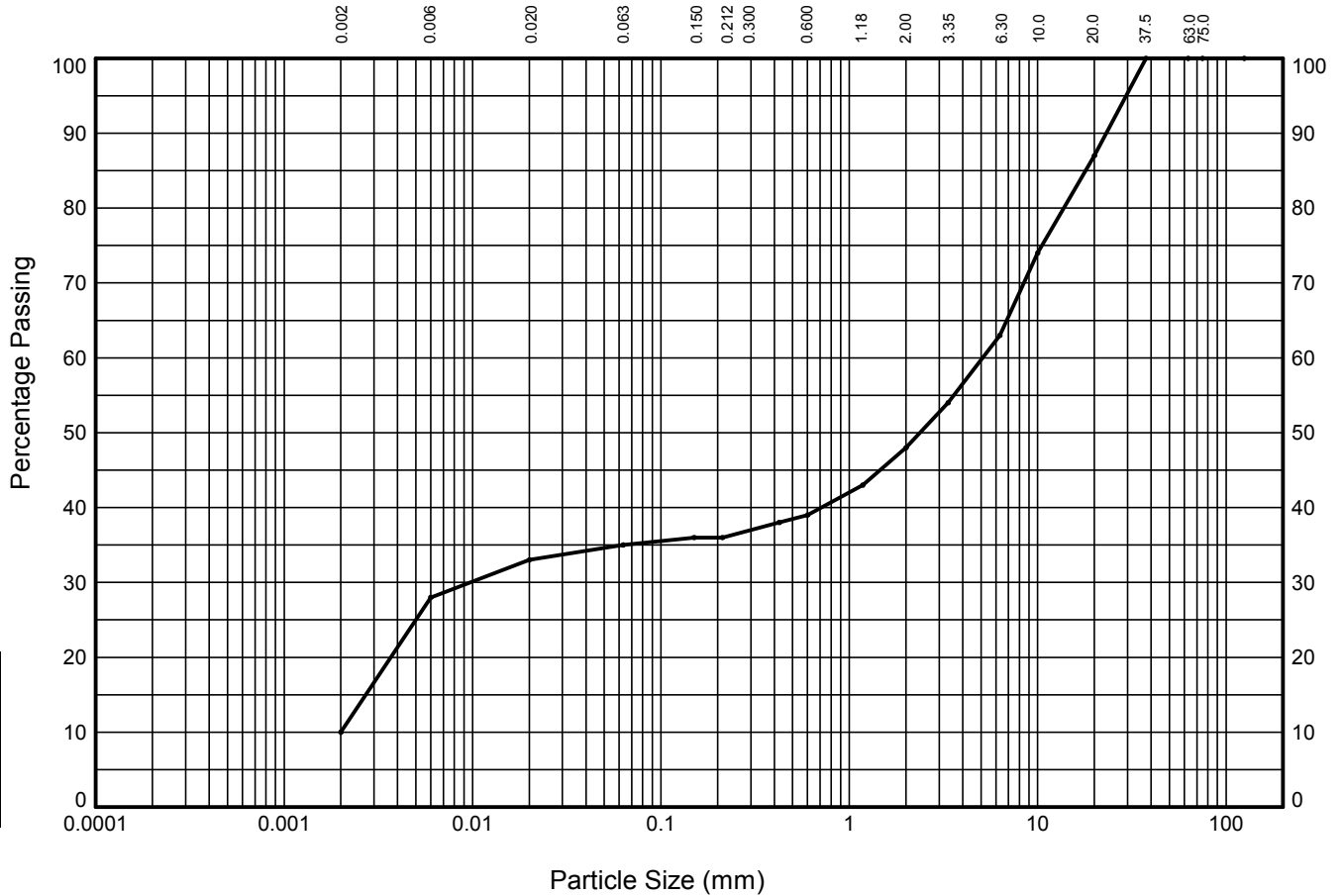
**STRUCTURAL SOILS**  
 1a Princess Street  
 Bedminster  
 Bristol  
 BS3 4AG

Compiled By		Date	Contract Ref:  <b>733442</b>
██████████	<b>EMY HOWARD</b>	<b>29.09.18</b>	
Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			

# PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 9.2, 9.5 of BS1377:Part 2:1990

Position ID: **RZ603**      Sample Ref: -      Sample Type: **B**      Depth (m): **1.70**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	SILT			SAND			GRAVEL			

Test Sieve (mm)	Percent Passing (%)
125.0	100
75.0	100
63.0	100
37.5	100
20.0	87
10.0	74
6.30	63
3.35	54
2.00	48
1.18	43
0.600	39
0.425	38
0.212	36
0.150	36
0.063	35

Particle Diameter (mm)	Percent Passing (%)
0.02	33
0.006	28
0.002	10

Sedimentation sample was not pre-treated

Soil Fraction	Sieve Percentage (%)
GRAVEL	52
SAND	13
SILT	25
CLAY	10

**Soil Description:**  
**White CHALK with occasional flint gravel**

6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_06  
 Email: ask@soils.co.uk | 07/11/18 - 11:31 | AF3 |

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 PjVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - PSD - A4P | 733442\_A3003  
 Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By [REDACTED] <b>ABBY MITCHELL</b>	Date <b>07/11/18</b>	
	Contract <b>A303 Stonehenge Phase 6 Ground Investigation</b>		Contract Ref: <b>733442</b>	

# DETERMINATION OF POINT LOAD STRENGTH

RT03 Point Load Testing (in accordance with ISRM 2007)

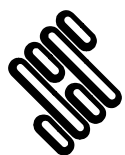
Exploratory Position ID	Sample Ref	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
R612	38	31.50	D	60	98	0.875	98	0.09	1.35	0.12 (✓)	25	CHALK	B
R612	38	31.50	A	98	32	0.075	63	0.02	1.11	0.02 (✓)	25	CHALK	B

Results

I<sub>s</sub>(50) Mean Axial tests = **0.02** MN/m<sup>2</sup>  
 I<sub>s</sub>(50) Mean Diametral tests = **0.12** MN/m<sup>2</sup>  
 I<sub>s</sub>(50) Strength Anisotropy Index = **5.91** (calculated from highest and lowest diametral and axial I<sub>s</sub>(50) ratio)  
 Note: Size Correction Factor (F) calculated using  $F = (D_e/50)^{0.45}$  (where D<sub>e</sub> 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, (x) = excluded from mean calculations  
 Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)



**STRUCTURAL SOILS**  
 1a Princess Street  
 Bedminster  
 Bristol  
 BS3 4AG

Compiled By		Date	Contract Ref:  <b>733442</b>
[REDACTED]		<b>06.11.18</b>	
Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			







# DETERMINATION OF POINT LOAD STRENGTH

RT03 Point Load Testing (in accordance with ISRM 2007)

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 <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
R612	44	37.05	I	80	50	0.280	71	0.05	1.17	0.06	22	CHALK	B
R612	44	37.05	I	55	41	0.165	54	0.06	1.03	0.06	22	CHALK	B

**Results**  
 Unable to calculate I<sub>a</sub>(50) Strength Anisotropy Index from this dataset.  
Note: Size Correction Factor (F) calculated using  $F = (D_e/50)^{0.45}$  (where D<sub>e</sub> 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 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date	Contract Ref:  <h2 style="margin: 0;">733442</h2> 
	<div style="background-color: black; width: 100px; height: 20px; margin: 0 auto;"></div>	<b>EMY HOWARD</b>	<b>06.11.18</b>	
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			

# DETERMINATION OF POINT LOAD STRENGTH

RT03 Point Load Testing (in accordance with ISRM 2007)

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 <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) <sub>s</sub> (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
R612	45	37.28	D	53	93	1.320	93	0.15	1.32	0.20 (✓)	21	CHALK	B
R612	45	37.28	A	96	58	1.490	84	0.21	1.26	0.27 (✓)	21	CHALK	B

<p><b>Results</b></p> <p>I<sub>s</sub>(50) Mean Axial tests = <b>0.27</b> MN/m<sup>2</sup>                  I<sub>s</sub>(50) Mean Diametral tests = <b>0.2</b> MN/m<sup>2</sup>                  I<sub>s</sub>(50) Strength Anisotropy Index = <b>1.32</b> (calculated from highest and lowest diametral and axial I<sub>s</sub>(50) ratio)                  Note: Size Correction Factor (F) calculated using <math>F = (D_e/50)^{0.45}</math> (where D<sub>e</sub> is equivalent core diameter).</p>	<p style="text-align: right;"><b>Key</b></p> <p>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 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)</p>
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**STRUCTURAL SOILS**  
 1a Princess Street  
 Bedminster  
 Bristol  
 BS3 4AG

Compiled By	Date	Contract Ref:
[REDACTED]	<b>EMY HOWARD</b>	<b>733442</b>
Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>		

# DETERMINATION OF POINT LOAD STRENGTH

RT03 Point Load Testing (in accordance with ISRM 2007)

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 <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) <sub>s</sub> (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
R612	46	38.10	D	51	87	0.550	87	0.07	1.28	0.09 (✓)	24	CHALK	B
R612	46	38.10	A	95	54	1.055	81	0.16	1.24	0.20 (✓)	24	CHALK	B

**Results**  
 I<sub>s</sub>(50) Mean Axial tests = **0.2** MN/m<sup>2</sup>  
 I<sub>s</sub>(50) Mean Diametral tests = **0.09** MN/m<sup>2</sup>  
 I<sub>s</sub>(50) Strength Anisotropy Index = **2.15** (calculated from highest and lowest diametral and axial I<sub>s</sub>(50) ratio)  
 Note: Size Correction Factor (F) calculated using  $F = (D_e/50)^{0.45}$  (where D<sub>e</sub> 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 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By	Date	Contract Ref:
	<div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> EMY HOWARD 06.11.18	06.11.18	
Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			

# DETERMINATION OF POINT LOAD STRENGTH

RT03 Point Load Testing (in accordance with ISRM 2007)


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 <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) <sub>2</sub> (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
R614	16	10.50	D	45	100	0.215	100	0.02	1.37	0.03 (✓)	28	CHALK	B
R614	16	10.50	A	100	82	0.560	102	0.05	1.38	0.07 (✓)	28	CHALK	B


**Results**

I<sub>s</sub>(50) Mean Axial tests = **0.07** MN/m<sup>2</sup>  
 I<sub>s</sub>(50) Mean Diametral tests = **0.03** MN/m<sup>2</sup>  
 I<sub>s</sub>(50) Strength Anisotropy Index = **2.52** (calculated from highest and lowest diametral and axial I<sub>s</sub>(50) ratio)  
 Note: Size Correction Factor (F) calculated using  $F = (D_e/50)^{0.45}$  (where D<sub>e</sub> 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, (x) = excluded from mean calculations  
 Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

 <p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By	Date	Contract Ref:	
	[REDACTED]	<b>EMY HOWARD</b>		<b>07.11.18</b>
	Contract: <b>A303 Stonehenge Phase 6 Ground Investigation</b>			<b>733442</b>



## DETERMINATION OF POINT LOAD STRENGTH


RT03 Point Load Testing (in accordance with ISRM 2007)

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 <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
R615	22	15.80	A	80	75	0.885	87	0.12	1.29	0.15 (✓)	24	CHALK	<b>B</b>
R615	22	15.80	I	50	60	0.580	62	0.15	1.10	0.17	24	CHALK	<b>B</b>

Results  
I<sub>s(50)</sub> Mean Axial tests = **0.15** MN/m<sup>2</sup>  
Unable to calculate I<sub>a</sub>(50) Strength Anisotropy Index from this dataset.  
Note: Size Correction Factor (F) calculated using F = (D<sub>e</sub>/50)<sup>0.45</sup> (where D<sub>e</sub> is equivalent core diameter).

Key


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



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BS3 4AG

<u>Compiled By</u>	Date	<u>Contract Ref:</u>
<div style="background-color: black; width: 100px; height: 1.2em; display: inline-block;"></div>	<b>EMY HOWARD</b>	<h1>733442</h1>
<u>Contract:</u> <b>A303 Stonehenge Phase 6 Ground Investigation</b>		

733442



# DETERMINATION OF POINT LOAD STRENGTH

RT03 Point Load Testing (in accordance with ISRM 2007)



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 <sub>e</sub> ) (mm)	Point Load (I <sub>s</sub> ) (MN/m <sup>2</sup> )	Size Factor (F)	Point Load Index (I <sub>s(50)</sub> ) (MN/m <sup>2</sup> )	Water Content (%)	Rock Type	Lab location
R615	29	21.79	D	75	100	0.905	100	0.09	1.37	0.12 (✓)	22	CHALK	B
R615	29	21.79	A	100	65	1.225	91	0.15	1.31	0.19 (✓)	22	CHALK	B

**Results**

I<sub>s</sub>(50) Mean Axial tests = **0.19** MN/m<sup>2</sup>  
 I<sub>s</sub>(50) Mean Diametral tests = **0.12** MN/m<sup>2</sup>  
 I<sub>s</sub>(50) Strength Anisotropy Index = **1.57** (calculated from highest and lowest diametral and axial I<sub>s</sub>(50) ratio)  
 Note: Size Correction Factor (F) calculated using  $F = (D_e/50)^{0.45}$  (where D<sub>e</sub> 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 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By <div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div> <b>EMY HOWARD</b>	Date <b>07.11.18</b>	Contract Ref:  <div style="font-size: 24pt; font-weight: bold;">733442</div>	
	Contract:		<b>A303 Stonehenge Phase 6 Ground Investigation</b>		
					

# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

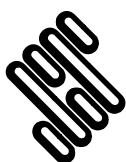
In accordance with BS1377:Part 8:1990

Borehole : **R606**      Sample Ref : **24**      Sample Type : **U**      Depth (m) : **17.74**  
 Sample Diameter (mm) : **101.16**      Sample Height (mm) : **197.51**  
 Drainage : **Radial + 1 End**      Sample Condition : **Undisturbed**  
 Description : **White CHALK**

	STAGE NUMBER	1	2	3
<b>PROPERTIES</b>	Initial Moisture Content (%)	27		
	Initial Bulk Density (Mg/m <sup>3</sup> )	1.97		
	Initial Dry Density (Mg/m <sup>3</sup> )	1.55		
	Final Moisture Content (%)	27		
	Final Bulk Density (Mg/m <sup>3</sup> )	1.98		
	Final Dry Density (Mg/m <sup>3</sup> )	1.55		
<b>SATURATION</b>	Final Back Pressure (kPa)	490		
	Cell Pressure Increment (kPa)	50		
	Pore Pressure Increment (kPa)	49.5		
	Final Pore Pressure Ratio - B Value	0.99		
<b>CONSOLIDATION</b>	Cell Pressure (kPa)	840		
	Back Pressure (kPa)	490		
	Effective Cell Pressure (kPa)	350		
	Initial Volume (cm <sup>3</sup> )	1587.46		
	Final Volume (cm <sup>3</sup> )	1583.74		
	Change in Volume (cm <sup>3</sup> )	3.72		
<b>COMPRESSION</b>	Cell Pressure (kPa)	840		
	Initial Pore Water Pressure (kPa)	490.1		
	Strain Rate (mm/min)	0.0274		
	Axial Strain at Failure (%)	0.59		
	Time to Failure (hrs)	1.6		
	Deviator Stress at Failure (kPa)	2521.7		
	Pore Pressure at Failure (kPa)	378.5		
	Effective Major Principal Stress (kPa)	2983.1		
	Effective Minor Principal Stress (kPa)	461.5		
	Effective Principal Stress Ratio	6.46		
	Pore Pressure Coefficient - A <sub>r</sub>	-0.04		
Effective Cohesion (kPa) :		<b>NA</b>	Angle of Shear Resistance (degs) : <b>NA</b>	

HENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06.  
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GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrctText L - EFFECTIVE STRESS 1173  
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 Bristol  
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Compiled By		Date
[Redacted]		29/09/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 6 Ground Investigation</b>	<b>733442</b>	

# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION - MOHR CIRCLES

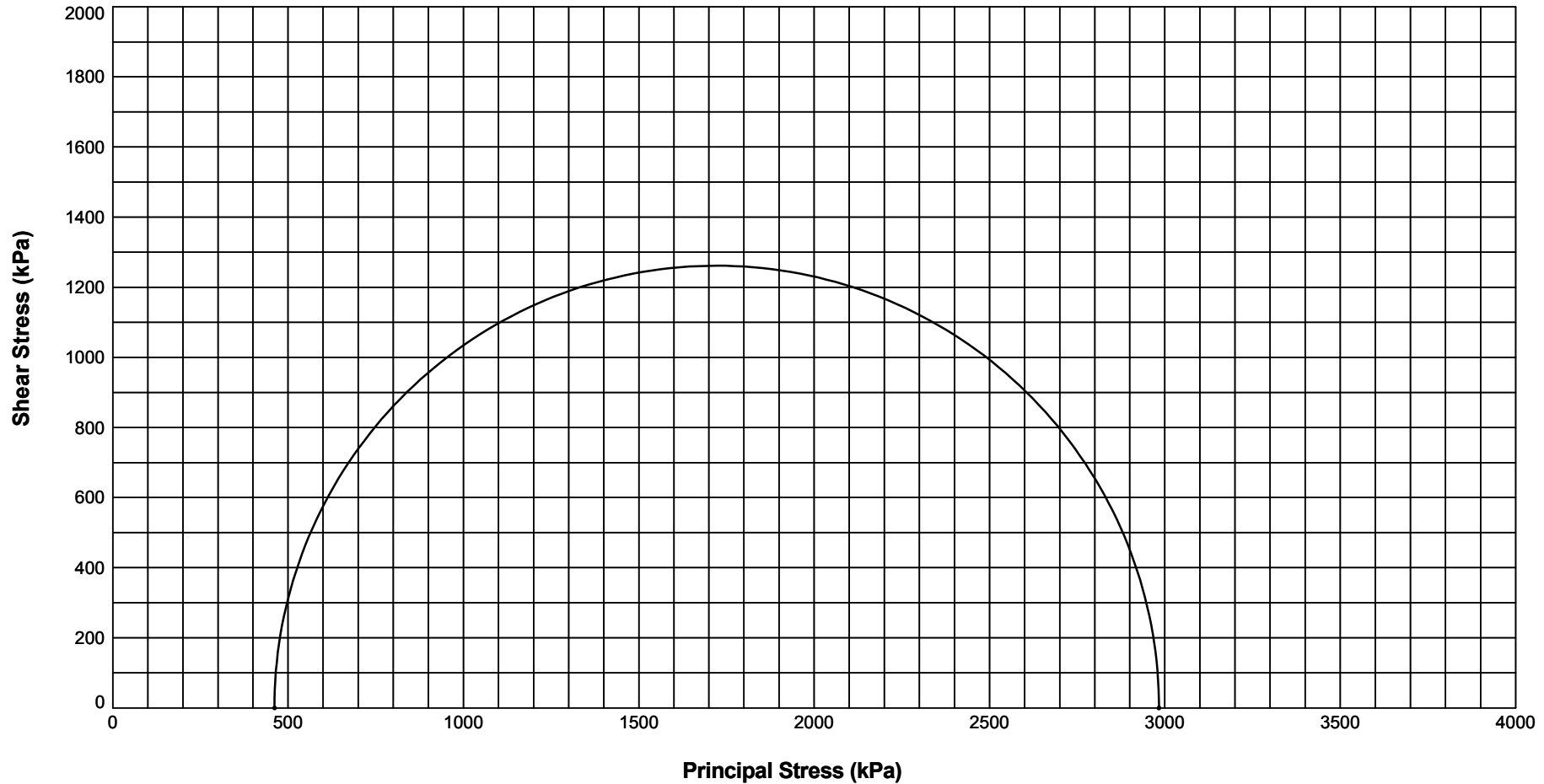
In accordance with BS1377:Part 8:1990

Hole ID : **R606**

Sample Ref : **24**

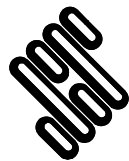
Sample Type : **U**

Depth (m) : **17.74**



GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - EFFECTIVE STRESS 2 MOHR CIRC - A4L |  
 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06  
 Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-100  
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<b>A303 Stonehenge Phase 6 Ground Investigation</b>			<b>733442</b>



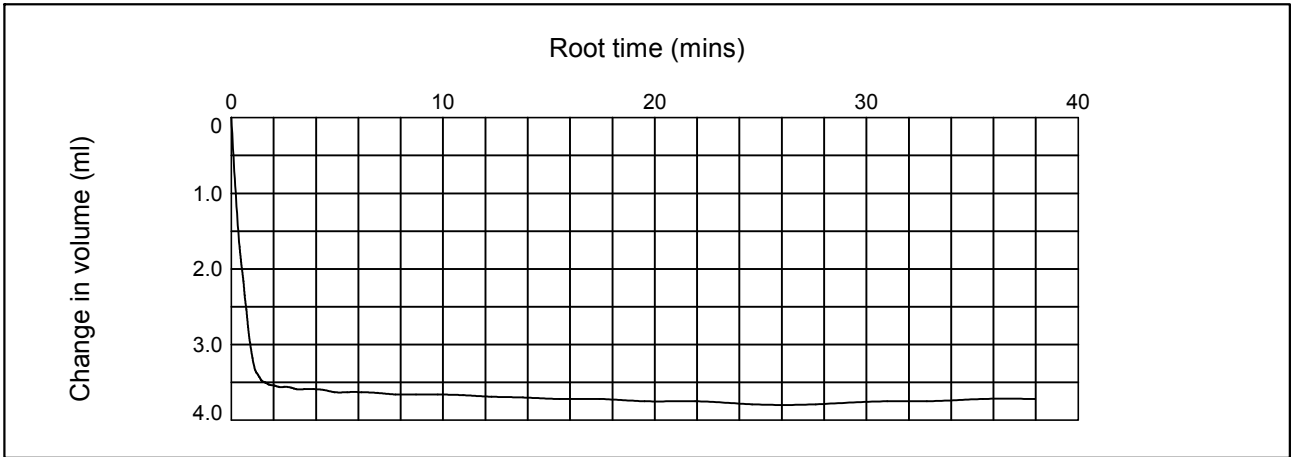


# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

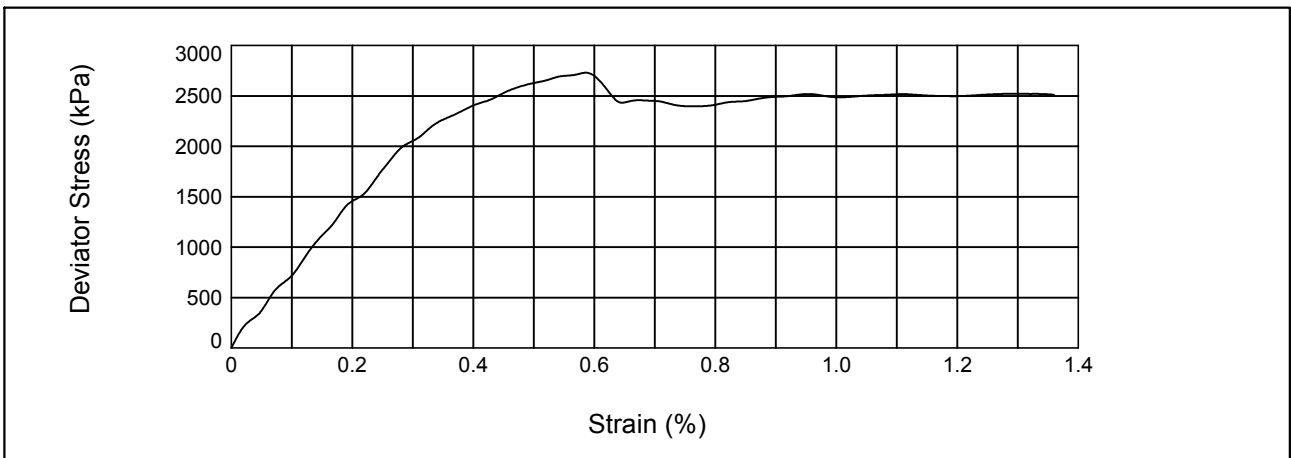
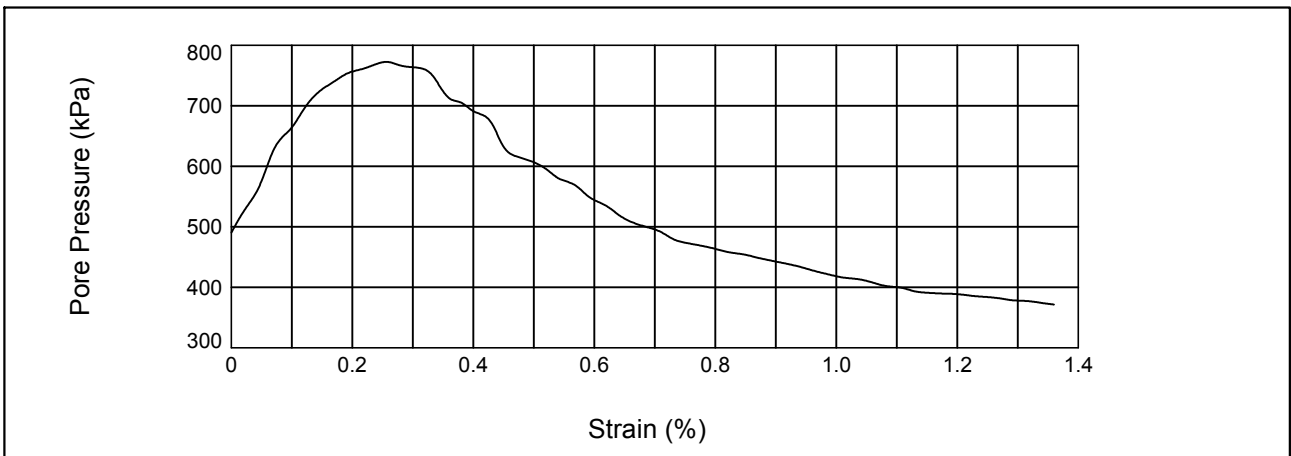
In accordance with BS1377:Part 8:1990

Position ID: **R606**    Sample Ref: **24**    Sample Type: **U**    Depth (m): **17.74**

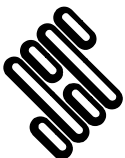
## CONSOLIDATION STAGE



## SHEAR STAGE



GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - EFFECTIVE STRESS 3.3.CUL - AAP | 733442 A303\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06  
 Structural Soils Ltd, Branch Office - Bristol Lab - 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1001, Email: ask@soils.co.uk | 29/09/18 - 09:19 | AF3



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Contract	Contract Ref:	
<b>A303 Stonehenge Phase 6 Ground Investigation</b>	<b>733442</b>	

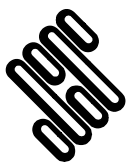
# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

Borehole : **R608**      Sample Ref : **32**      Sample Type : **U**      Depth (m) : **24.39**  
 Sample Diameter (mm) : **101.02**      Sample Height (mm) : **203.27**  
 Drainage : **Radial + 1 End**      Sample Condition : **Undisturbed**  
 Description : **White CHALK**

	STAGE NUMBER	1	2	3
<b>PROPERTIES</b>	Initial Moisture Content (%)	<b>25</b>		
	Initial Bulk Density (Mg/m <sup>3</sup> )	<b>1.97</b>		
	Initial Dry Density (Mg/m <sup>3</sup> )	<b>1.58</b>		
	Final Moisture Content (%)	<b>26</b>		
	Final Bulk Density (Mg/m <sup>3</sup> )	<b>2.00</b>		
	Final Dry Density (Mg/m <sup>3</sup> )	<b>1.58</b>		
<b>SATURATION</b>	Final Back Pressure (kPa)	<b>590</b>		
	Cell Pressure Increment (kPa)	<b>50</b>		
	Pore Pressure Increment (kPa)	<b>49</b>		
	Final Pore Pressure Ratio - B Value	<b>0.98</b>		
<b>CONSOLIDATION</b>	Cell Pressure (kPa)	<b>1040</b>		
	Back Pressure (kPa)	<b>590</b>		
	Effective Cell Pressure (kPa)	<b>450</b>		
	Initial Volume (cm <sup>3</sup> )	<b>1629.12</b>		
	Final Volume (cm <sup>3</sup> )	<b>1625.84</b>		
	Change in Volume (cm <sup>3</sup> )	<b>3.28</b>		
<b>COMPRESSION</b>	Cell Pressure (kPa)	<b>1040</b>		
	Initial Pore Water Pressure (kPa)	<b>591.6</b>		
	Strain Rate (mm/min)	<b>0.0226</b>		
	Axial Strain at Failure (%)	<b>0.68</b>		
	Time to Failure (hrs)	<b>1.0</b>		
	Deviator Stress at Failure (kPa)	<b>3345.1</b>		
	Pore Pressure at Failure (kPa)	<b>695.5</b>		
	Effective Major Principal Stress (kPa)	<b>3689.7</b>		
	Effective Minor Principal Stress (kPa)	<b>344.7</b>		
	Effective Principal Stress Ratio	<b>10.70</b>		
	Pore Pressure Coefficient - A <sub>r</sub>	<b>0.03</b>		
Effective Cohesion (kPa) :		<b>NA</b>	Angle of Shear Resistance (degs) : <b>NA</b>	

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrctText L - EFFECTIVE STRESS 11733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, | 20/10/18 - 07:45 | AF3 ]



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Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>

# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION - MOHR CIRCLES

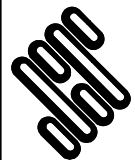
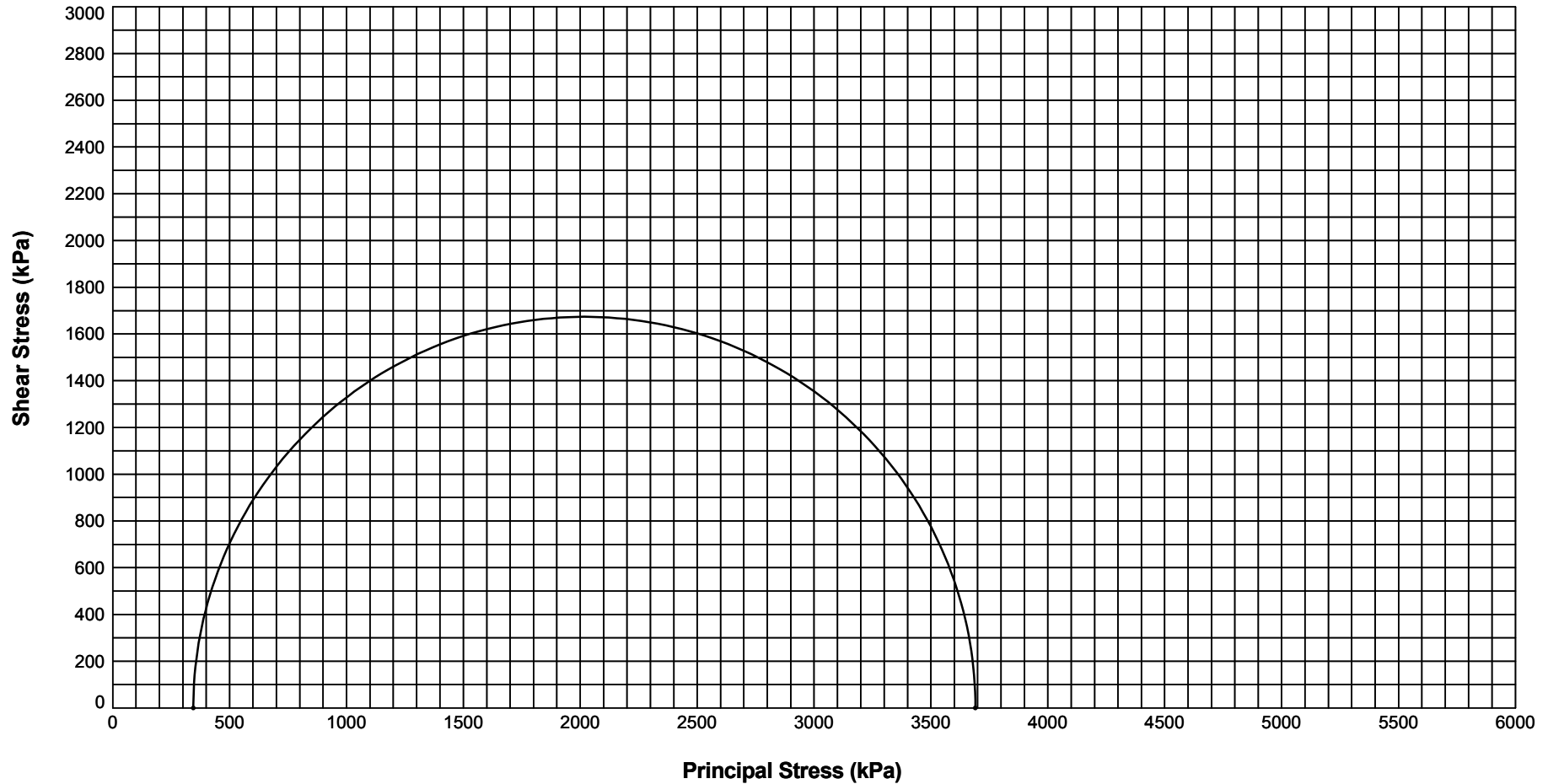
In accordance with BS1377:Part 8:1990

Hole ID : **R608**

Sample Ref : **32**

Sample Type : **U**

Depth (m) : **24.39**



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<b>A303 Stonehenge Phase 6 Ground Investigation</b>			

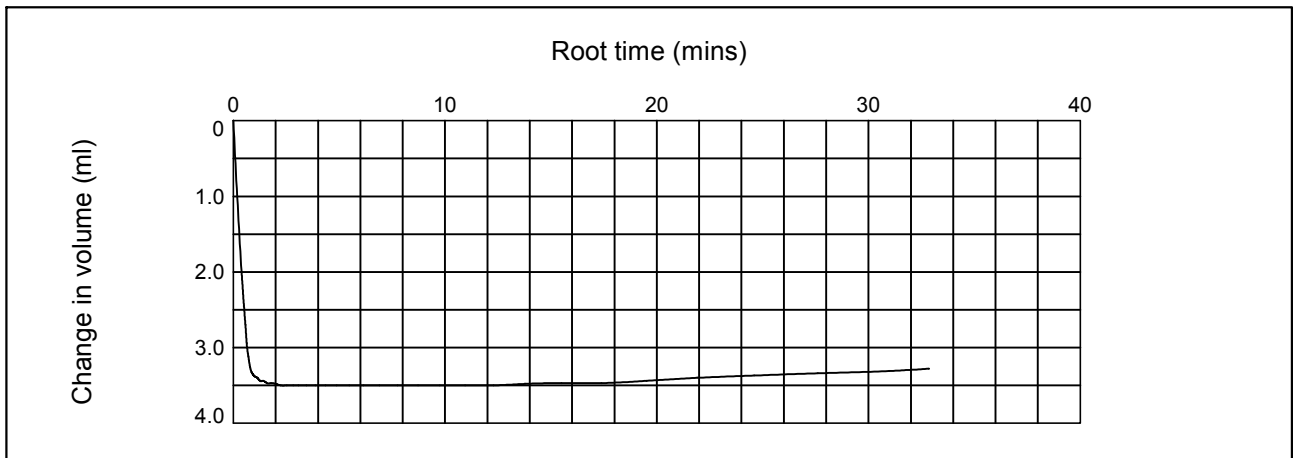


# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

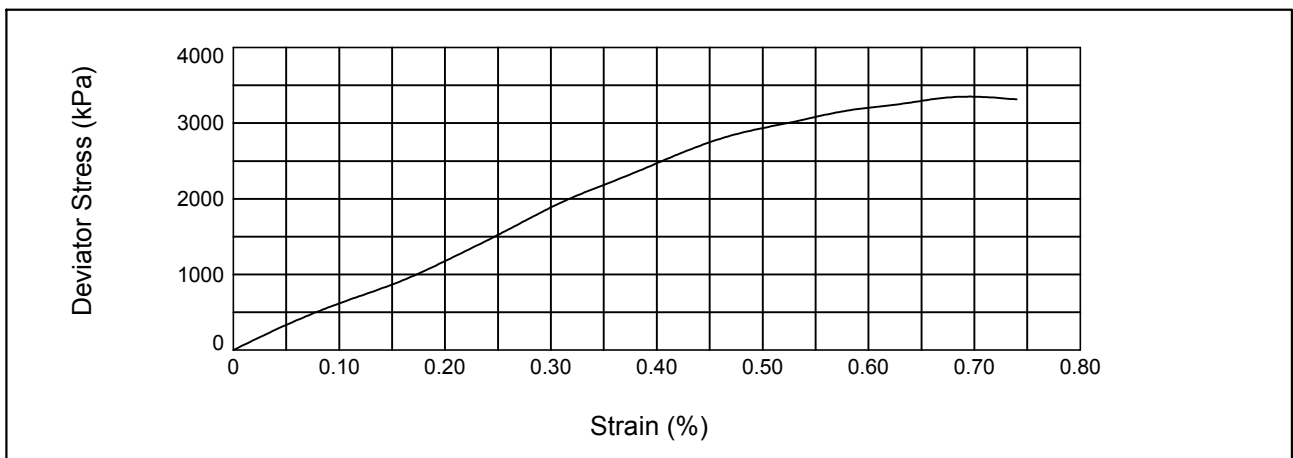
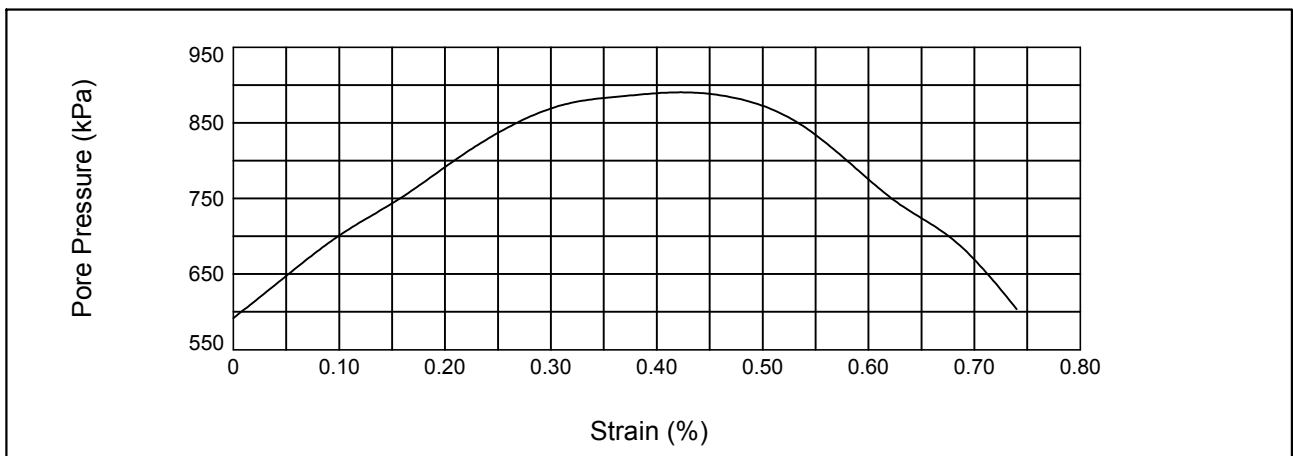
In accordance with BS1377:Part 8:1990

Position ID: **R608**    Sample Ref: **32**    Sample Type: **U**    Depth (m): **24.39**

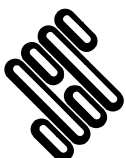
## CONSOLIDATION STAGE



## SHEAR STAGE



GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - EFFECTIVE STRESS 3.3.CU - AAP | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06  
 Structural Soils Ltd, Branch Office - Bristol Lab - 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 20/10/18 - 07:52 [AF3]



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Contract	Contract Ref:	
<b>A303 Stonehenge Phase 6 Ground Investigation</b>	<b>733442</b>	

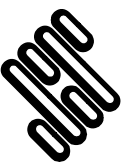


# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

Borehole : **R611**      Sample Ref : **33**      Sample Type : **U**      Depth (m) : **25.18**  
 Sample Diameter (mm) : **100.47**      Sample Height (mm) : **202.98**  
 Drainage : **Radial + 1 End**      Sample Condition : **Undisturbed**  
 Description : **White CHALK**

	STAGE NUMBER	1	2	3
<b>PROPERTIES</b>	Initial Moisture Content (%)	<b>24</b>		
	Initial Bulk Density (Mg/m <sup>3</sup> )	<b>2.00</b>		
	Initial Dry Density (Mg/m <sup>3</sup> )	<b>1.61</b>		
	Final Moisture Content (%)	<b>25</b>		
	Final Bulk Density (Mg/m <sup>3</sup> )	<b>2.02</b>		
	Final Dry Density (Mg/m <sup>3</sup> )	<b>1.62</b>		
<b>SATURATION</b>	Final Back Pressure (kPa)	<b>490</b>		
	Cell Pressure Increment (kPa)	<b>50</b>		
	Pore Pressure Increment (kPa)	<b>48</b>		
	Final Pore Pressure Ratio - B Value	<b>0.96</b>		
<b>CONSOLIDATION</b>	Cell Pressure (kPa)	<b>990</b>		
	Back Pressure (kPa)	<b>490</b>		
	Effective Cell Pressure (kPa)	<b>500</b>		
	Initial Volume (cm <sup>3</sup> )	<b>1609.34</b>		
	Final Volume (cm <sup>3</sup> )	<b>1604.85</b>		
	Change in Volume (cm <sup>3</sup> )	<b>4.49</b>		
<b>COMPRESSION</b>	Cell Pressure (kPa)	<b>990</b>		
	Initial Pore Water Pressure (kPa)	<b>491.2</b>		
	Strain Rate (mm/min)	<b>0.0085</b>		
	Axial Strain at Failure (%)	<b>0.32</b>		
	Time to Failure (hrs)	<b>1.3</b>		
	Deviator Stress at Failure (kPa)	<b>2392.2</b>		
	Pore Pressure at Failure (kPa)	<b>758.6</b>		
	Effective Major Principal Stress (kPa)	<b>2623.6</b>		
	Effective Minor Principal Stress (kPa)	<b>231.4</b>		
	Effective Principal Stress Ratio	<b>11.34</b>		
	Pore Pressure Coefficient - A <sub>r</sub>	<b>0.11</b>		
Effective Cohesion (kPa) :		<b>NA</b>	Angle of Shear Resistance (degs) : <b>NA</b>	

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrctText L - EFFECTIVE STRESS 11733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk, 108/11/18 - 06:51 | AF3

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
			<b>ALAN FROST</b> 08/11/18
	Contract <b>A303 Stonehenge Phase 6 Ground Investigation</b>		Job No <b>733442</b> 

# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION - MOHR CIRCLES

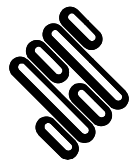
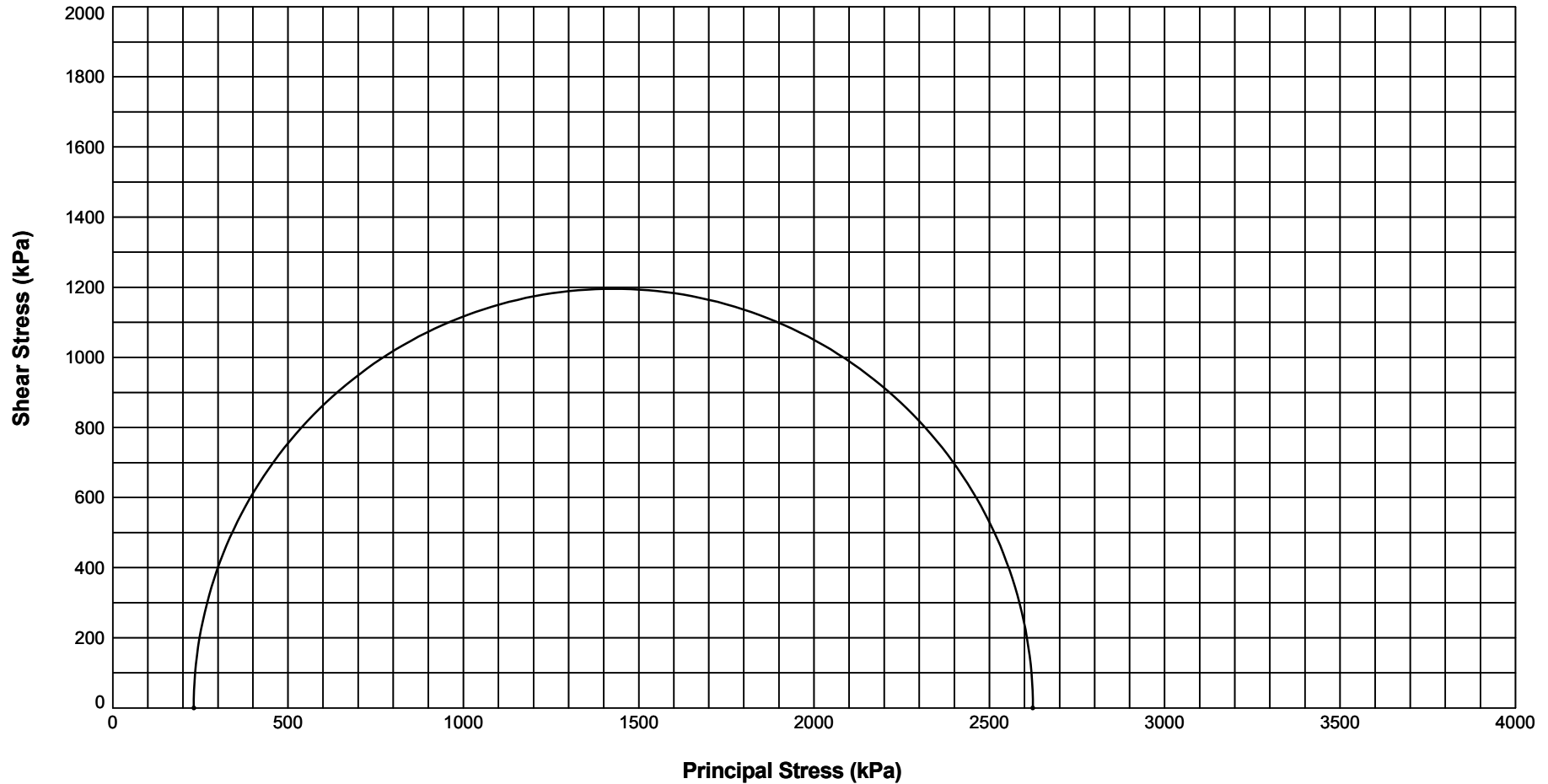
In accordance with BS1377:Part 8:1990

Hole ID : **R611**

Sample Ref : **33**

Sample Type : **U**

Depth (m) : **25.18**



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Contract  <b>A303 Stonehenge Phase 6 Ground Investigation</b>			

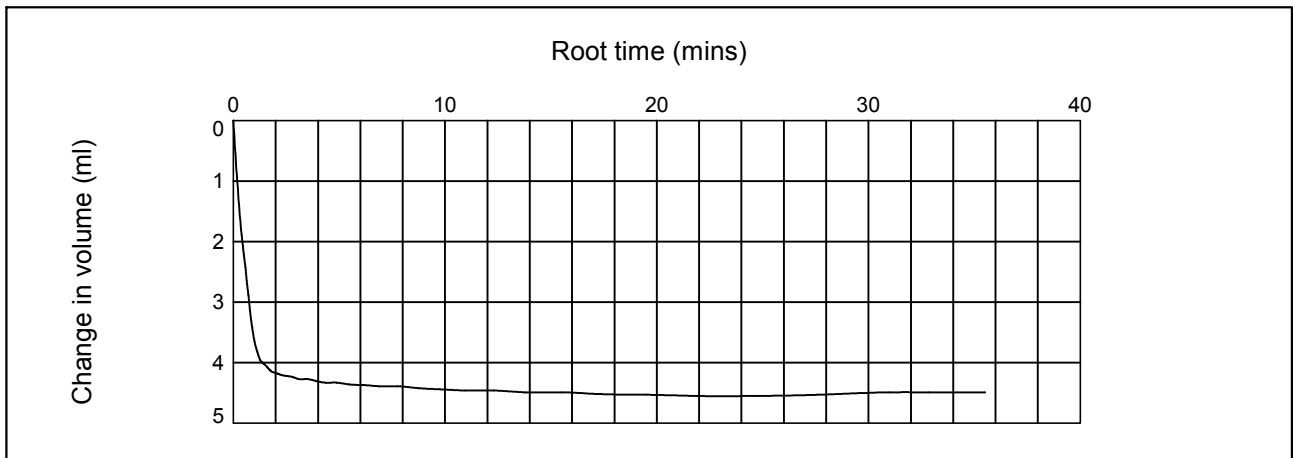


# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

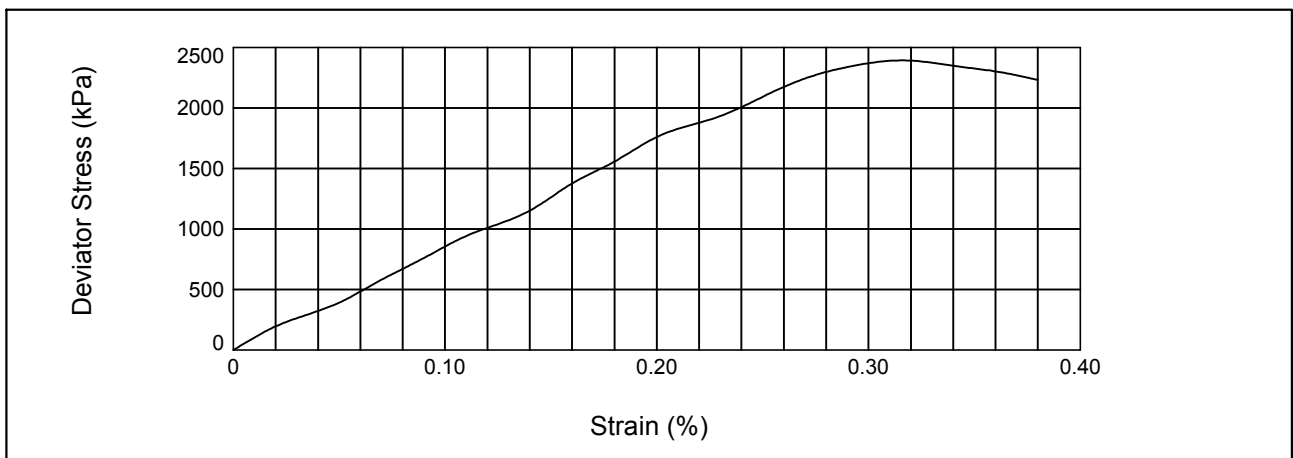
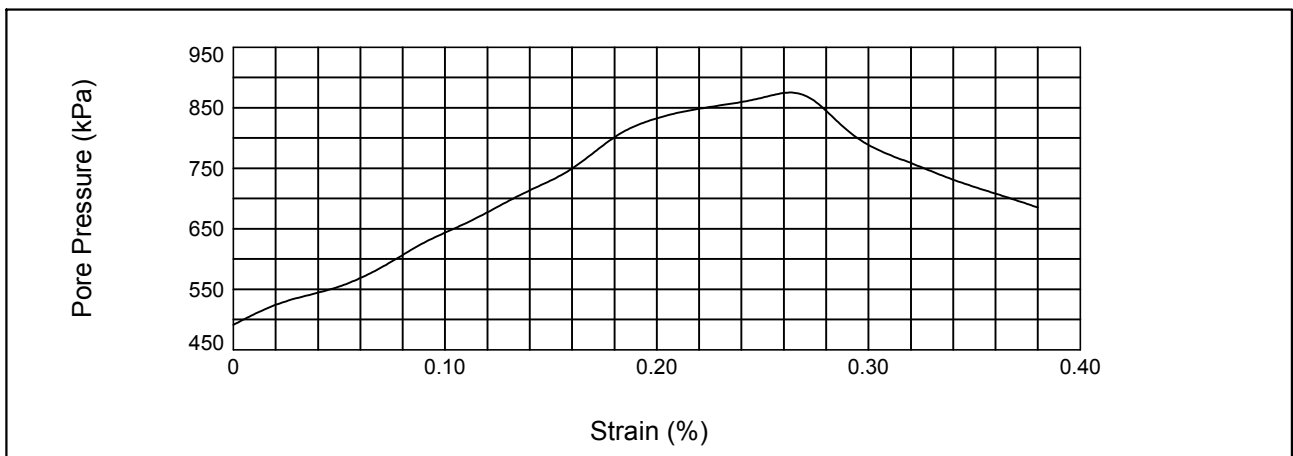
In accordance with BS1377:Part 8:1990

Position ID: **R611**    Sample Ref: **33**    Sample Type: **U**    Depth (m): **25.18**

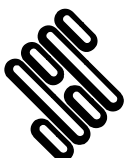
## CONSOLIDATION STAGE



## SHEAR STAGE



GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - EFFECTIVE STRESS 3.3.CU - AAP | 733442 - A303 STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06  
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Contract	Contract Ref:	
<b>A303 Stonehenge Phase 6 Ground Investigation</b>	<b>733442</b>	

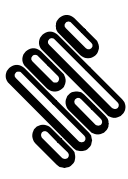

# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

Borehole : **R613**      Sample Ref : **37**      Sample Type : **U**      Depth (m) : **28.29**  
 Sample Diameter (mm) : **98.87**      Sample Height (mm) : **206.75**  
 Drainage : **Radial + 1 End**      Sample Condition : **Undisturbed**  
 Description : **White CHALK**

	STAGE NUMBER	1	2	3
<b>PROPERTIES</b>	Initial Moisture Content (%)	<b>29</b>		
	Initial Bulk Density (Mg/m <sup>3</sup> )	<b>1.93</b>		
	Initial Dry Density (Mg/m <sup>3</sup> )	<b>1.50</b>		
	Final Moisture Content (%)	<b>29</b>		
	Final Bulk Density (Mg/m <sup>3</sup> )	<b>1.94</b>		
	Final Dry Density (Mg/m <sup>3</sup> )	<b>1.50</b>		
<b>SATURATION</b>	Final Back Pressure (kPa)	<b>490</b>		
	Cell Pressure Increment (kPa)	<b>50</b>		
	Pore Pressure Increment (kPa)	<b>49</b>		
	Final Pore Pressure Ratio - B Value	<b>0.98</b>		
<b>CONSOLIDATION</b>	Cell Pressure (kPa)	<b>1040</b>		
	Back Pressure (kPa)	<b>490</b>		
	Effective Cell Pressure (kPa)	<b>550</b>		
	Initial Volume (cm <sup>3</sup> )	<b>1587.28</b>		
	Final Volume (cm <sup>3</sup> )	<b>1582.91</b>		
	Change in Volume (cm <sup>3</sup> )	<b>4.37</b>		
<b>COMPRESSION</b>	Cell Pressure (kPa)	<b>1040</b>		
	Initial Pore Water Pressure (kPa)	<b>490.9</b>		
	Strain Rate (mm/min)	<b>0.0057</b>		
	Axial Strain at Failure (%)	<b>0.31</b>		
	Time to Failure (hrs)	<b>1.9</b>		
	Deviator Stress at Failure (kPa)	<b>2206.6</b>		
	Pore Pressure at Failure (kPa)	<b>916.2</b>		
	Effective Major Principal Stress (kPa)	<b>2330.4</b>		
	Effective Minor Principal Stress (kPa)	<b>123.8</b>		
	Effective Principal Stress Ratio	<b>18.82</b>		
	Pore Pressure Coefficient - A <sub>r</sub>	<b>0.19</b>		
Effective Cohesion (kPa) :		<b>NA</b>	Angle of Shear Resistance (degs) : <b>NA</b>	

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrctText L - EFFECTIVE STRESS 11733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004 | Email: ask@soils.co.uk | 08/11/18 - 07:04 | AF3

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		<b>ALAN FROST</b>	<b>08/11/18</b>
	Contract <b>A303 Stonehenge Phase 6 Ground Investigation</b>		Job No <b>733442</b>
			



# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION - MOHR CIRCLES

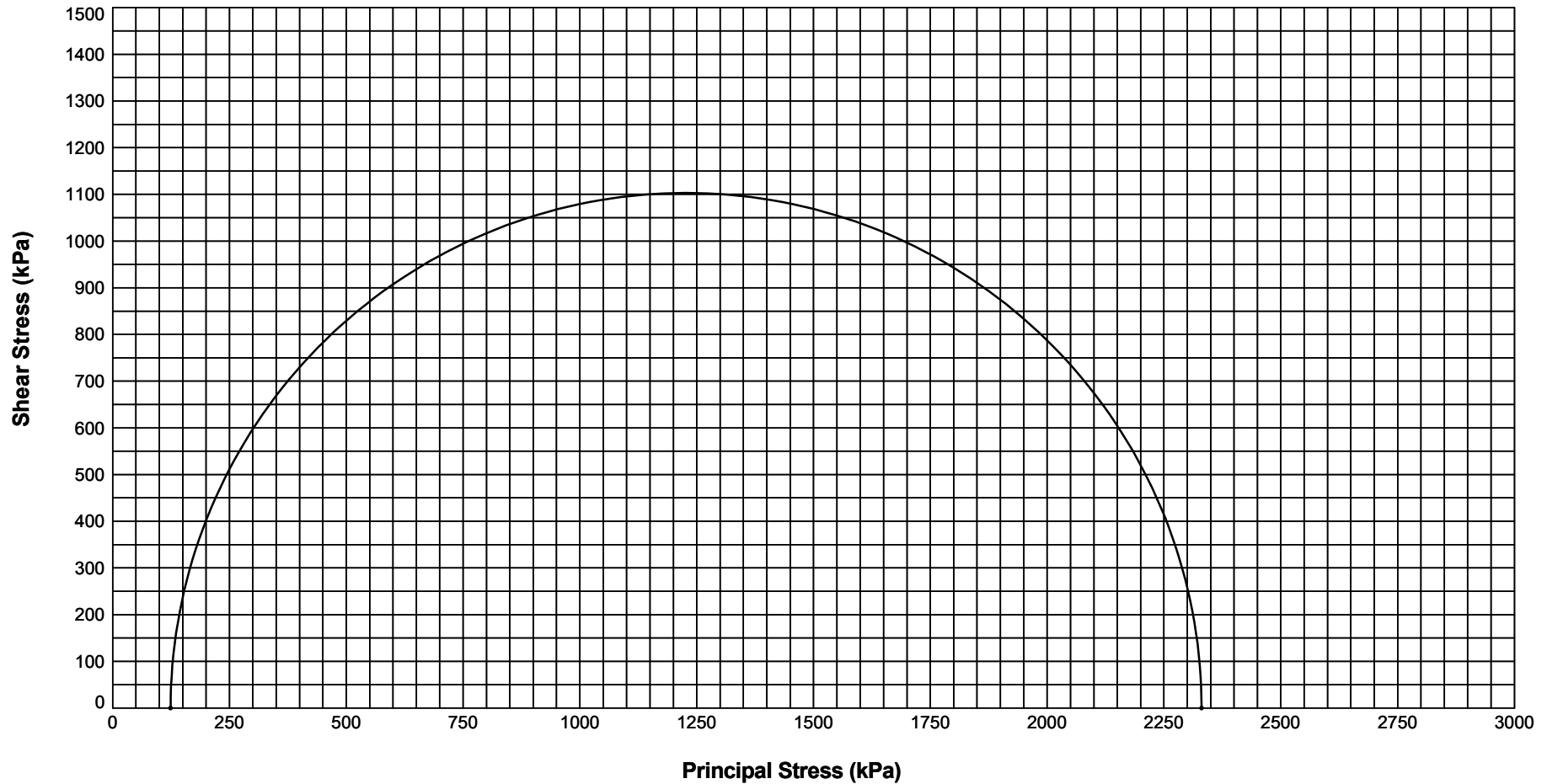
In accordance with BS1377:Part 8:1990

Hole ID : **R613**

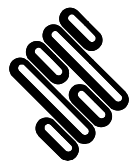
Sample Ref : **37**

Sample Type : **U**

Depth (m) : **28.29**



GINT LIBRARY\_V8.06.GLB LibVersion: v8.06.018 ProjVersion: v8.06.06 - Core+Full Bristol SI - 012 | Graph L - EFFECTIVE STRESS 2 MOHR CIRC - A4L | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8.06.06  
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Contract			<b>733442</b>
<b>A303 Stonehenge Phase 6 Ground Investigation</b>			

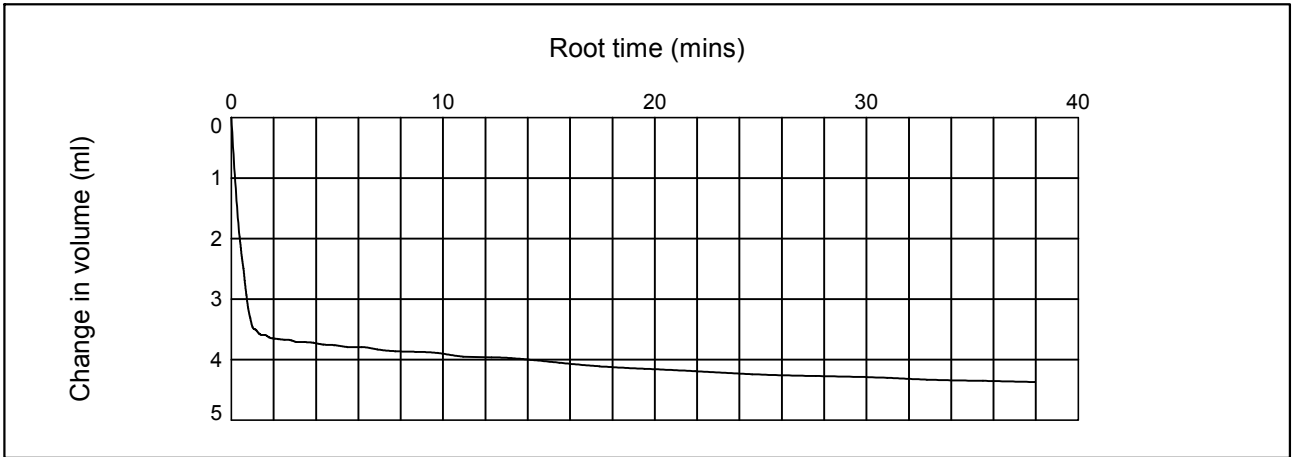


# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

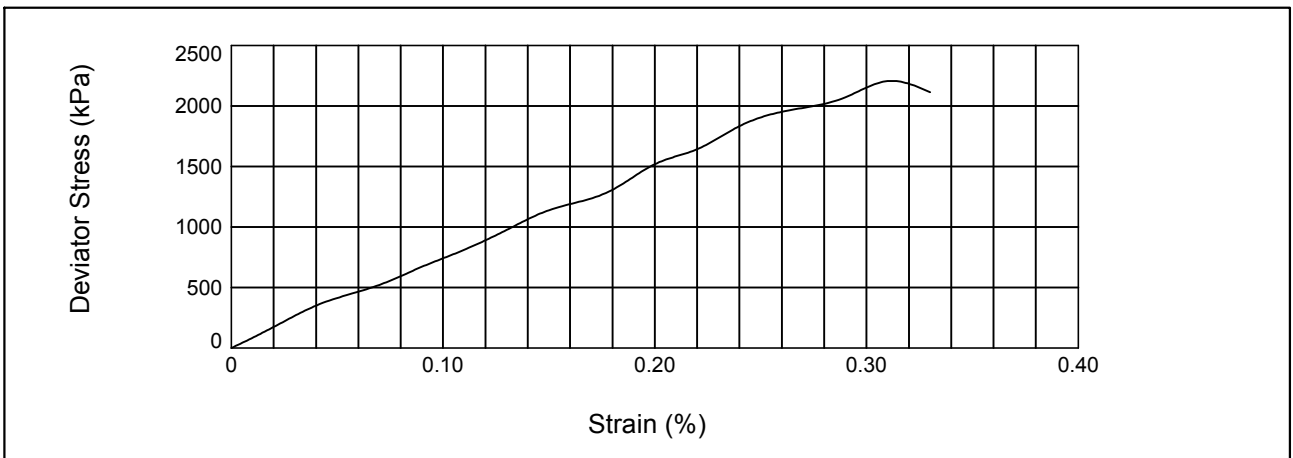
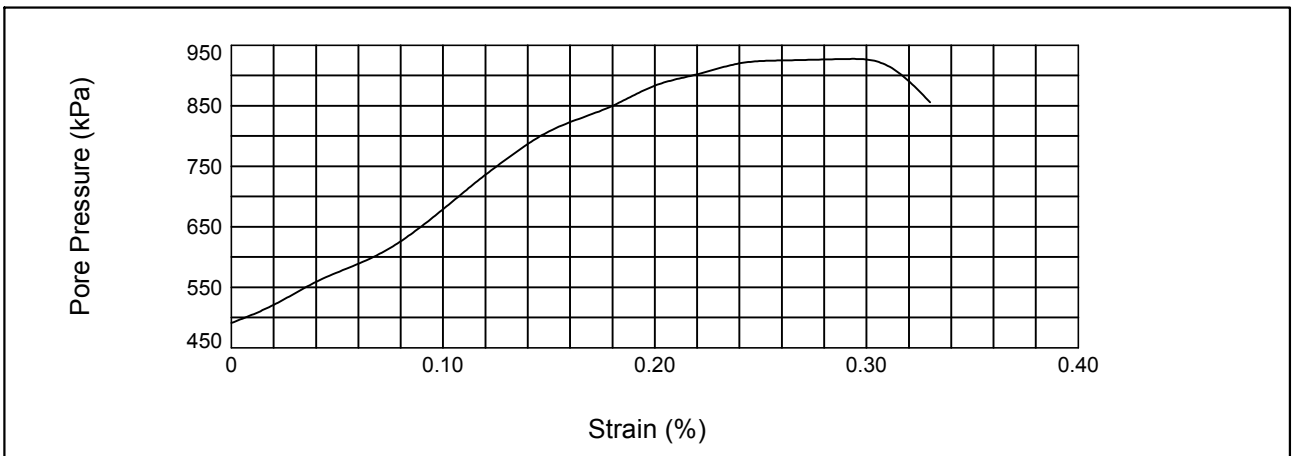
In accordance with BS1377:Part 8:1990

Position ID: **R613**    Sample Ref: **37**    Sample Type: **U**    Depth (m): **28.29**

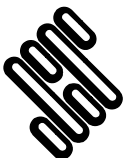
## CONSOLIDATION STAGE



## SHEAR STAGE



GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - EFFECTIVE STRESS 3.3.CU - AAP | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06  
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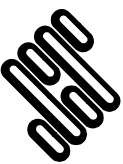


# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

Borehole : **R614**      Sample Ref : **18**      Sample Type : **U**      Depth (m) : **12.27**  
 Sample Diameter (mm) : **100.56**      Sample Height (mm) : **197.60**  
 Drainage : **Radial + 1 End**      Sample Condition : **Undisturbed**  
 Description : **White CHALK**

	STAGE NUMBER	1	2	3
<b>PROPERTIES</b>	Initial Moisture Content (%)	27		
	Initial Bulk Density (Mg/m <sup>3</sup> )	1.97		
	Initial Dry Density (Mg/m <sup>3</sup> )	1.55		
	Final Moisture Content (%)	28		
	Final Bulk Density (Mg/m <sup>3</sup> )	1.98		
	Final Dry Density (Mg/m <sup>3</sup> )	1.55		
<b>SATURATION</b>	Final Back Pressure (kPa)	490		
	Cell Pressure Increment (kPa)	50		
	Pore Pressure Increment (kPa)	48.5		
	Final Pore Pressure Ratio - B Value	0.97		
<b>CONSOLIDATION</b>	Cell Pressure (kPa)	730		
	Back Pressure (kPa)	490		
	Effective Cell Pressure (kPa)	240		
	Initial Volume (cm <sup>3</sup> )	1569.34		
	Final Volume (cm <sup>3</sup> )	1566.12		
	Change in Volume (cm <sup>3</sup> )	3.22		
<b>COMPRESSION</b>	Cell Pressure (kPa)	730		
	Initial Pore Water Pressure (kPa)	490.4		
	Strain Rate (mm/min)	0.0066		
	Axial Strain at Failure (%)	0.42		
	Time to Failure (hrs)	2.1		
	Deviator Stress at Failure (kPa)	2608.7		
	Pore Pressure at Failure (kPa)	500.8		
	Effective Major Principal Stress (kPa)	2837.8		
	Effective Minor Principal Stress (kPa)	229.2		
	Effective Principal Stress Ratio	12.38		
Pore Pressure Coefficient - A <sub>r</sub>	0.00			
Effective Cohesion (kPa) : <b>NA</b>		Angle of Shear Resistance (degs) : <b>NA</b>		

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrctText L - EFFECTIVE STRESS 11733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk, 108/11/18 - 07:24 | AF3

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			ALAN FROST
	Contract		Job No
<p><b>A303 Stonehenge Phase 6 Ground Investigation</b></p>		<p><b>733442</b></p> 	08/11/18

# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION - MOHR CIRCLES

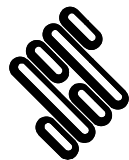
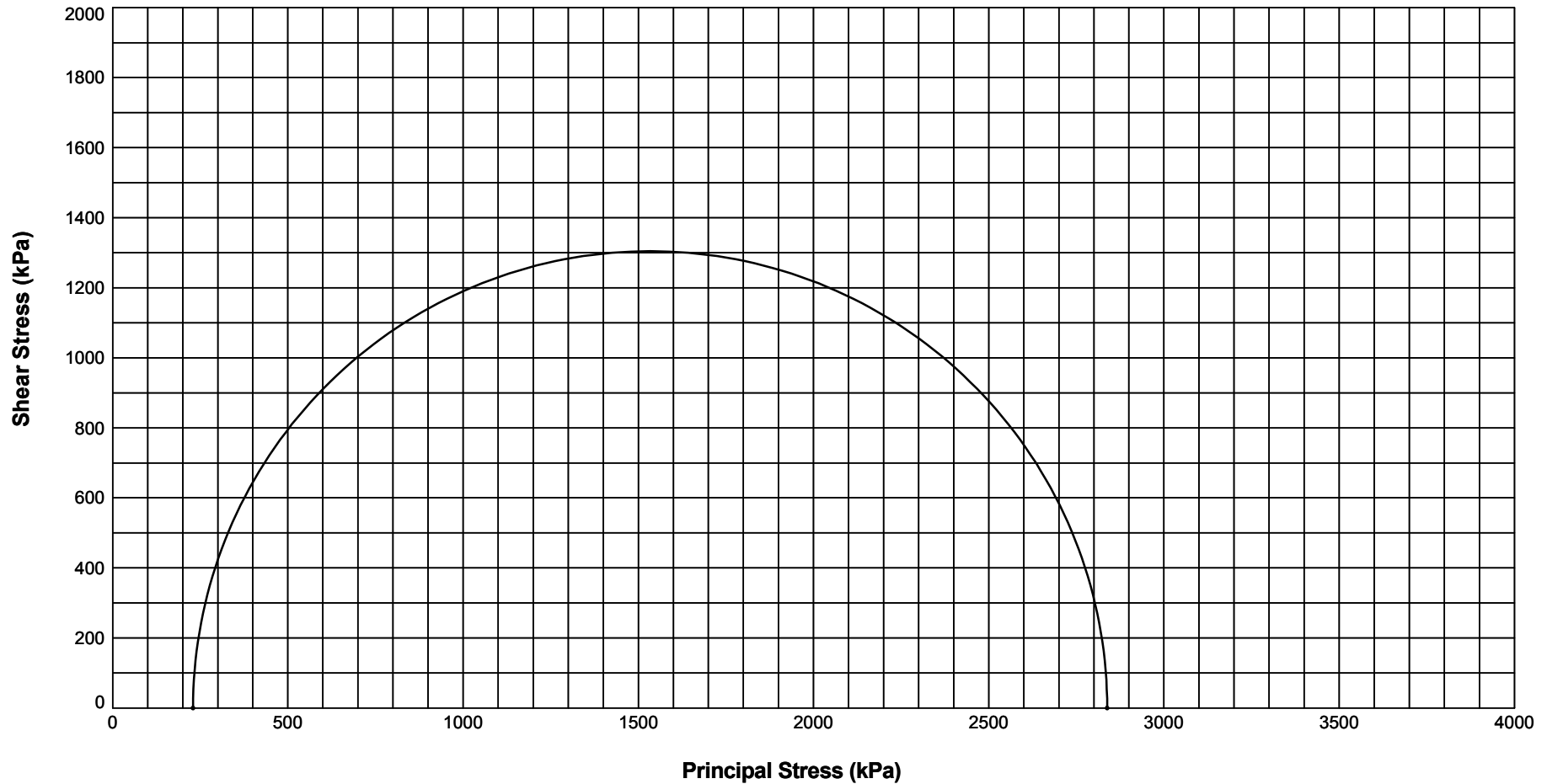
In accordance with BS1377:Part 8:1990

Hole ID : **R614**

Sample Ref : **18**

Sample Type : **U**

Depth (m) : **12.27**



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Contract Ref:

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**A303 Stonehenge Phase 6 Ground Investigation**

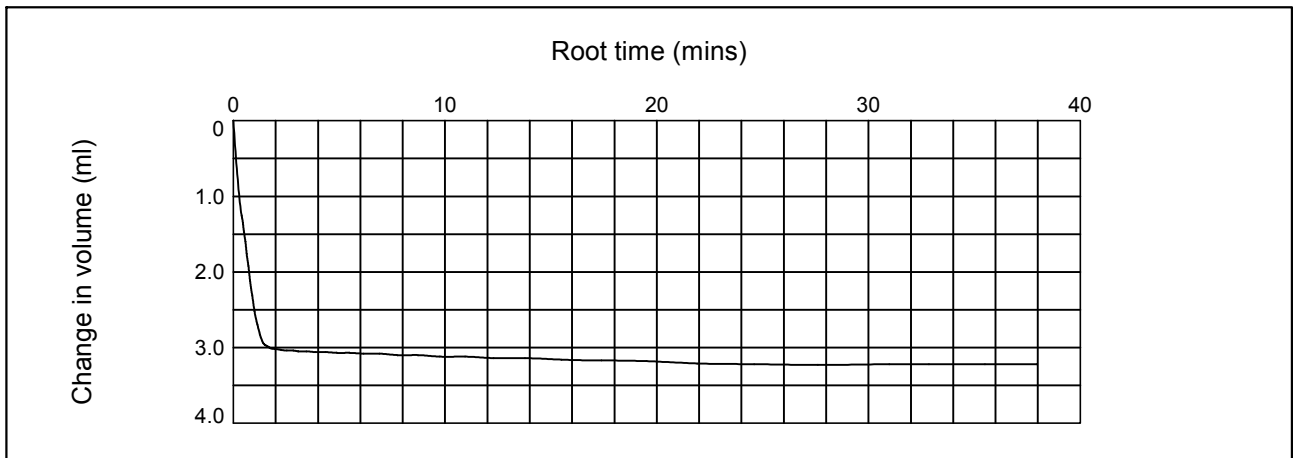


# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

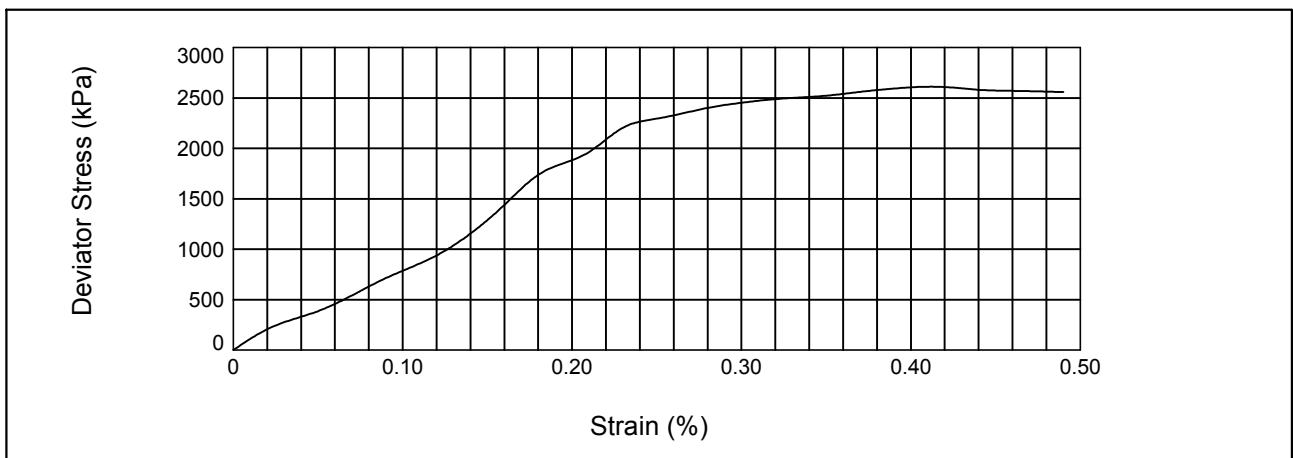
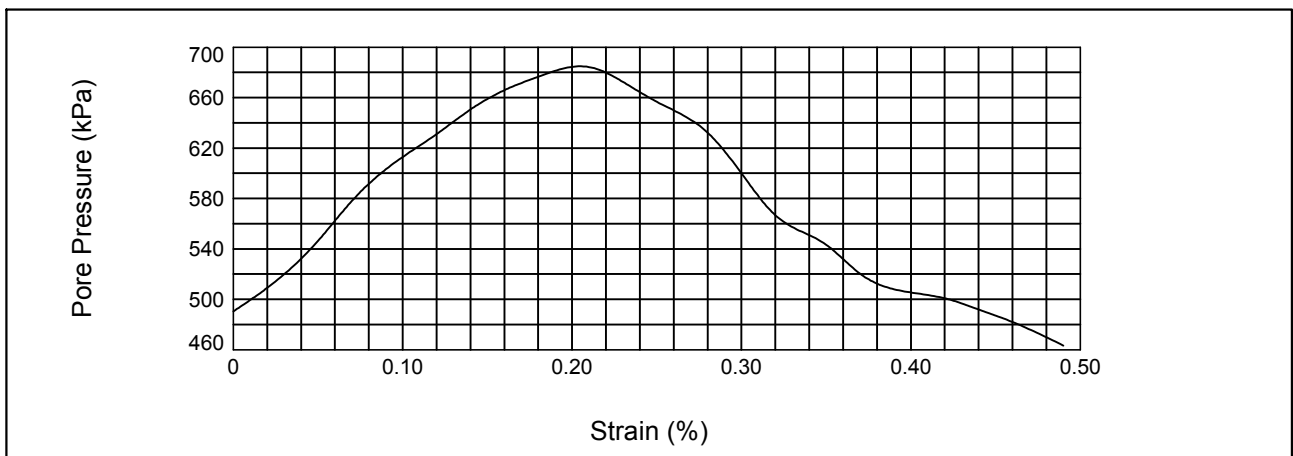
In accordance with BS1377:Part 8:1990

Position ID: **R614**    Sample Ref: **18**    Sample Type: **U**    Depth (m): **12.27**

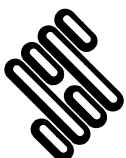
## CONSOLIDATION STAGE



## SHEAR STAGE



GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - EFFECTIVE STRESS 3.3.CU - AAP | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06  
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Contract	Contract Ref:	
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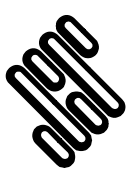


# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

Borehole : **R615**      Sample Ref : **42**      Sample Type : **U**      Depth (m) : **33.25**  
 Sample Diameter (mm) : **99.92**      Sample Height (mm) : **204.90**  
 Drainage : **Radial + 1 End**      Sample Condition : **Undisturbed**  
 Description : **White CHALK**

	STAGE NUMBER	1	2	3
<b>PROPERTIES</b>	Initial Moisture Content (%)	<b>25</b>		
	Initial Bulk Density (Mg/m <sup>3</sup> )	<b>2.00</b>		
	Initial Dry Density (Mg/m <sup>3</sup> )	<b>1.61</b>		
	Final Moisture Content (%)	<b>25</b>		
	Final Bulk Density (Mg/m <sup>3</sup> )	<b>2.01</b>		
	Final Dry Density (Mg/m <sup>3</sup> )	<b>1.61</b>		
<b>SATURATION</b>	Final Back Pressure (kPa)	<b>590</b>		
	Cell Pressure Increment (kPa)	<b>50</b>		
	Pore Pressure Increment (kPa)	<b>50</b>		
	Final Pore Pressure Ratio - B Value	<b>1.00</b>		
<b>CONSOLIDATION</b>	Cell Pressure (kPa)	<b>1240</b>		
	Back Pressure (kPa)	<b>590</b>		
	Effective Cell Pressure (kPa)	<b>650</b>		
	Initial Volume (cm <sup>3</sup> )	<b>1606.61</b>		
	Final Volume (cm <sup>3</sup> )	<b>1602.45</b>		
	Change in Volume (cm <sup>3</sup> )	<b>4.16</b>		
<b>COMPRESSION</b>	Cell Pressure (kPa)	<b>1240</b>		
	Initial Pore Water Pressure (kPa)	<b>592.3</b>		
	Strain Rate (mm/min)	<b>0.0085</b>		
	Axial Strain at Failure (%)	<b>0.38</b>		
	Time to Failure (hrs)	<b>1.5</b>		
	Deviator Stress at Failure (kPa)	<b>4271.5</b>		
	Pore Pressure at Failure (kPa)	<b>1100.8</b>		
	Effective Major Principal Stress (kPa)	<b>4410.6</b>		
	Effective Minor Principal Stress (kPa)	<b>139.2</b>		
	Effective Principal Stress Ratio	<b>31.69</b>		
	Pore Pressure Coefficient - A <sub>r</sub>	<b>0.12</b>		
Effective Cohesion (kPa) :		<b>NA</b>	Angle of Shear Resistance (degs) : <b>NA</b>	

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrctText L - EFFECTIVE STRESS 11733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 108/11/18 - 07:40 | AF3

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	Contract		Job No
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# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION - MOHR CIRCLES

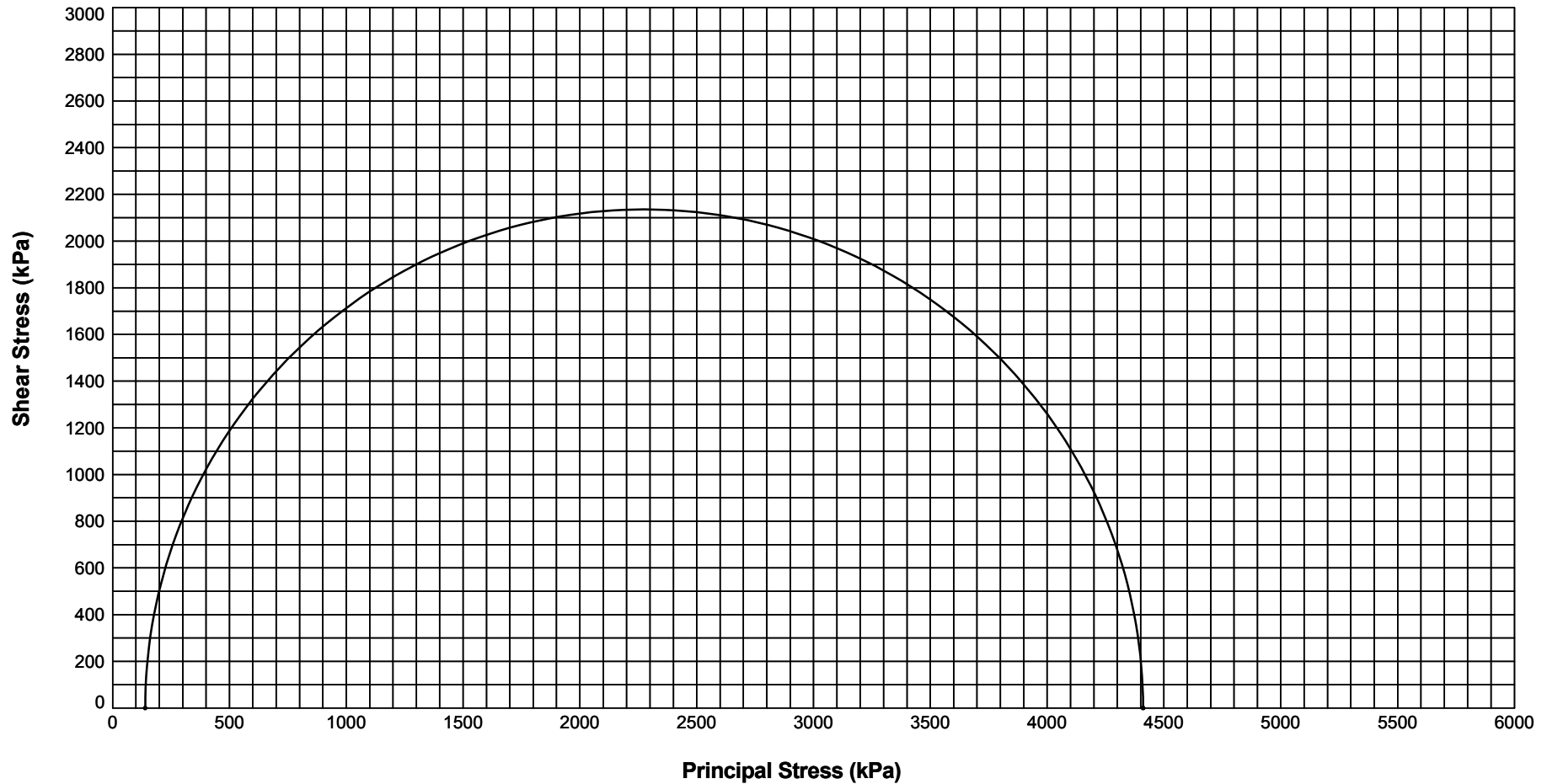
In accordance with BS1377:Part 8:1990

Hole ID : **R615**

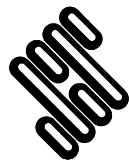
Sample Ref : **42**

Sample Type : **U**

Depth (m) : **33.25**



GINT\_LIBRARY\_V8.06.GLB LibVersion: v8.06.018 ProjVersion: v8.06.06 - Core+Full Bristol SI - 012 | Graph L - EFFECTIVE STRESS 2 MOHR CIRC - A4L | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8.06. Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 08/11/18 - 07:41 | AF3



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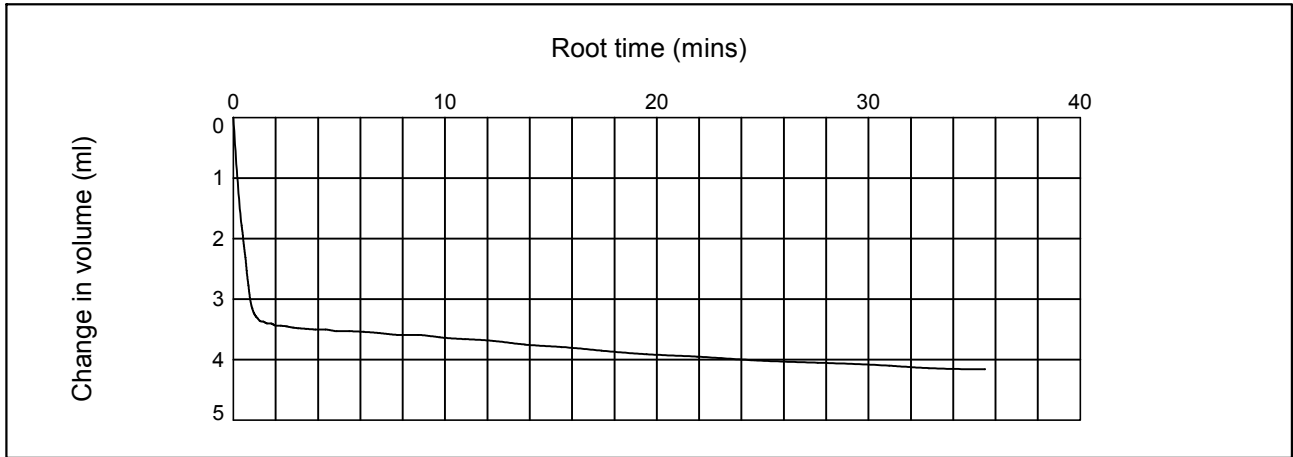


# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

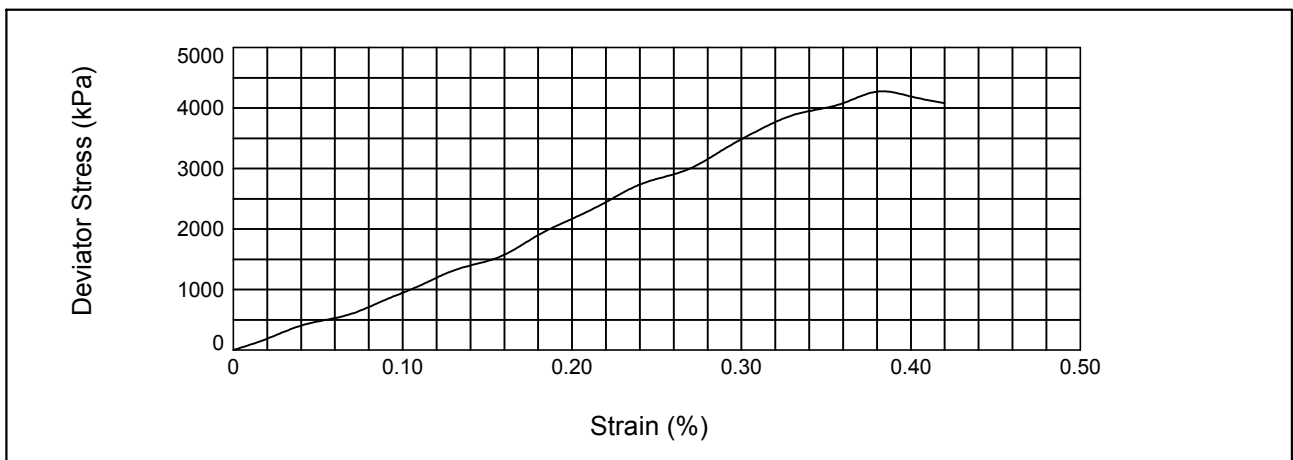
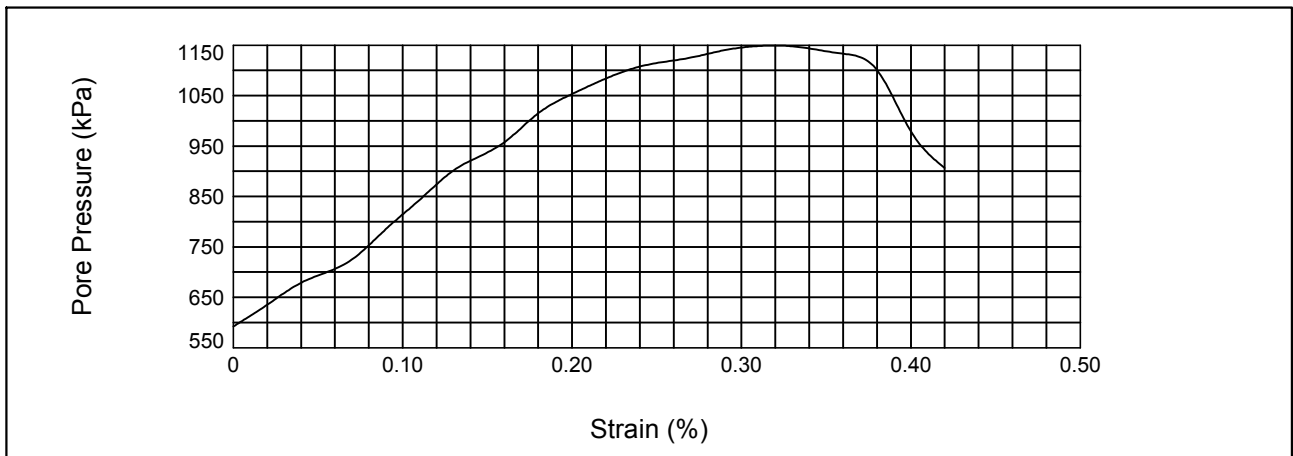
In accordance with BS1377:Part 8:1990

Position ID: **R615**    Sample Ref: **42**    Sample Type: **U**    Depth (m): **33.25**

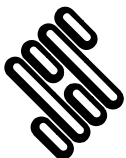
## CONSOLIDATION STAGE



## SHEAR STAGE



GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - EFFECTIVE STRESS 3.3.CU - AAP | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06  
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**733442**



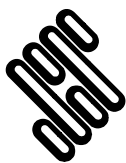
# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

Borehole : **R616**      Sample Ref : **50**      Sample Type : **U**      Depth (m) : **36.73**  
 Sample Diameter (mm) : **99.17**      Sample Height (mm) : **2002.82**  
 Drainage : **Radial + 1 End**      Sample Condition : **Undisturbed**  
 Description : **White CHALK**

	STAGE NUMBER	1	2	3
<b>PROPERTIES</b>	Initial Moisture Content (%)	<b>27</b>		
	Initial Bulk Density (Mg/m <sup>3</sup> )	<b>1.94</b>		
	Initial Dry Density (Mg/m <sup>3</sup> )	<b>1.53</b>		
	Final Moisture Content (%)	<b>28</b>		
	Final Bulk Density (Mg/m <sup>3</sup> )	<b>1.96</b>		
	Final Dry Density (Mg/m <sup>3</sup> )	<b>1.53</b>		
<b>SATURATION</b>	Final Back Pressure (kPa)	<b>390</b>		
	Cell Pressure Increment (kPa)	<b>50</b>		
	Pore Pressure Increment (kPa)	<b>49</b>		
	Final Pore Pressure Ratio - B Value	<b>0.98</b>		
<b>CONSOLIDATION</b>	Cell Pressure (kPa)	<b>1090</b>		
	Back Pressure (kPa)	<b>390</b>		
	Effective Cell Pressure (kPa)	<b>700</b>		
	Initial Volume (cm <sup>3</sup> )	<b>1566.60</b>		
	Final Volume (cm <sup>3</sup> )	<b>1561.52</b>		
	Change in Volume (cm <sup>3</sup> )	<b>5.08</b>		
<b>COMPRESSION</b>	Cell Pressure (kPa)	<b>1090</b>		
	Initial Pore Water Pressure (kPa)	<b>392.0</b>		
	Strain Rate (mm/min)	<b>0.0056</b>		
	Axial Strain at Failure (%)	<b>0.22</b>		
	Time to Failure (hrs)	<b>1.4</b>		
	Deviator Stress at Failure (kPa)	<b>2797.2</b>		
	Pore Pressure at Failure (kPa)	<b>959.4</b>		
	Effective Major Principal Stress (kPa)	<b>2927.8</b>		
	Effective Minor Principal Stress (kPa)	<b>130.6</b>		
	Effective Principal Stress Ratio	<b>22.42</b>		
	Pore Pressure Coefficient - A <sub>r</sub>	<b>0.20</b>		
Effective Cohesion (kPa) :		<b>NA</b>	Angle of Shear Resistance (degs) : <b>NA</b>	

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrctText L - EFFECTIVE STRESS 11733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk, 108/11/18 - 08:17 | AFS3



**STRUCTURAL SOILS**  
 1a Princess Street  
 Bedminster  
 Bristol  
 BS3 4AG

Compiled By		Date
[REDACTED]		08/11/18
Contract	Job No	
<b>A303 Stonehenge Phase 6 Ground Investigation</b>	<b>733442</b>	

# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION - MOHR CIRCLES

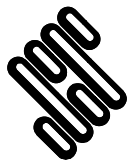
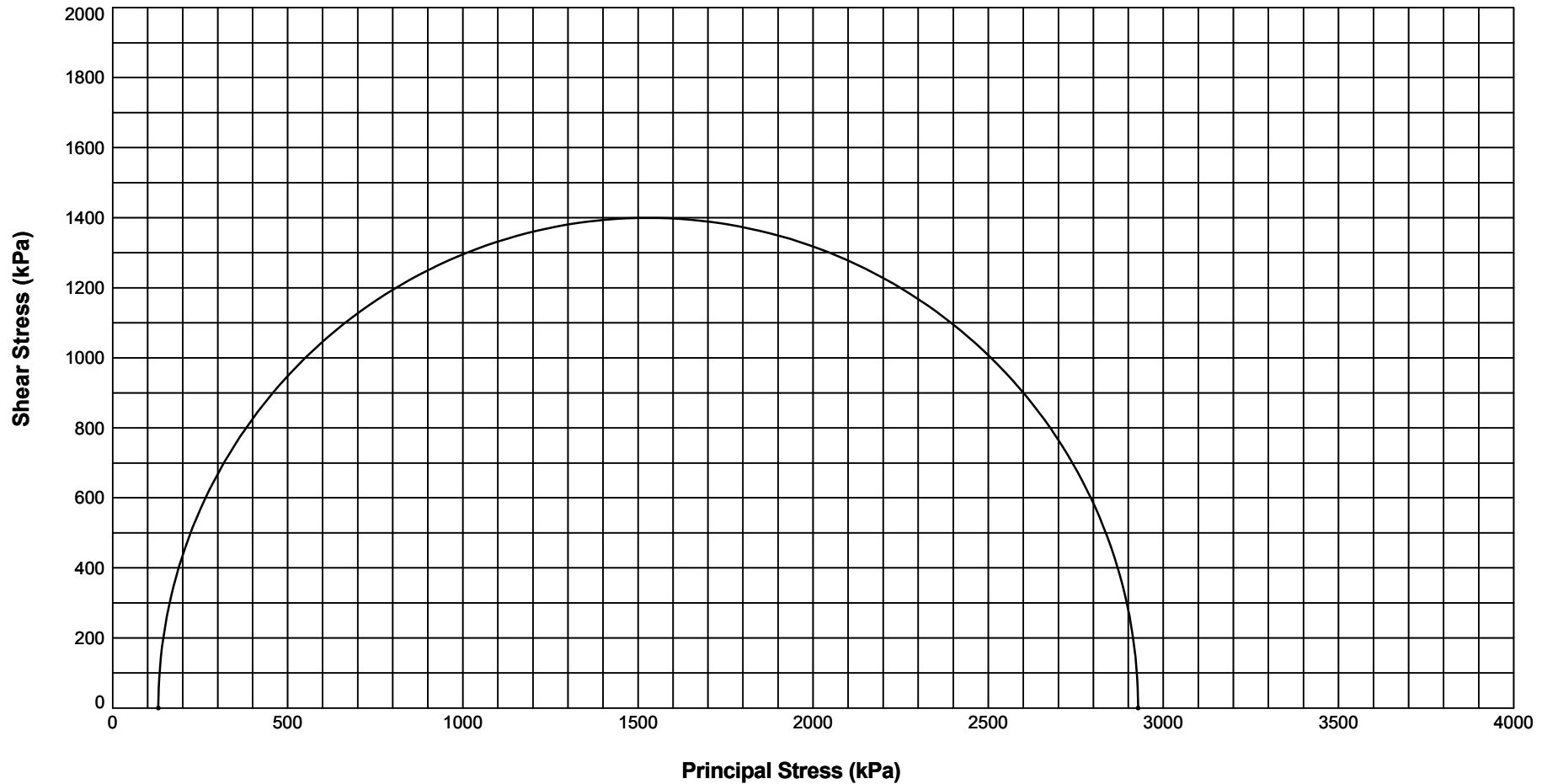
In accordance with BS1377:Part 8:1990

Hole ID : **R616**

Sample Ref : **50**

Sample Type : **U**

Depth (m) : **36.73**



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Compiled By		Date	Contract Ref:  <b>733442</b>
[Redacted]		08.11.18	
Contract  <b>A303 Stonehenge Phase 6 Ground Investigation</b>			

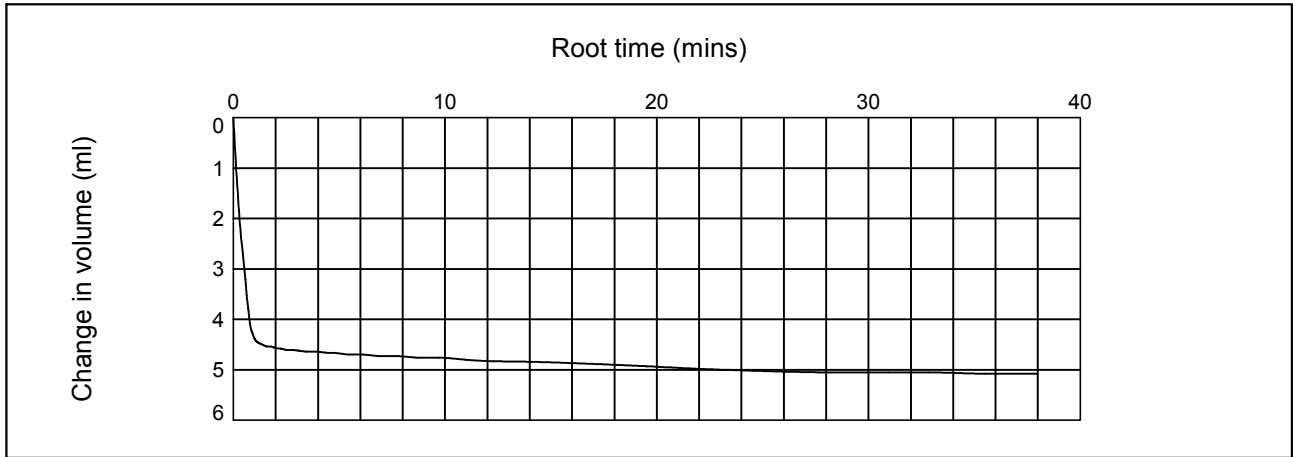


# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

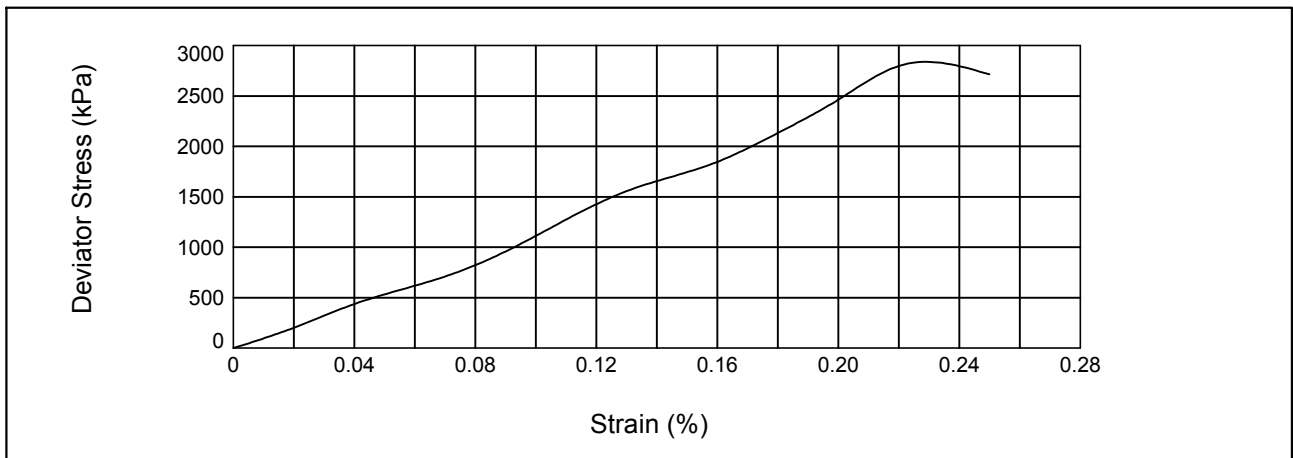
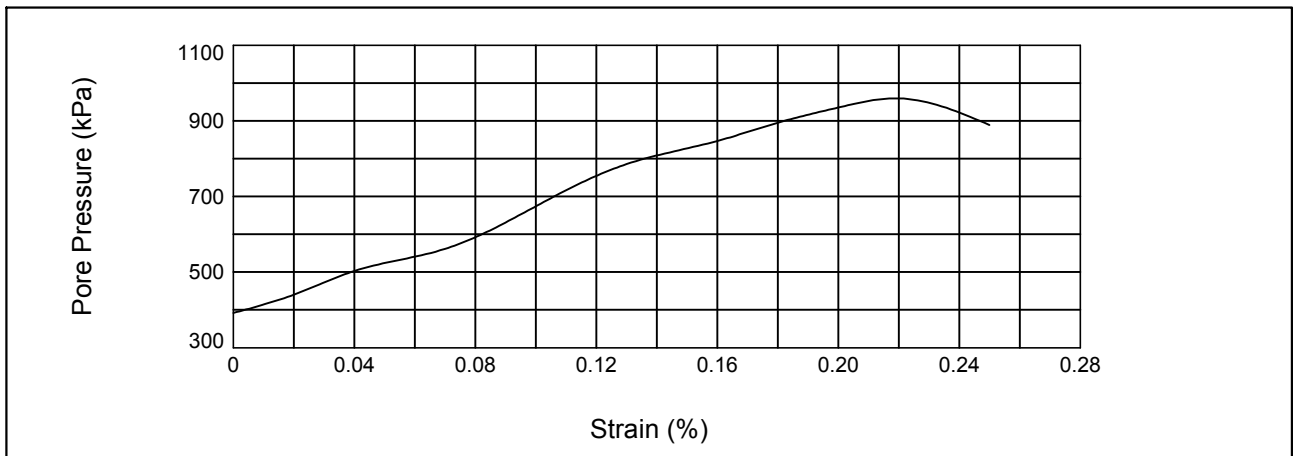
In accordance with BS1377:Part 8:1990

Position ID: **R616**    Sample Ref: **50**    Sample Type: **U**    Depth (m): **36.73**

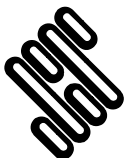
## CONSOLIDATION STAGE



## SHEAR STAGE



GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - EFFECTIVE STRESS 3.3.CU - AAP | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06  
 Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 08/11/18 - 08:26 [AF3]



**STRUCTURAL SOILS**  
 1a Princess Street  
 Bedminster  
 Bristol  
 BS3 4AG

Compiled By		Date
[REDACTED]		08/11/18
Contract	Contract Ref:	
<b>A303 Stonehenge Phase 6 Ground Investigation</b>	<b>733442</b>	

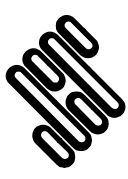


# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

Borehole : **R71801**      Sample Ref : **17**      Sample Type : **U**      Depth (m) : **13.84**  
 Sample Diameter (mm) : **101.24**      Sample Height (mm) : **202.04**  
 Drainage : **Radial + 1 End**      Sample Condition : **Undisturbed**  
 Description : **White CHALK**

	STAGE NUMBER	1	2	3
<b>PROPERTIES</b>	Initial Moisture Content (%)	<b>27</b>		
	Initial Bulk Density (Mg/m <sup>3</sup> )	<b>1.99</b>		
	Initial Dry Density (Mg/m <sup>3</sup> )	<b>1.57</b>		
	Final Moisture Content (%)	<b>27</b>		
	Final Bulk Density (Mg/m <sup>3</sup> )	<b>2.00</b>		
	Final Dry Density (Mg/m <sup>3</sup> )	<b>1.58</b>		
<b>SATURATION</b>	Final Back Pressure (kPa)	<b>325</b>		
	Cell Pressure Increment (kPa)	<b>50</b>		
	Pore Pressure Increment (kPa)	<b>50</b>		
	Final Pore Pressure Ratio - B Value	<b>1.00</b>		
<b>CONSOLIDATION</b>	Cell Pressure (kPa)	<b>600</b>		
	Back Pressure (kPa)	<b>325</b>		
	Effective Cell Pressure (kPa)	<b>275</b>		
	Initial Volume (cm <sup>3</sup> )	<b>1626.52</b>		
	Final Volume (cm <sup>3</sup> )	<b>1619.60</b>		
	Change in Volume (cm <sup>3</sup> )	<b>6.92</b>		
<b>COMPRESSION</b>	Cell Pressure (kPa)	<b>600</b>		
	Initial Pore Water Pressure (kPa)	<b>328.4</b>		
	Strain Rate (mm/min)	<b>0.0056</b>		
	Axial Strain at Failure (%)	<b>0.26</b>		
	Time to Failure (hrs)	<b>1.6</b>		
	Deviator Stress at Failure (kPa)	<b>2393.7</b>		
	Pore Pressure at Failure (kPa)	<b>423.4</b>		
	Effective Major Principal Stress (kPa)	<b>2570.2</b>		
	Effective Minor Principal Stress (kPa)	<b>176.6</b>		
	Effective Principal Stress Ratio	<b>14.55</b>		
	Pore Pressure Coefficient - A <sub>r</sub>	<b>0.04</b>		
Effective Cohesion (kPa) :		<b>NA</b>	Angle of Shear Resistance (degs) : <b>NA</b>	

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrctText L - EFFECTIVE STRESS 11733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk, 19/02/19 - 10:26 | AF3

 <b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	 Contract		ALAN FROST 19/02/19
	<b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b> 

# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION - MOHR CIRCLES

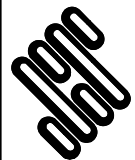
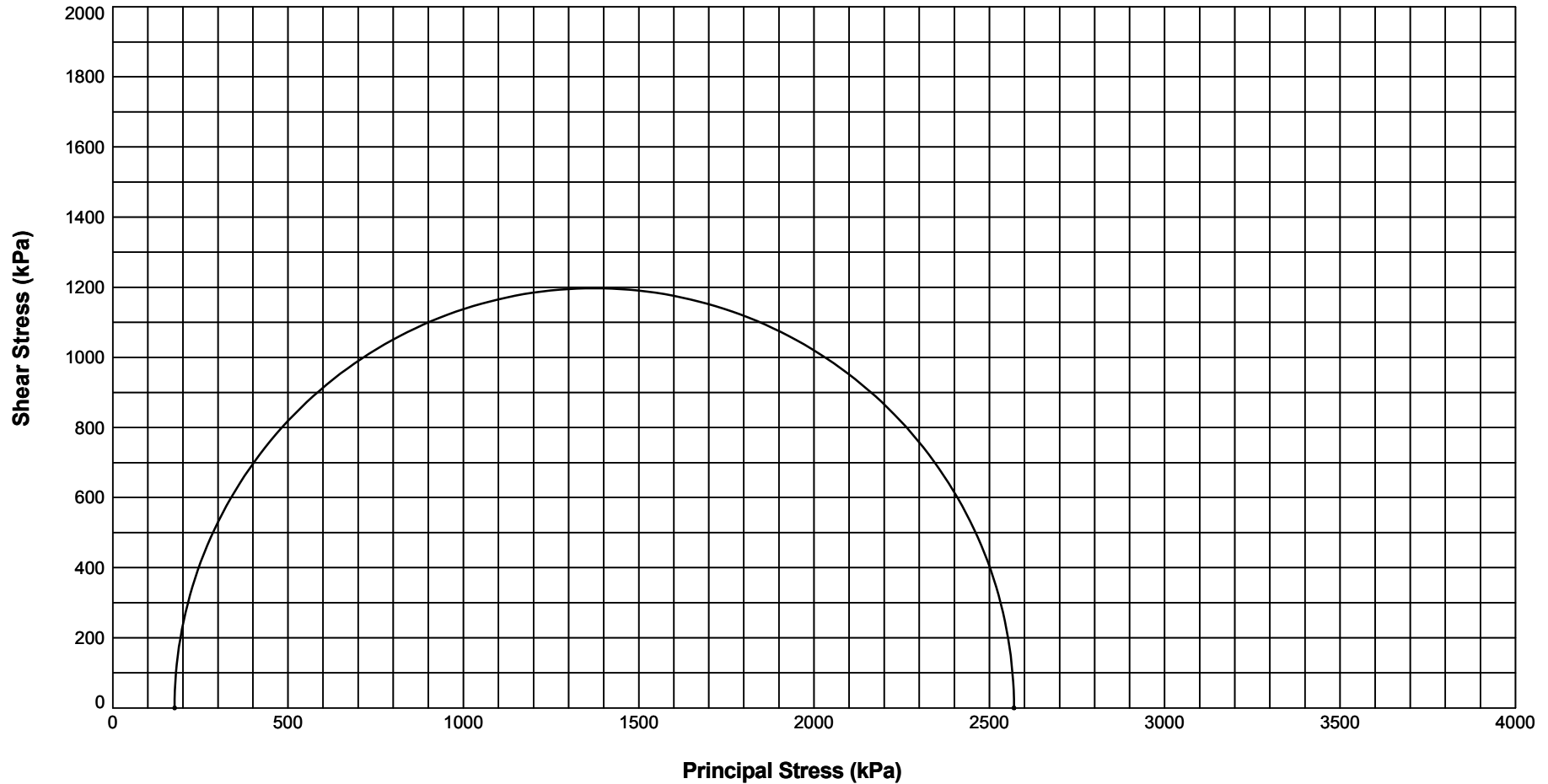
In accordance with BS1377:Part 8:1990

Hole ID : **R71801**

Sample Ref : **17**

Sample Type : **U**

Depth (m) : **13.84**



**STRUCTURAL SOILS**  
1a Princess Street  
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Bristol  
BS3 4AG

Compiled By		Date	Contract Ref:
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Contract			<b>733442</b>
<b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

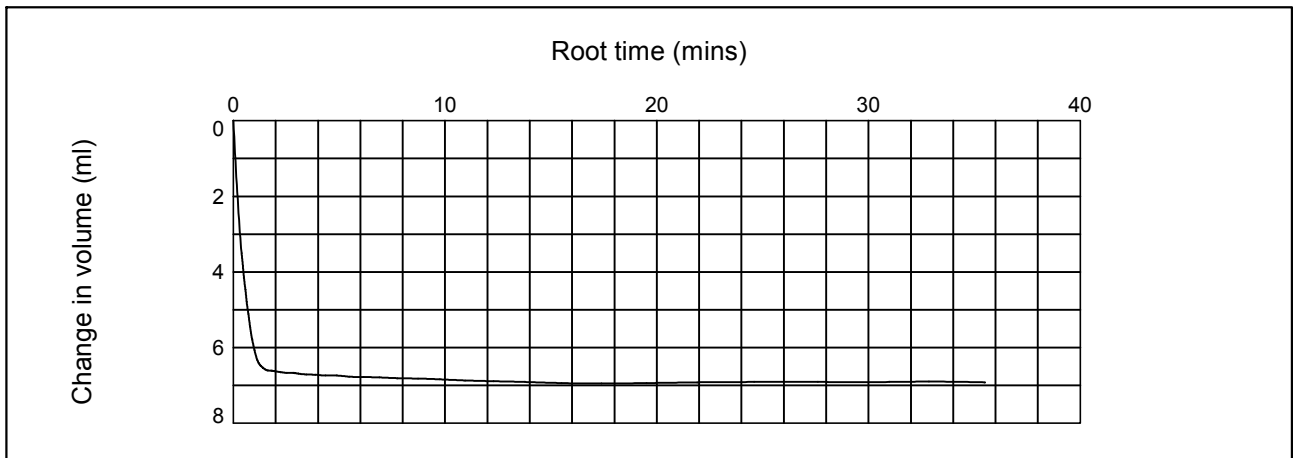
Position ID: **R71801**

Sample Ref: **17**

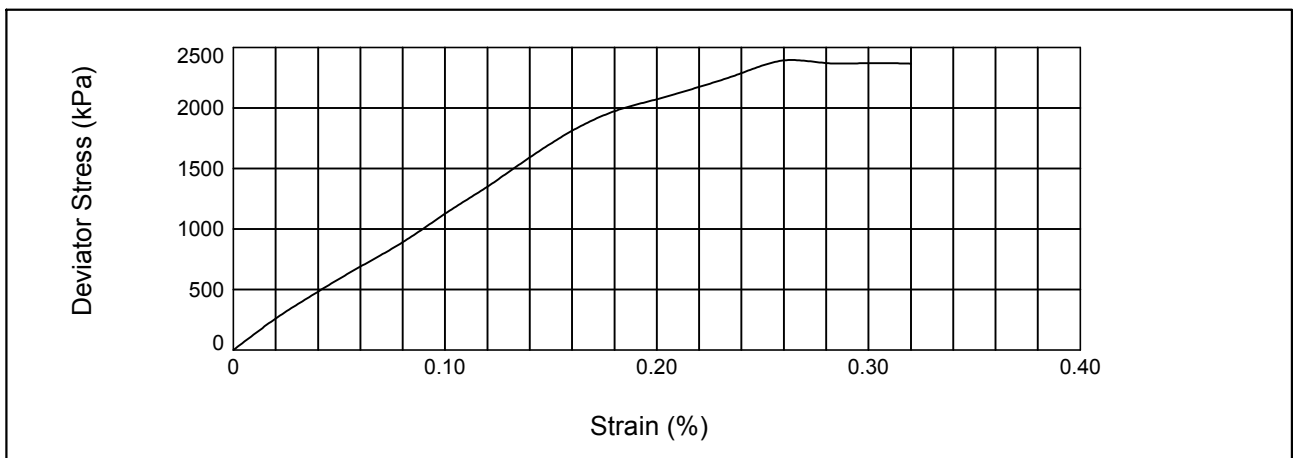
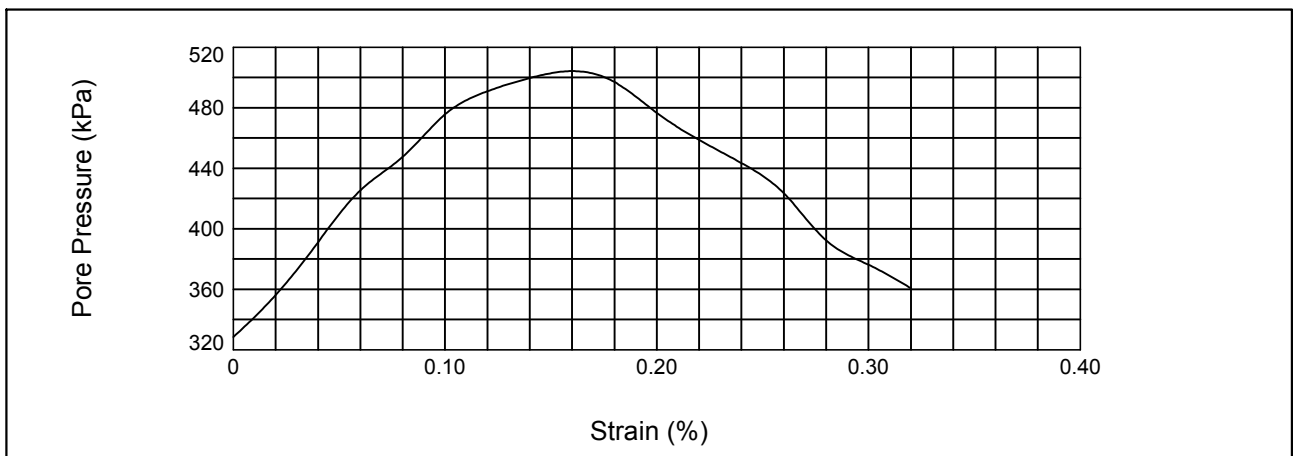
Sample Type: **U**

Depth (m): **13.84**

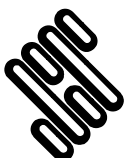
## CONSOLIDATION STAGE



## SHEAR STAGE



GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - EFFECTIVE STRESS 3.3.CU - AAP | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd. Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000. Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/02/19 - 10:33 [AF3]



**STRUCTURAL SOILS**  
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Compiled By		Date
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Contract	Contract Ref:	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

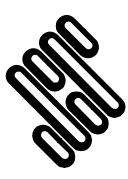


# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

Borehole : **R71805**      Sample Ref : **17**      Sample Type : **U**      Depth (m) : **15.03**  
 Sample Diameter (mm) : **101.35**      Sample Height (mm) : **204.57**  
 Drainage : **Radial + 1 End**      Sample Condition : **Undisturbed**  
 Description : **White CHALK**

	STAGE NUMBER	1	2	3
<b>PROPERTIES</b>	Initial Moisture Content (%)	<b>24</b>		
	Initial Bulk Density (Mg/m <sup>3</sup> )	<b>2.01</b>		
	Initial Dry Density (Mg/m <sup>3</sup> )	<b>1.62</b>		
	Final Moisture Content (%)	<b>24</b>		
	Final Bulk Density (Mg/m <sup>3</sup> )	<b>2.02</b>		
	Final Dry Density (Mg/m <sup>3</sup> )	<b>1.62</b>		
<b>SATURATION</b>	Final Back Pressure (kPa)	<b>340</b>		
	Cell Pressure Increment (kPa)	<b>50</b>		
	Pore Pressure Increment (kPa)	<b>49</b>		
	Final Pore Pressure Ratio - B Value	<b>0.98</b>		
<b>CONSOLIDATION</b>	Cell Pressure (kPa)	<b>630</b>		
	Back Pressure (kPa)	<b>340</b>		
	Effective Cell Pressure (kPa)	<b>290</b>		
	Initial Volume (cm <sup>3</sup> )	<b>1650.28</b>		
	Final Volume (cm <sup>3</sup> )	<b>1647.37</b>		
	Change in Volume (cm <sup>3</sup> )	<b>2.91</b>		
<b>COMPRESSION</b>	Cell Pressure (kPa)	<b>630</b>		
	Initial Pore Water Pressure (kPa)	<b>340.5</b>		
	Strain Rate (mm/min)	<b>0.0034</b>		
	Axial Strain at Failure (%)	<b>0.49</b>		
	Time to Failure (hrs)	<b>4.9</b>		
	Deviator Stress at Failure (kPa)	<b>3090.9</b>		
	Pore Pressure at Failure (kPa)	<b>523.4</b>		
	Effective Major Principal Stress (kPa)	<b>3197.6</b>		
	Effective Minor Principal Stress (kPa)	<b>106.6</b>		
	Effective Principal Stress Ratio	<b>30.00</b>		
	Pore Pressure Coefficient - A <sub>r</sub>	<b>0.06</b>		
Effective Cohesion (kPa) :		<b>NA</b>	Angle of Shear Resistance (degs) : <b>NA</b>	

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrctText L - EFFECTIVE STRESS 11733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 19/02/19 - 10:39 | AF3

 <p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date
	 <b>ALAN FROST</b>		<b>19/02/19</b>
	Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>	

# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION - MOHR CIRCLES

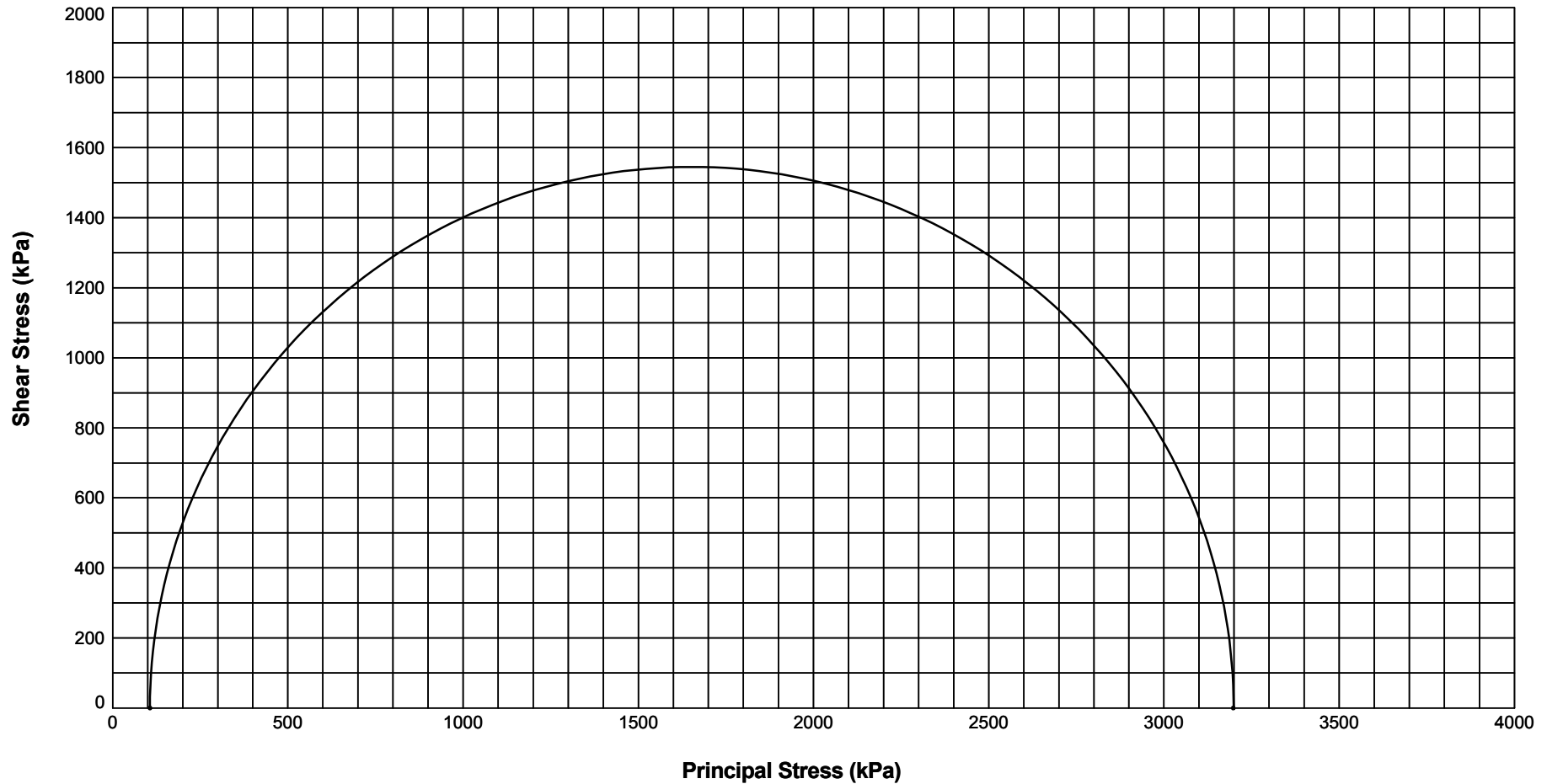
In accordance with BS1377:Part 8:1990

Hole ID : **R71805**

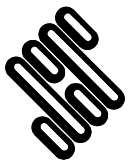
Sample Ref : **17**

Sample Type : **U**

Depth (m) : **15.03**



GINT LIBRARY\_V8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - EFFECTIVE STRESS 2 MOHR CIRC - A4L | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06  
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**STRUCTURAL SOILS**  
 1a Princess Street  
 Bedminster  
 Bristol  
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Compiled By		Date	Contract Ref:  <b>733442</b>
[Redacted]		19.02.19	
Contract			
<b>A303 Stonehenge Phase 7 Ground Investigation</b>			





# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

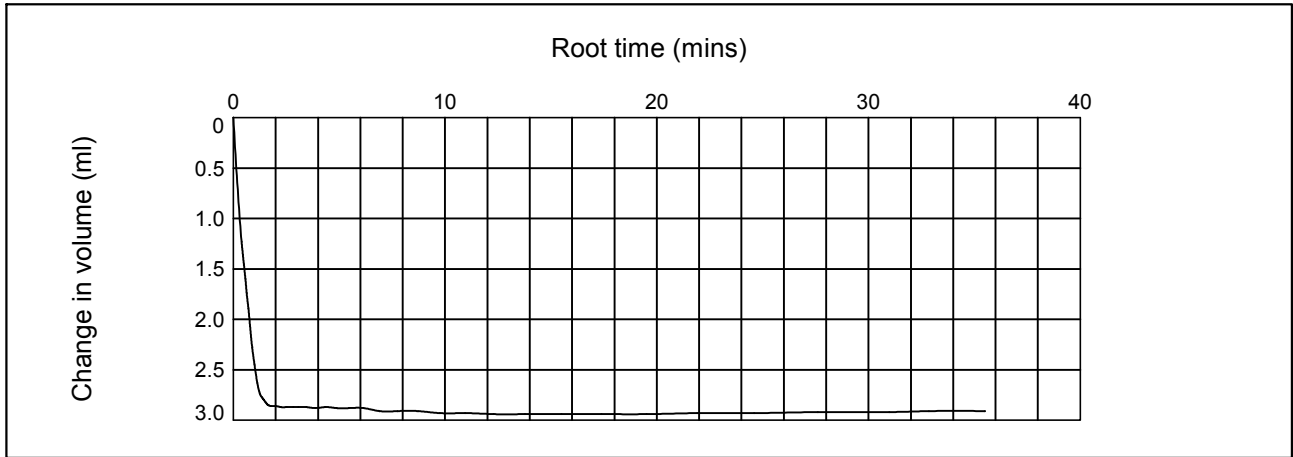
Position ID: **R71805**

Sample Ref: **17**

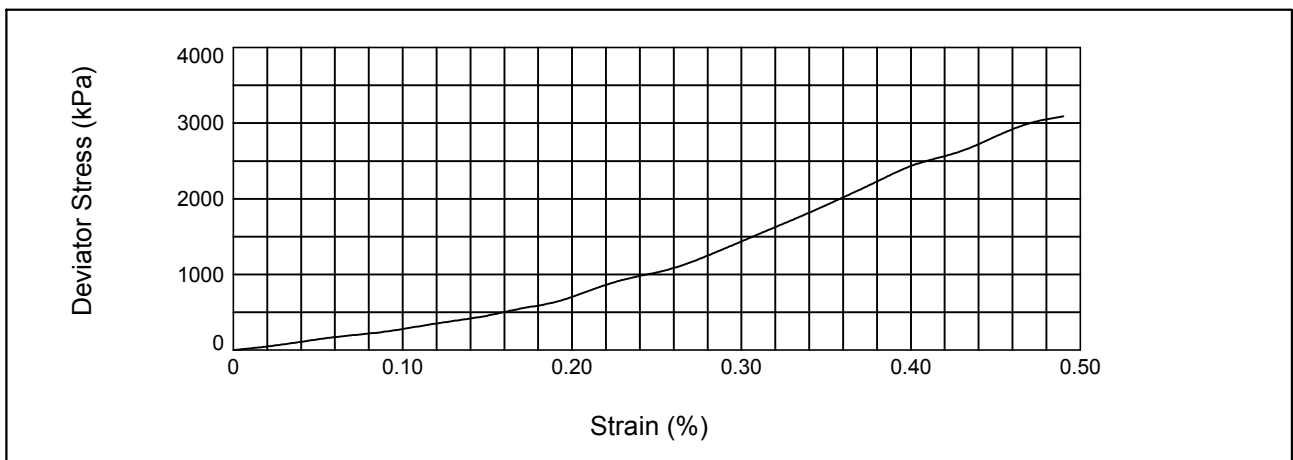
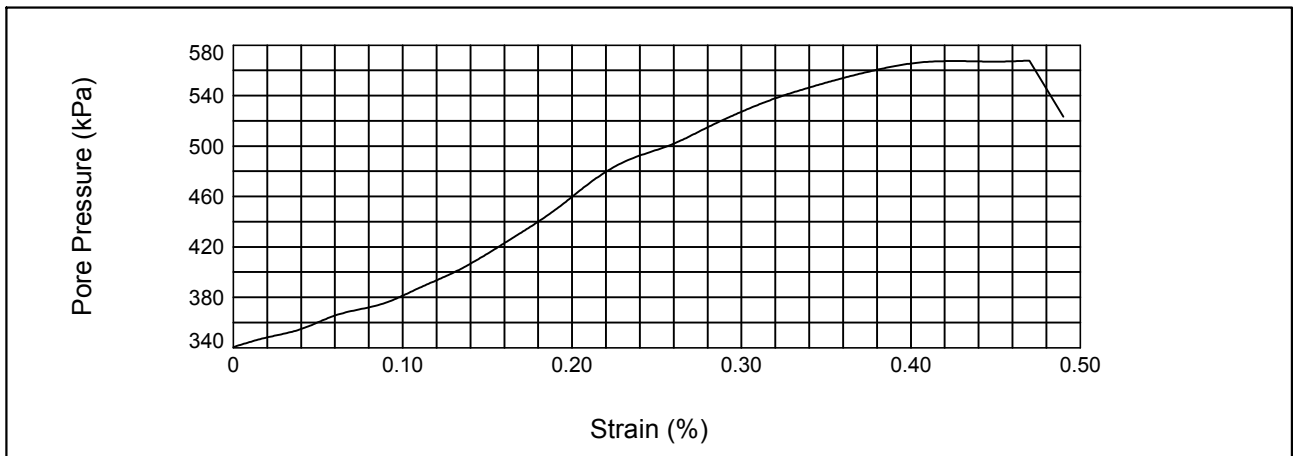
Sample Type: **U**

Depth (m): **15.03**

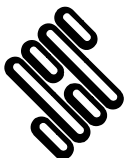
## CONSOLIDATION STAGE



## SHEAR STAGE



GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - EFFECTIVE STRESS 3.3.CU - AAP | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06  
 Structural Soils Ltd, Branch Office - Bristol Lab - 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/02/19 - 10:46 [AF3]



**STRUCTURAL SOILS**  
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 Bristol  
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Compiled By		Date
[REDACTED]		19/02/19
Contract		Contract Ref:
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>

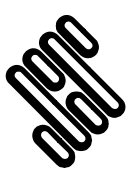


# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

Borehole : **R71809**      Sample Ref : **19**      Sample Type : **U**      Depth (m) : **20.38**  
 Sample Diameter (mm) : **100.17**      Sample Height (mm) : **199.65**  
 Drainage : **Radial + 1 End**      Sample Condition : **Undisturbed**  
 Description : **White CHALK**

	STAGE NUMBER	1	2	3
<b>PROPERTIES</b>	Initial Moisture Content (%)	<b>26</b>		
	Initial Bulk Density (Mg/m <sup>3</sup> )	<b>2.01</b>		
	Initial Dry Density (Mg/m <sup>3</sup> )	<b>1.59</b>		
	Final Moisture Content (%)	<b>26</b>		
	Final Bulk Density (Mg/m <sup>3</sup> )	<b>2.01</b>		
	Final Dry Density (Mg/m <sup>3</sup> )	<b>1.59</b>		
<b>SATURATION</b>	Final Back Pressure (kPa)	<b>340</b>		
	Cell Pressure Increment (kPa)	<b>50</b>		
	Pore Pressure Increment (kPa)	<b>50</b>		
	Final Pore Pressure Ratio - B Value	<b>1.00</b>		
<b>CONSOLIDATION</b>	Cell Pressure (kPa)	<b>735</b>		
	Back Pressure (kPa)	<b>340</b>		
	Effective Cell Pressure (kPa)	<b>395</b>		
	Initial Volume (cm <sup>3</sup> )	<b>1573.32</b>		
	Final Volume (cm <sup>3</sup> )	<b>1571.06</b>		
	Change in Volume (cm <sup>3</sup> )	<b>2.26</b>		
<b>COMPRESSION</b>	Cell Pressure (kPa)	<b>735</b>		
	Initial Pore Water Pressure (kPa)	<b>339.9</b>		
	Strain Rate (mm/min)	<b>0.0028</b>		
	Axial Strain at Failure (%)	<b>0.28</b>		
	Time to Failure (hrs)	<b>3.4</b>		
	Deviator Stress at Failure (kPa)	<b>3070.9</b>		
	Pore Pressure at Failure (kPa)	<b>692.0</b>		
	Effective Major Principal Stress (kPa)	<b>3114.0</b>		
	Effective Minor Principal Stress (kPa)	<b>43.0</b>		
	Effective Principal Stress Ratio	<b>72.42</b>		
	Pore Pressure Coefficient - A <sub>r</sub>	<b>0.11</b>		
Effective Cohesion (kPa) :		<b>NA</b>	Angle of Shear Resistance (degs) : <b>NA</b>	

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrctText L - EFFECTIVE STRESS 11733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 19/02/19 - 10:50 | AF3

 <b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	 Contract		ALAN FROST 19/02/19
	<b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b> 

# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION - MOHR CIRCLES

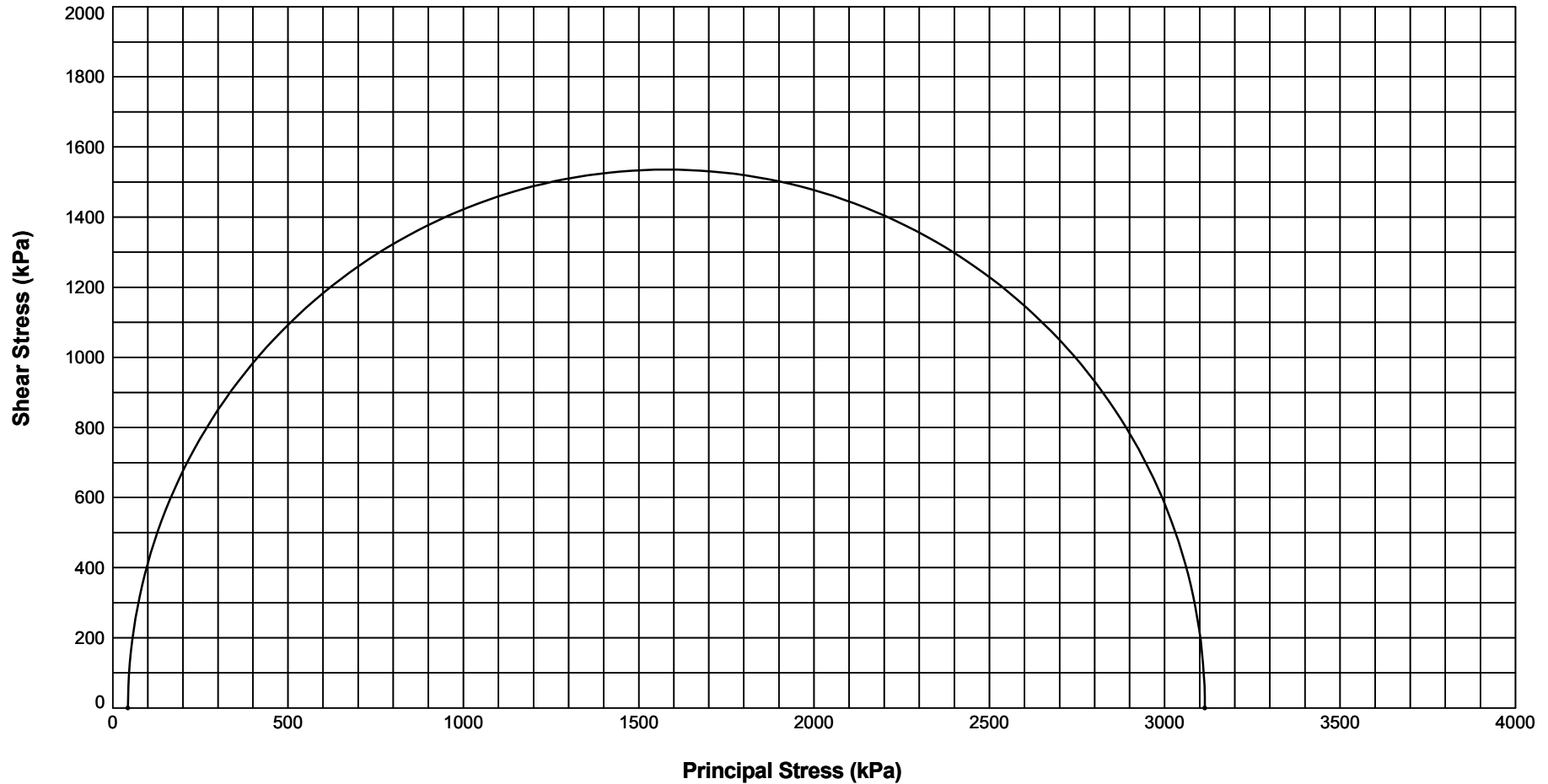
In accordance with BS1377:Part 8:1990

Hole ID : **R71809**

Sample Ref : **19**

Sample Type : **U**

Depth (m) : **20.38**



**STRUCTURAL SOILS**  
1a Princess Street  
Bedminster  
Bristol  
BS3 4AG

Compiled By		Date	Contract Ref:
[REDACTED]		19.02.19	
Contract			<b>733442</b>
<b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

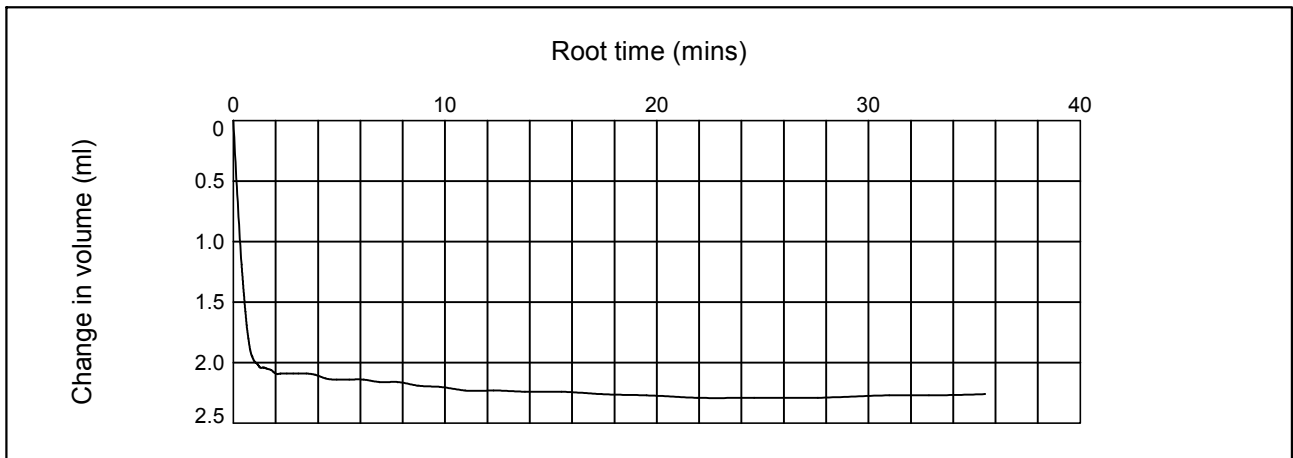
Position ID: **R71809**

Sample Ref: **19**

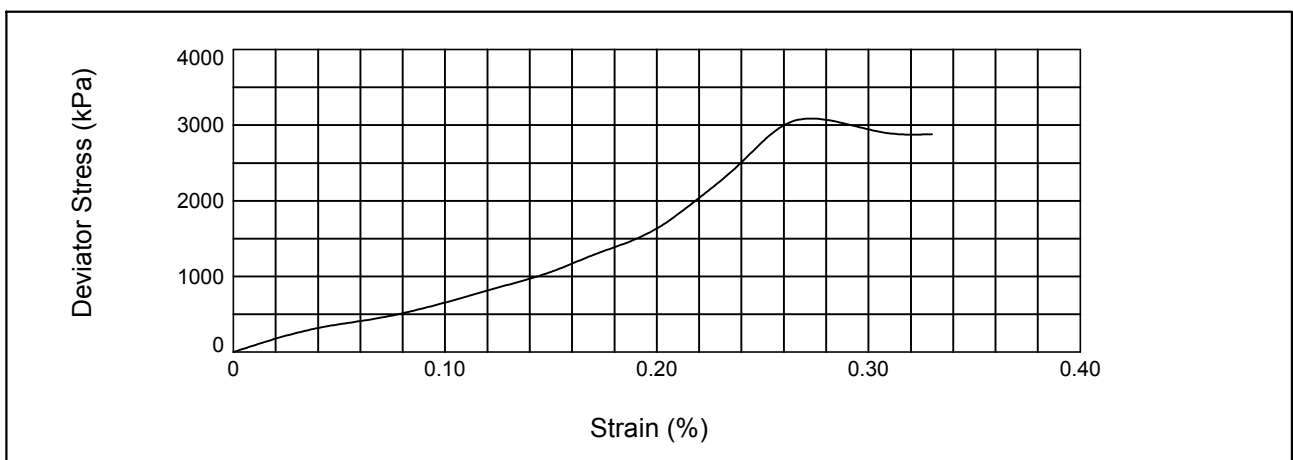
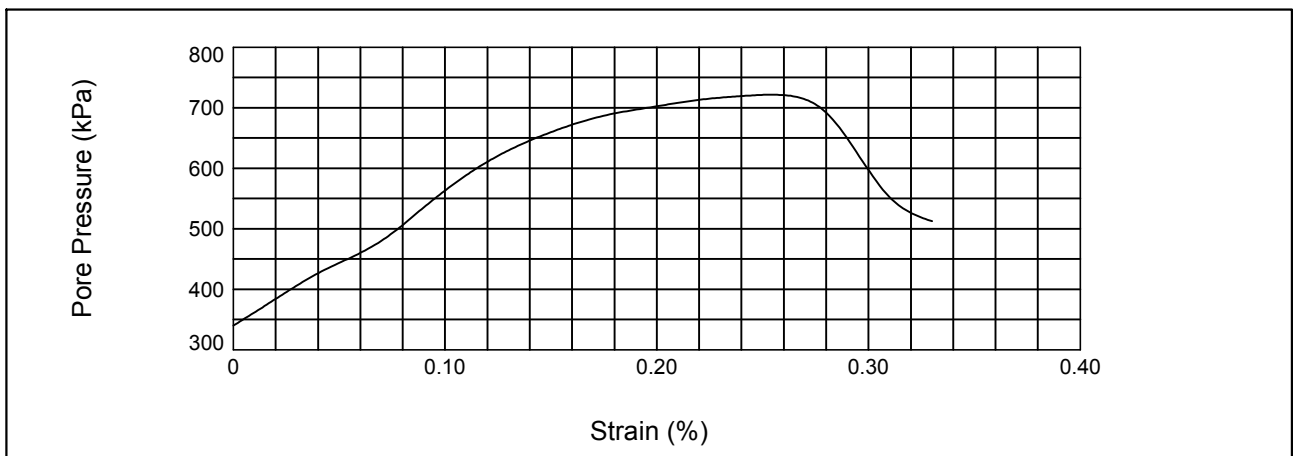
Sample Type: **U**

Depth (m): **20.38**

## CONSOLIDATION STAGE



## SHEAR STAGE



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Compiled By

Date

**ALAN FROST**

**19/02/19**

Contract

Contract Ref:

**A303 Stonehenge Phase 7 Ground Investigation**

**733442**

# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

Borehole : **R71813**      Sample Ref : **40**      Sample Type : **U**      Depth (m) : **34.49**  
 Sample Diameter (mm) : **101.38**      Sample Height (mm) : **203.58**  
 Drainage : **Radial + 1 End**      Sample Condition : **Undisturbed**  
 Description : **White CHALK**

	STAGE NUMBER	1	2	3
<b>PROPERTIES</b>	Initial Moisture Content (%)	<b>26</b>		
	Initial Bulk Density (Mg/m <sup>3</sup> )	<b>1.98</b>		
	Initial Dry Density (Mg/m <sup>3</sup> )	<b>1.58</b>		
	Final Moisture Content (%)	<b>26</b>		
	Final Bulk Density (Mg/m <sup>3</sup> )	<b>2.00</b>		
	Final Dry Density (Mg/m <sup>3</sup> )	<b>1.59</b>		
<b>SATURATION</b>	Final Back Pressure (kPa)	<b>325</b>		
	Cell Pressure Increment (kPa)	<b>50</b>		
	Pore Pressure Increment (kPa)	<b>50</b>		
	Final Pore Pressure Ratio - B Value	<b>1.00</b>		
<b>CONSOLIDATION</b>	Cell Pressure (kPa)	<b>1000</b>		
	Back Pressure (kPa)	<b>325</b>		
	Effective Cell Pressure (kPa)	<b>675</b>		
	Initial Volume (cm <sup>3</sup> )	<b>1643.25</b>		
	Final Volume (cm <sup>3</sup> )	<b>1633.27</b>		
	Change in Volume (cm <sup>3</sup> )	<b>9.98</b>		
<b>COMPRESSION</b>	Cell Pressure (kPa)	<b>1000</b>		
	Initial Pore Water Pressure (kPa)	<b>330.3</b>		
	Strain Rate (mm/min)	<b>0.0043</b>		
	Axial Strain at Failure (%)	<b>0.16</b>		
	Time to Failure (hrs)	<b>1.2</b>		
	Deviator Stress at Failure (kPa)	<b>2783.0</b>		
	Pore Pressure at Failure (kPa)	<b>823.0</b>		
	Effective Major Principal Stress (kPa)	<b>2960.0</b>		
	Effective Minor Principal Stress (kPa)	<b>177.0</b>		
	Effective Principal Stress Ratio	<b>16.72</b>		
	Pore Pressure Coefficient - A <sub>r</sub>	<b>0.18</b>		
Effective Cohesion (kPa) :		<b>NA</b>	Angle of Shear Resistance (degs) : <b>NA</b>	

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	Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>	

# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION - MOHR CIRCLES

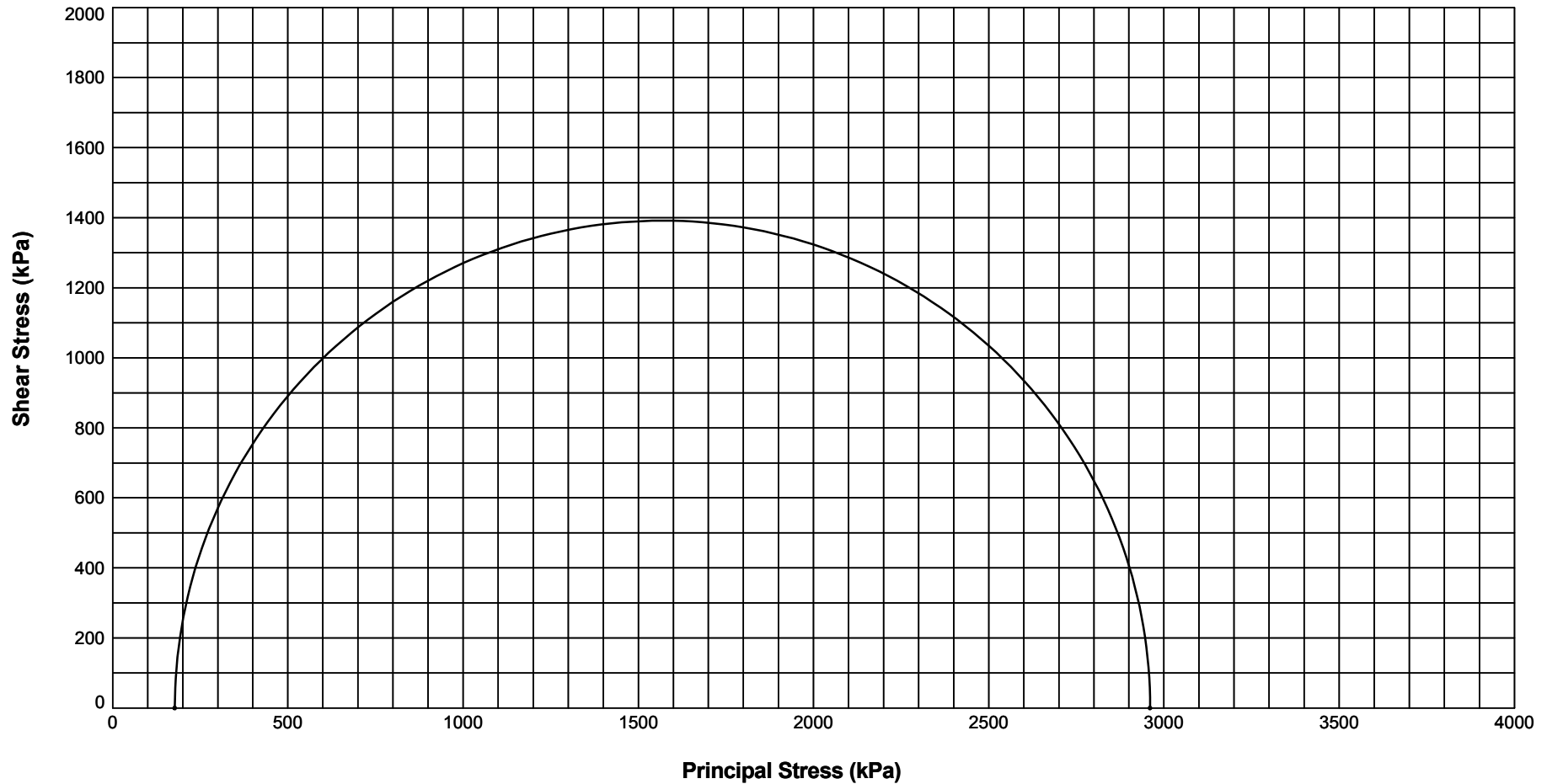
In accordance with BS1377:Part 8:1990

Hole ID : **R71813**

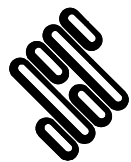
Sample Ref : **40**

Sample Type : **U**

Depth (m) : **34.49**



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# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

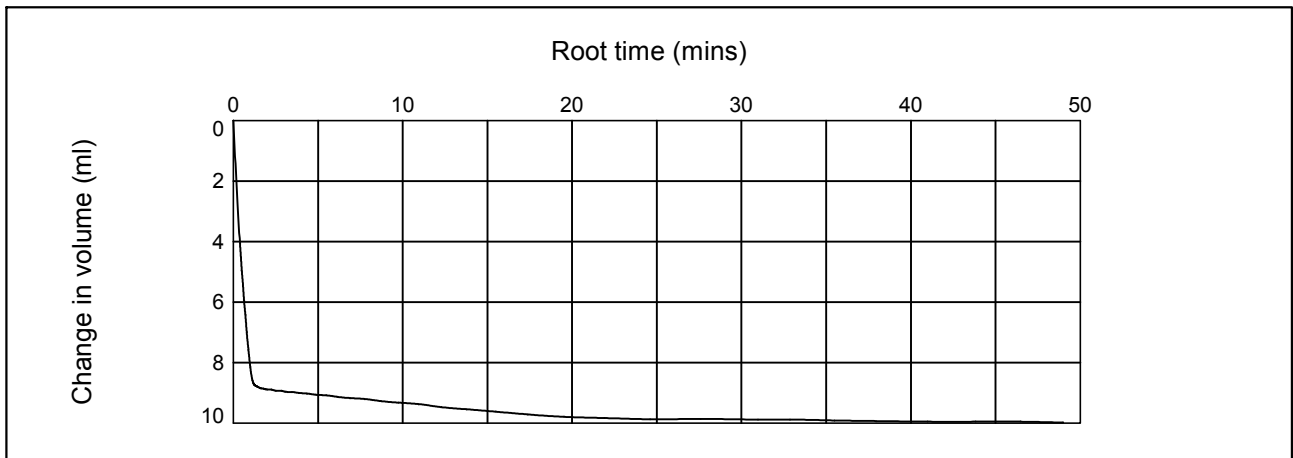
Position ID: **R71813**

Sample Ref: **40**

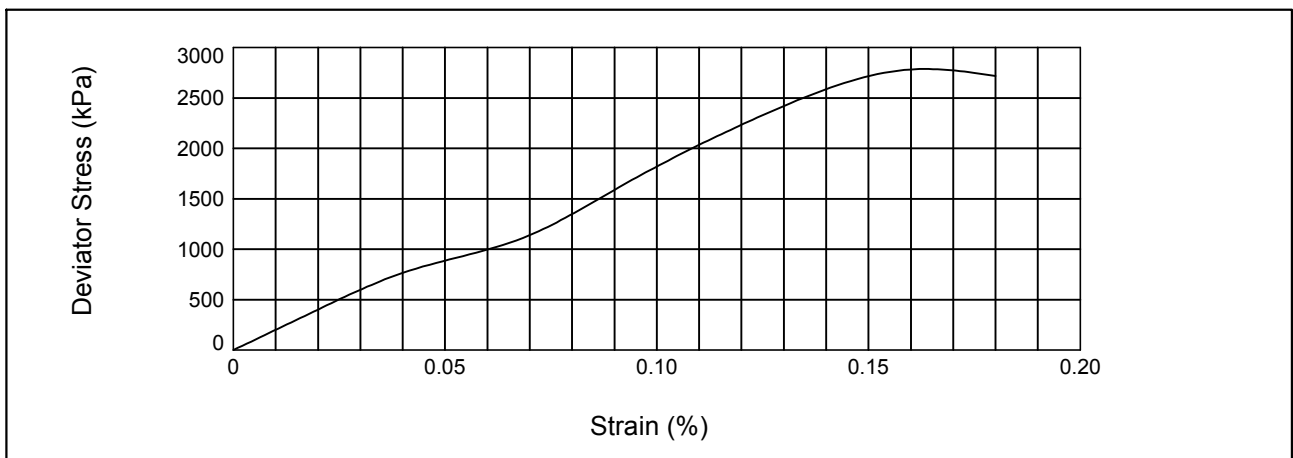
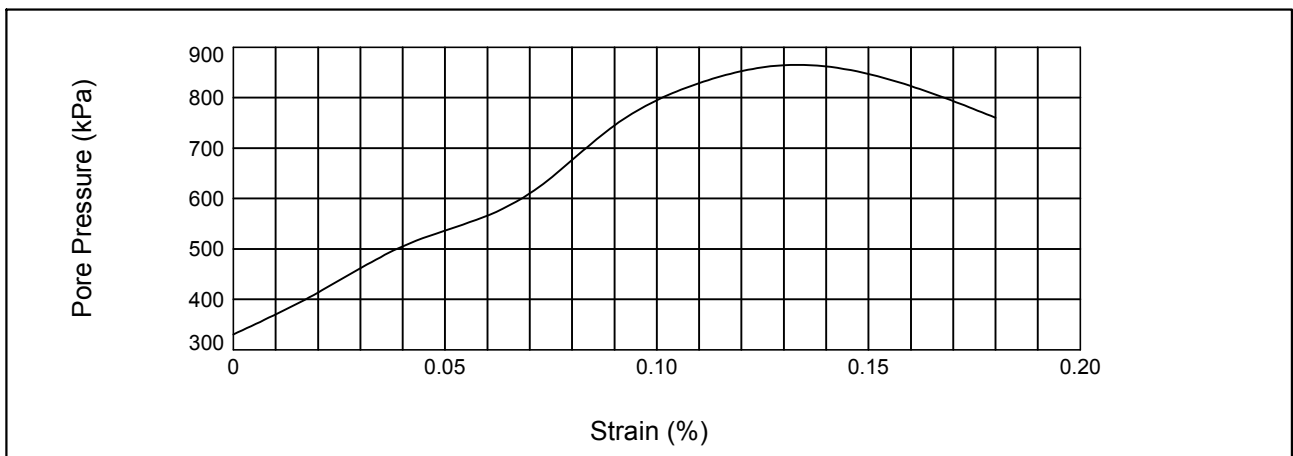
Sample Type: **U**

Depth (m): **34.49**

## CONSOLIDATION STAGE



## SHEAR STAGE



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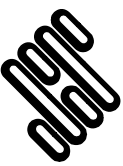


# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

Borehole : **R71817**      Sample Ref : **31**      Sample Type : **U**      Depth (m) : **24.52**  
 Sample Diameter (mm) : **100.93**      Sample Height (mm) : **201.83**  
 Drainage : **Radial + 1 End**      Sample Condition : **Undisturbed**  
 Description : **White CHALK**

	STAGE NUMBER	1	2	3
<b>PROPERTIES</b>	Initial Moisture Content (%)	<b>26</b>		
	Initial Bulk Density (Mg/m <sup>3</sup> )	<b>1.97</b>		
	Initial Dry Density (Mg/m <sup>3</sup> )	<b>1.57</b>		
	Final Moisture Content (%)	<b>26</b>		
	Final Bulk Density (Mg/m <sup>3</sup> )	<b>1.98</b>		
	Final Dry Density (Mg/m <sup>3</sup> )	<b>1.57</b>		
<b>SATURATION</b>	Final Back Pressure (kPa)	<b>390</b>		
	Cell Pressure Increment (kPa)	<b>50</b>		
	Pore Pressure Increment (kPa)	<b>50</b>		
	Final Pore Pressure Ratio - B Value	<b>1.00</b>		
<b>CONSOLIDATION</b>	Cell Pressure (kPa)	<b>865</b>		
	Back Pressure (kPa)	<b>390</b>		
	Effective Cell Pressure (kPa)	<b>475</b>		
	Initial Volume (cm <sup>3</sup> )	<b>1614.66</b>		
	Final Volume (cm <sup>3</sup> )	<b>1610.32</b>		
	Change in Volume (cm <sup>3</sup> )	<b>4.34</b>		
<b>COMPRESSION</b>	Cell Pressure (kPa)	<b>865</b>		
	Initial Pore Water Pressure (kPa)	<b>391.6</b>		
	Strain Rate (mm/min)	<b>0.0042</b>		
	Axial Strain at Failure (%)	<b>0.30</b>		
	Time to Failure (hrs)	<b>2.4</b>		
	Deviator Stress at Failure (kPa)	<b>3363.8</b>		
	Pore Pressure at Failure (kPa)	<b>533.0</b>		
	Effective Major Principal Stress (kPa)	<b>3695.8</b>		
	Effective Minor Principal Stress (kPa)	<b>332.0</b>		
	Effective Principal Stress Ratio	<b>11.13</b>		
Pore Pressure Coefficient - A <sub>r</sub>	<b>0.04</b>			
Effective Cohesion (kPa) :		<b>NA</b>	Angle of Shear Resistance (degs) : <b>NA</b>	

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# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION - MOHR CIRCLES

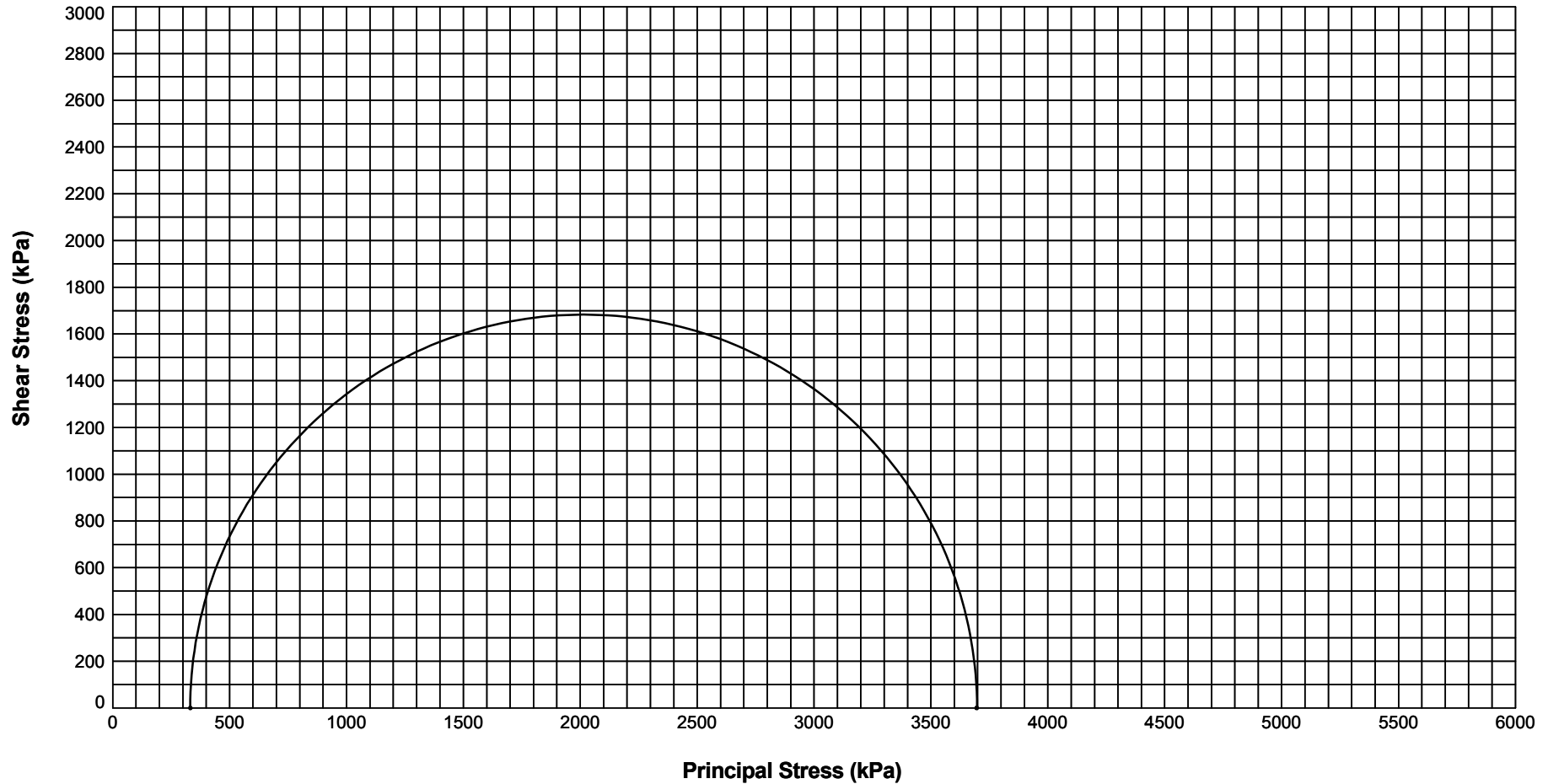
In accordance with BS1377:Part 8:1990

Hole ID : **R71817**

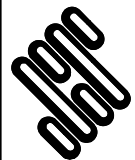
Sample Ref : **31**

Sample Type : **U**

Depth (m) : **24.52**



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# CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST

In accordance with BS1377:Part 8:1990

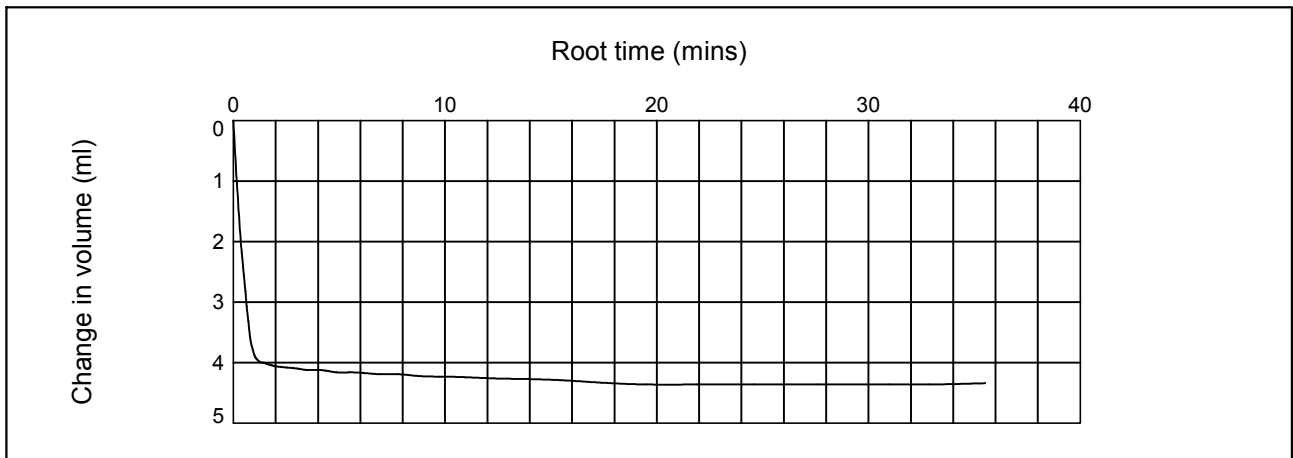
Position ID: **R71817**

Sample Ref: **31**

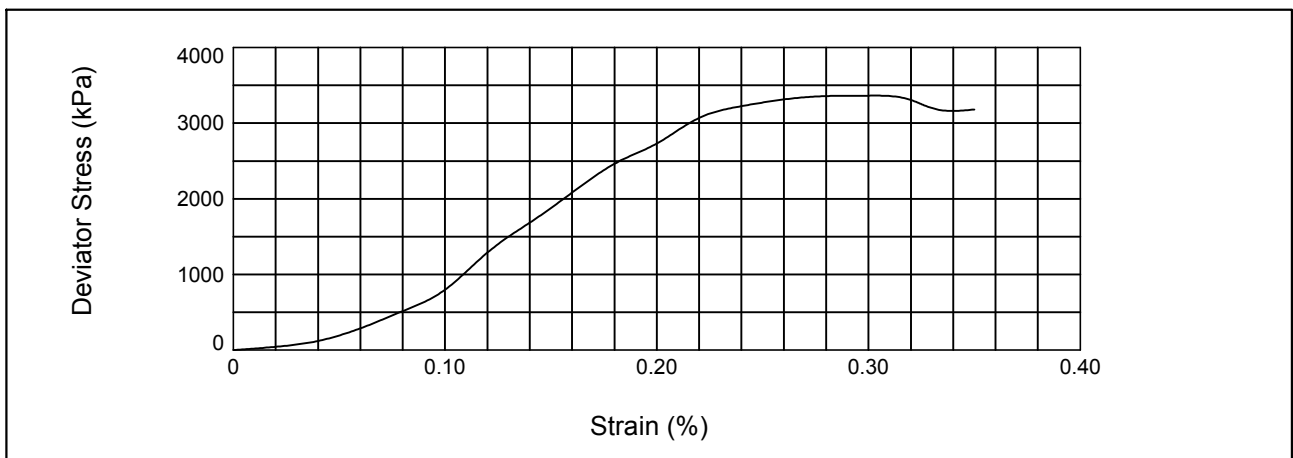
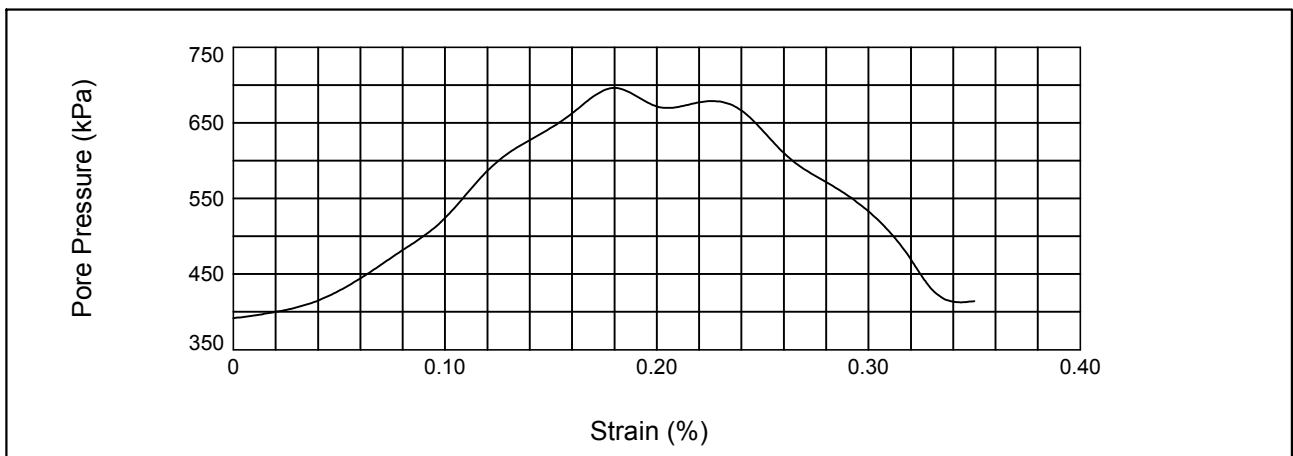
Sample Type: **U**

Depth (m): **24.52**

## CONSOLIDATION STAGE



## SHEAR STAGE



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R602
Sample Ref :	33
Depth (m) :	26.40
Type of Discontinuity :	Saw cut
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00795
Type of Encapsulating Material :	Gypsum Plaster
Description :	Off white CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	0 - 2	0 - 2
Lower Surface of Discontinuity :	0 - 2	2 - 4

## LOADING DETAILS

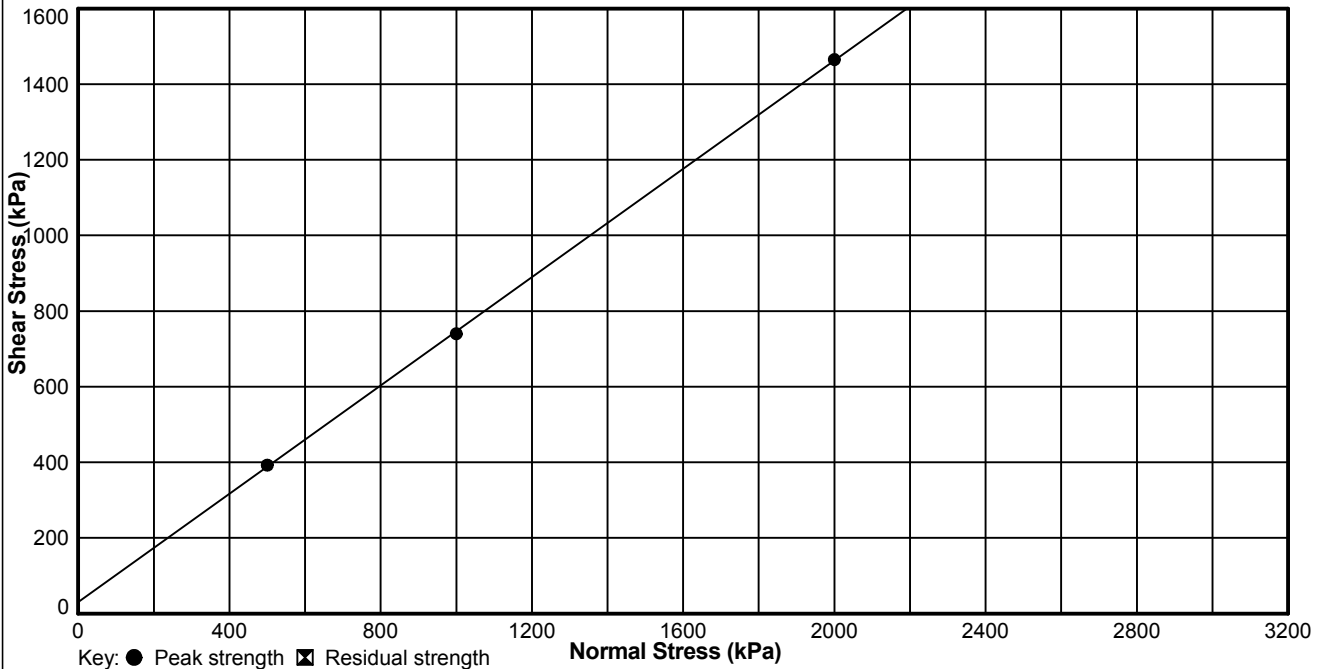
	1	2	3	4	5
Normal Stress (kPa) :	500	1000	2000	NA	NA
Shear Stress (kPa) :	392	740	1465	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.1	0.3	0.9	NA	NA
Shear Displacement at Peak Load (mm) :	9.7	8.1	3.3	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	35.6
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	29.9
Residual Stress (kPa) :	NA



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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

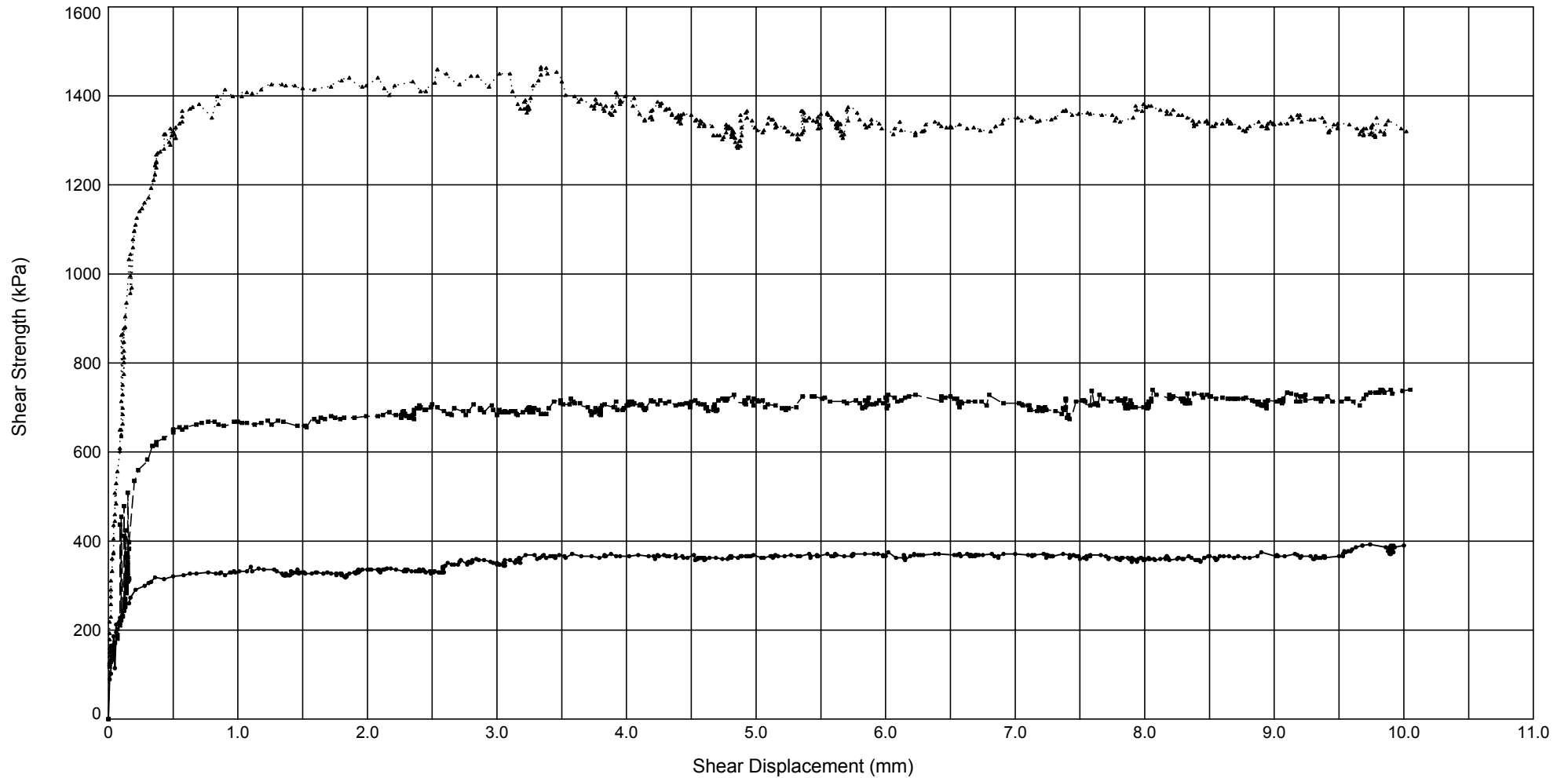
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R602**

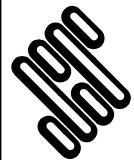
Sample Ref : **33**

Sample Type : **U**

Depth (m) : **26.40**



Legend: ● Stage 1, ■ Stage 2, ▲ Stage 3, ★ Stage 4



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**EMY HOWARD**

Date

**29.09.18**

Contract Ref:

**733442**



# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R606
Sample Ref :	40
Depth (m) :	30.20
Type of Discontinuity :	Joint
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00601
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	14 - 16	12 - 14
Lower Surface of Discontinuity :	14 - 16	12 - 14

## LOADING DETAILS

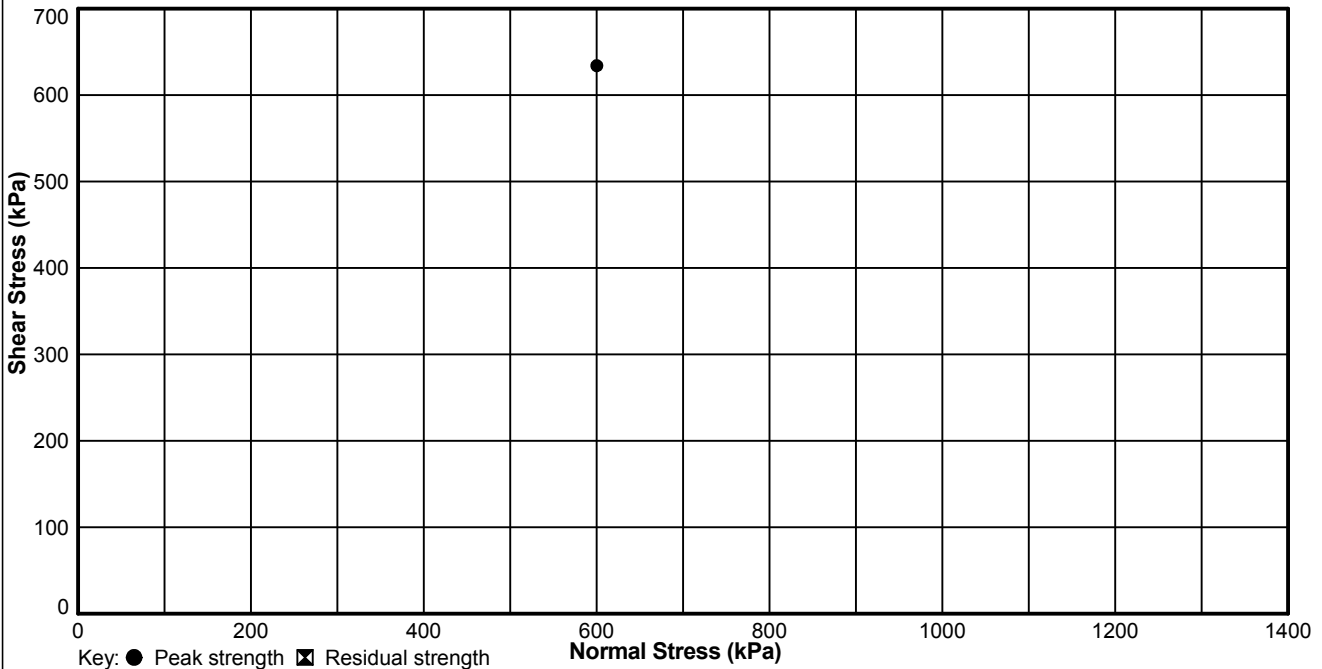
	1	2	3	4	5
Normal Stress (kPa) :	600	NA	NA	NA	NA
Shear Stress (kPa) :	634	NA	NA	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.4	NA	NA	NA	NA
Shear Displacement at Peak Load (mm) :	3.4	NA	NA	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	NA
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	NA
Residual Stress (kPa) :	NA



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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

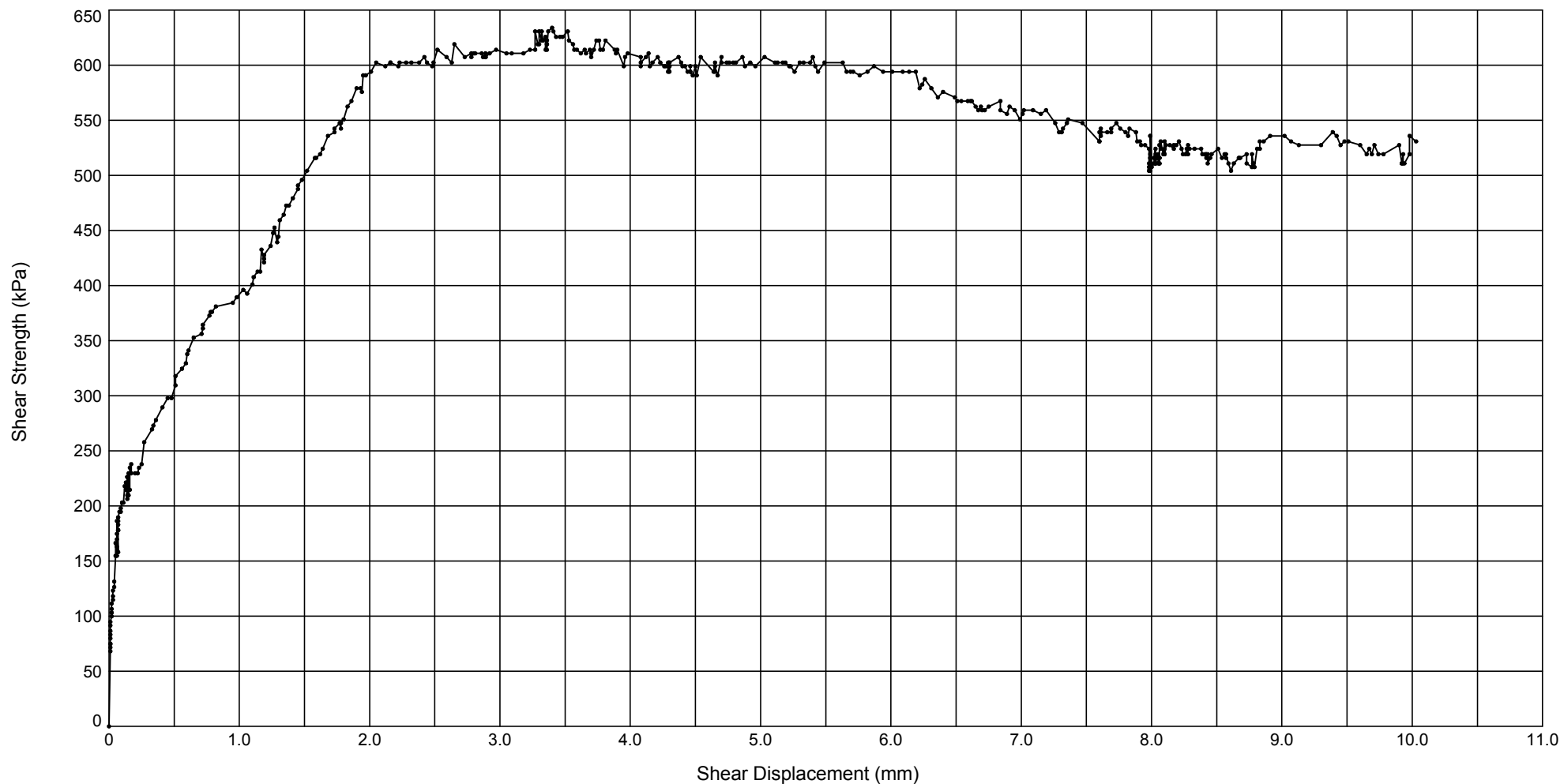
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R606**

Sample Ref : **40**

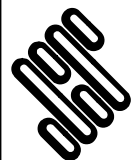
Sample Type : **D**

Depth (m) : **30.20**



Legend: ● Stage 1, ☒ Stage 2, ▲ Stage 3, ★ Stage 4

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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R607
Sample Ref :	37
Depth (m) :	29.64
Type of Discontinuity :	Saw cut
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00763
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	0 - 2	0 - 2
Lower Surface of Discontinuity :	0 - 2	0 - 2

## LOADING DETAILS

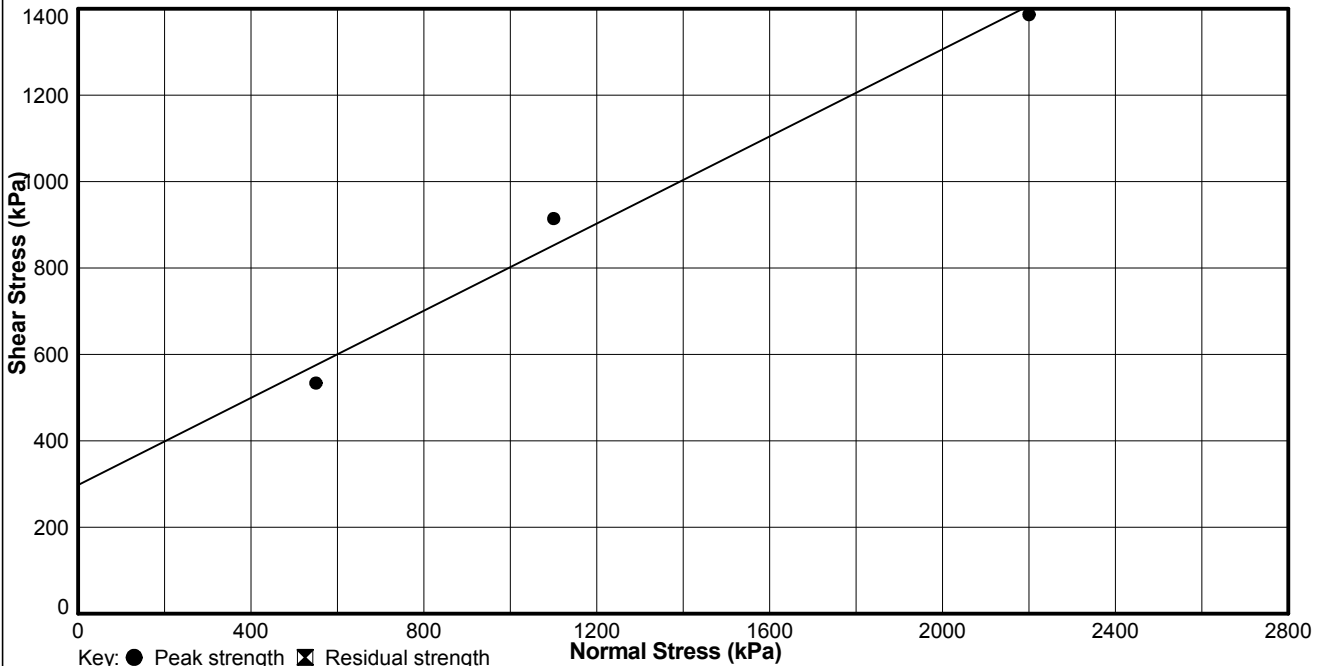
	1	2	3	4	5
Normal Stress (kPa) :	550	1100	2200	NA	NA
Shear Stress (kPa) :	533	914	1386	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.1	0.3	2.1	NA	NA
Shear Displacement at Peak Load (mm) :	9.9	8.9	9.3	NA	NA

## APPARENT FRICTION ANGLE

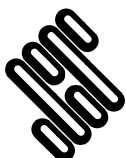
Peak Stress (degrees) :	26.8
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	297.2
Residual Stress (kPa) :	NA



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ALAN FROST		03/04/19
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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

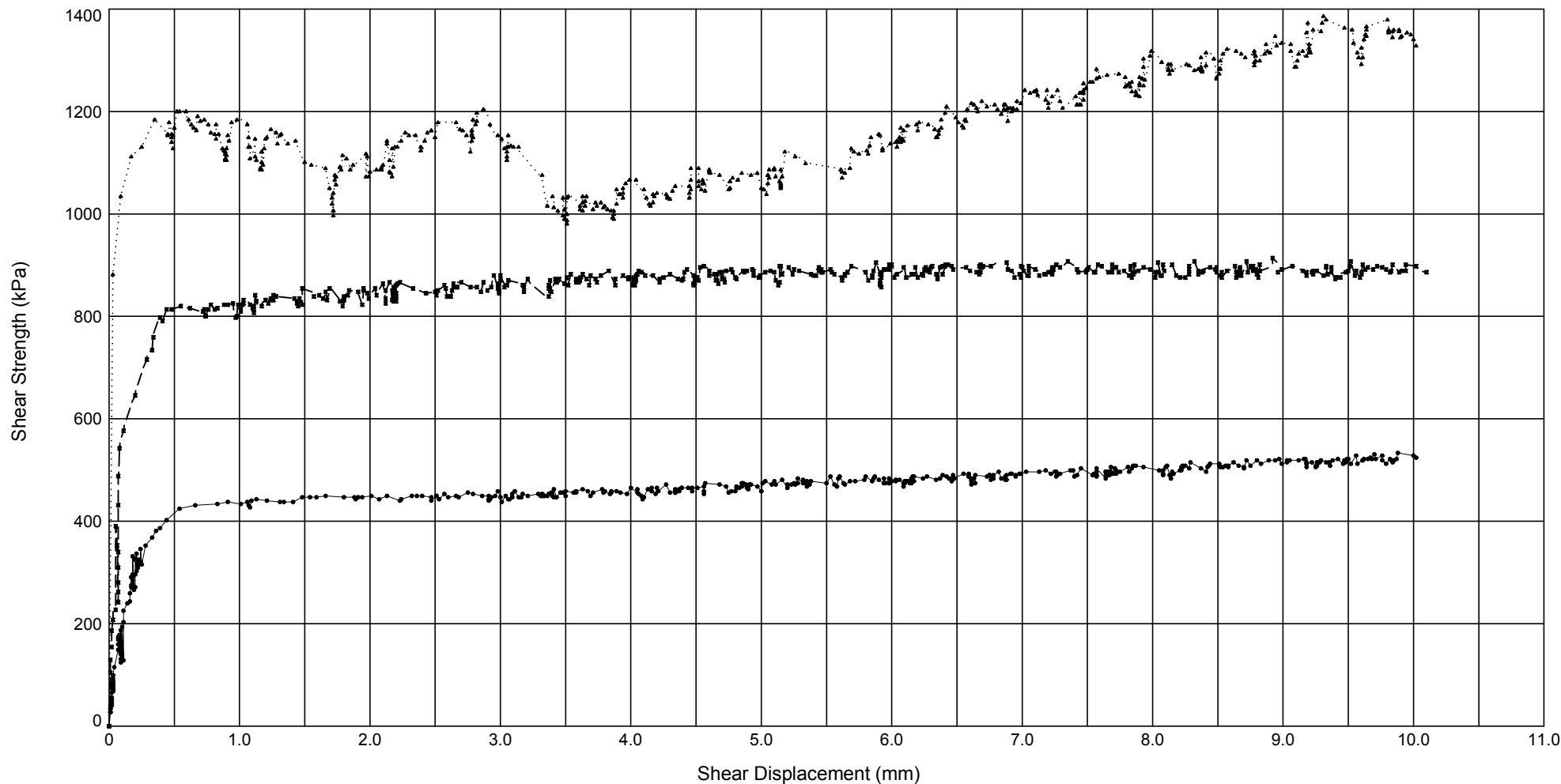
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : R607

Sample Ref : 37

Sample Type : U

Depth (m) : 29.64



Legend: ● Stage 1, ◻ Stage 2, ▲ Stage 3, ★ Stage 4



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R608
Sample Ref :	48
Depth (m) :	36.30
Type of Discontinuity :	Saw cut
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00796
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	0 - 2	0 - 2
Lower Surface of Discontinuity :	0 - 2	0 - 2

## LOADING DETAILS

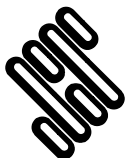
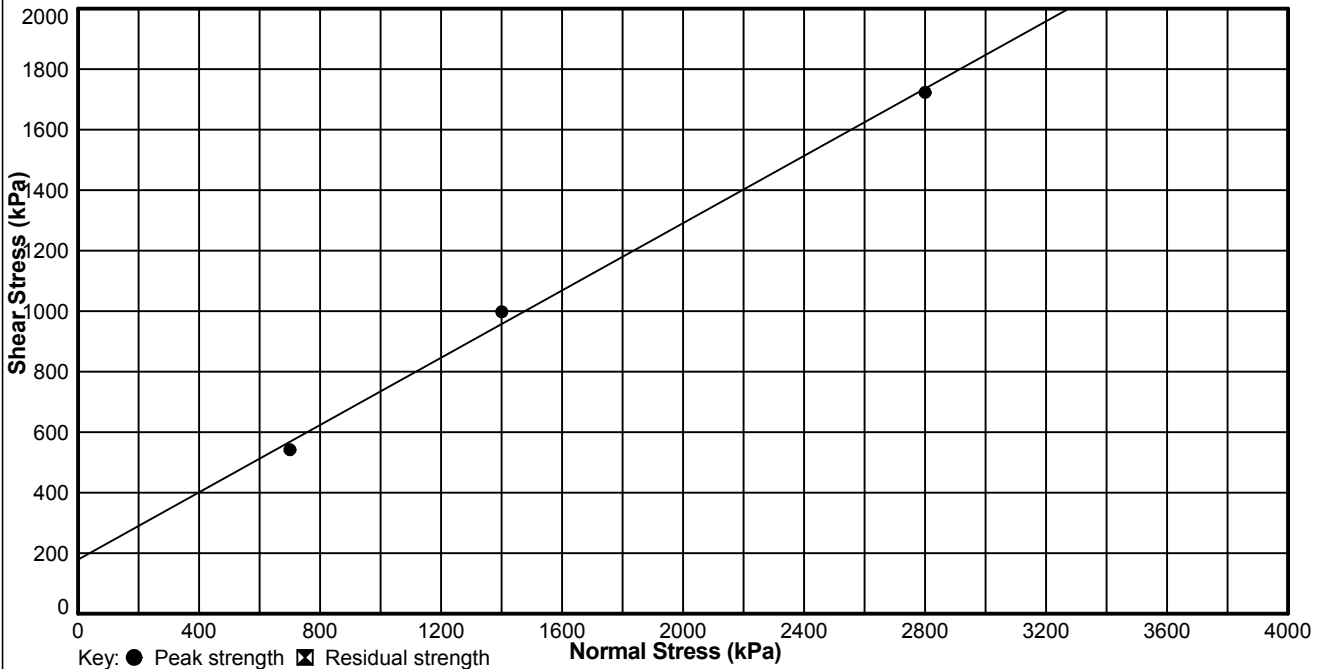
	1	2	3	4	5
Normal Stress (kPa) :	700	1400	2800	NA	NA
Shear Stress (kPa) :	541	998	1723	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.1	0.4	1.4	NA	NA
Shear Displacement at Peak Load (mm) :	9.7	6.3	9.7	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	29.1
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	178.9
Residual Stress (kPa) :	NA



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Contract Ref:

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**733442**



# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

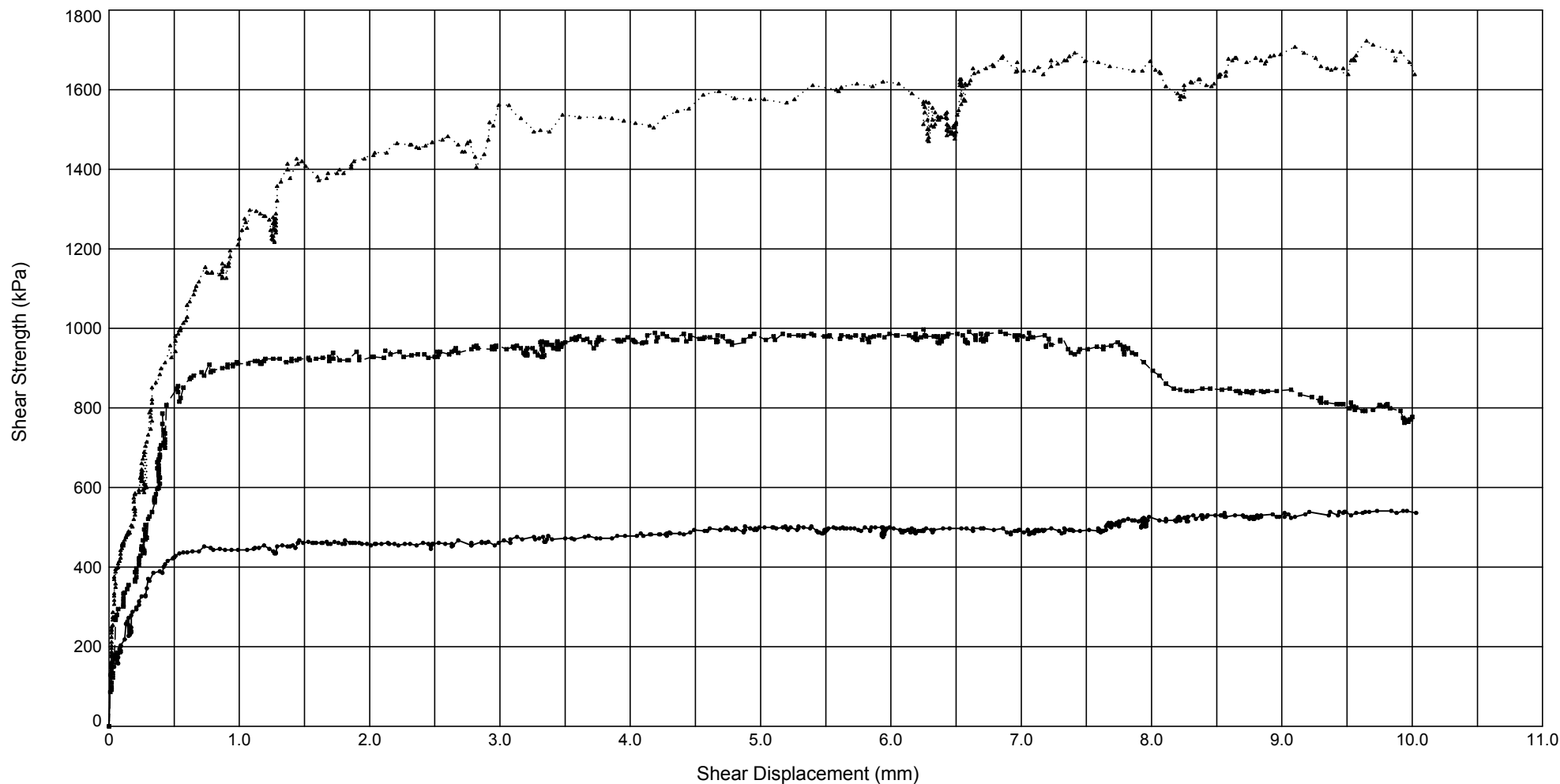
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R608**

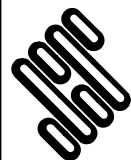
Sample Ref : **48**

Sample Type : **U**

Depth (m) : **36.30**



Legend: ● Stage 1, ■ Stage 2, ▲ Stage 3, ★ Stage 4



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R610
Sample Ref :	22
Depth (m) :	15.30
Type of Discontinuity :	Joint
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00688
Type of Encapsulating Material :	Gypsum Plaster
Description :	Off white CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	10 - 12	10 - 12
Lower Surface of Discontinuity :	10 - 12	10 - 12

## LOADING DETAILS

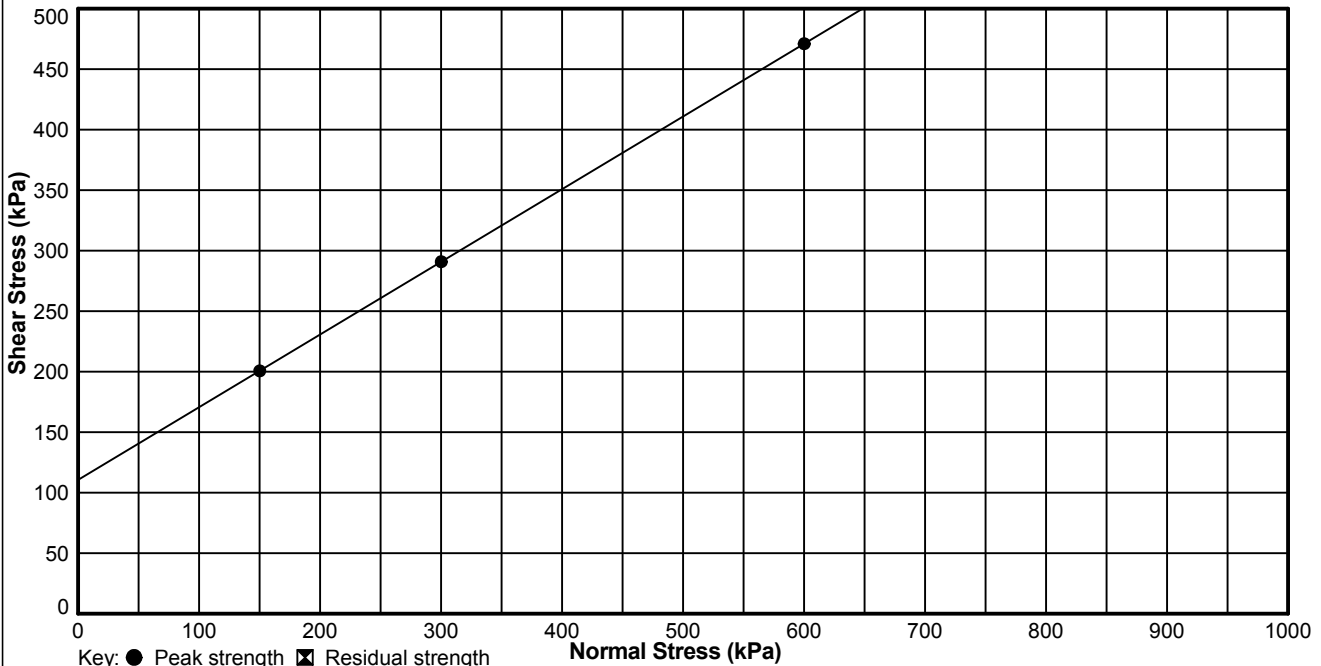
	1	2	3	4	5
Normal Stress (kPa) :	150	300	600	NA	NA
Shear Stress (kPa) :	201	291	471	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.5	0.6	1.6	NA	NA
Shear Displacement at Peak Load (mm) :	7.8	6.1	9.9	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	31.0
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	110.5
Residual Stress (kPa) :	NA



GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - ROCK SBOX - 1 - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06.  
 Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@scs.co.uk | 20/10/18 - 09:36 | AF3



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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

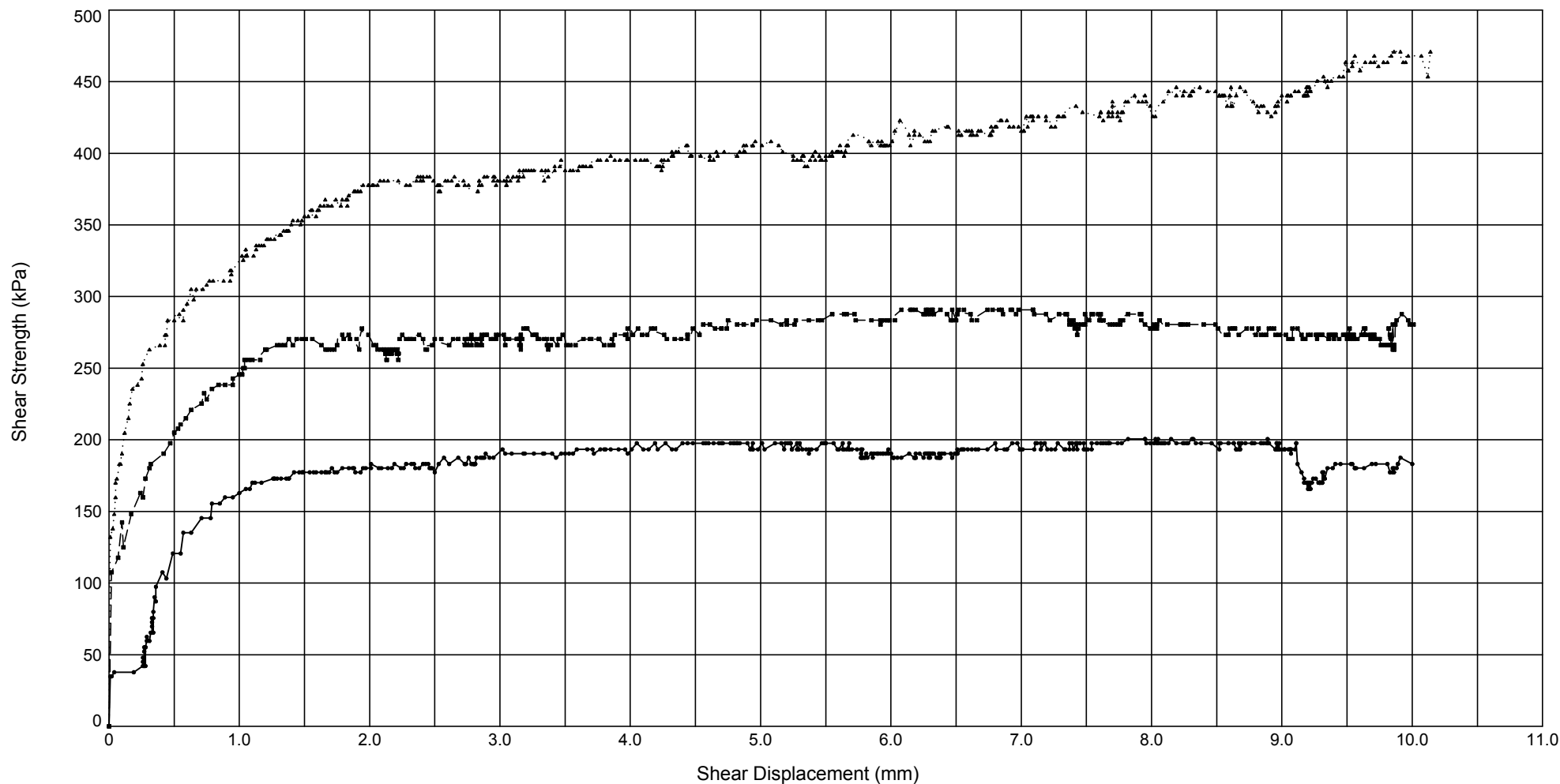
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : R610

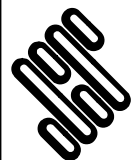
Sample Ref : 22

Sample Type : U

Depth (m) : 15.30



Legend: ● Stage 1, ■ Stage 2, ▲ Stage 3, ★ Stage 4



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R610
Sample Ref :	25
Depth (m) :	17.76
Type of Discontinuity :	Saw cut
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00796
Type of Encapsulating Material :	Gypsum Plaster
Description :	Off white CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	0 - 2	2 - 4
Lower Surface of Discontinuity :	0 - 2	2 - 4

## LOADING DETAILS

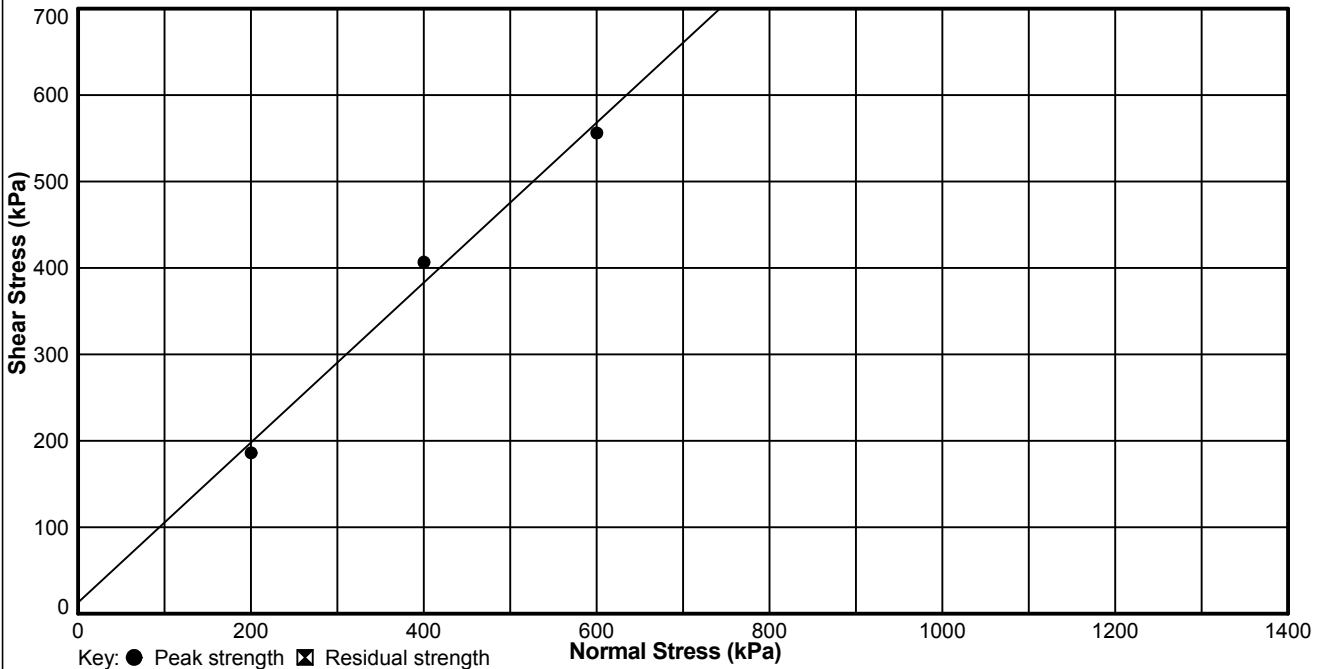
	1	2	3	4	5
Normal Stress (kPa) :	200	400	600	NA	NA
Shear Stress (kPa) :	186	407	556	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.3	0.4	0.8	NA	NA
Shear Displacement at Peak Load (mm) :	9.8	10.0	9.7	NA	NA

## APPARENT FRICTION ANGLE

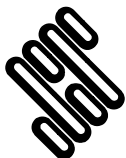
Peak Stress (degrees) :	42.8
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	12.7
Residual Stress (kPa) :	NA



GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - ROCK SBOX - 1 - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06.  
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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

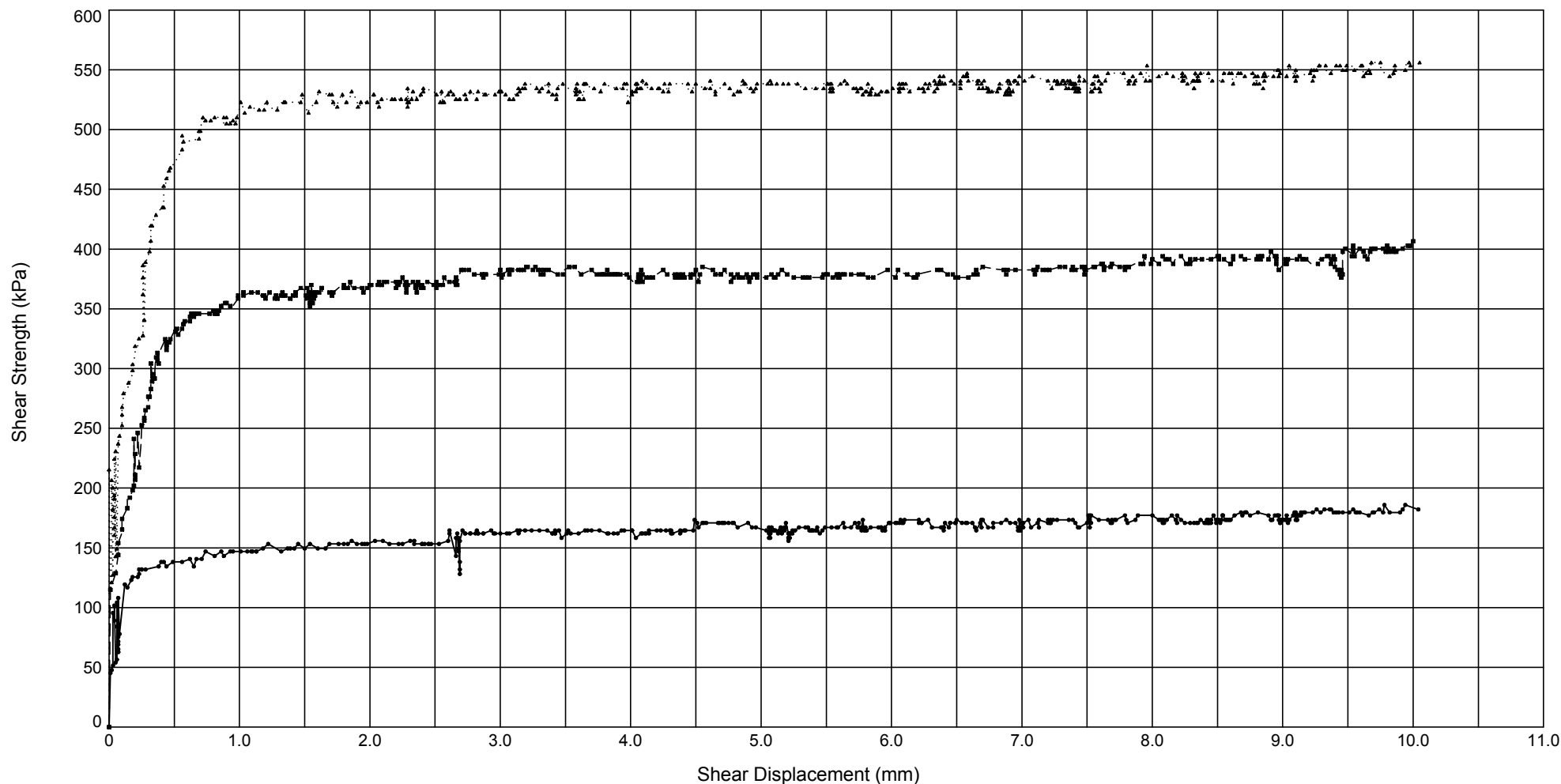
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R610**

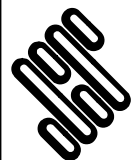
Sample Ref : **25**

Sample Type : **U**

Depth (m) : **17.76**



Legend: ● Stage 1, ■ Stage 2, ▲ Stage 3, ★ Stage 4



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R610
Sample Ref :	30
Depth (m) :	22.79
Type of Discontinuity :	Joint
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00807
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	8 - 10	8 - 10
Lower Surface of Discontinuity :	10 - 12	8 - 10

## LOADING DETAILS

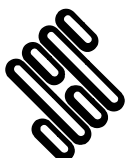
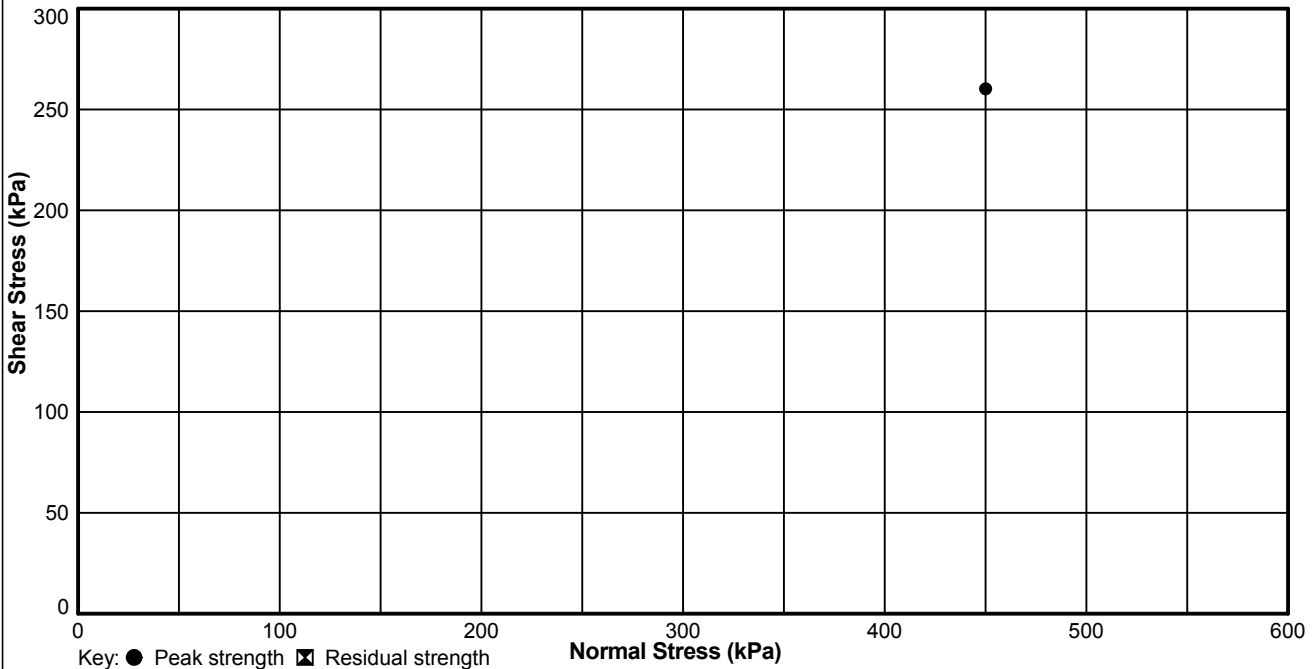
	1	2	3	4	5
Normal Stress (kPa) :	450	NA	NA	NA	NA
Shear Stress (kPa) :	260	NA	NA	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	1.7	NA	NA	NA	NA
Shear Displacement at Peak Load (mm) :	0.2	NA	NA	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	NA
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	NA
Residual Stress (kPa) :	NA



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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

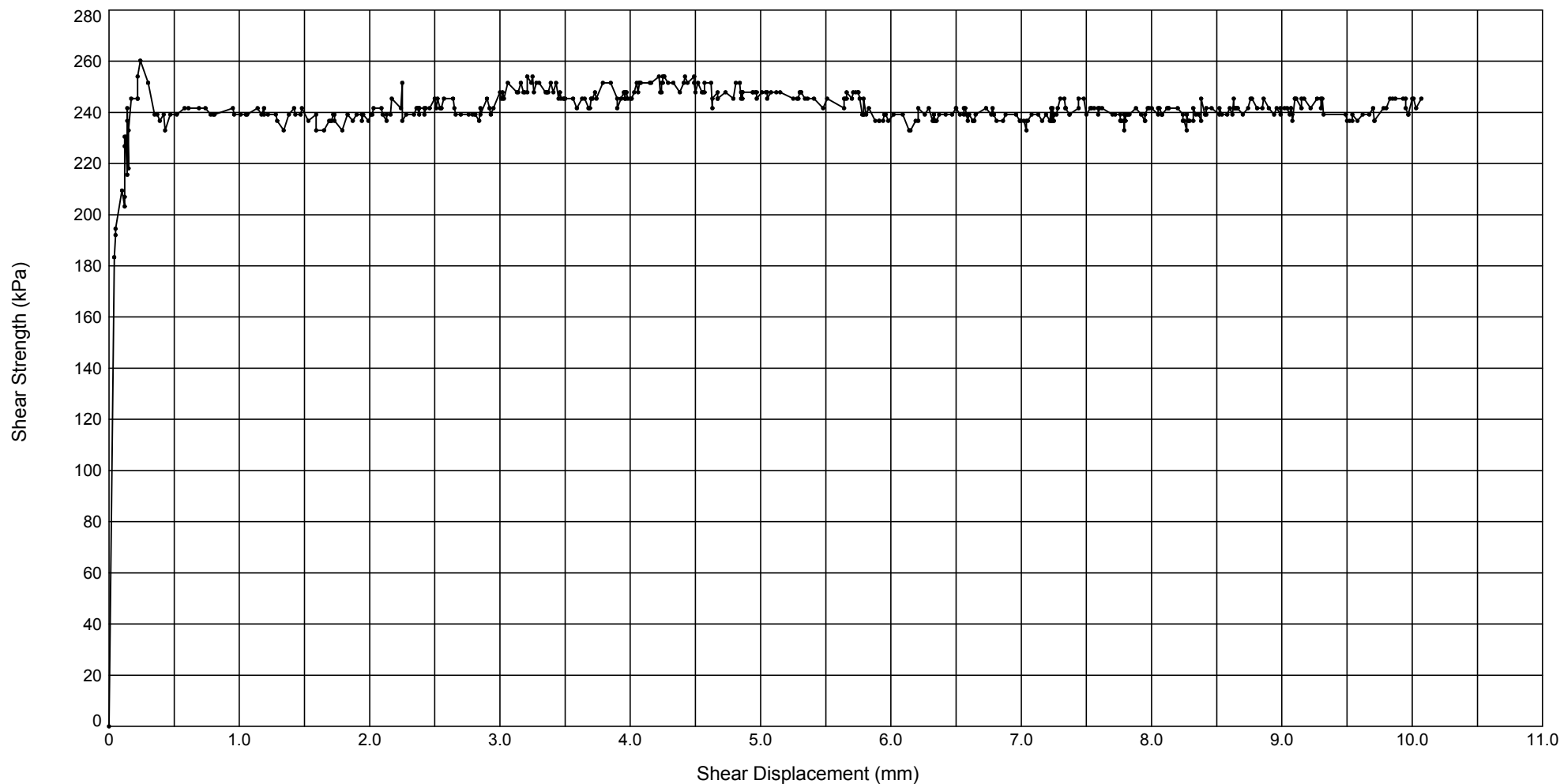
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R610**

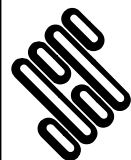
Sample Ref : **30**

Sample Type : **U**

Depth (m) : **22.79**



Legend: ● Stage 1, ☒ Stage 2, ▲ Stage 3, ★ Stage 4



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R611
Sample Ref :	46
Depth (m) :	34.35
Type of Discontinuity :	Saw cut
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00774
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	0 - 2	0 - 2
Lower Surface of Discontinuity :	0 - 2	0 - 2

## LOADING DETAILS

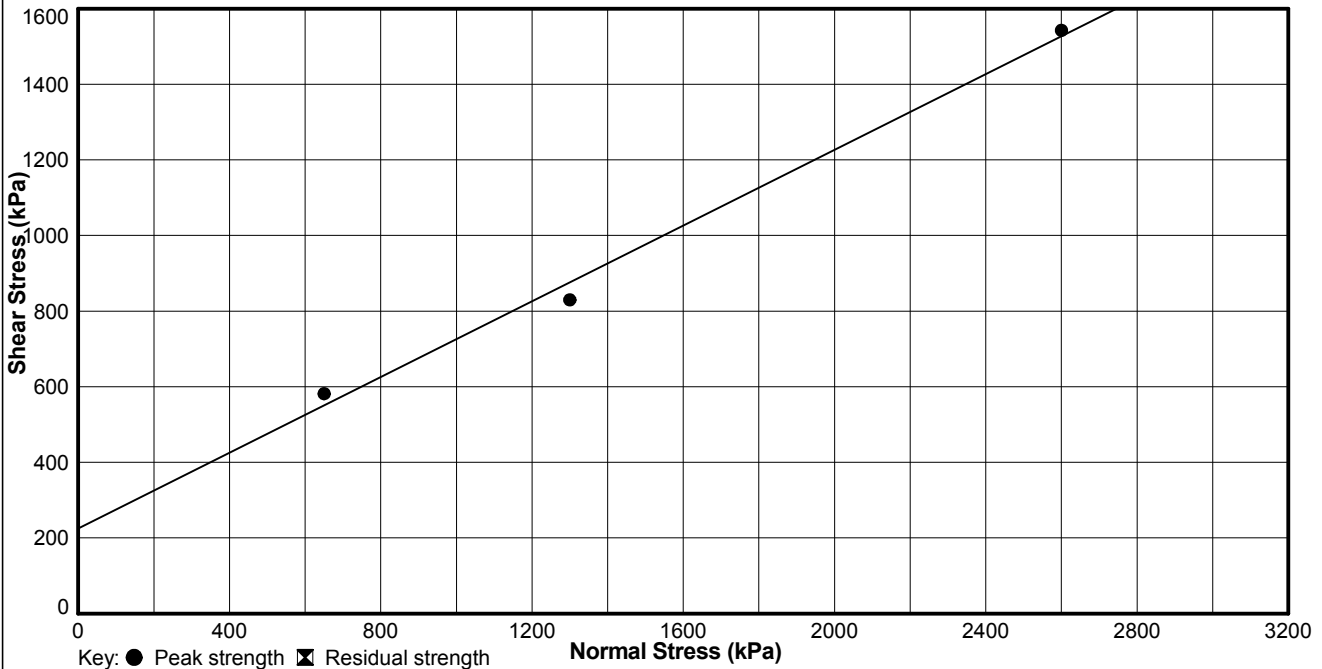
	1	2	3	4	5
Normal Stress (kPa) :	650	1300	2600	NA	NA
Shear Stress (kPa) :	581	830	1543	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.1	0.9	1.9	NA	NA
Shear Displacement at Peak Load (mm) :	9.3	4.8	7.2	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	26.6
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	224.9
Residual Stress (kPa) :	NA



GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - ROCK SBOX - 1 - A4P | 733442 - A3003 STONEHENGE PHASE 6 GROUND INVESTIGATION.GPJ - v8\_06.  
 Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 03/04/19 - 12:57 | AM4



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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

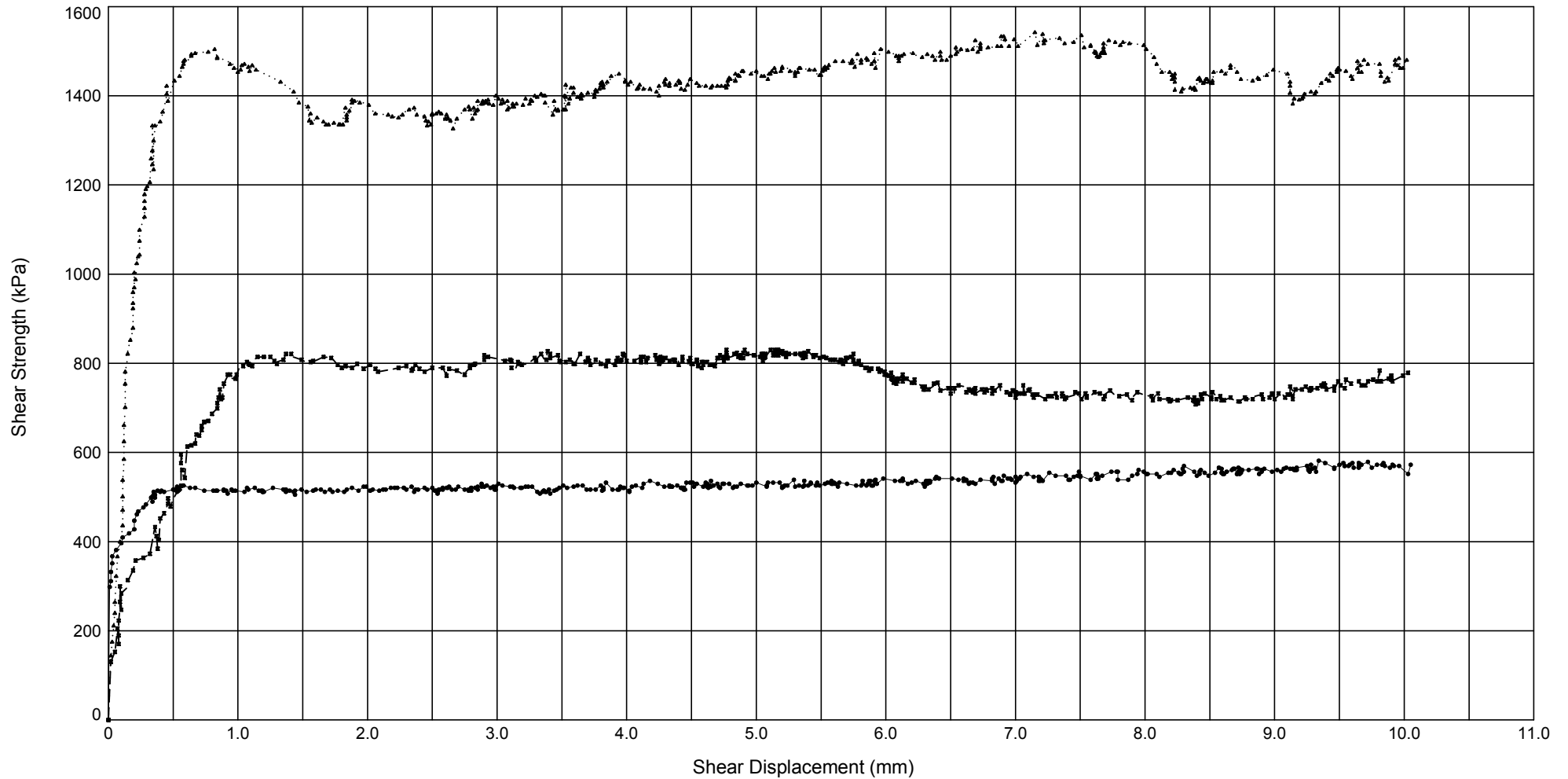
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R611**

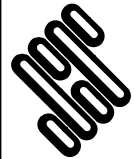
Sample Ref : **46**

Sample Type : **U**

Depth (m) : **34.35**



Legend: ● Stage 1, ◻ Stage 2, ▲ Stage 3, ★ Stage 4



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R612
Sample Ref :	
Depth (m) :	32.35
Type of Discontinuity :	Joint
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.0076
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	14 - 16	10 - 12
Lower Surface of Discontinuity :	14 - 16	10 - 12

## LOADING DETAILS

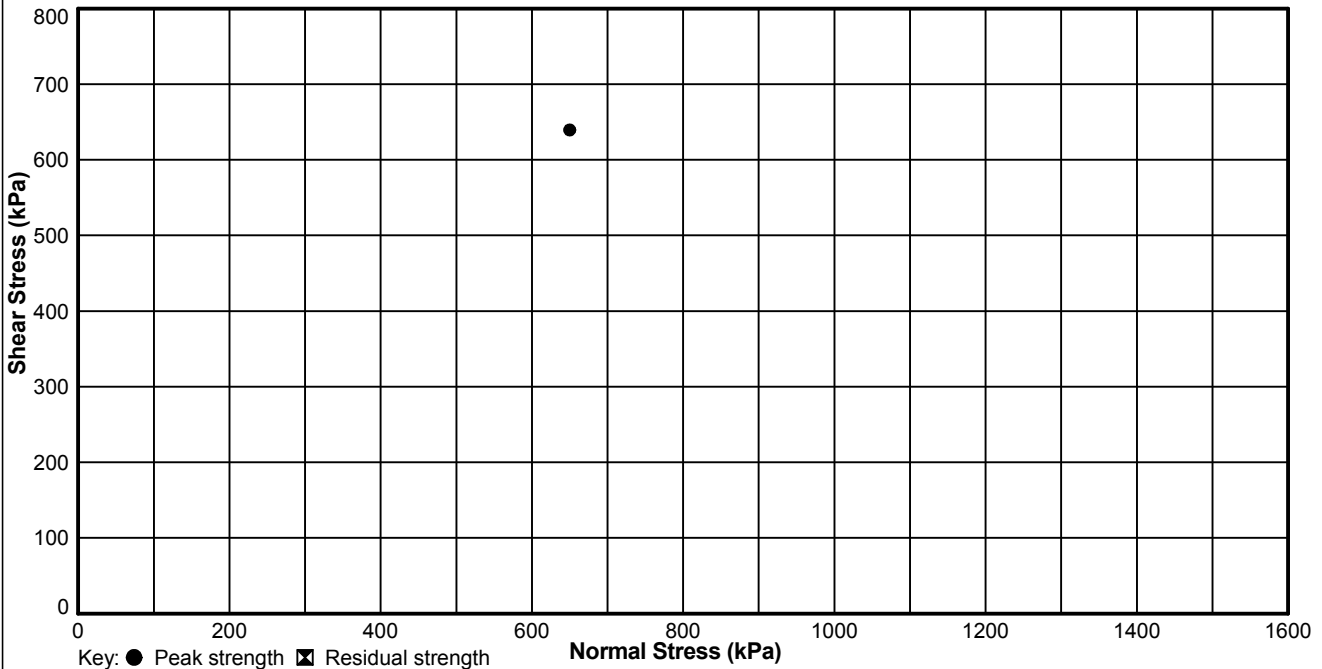
	1	2	3	4	5
Normal Stress (kPa) :	650	NA	NA	NA	NA
Shear Stress (kPa) :	639	NA	NA	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.1	NA	NA	NA	NA
Shear Displacement at Peak Load (mm) :	9.9	NA	NA	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	NA
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	NA
Residual Stress (kPa) :	NA



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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

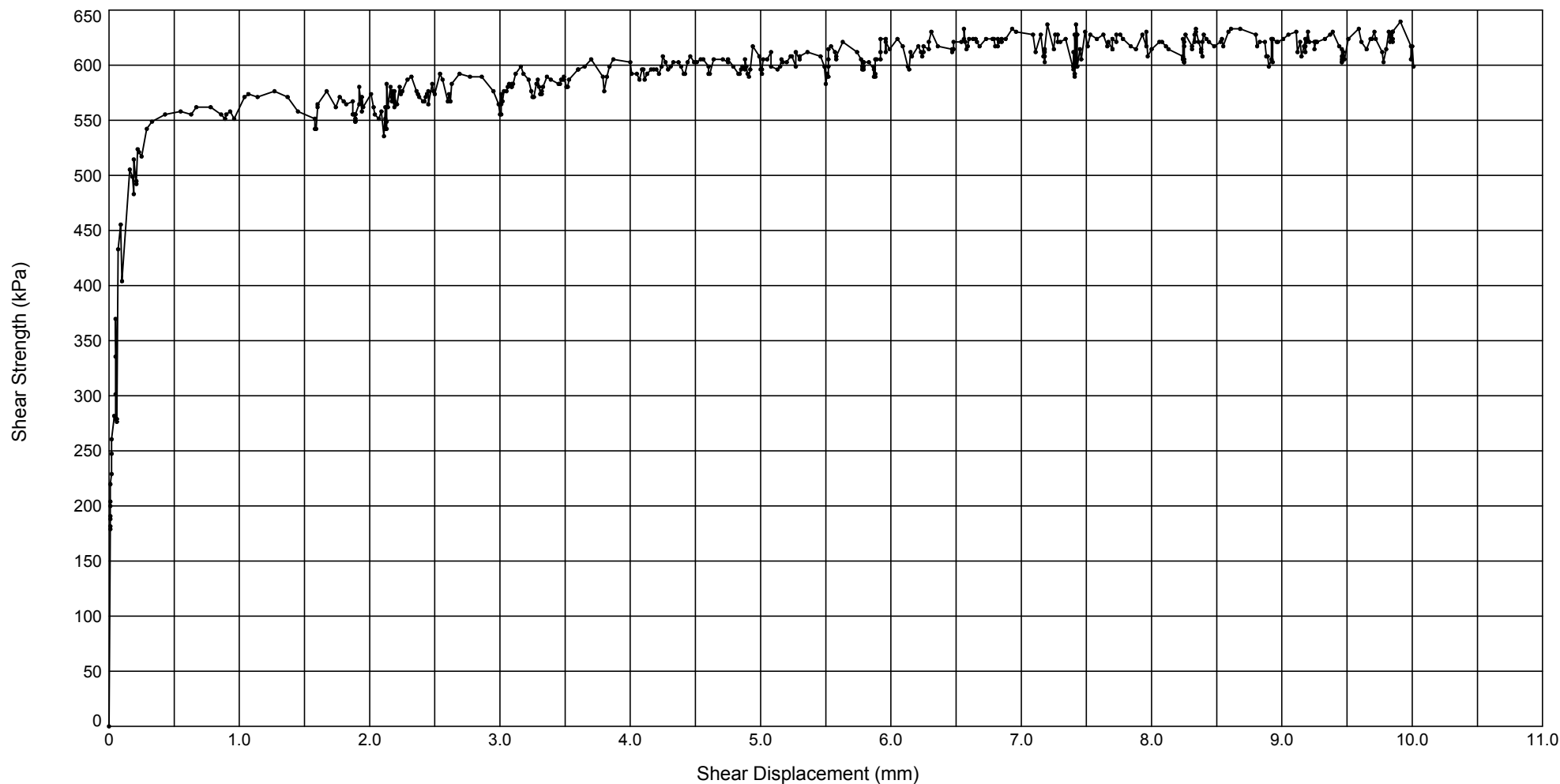
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R612**

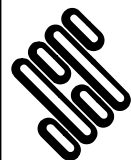
Sample Ref :

Sample Type : **U**

Depth (m) : **32.35**



Legend: ● Stage 1, ☒ Stage 2, ▲ Stage 3, ★ Stage 4



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

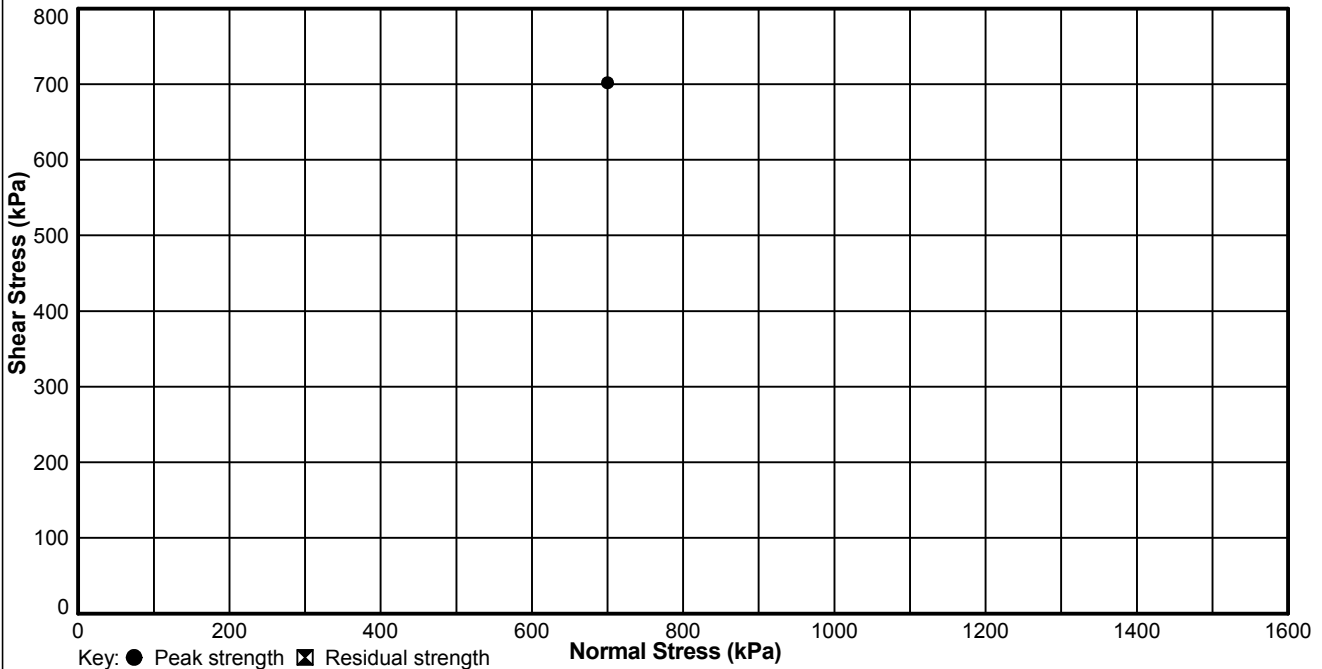
SAMPLE DETAILS	
Borehole :	R612
Sample Ref :	43
Depth (m) :	35.30
Type of Discontinuity :	Joint
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.01063
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

JOINT ROUGHNESS COEFFICIENT		
	Pre-test	Post-test
Upper Surface of Discontinuity :	14 - 16	14 - 16
Lower Surface of Discontinuity :	14 - 16	14 - 16

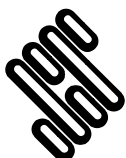
LOADING DETAILS	1	2	3	4	5
Normal Stress (kPa) :	700	NA	NA	NA	NA
Shear Stress (kPa) :	702	NA	NA	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.2	NA	NA	NA	NA
Shear Displacement at Peak Load (mm) :	1.5	NA	NA	NA	NA

APPARENT FRICTION ANGLE	
Peak Stress (degrees) :	NA
Residual Stress (degrees) :	NA

SHEAR STRESS COHESION	
Peak Stress (kPa) :	NA
Residual Stress (kPa) :	NA



GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - ROCK SBOX - 1 - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06.  
 Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 06/11/18 - 14:28 | AF3



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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

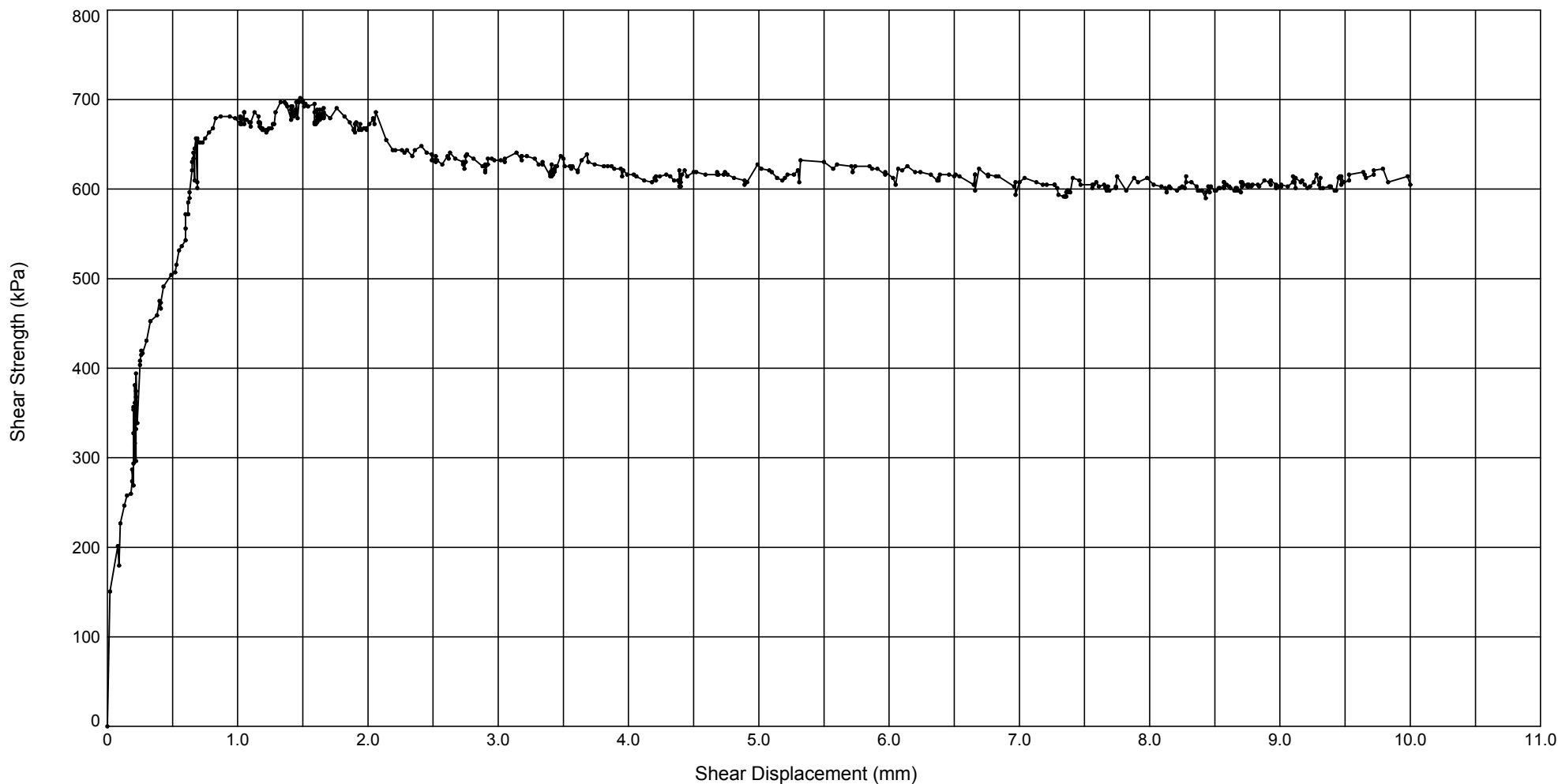
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : R612

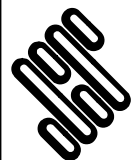
Sample Ref : 43

Sample Type : U

Depth (m) : 35.30



Legend: ● Stage 1, ☒ Stage 2, ▲ Stage 3, ★ Stage 4



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R613
Sample Ref :	48
Depth (m) :	35.50
Type of Discontinuity :	Saw cut
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00777
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	0 - 2	0 - 2
Lower Surface of Discontinuity :	0 - 2	0 - 2

## LOADING DETAILS

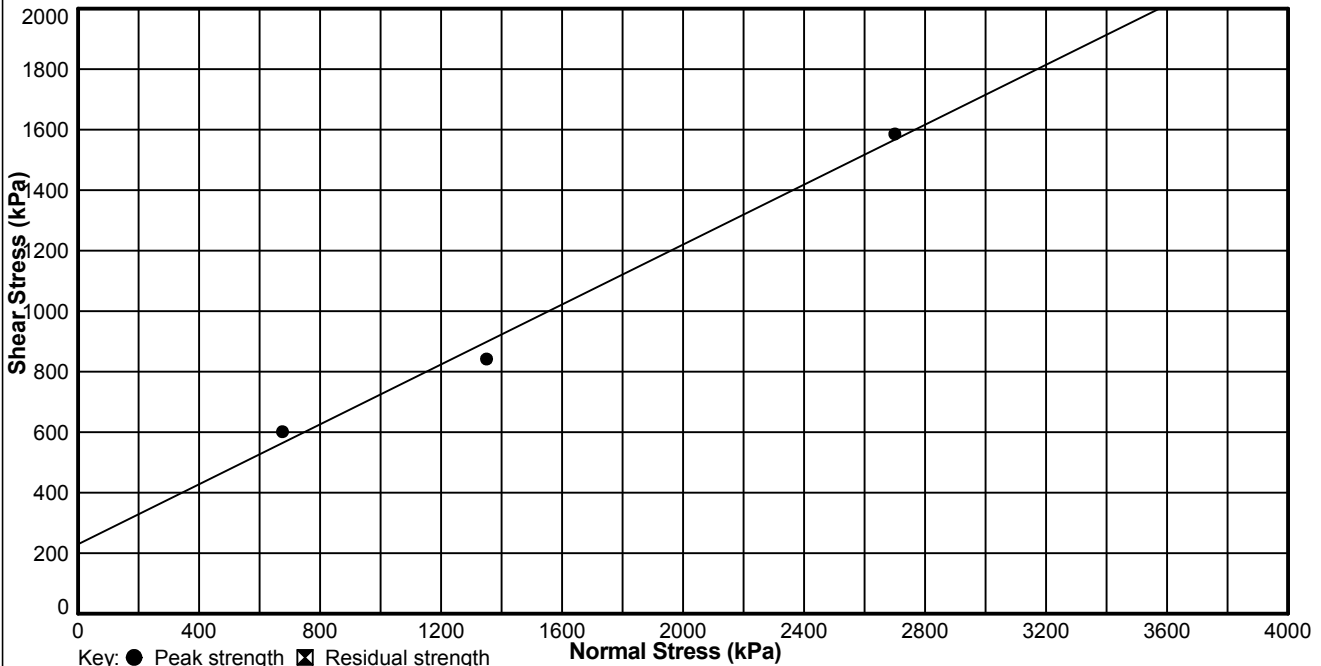
	1	2	3	4	5
Normal Stress (kPa) :	675	1350	2700	NA	NA
Shear Stress (kPa) :	601	842	1585	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.1	0.7	1.5	NA	NA
Shear Displacement at Peak Load (mm) :	10.0	1.7	9.8	NA	NA

## APPARENT FRICTION ANGLE

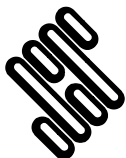
Peak Stress (degrees) :	26.4
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	229.1
Residual Stress (kPa) :	NA



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Contract		Contract Ref:
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>

# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

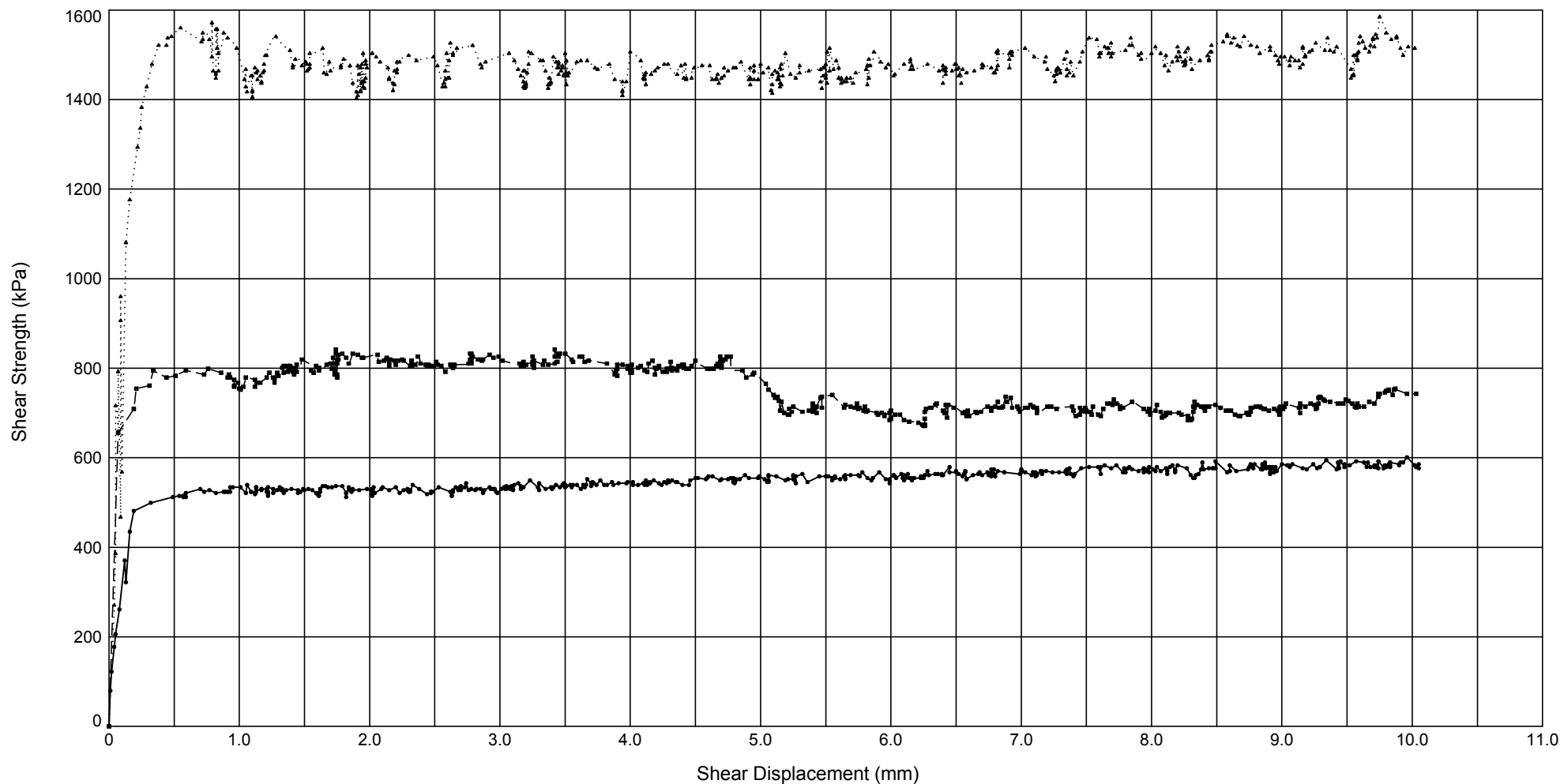
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : R613

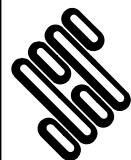
Sample Ref : 48

Sample Type : U

Depth (m) : 35.50



Legend: ● Stage 1, ■ Stage 2, ▲ Stage 3, ★ Stage 4



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R614
Sample Ref :	41
Depth (m) :	28.50
Type of Discontinuity :	Saw cut
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00788
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	0 - 2	0 - 2
Lower Surface of Discontinuity :	0 - 2	0 - 2

## LOADING DETAILS

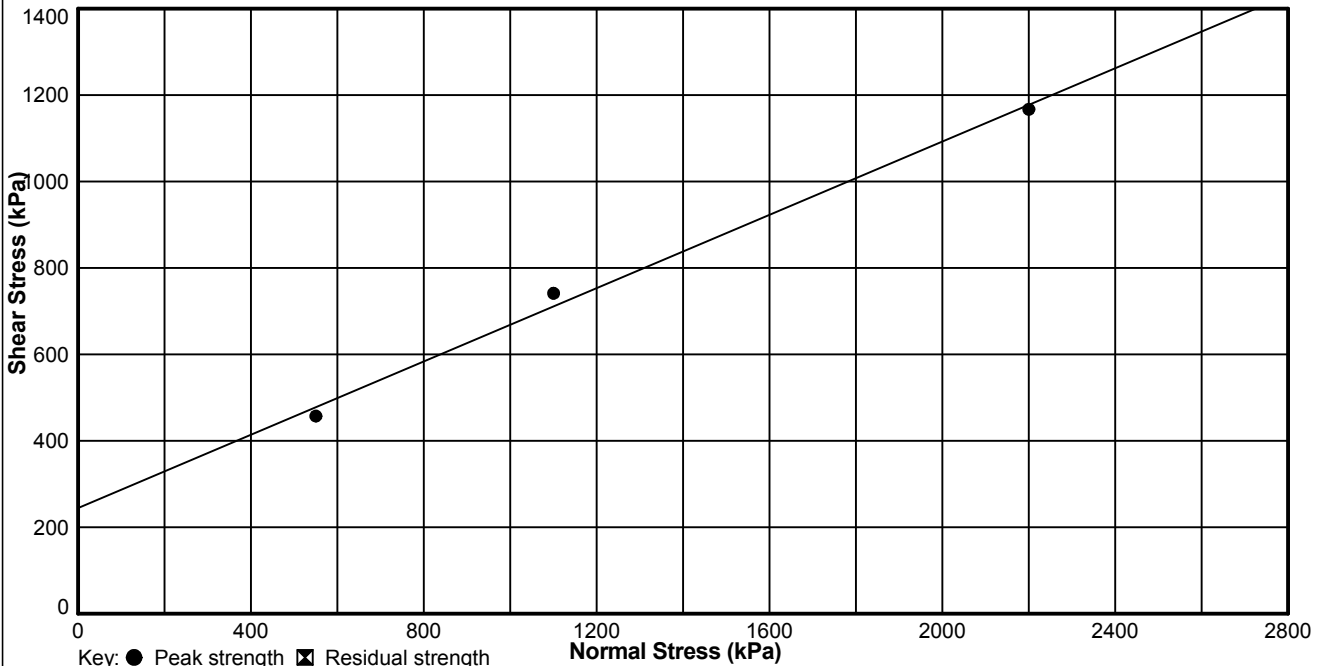
	1	2	3	4	5
Normal Stress (kPa) :	550	1100	2200	NA	NA
Shear Stress (kPa) :	457	741	1167	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.2	0.7	1.7	NA	NA
Shear Displacement at Peak Load (mm) :	9.8	9.2	7.8	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	23.0
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	244.0
Residual Stress (kPa) :	NA



GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - ROCK SBOX - 1 - A4P | 733442 - A3003 STONEHENGE PHASE 6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd. Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@scsols.co.uk | 07/11/18 - 08:24 | AF3



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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

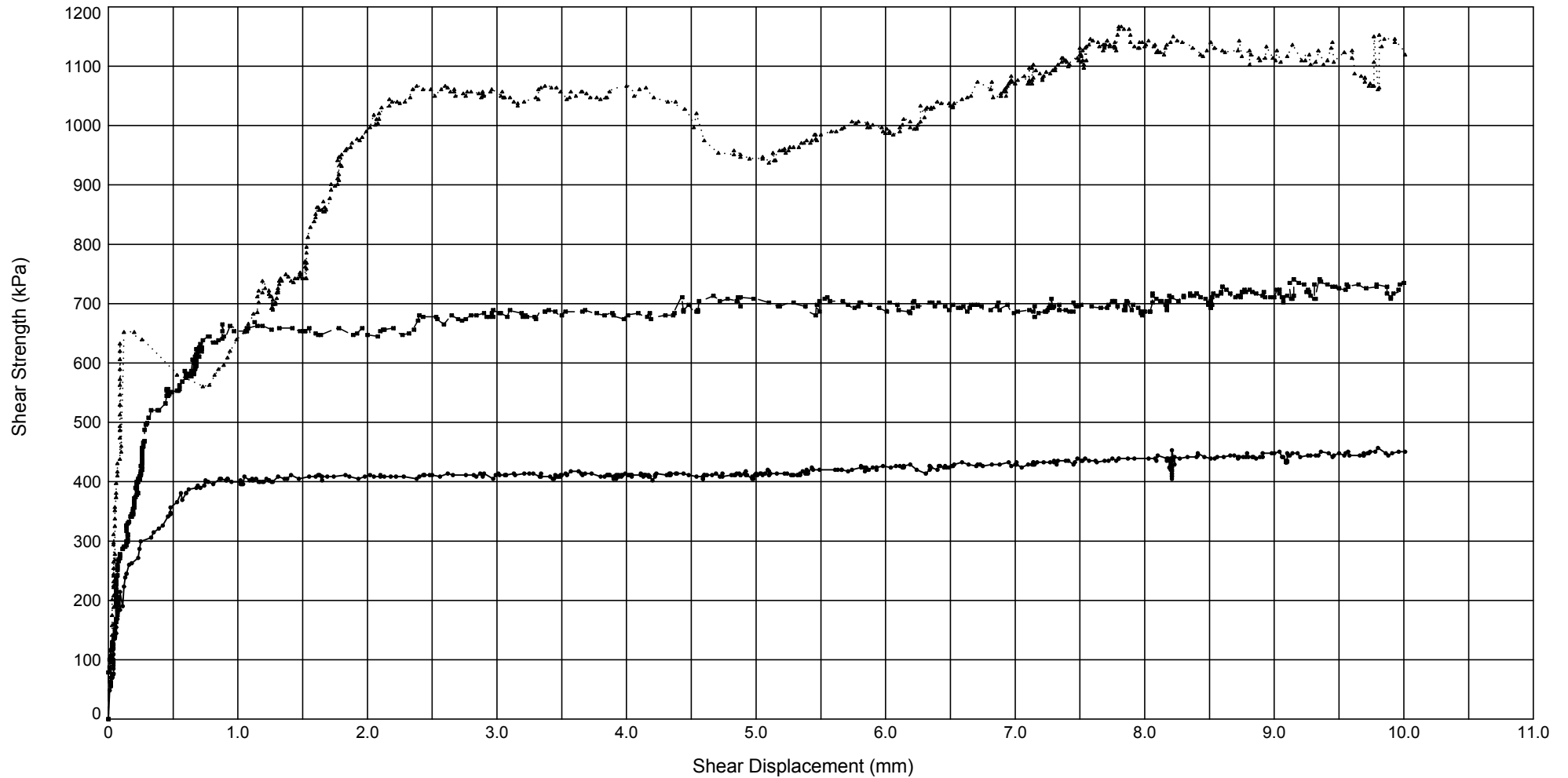
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R614**

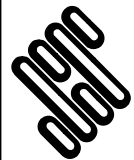
Sample Ref : **41**

Sample Type : **U**

Depth (m) : **28.50**



Legend: ● Stage 1, ■ Stage 2, ▲ Stage 3, ★ Stage 4



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**A303 Stonehenge Phase 6 Ground Investigation**



# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R615
Sample Ref :	23
Depth (m) :	16.80
Type of Discontinuity :	Saw cut
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00791
Type of Encapsulating Material :	Gypsum Plaster
Description :	Off white CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	0 - 2	0 - 2
Lower Surface of Discontinuity :	0 - 2	0 - 2

## LOADING DETAILS

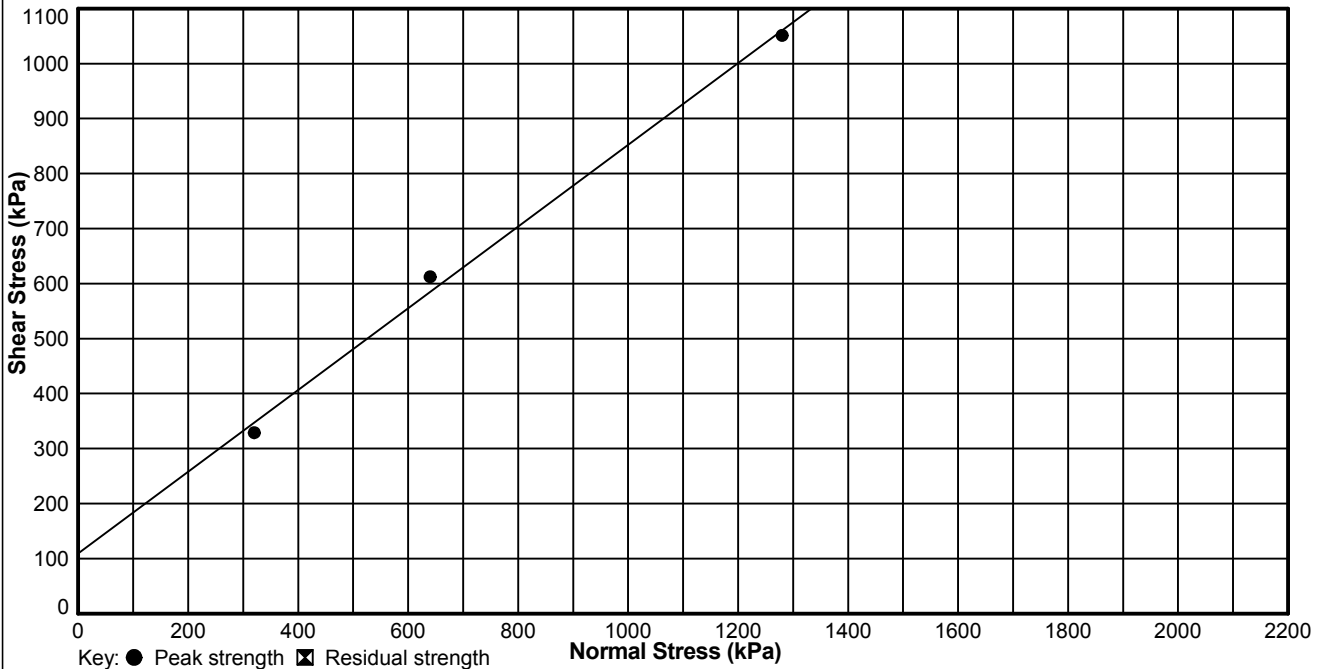
	1	2	3	4	5
Normal Stress (kPa) :	320	640	1280	NA	NA
Shear Stress (kPa) :	329	612	1051	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.3	0.2	0.4	NA	NA
Shear Displacement at Peak Load (mm) :	9.8	10.4	3.6	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	36.6
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	109.2
Residual Stress (kPa) :	NA



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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

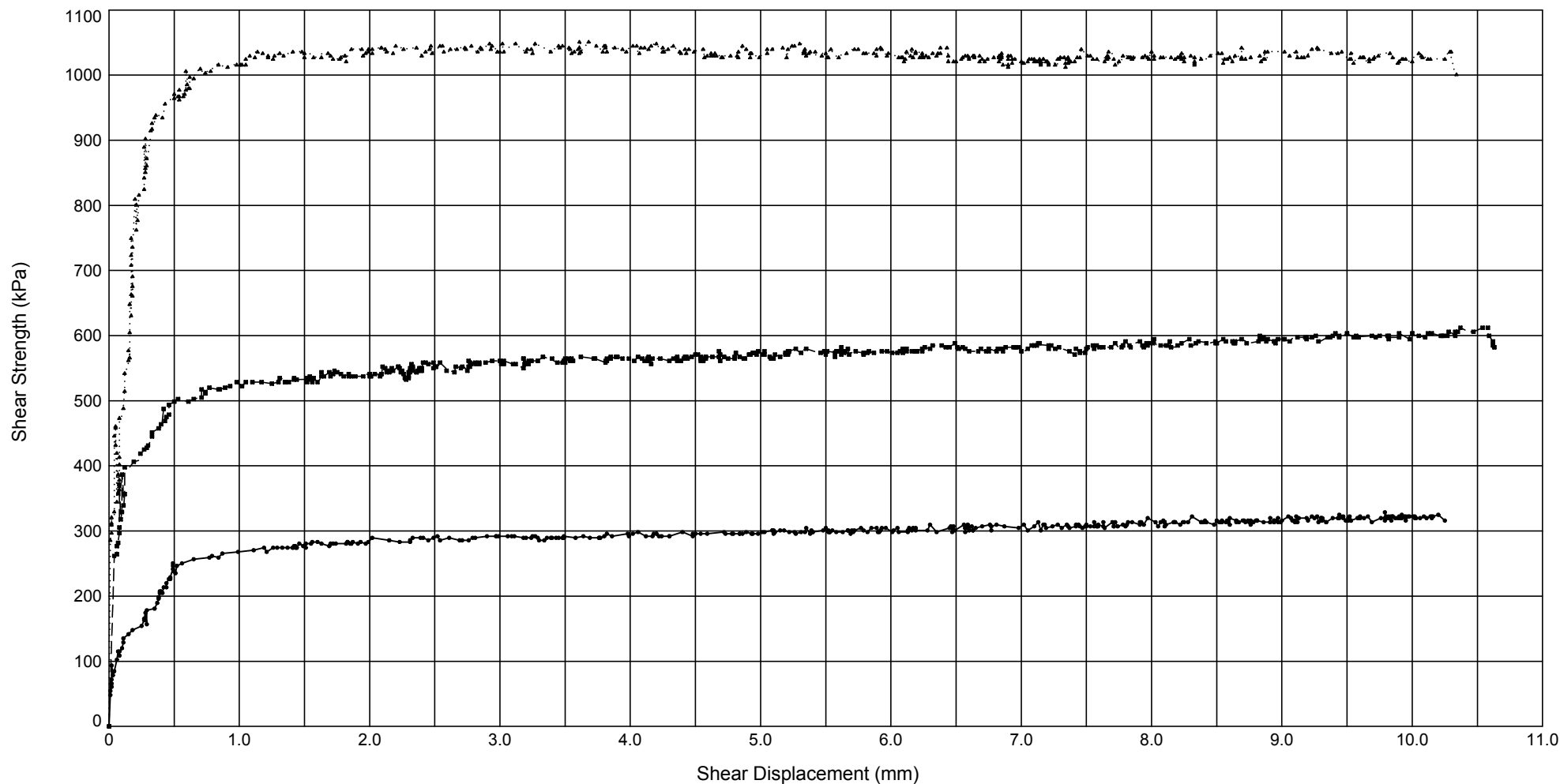
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R615**

Sample Ref : **23**

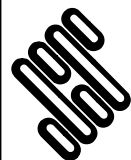
Sample Type : **U**

Depth (m) : **16.80**



Legend: ● Stage 1, ■ Stage 2, ▲ Stage 3, ★ Stage 4

GINT LIBRARY v8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - ROCK SBOX - 3 - A4L | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 | Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 07/11/18 - 09:22 | AF3 |



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R616
Sample Ref :	23
Depth (m) :	18.90
Type of Discontinuity :	Joint
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00966
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	12 - 14	14 - 16
Lower Surface of Discontinuity :	12 - 14	14 - 16

## LOADING DETAILS

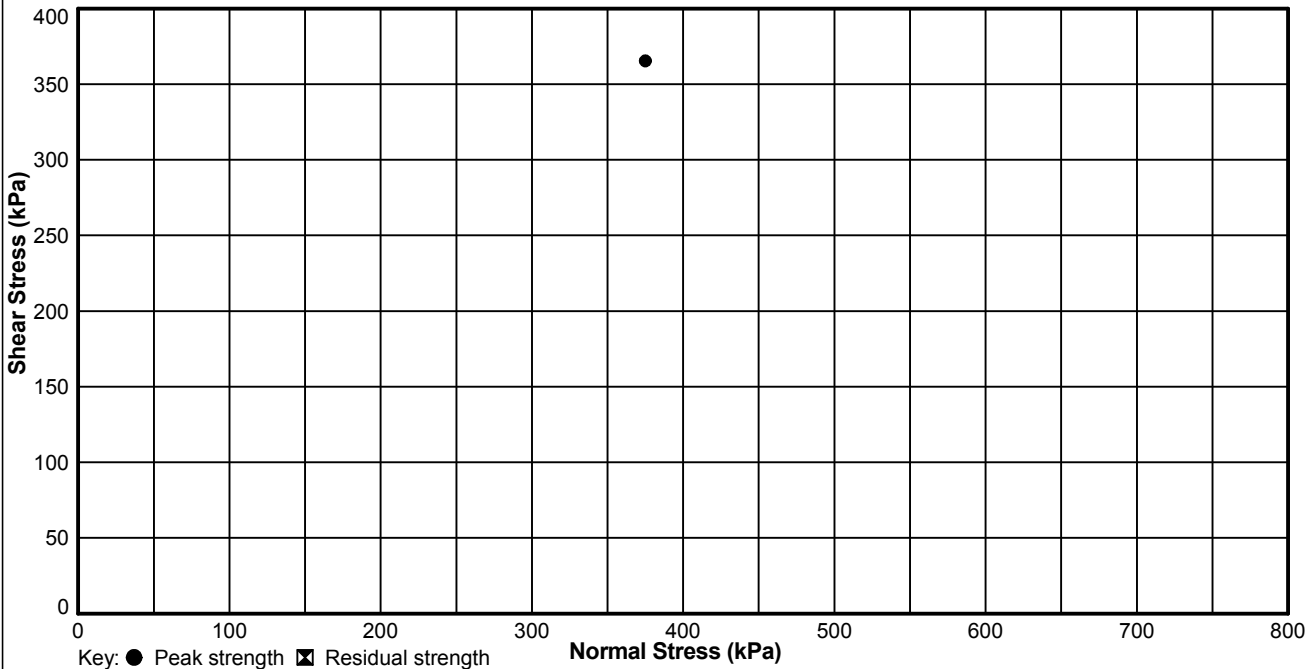
	1	2	3	4	5
Normal Stress (kPa) :	375	NA	NA	NA	NA
Shear Stress (kPa) :	365	NA	NA	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.2	NA	NA	NA	NA
Shear Displacement at Peak Load (mm) :	7.5	NA	NA	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	NA
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	NA
Residual Stress (kPa) :	NA



GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - ROCK SBOX - 1 - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06.  
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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

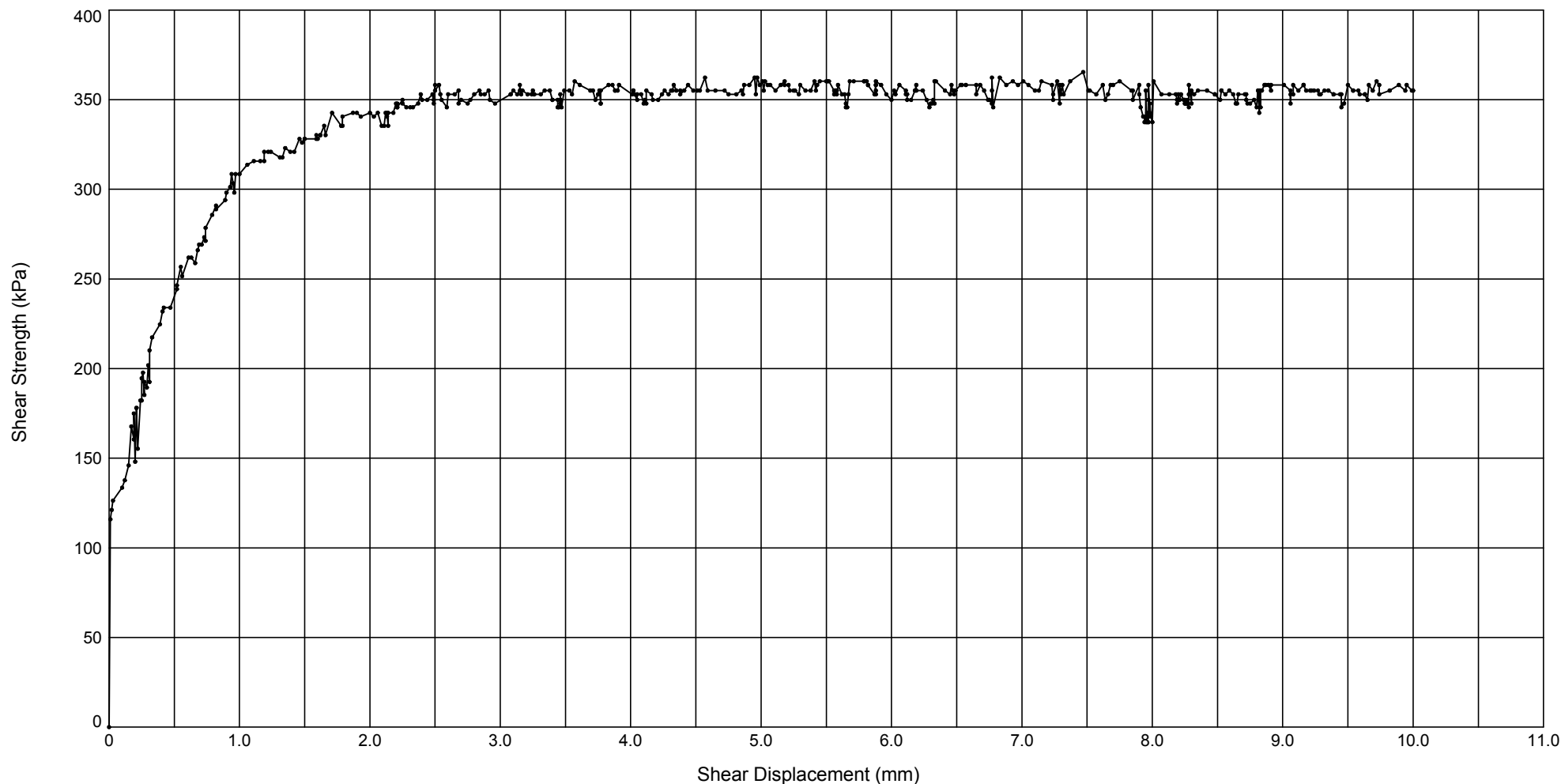
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R616**

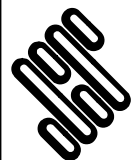
Sample Ref : **23**

Sample Type : **U**

Depth (m) : **18.90**



Legend: ● Stage 1, ☒ Stage 2, ▲ Stage 3, ★ Stage 4



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R616
Sample Ref :	46
Depth (m) :	33.55
Type of Discontinuity :	Saw cut
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00789
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	0 - 2	0 - 2
Lower Surface of Discontinuity :	0 - 2	0 - 2

## LOADING DETAILS

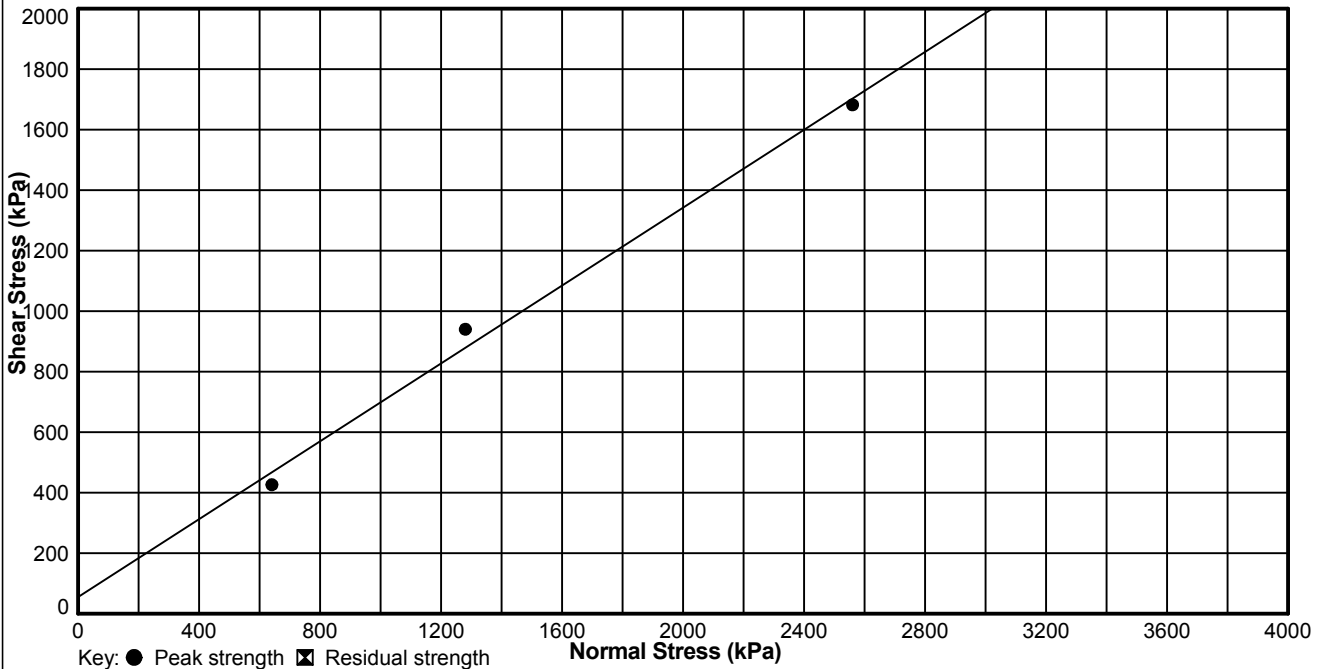
	1	2	3	4	5
Normal Stress (kPa) :	640	1280	2560	NA	NA
Shear Stress (kPa) :	426	940	1682	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.2	0.2	1.2	NA	NA
Shear Displacement at Peak Load (mm) :	6.7	1.4	2.9	NA	NA

## APPARENT FRICTION ANGLE

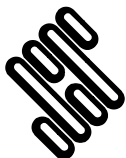
Peak Stress (degrees) :	32.8
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	54.7
Residual Stress (kPa) :	NA



GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - ROCK SBOX - 1 - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06.  
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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

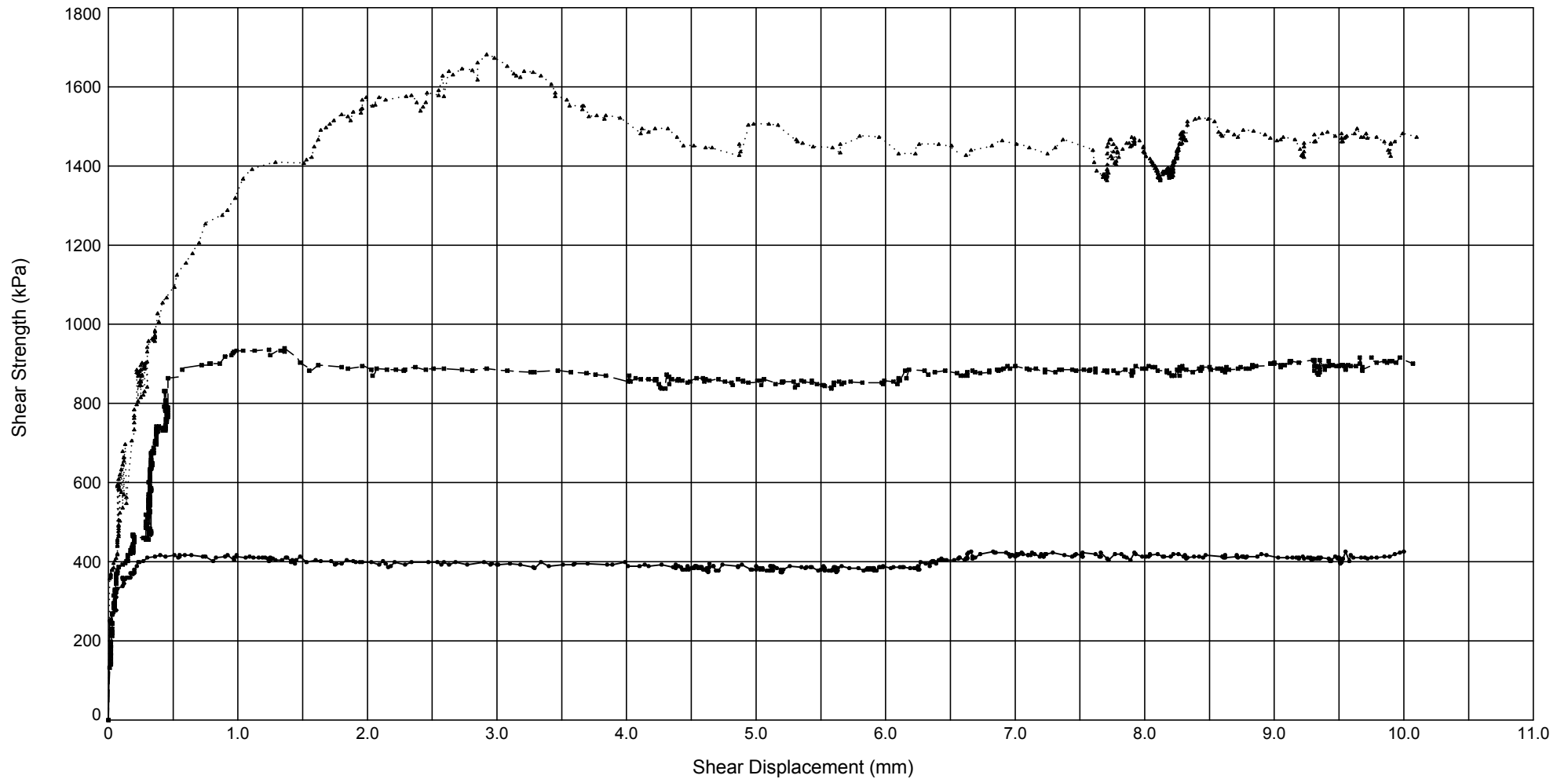
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R616**

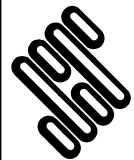
Sample Ref : **46**

Sample Type : **U**

Depth (m) : **33.55**



Legend: ● Stage 1, ■ Stage 2, ▲ Stage 3, ★ Stage 4



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R616
Sample Ref :	59
Depth (m) :	41.95
Type of Discontinuity :	Not Recorded
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.01131
Type of Encapsulating Material :	Gypsum Plaster
Description :	Off white CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	10 - 12	
Lower Surface of Discontinuity :	10 - 12	

## LOADING DETAILS

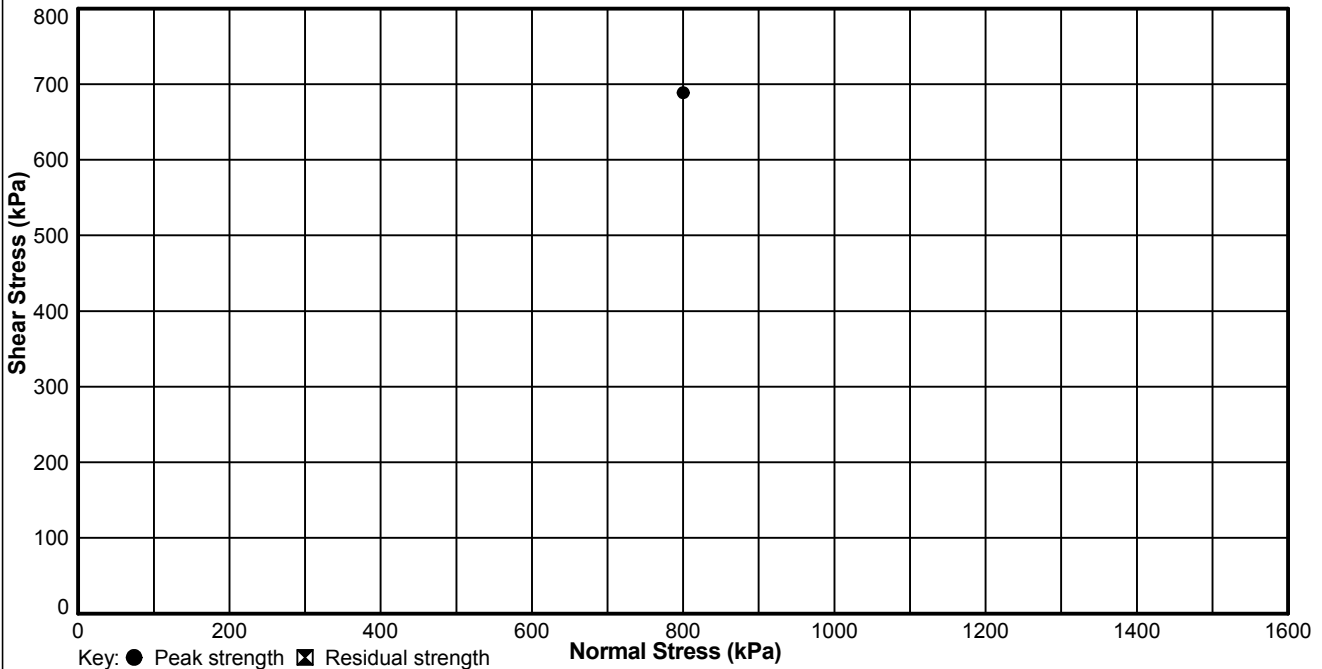
	1	2	3	4	5
Normal Stress (kPa) :	800	NA	NA	NA	NA
Shear Stress (kPa) :	689	NA	NA	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.4	NA	NA	NA	NA
Shear Displacement at Peak Load (mm) :	9.1	NA	NA	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	NA
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	NA
Residual Stress (kPa) :	NA



GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - ROCK SBOX - 1 - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06.  
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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

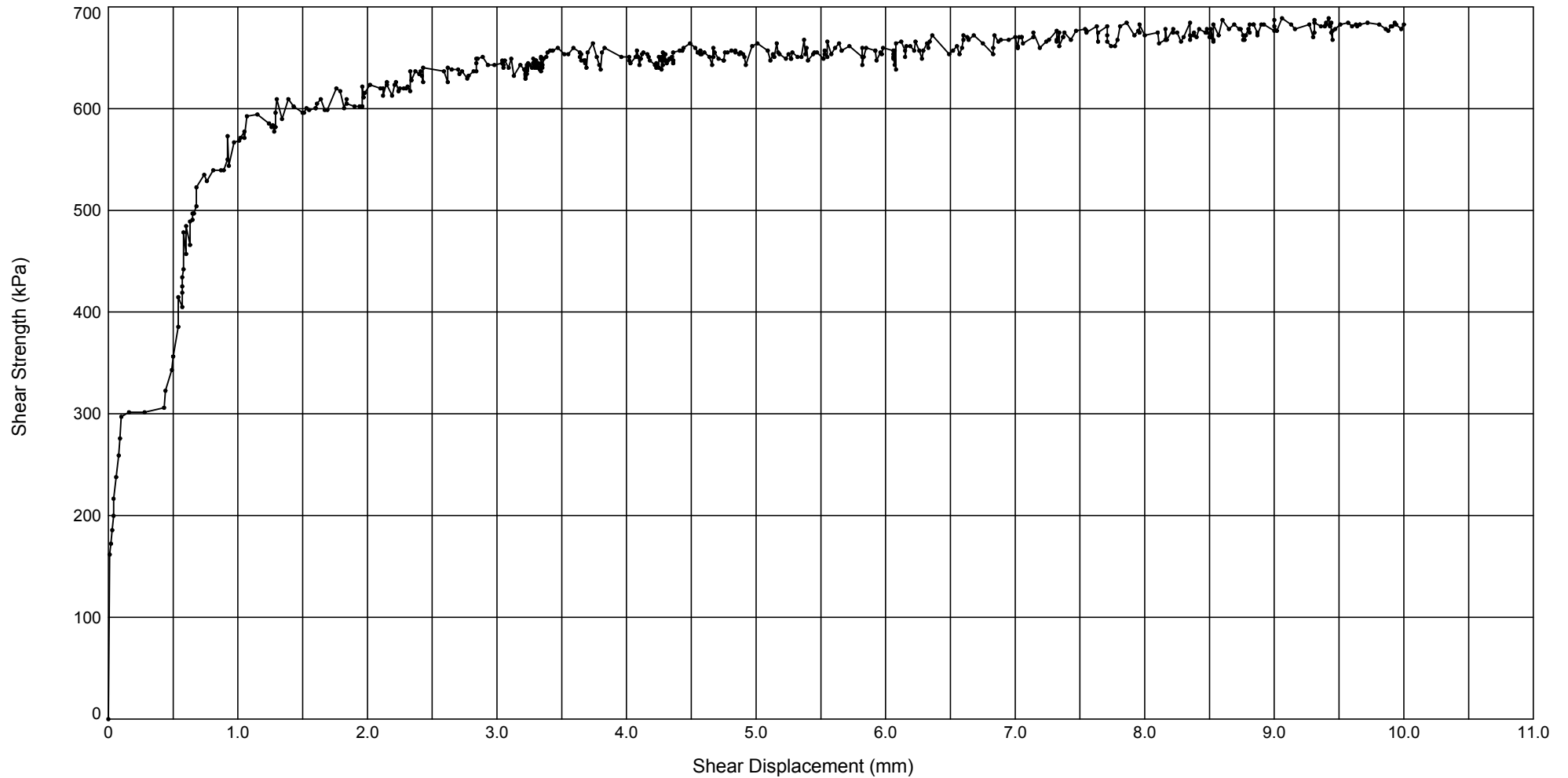
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R616**

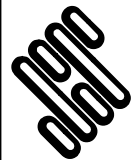
Sample Ref : **59**

Sample Type : **U**

Depth (m) : **41.95**



Legend: ● Stage 1, ◻ Stage 2, ▲ Stage 3, ★ Stage 4



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R619
Sample Ref :	32
Depth (m) :	29.30
Type of Discontinuity :	Saw cut
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00795
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	0 - 2	0 - 2
Lower Surface of Discontinuity :	0 - 2	0 - 2

## LOADING DETAILS

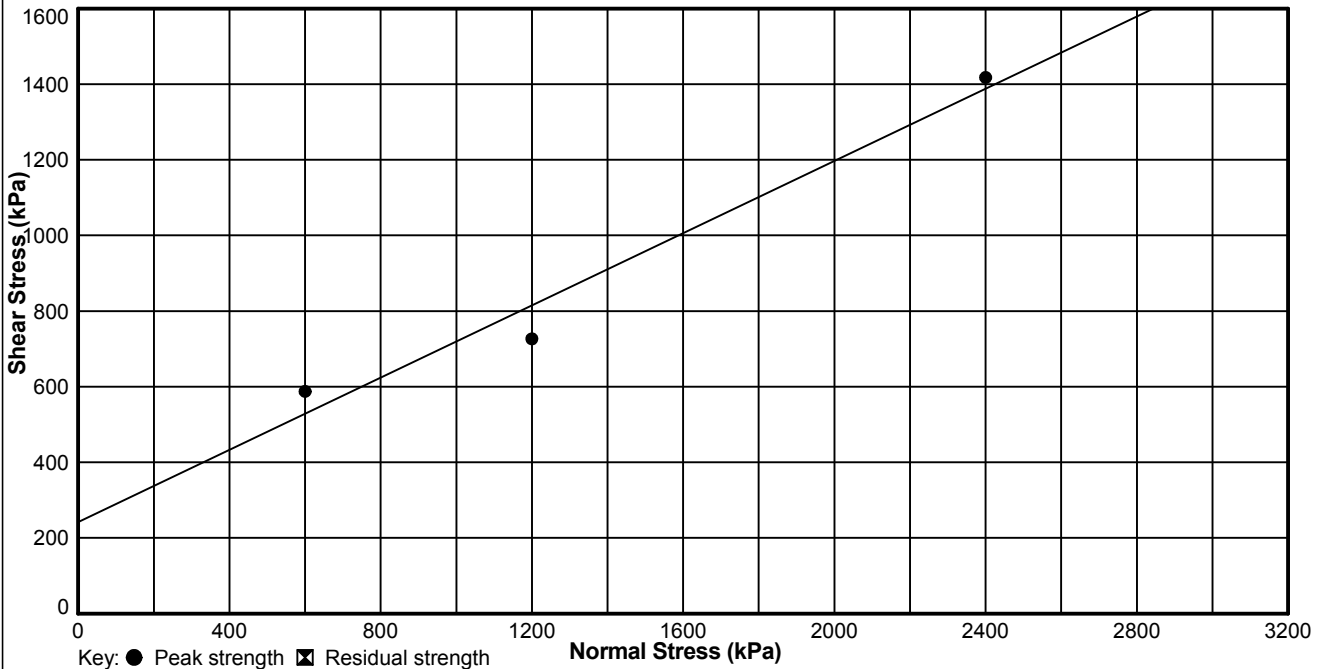
	1	2	3	4	5
Normal Stress (kPa) :	600	1200	2400	NA	NA
Shear Stress (kPa) :	587	727	1418	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.1	1.3	1.6	NA	NA
Shear Displacement at Peak Load (mm) :	9.9	9.5	6.3	NA	NA

## APPARENT FRICTION ANGLE

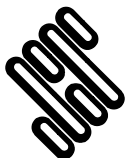
Peak Stress (degrees) :	25.5
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	241.9
Residual Stress (kPa) :	NA



GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - ROCK SBOX - 1 - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd. Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004 | Email: ask@scsils.co.uk | 26/06/18 - 08:30 | AF3



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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

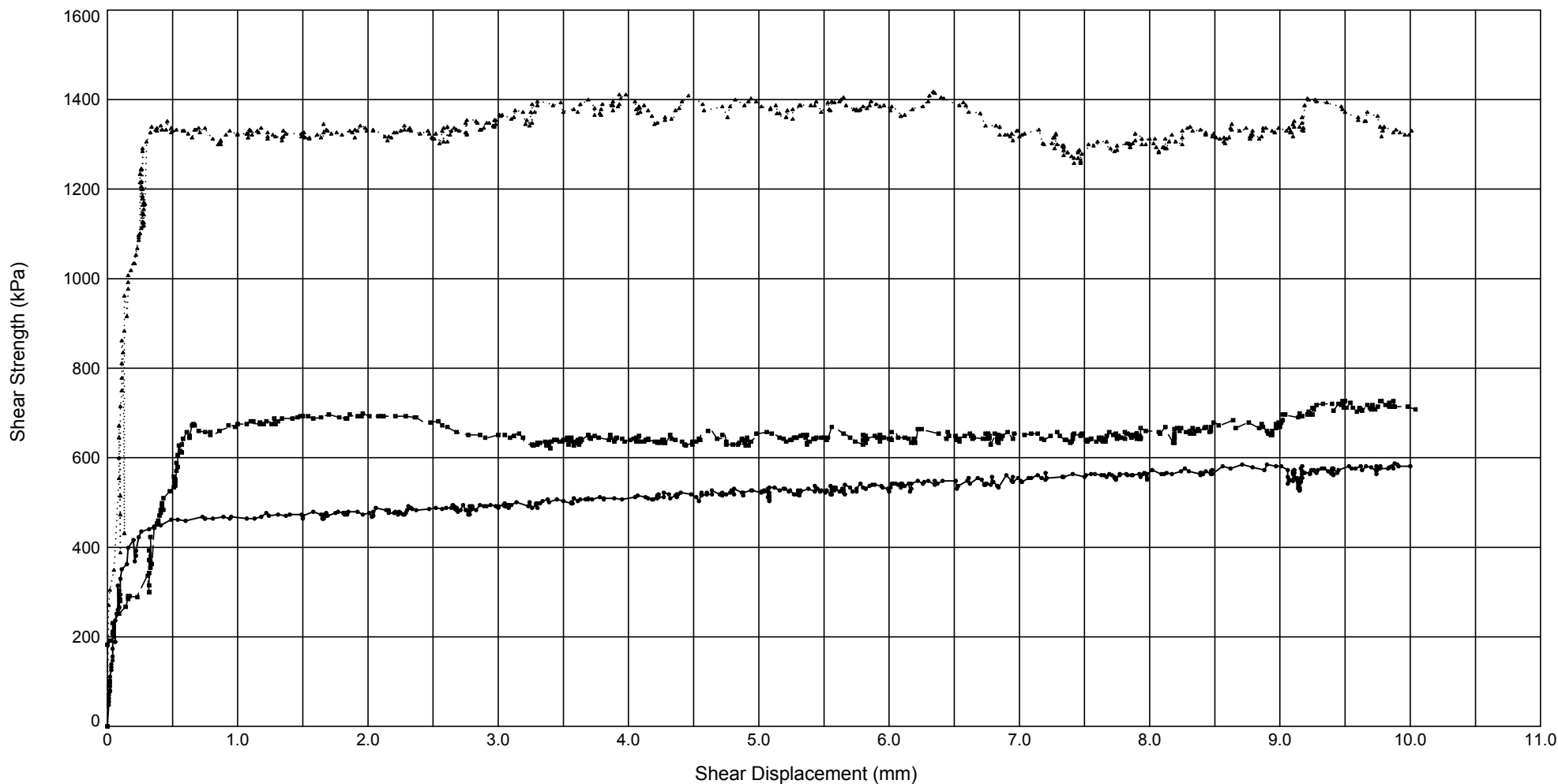
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R619**

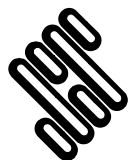
Sample Ref : **32**

Sample Type : **U**

Depth (m) : **29.30**



Legend: ● Stage 1, ■ Stage 2, ▲ Stage 3, ★ Stage 4



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R619
Sample Ref :	54
Depth (m) :	47.80
Type of Discontinuity :	Joint
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00781
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	10 - 12	14 - 16
Lower Surface of Discontinuity :	10 - 12	14 - 16

## LOADING DETAILS

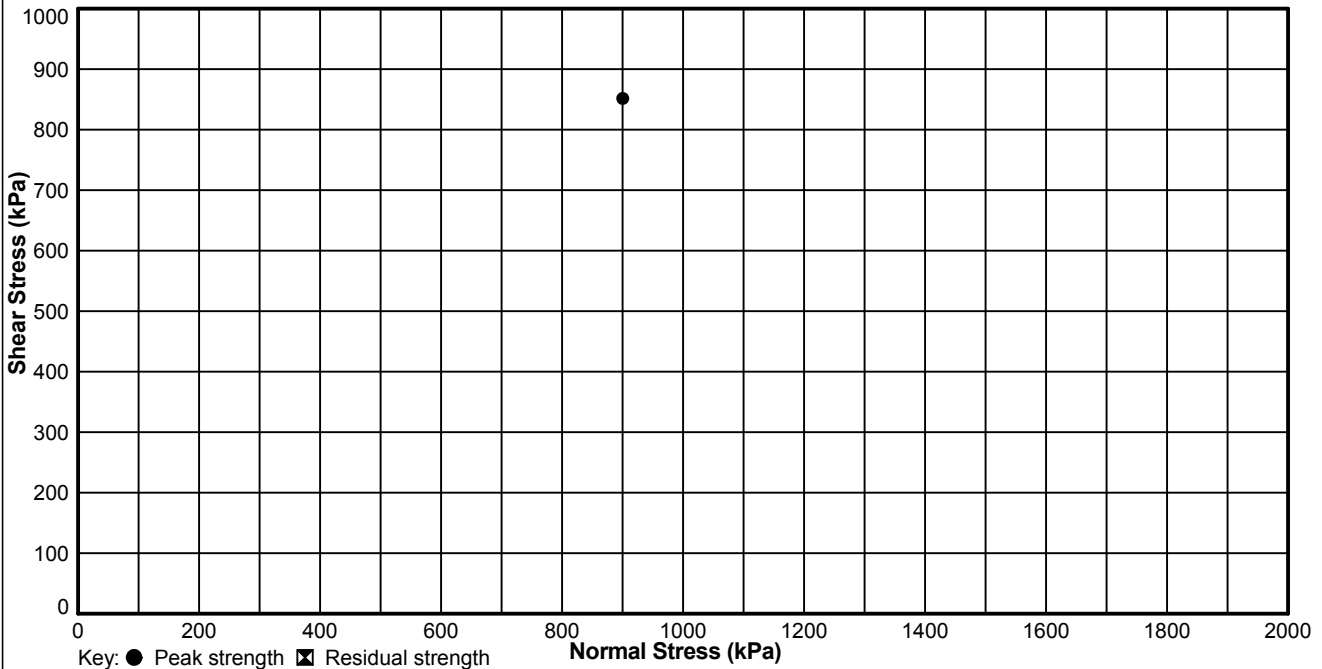
	1	2	3	4	5
Normal Stress (kPa) :	900	NA	NA	NA	NA
Shear Stress (kPa) :	851	NA	NA	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.5	NA	NA	NA	NA
Shear Displacement at Peak Load (mm) :	0.9	NA	NA	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	NA
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	NA
Residual Stress (kPa) :	NA



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**A303 Stonehenge Phase 6 Ground Investigation**

**733442**



# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

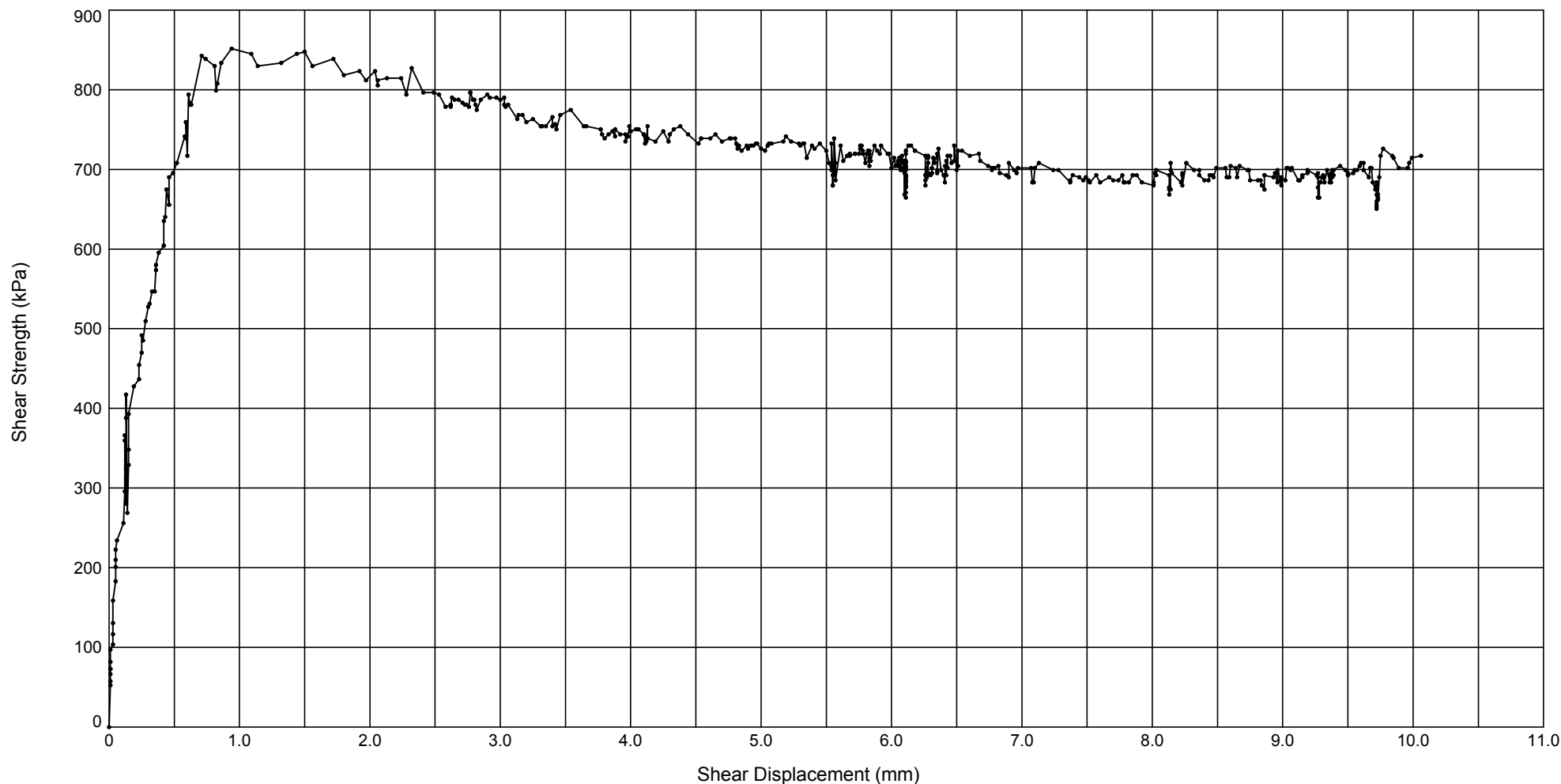
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R619**

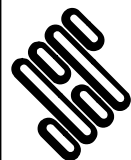
Sample Ref : **54**

Sample Type : **D**

Depth (m) : **47.80**



Legend: ● Stage 1, ☒ Stage 2, ▲ Stage 3, ★ Stage 4



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 Bedminster  
 Bristol  
 BS3 4AG

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Contract			<b>733442</b>
<b>A303 Stonehenge Phase 6 Ground Investigation</b>			



# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R620
Sample Ref :	38
Depth (m) :	33.35
Type of Discontinuity :	Saw cut
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00742
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	0 - 2	2 - 4
Lower Surface of Discontinuity :	0 - 2	2 - 4

## LOADING DETAILS

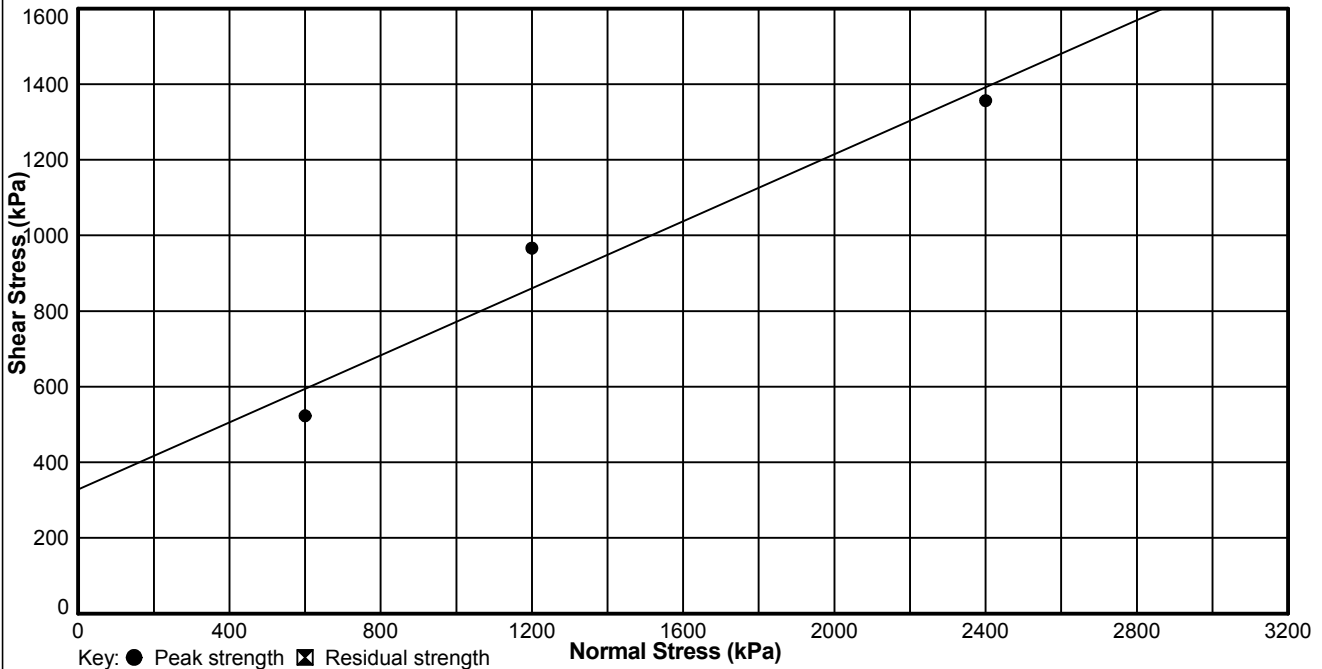
	1	2	3	4	5
Normal Stress (kPa) :	600	1200	2400	NA	NA
Shear Stress (kPa) :	523	966	1357	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.2	0.6	1.3	NA	NA
Shear Displacement at Peak Load (mm) :	9.6	6.1	0.8	NA	NA

## APPARENT FRICTION ANGLE

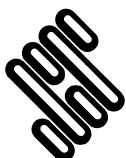
Peak Stress (degrees) :	23.9
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	327.8
Residual Stress (kPa) :	NA



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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

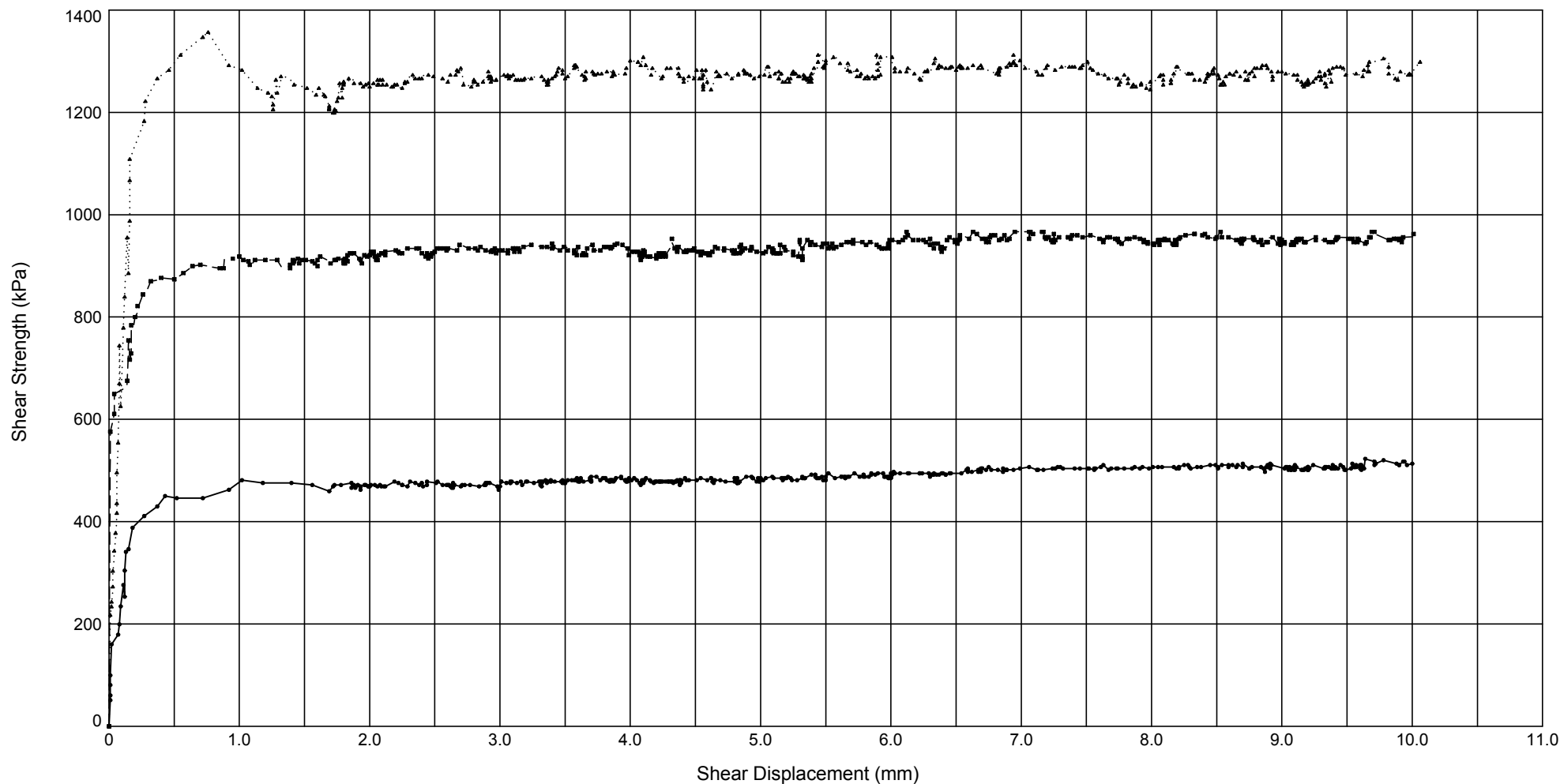
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R620**

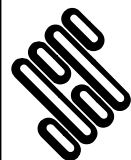
Sample Ref : **38**

Sample Type : **U**

Depth (m) : **33.35**



Legend: ● Stage 1, ■ Stage 2, ▲ Stage 3, ★ Stage 4



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<b>A303 Stonehenge Phase 6 Ground Investigation</b>			





# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	RZ603
Sample Ref :	31
Depth (m) :	24.93
Type of Discontinuity :	Joint
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00837
Type of Encapsulating Material :	Gypsum Plaster
Description :	Off brown CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	16 - 18	14 - 16
Lower Surface of Discontinuity :	16 - 18	14 - 16

## LOADING DETAILS

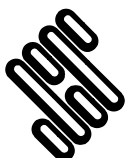
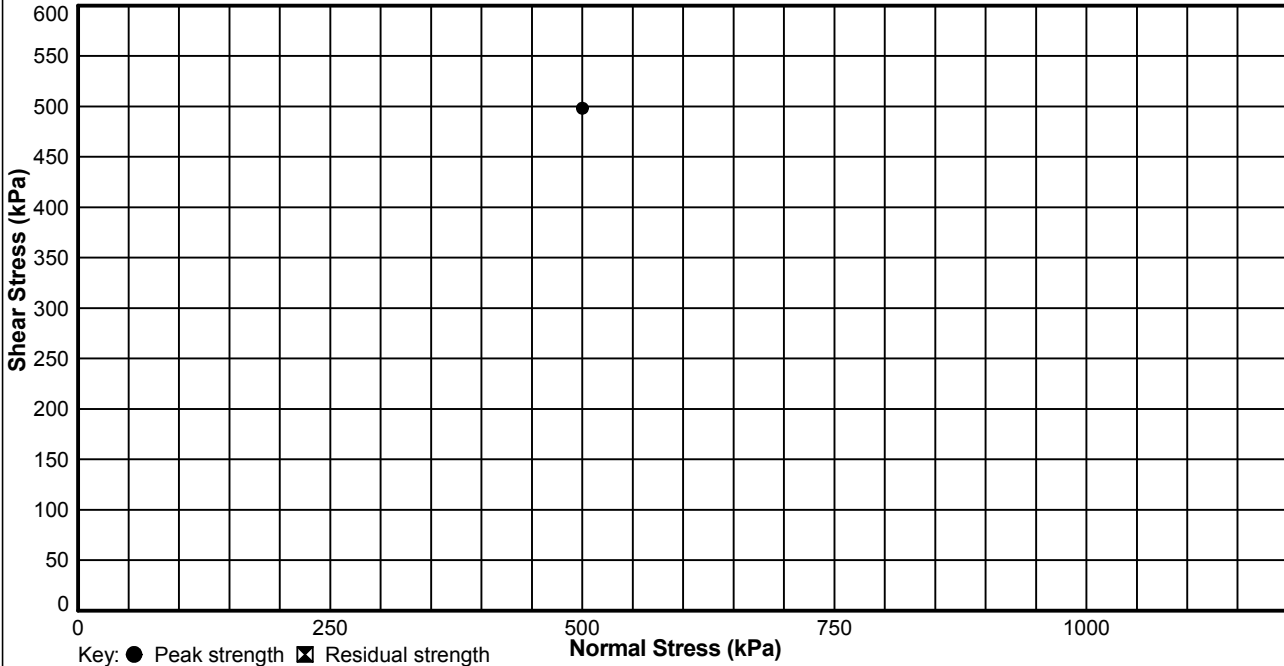
	1	2	3	4	5
Normal Stress (kPa) :	500	NA	NA	NA	NA
Shear Stress (kPa) :	498	NA	NA	NA	NA
Residual Stress (kPa) :		NA	NA	NA	NA
Normal Displacement (mm) :	0.8	NA	NA	NA	NA
Shear Displacement at Peak Load (mm) :	5.3	NA	NA	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	NA
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	NA
Residual Stress (kPa) :	NA



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EMY HOWARD

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**A303 Stonehenge Phase 6 Ground Investigation**

**733442**



# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

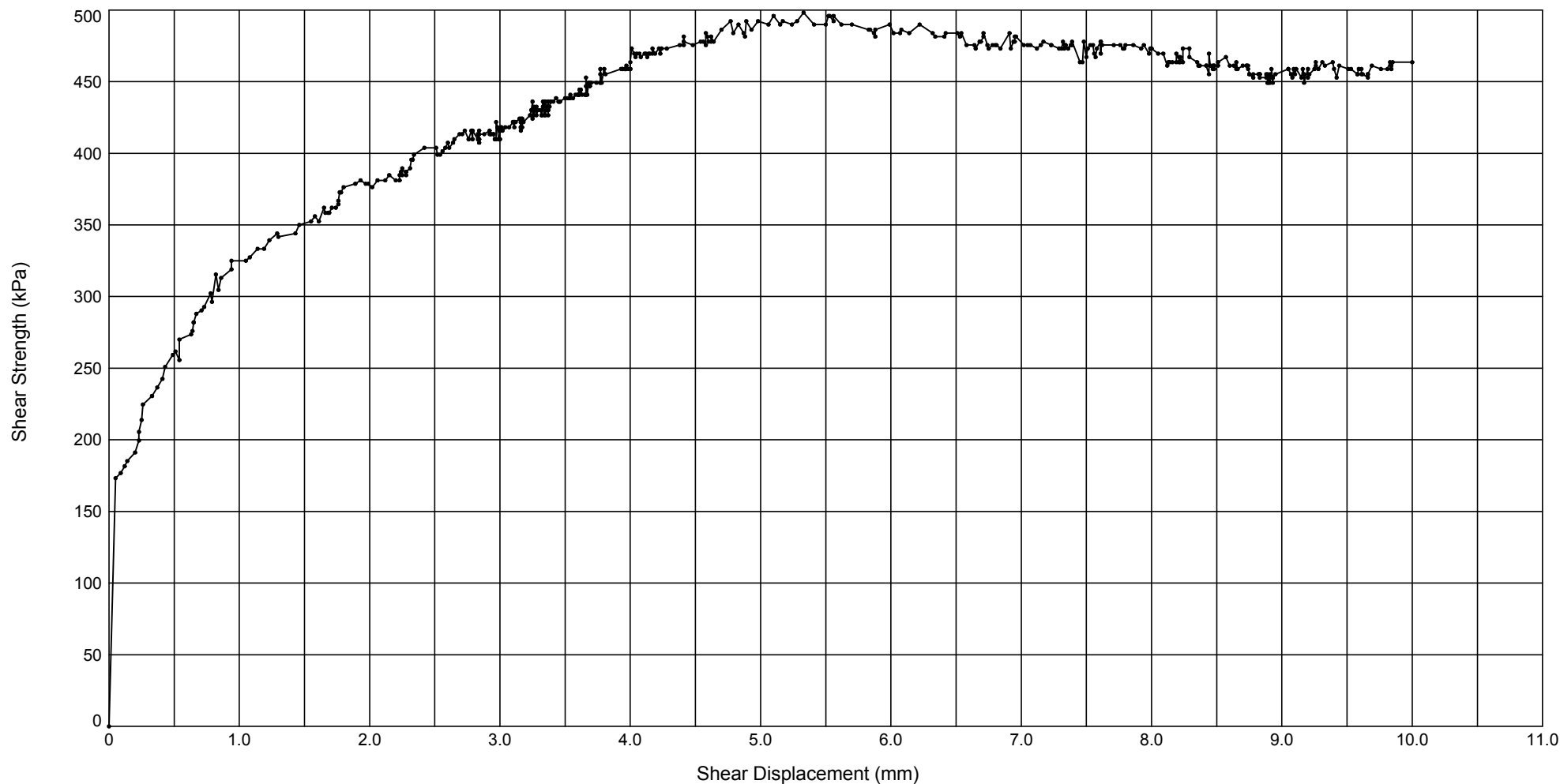
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **RZ603**

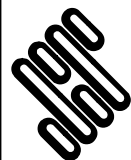
Sample Ref : **31**

Sample Type : **U**

Depth (m) : **24.93**



Legend: ● Stage 1, ☒ Stage 2, ▲ Stage 3, ★ Stage 4



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R71801
Sample Ref :	27
Depth (m) :	19.45
Type of Discontinuity :	Saw cut
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00812
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	0 - 2	0 - 2
Lower Surface of Discontinuity :	0 - 2	0 - 2

## LOADING DETAILS

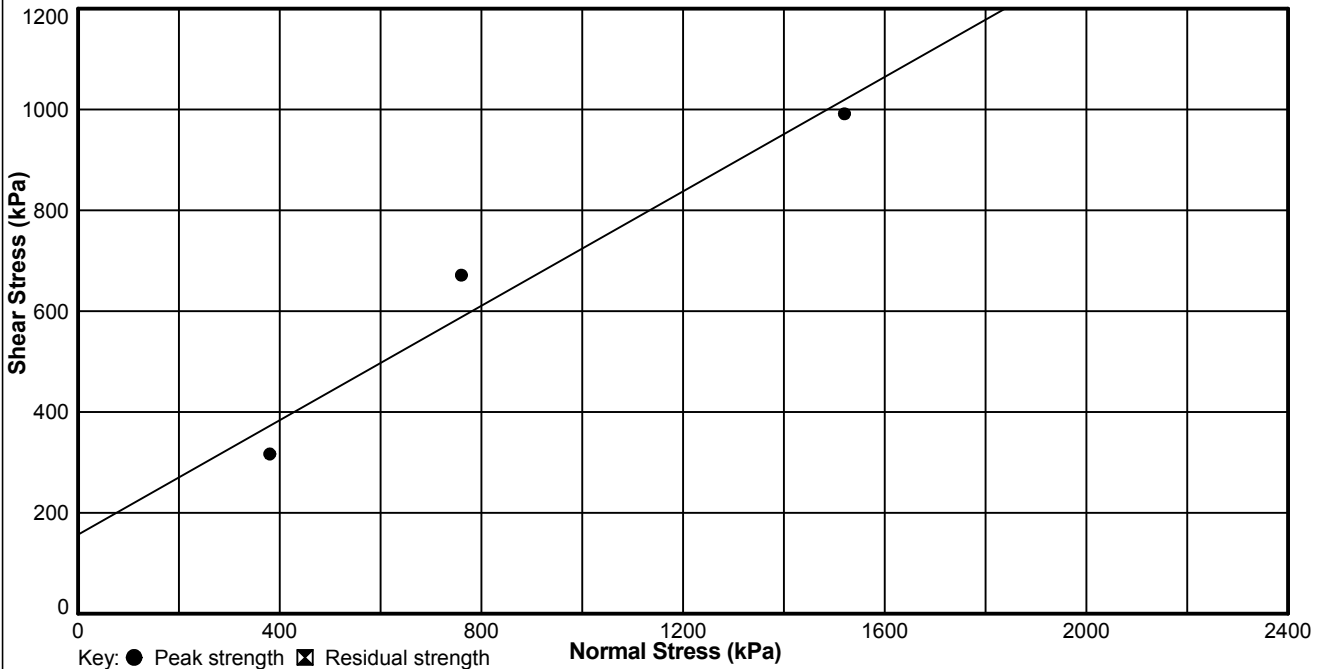
	1	2	3	4	5
Normal Stress (kPa) :	380	760	1520	NA	NA
Shear Stress (kPa) :	317	671	991	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.3	0.1	0.7	NA	NA
Shear Displacement at Peak Load (mm) :	9.7	9.9	3.0	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	29.6
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	156.4
Residual Stress (kPa) :	NA



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# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

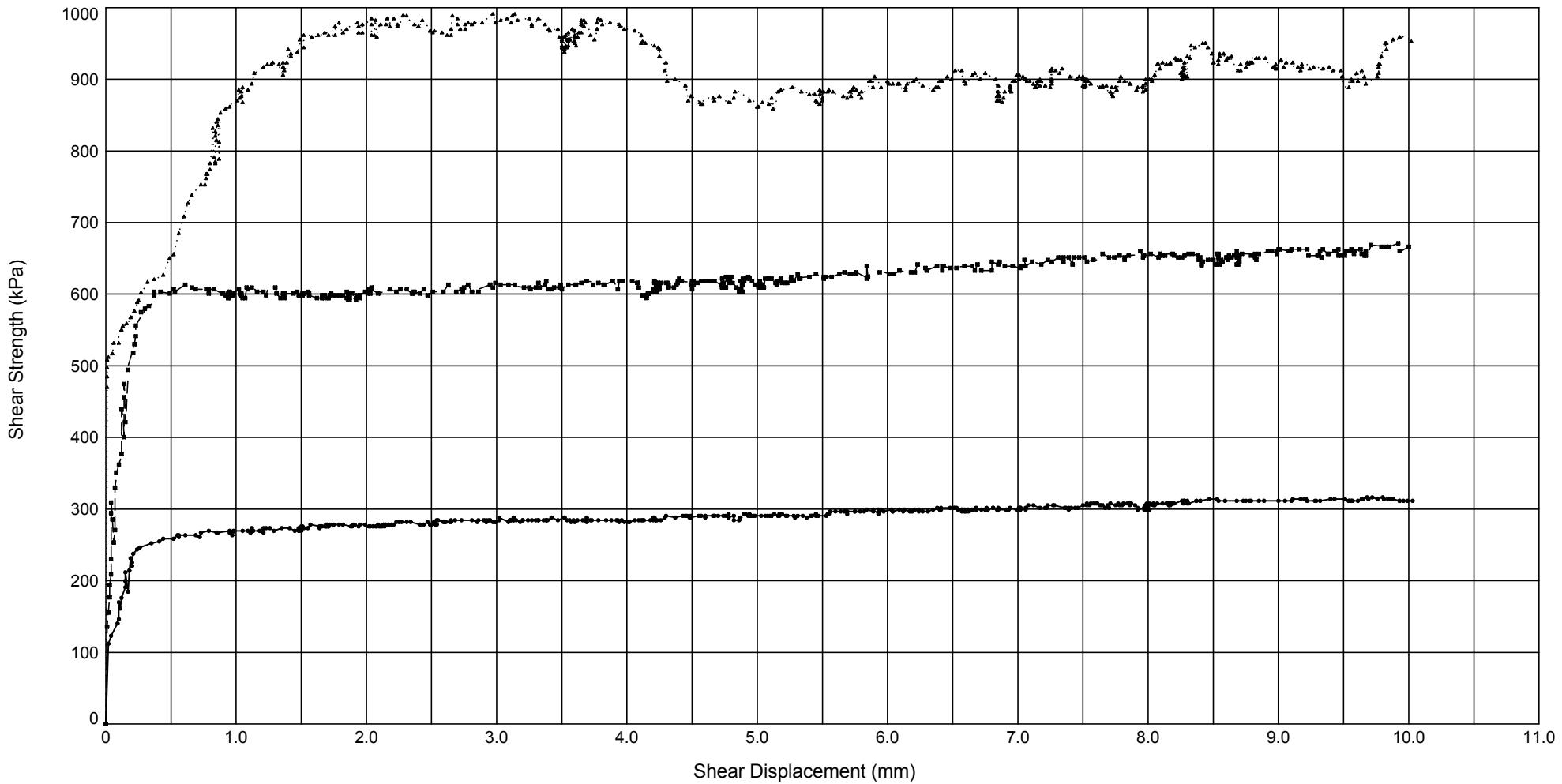
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : R71801

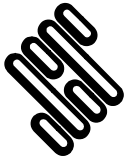
Sample Ref : 27

Sample Type : U

Depth (m) : 19.45



Legend: ● Stage 1, ■ Stage 2, ▲ Stage 3, ★ Stage 4



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ABBY MITCHELL

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**A303 Stonehenge Phase 7 Ground Investigation**



# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R71813
Sample Ref :	27
Depth (m) :	24.54
Type of Discontinuity :	Saw cut
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00801
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	0 - 2	0 - 2
Lower Surface of Discontinuity :	0 - 2	0 - 2

## LOADING DETAILS

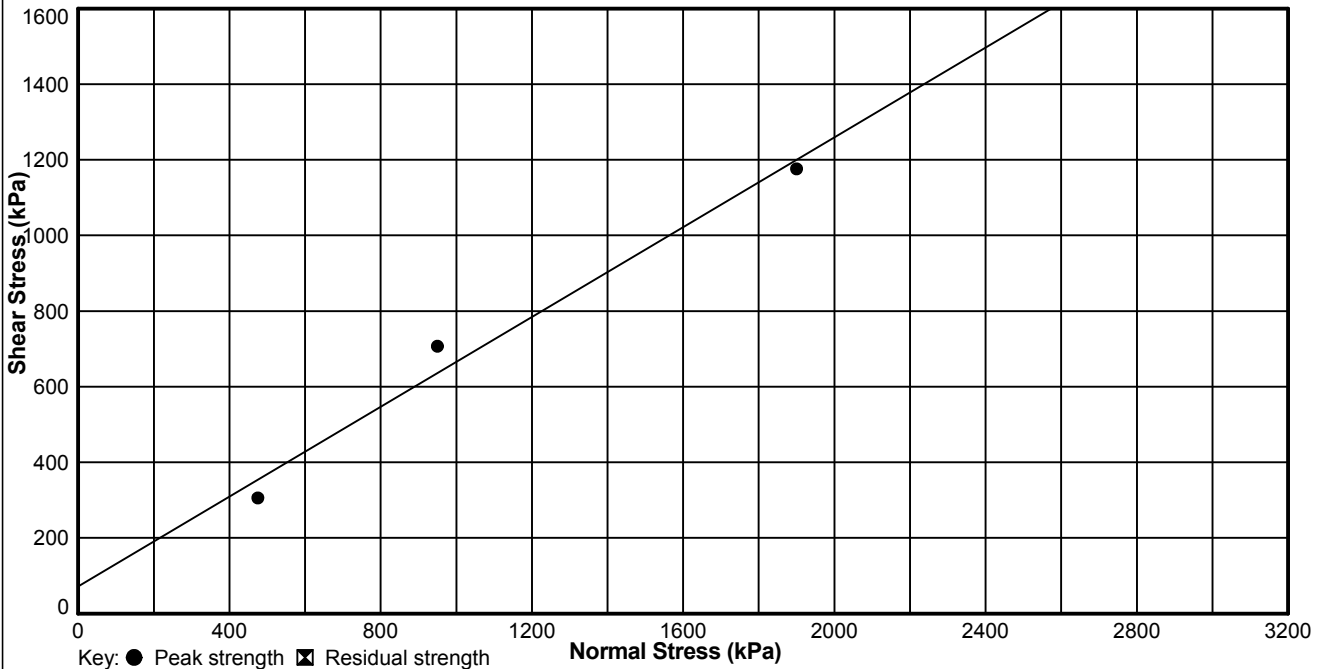
	1	2	3	4	5
Normal Stress (kPa) :	475	950	1900	NA	NA
Shear Stress (kPa) :	306	707	1176	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.2	0.1	0.4	NA	NA
Shear Displacement at Peak Load (mm) :	9.7	9.9	4.3	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	30.7
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	71.2
Residual Stress (kPa) :	NA



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A303 Stonehenge Phase 7 Ground Investigation		733442



# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

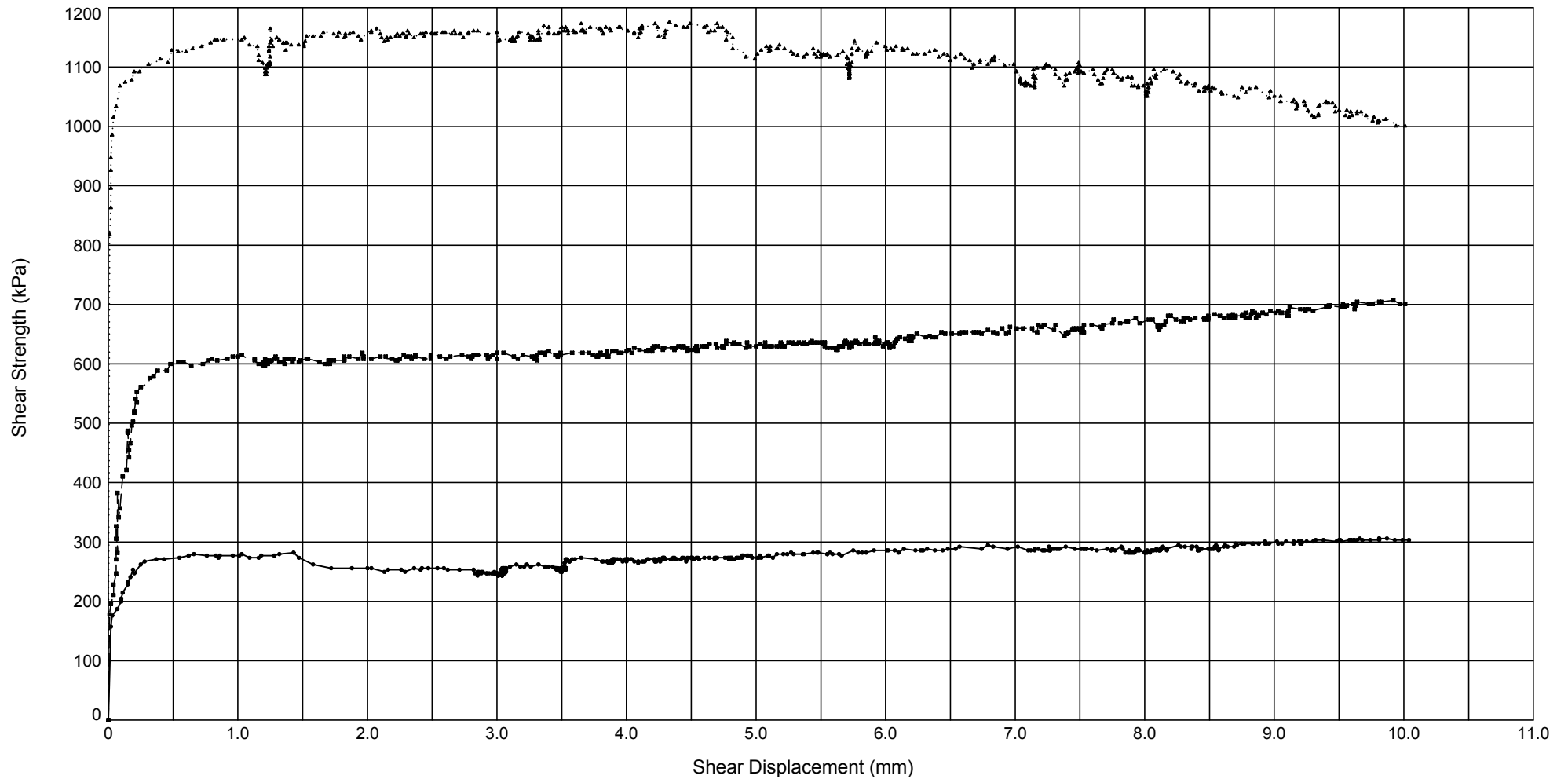
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : R71813

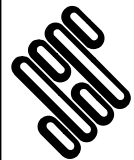
Sample Ref : 27

Sample Type : U

Depth (m) : 24.54



Legend: ● Stage 1, ■ Stage 2, ▲ Stage 3, ★ Stage 4



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Contract			<b>733442</b>
<b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R71909
Sample Ref :	73
Depth (m) :	57.60
Type of Discontinuity :	Joint
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.0085
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	14 - 16	10 - 12
Lower Surface of Discontinuity :	14 - 16	10 - 12

## LOADING DETAILS

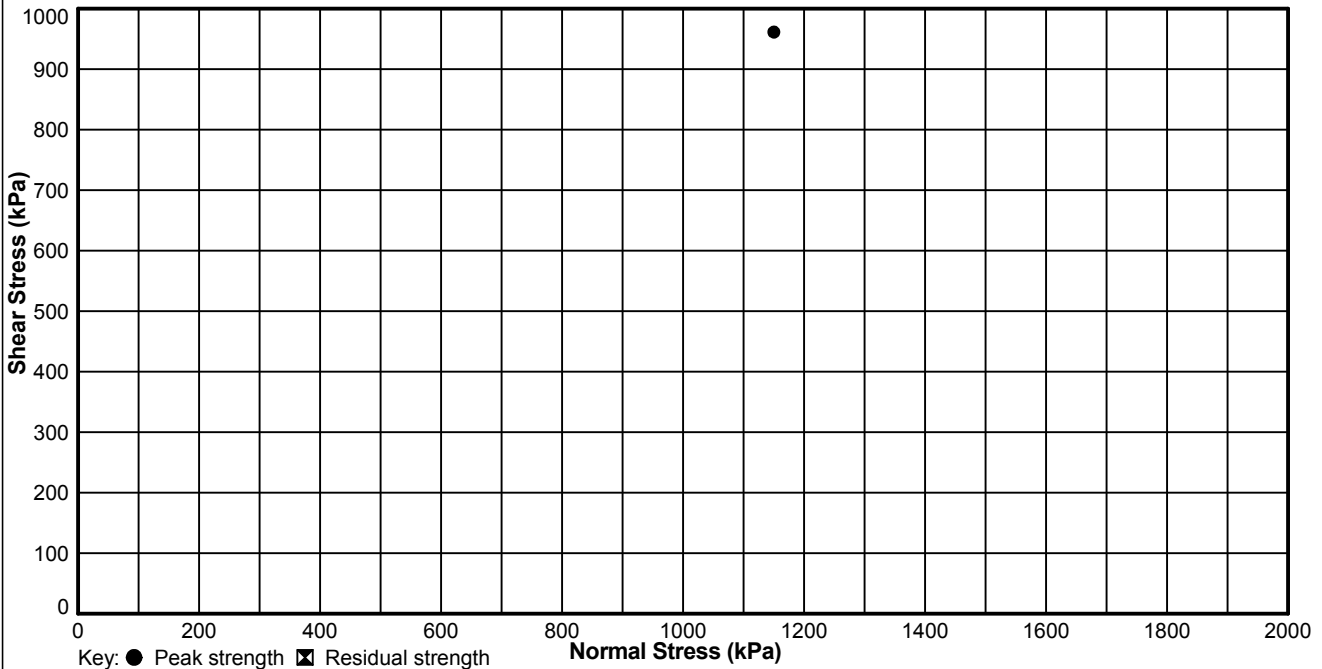
	1	2	3	4	5
Normal Stress (kPa) :	1150	NA	NA	NA	NA
Shear Stress (kPa) :	961	NA	NA	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.5	NA	NA	NA	NA
Shear Displacement at Peak Load (mm) :	5.1	NA	NA	NA	NA

## APPARENT FRICTION ANGLE

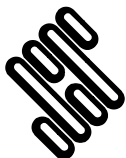
Peak Stress (degrees) :	NA
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	NA
Residual Stress (kPa) :	NA



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A303 Stonehenge Phase 7 Ground Investigation		733442



# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

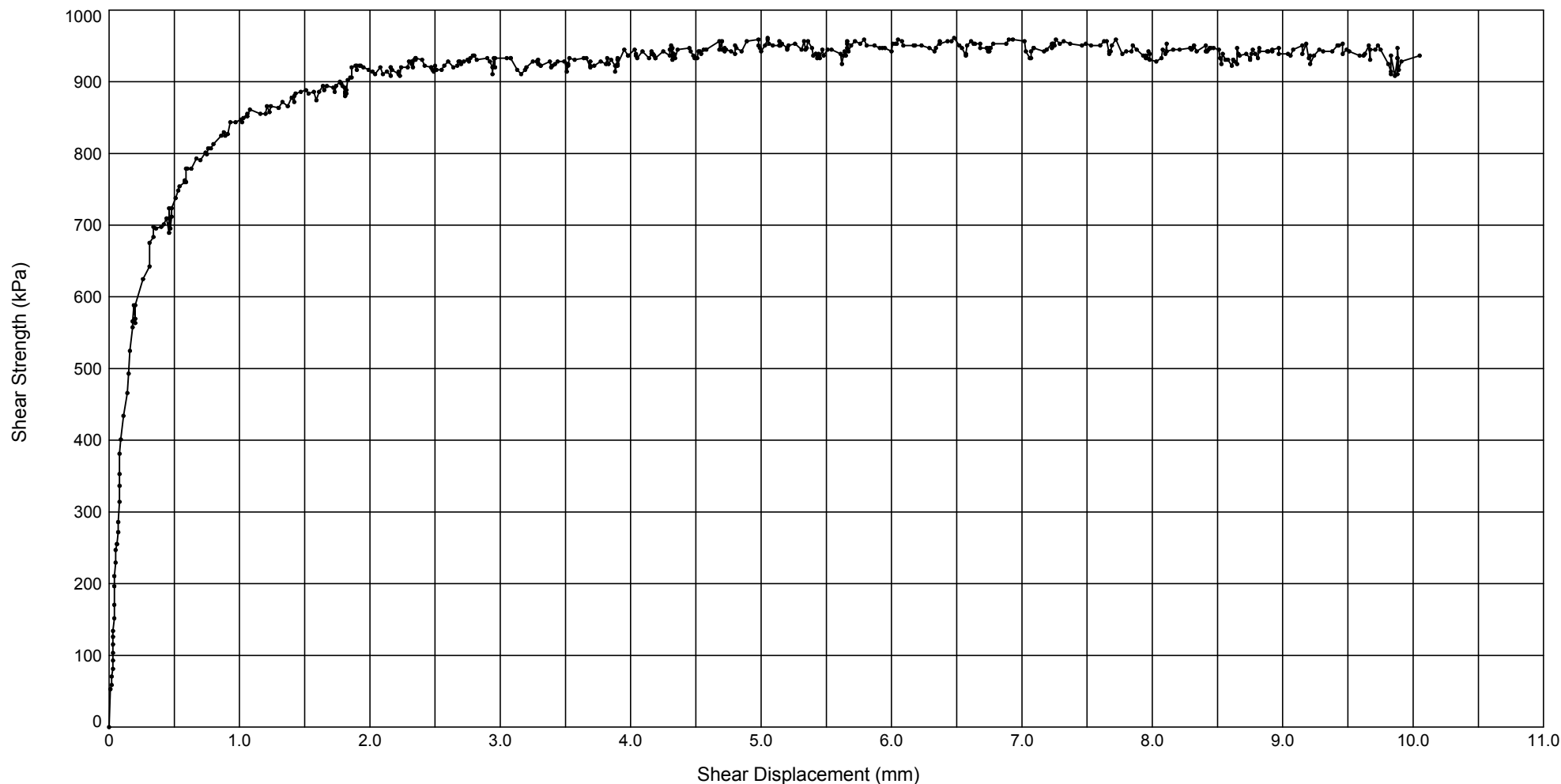
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R71909**

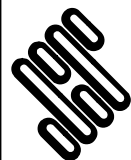
Sample Ref : **73**

Sample Type : **Us**

Depth (m) : **57.60**



Legend: ● Stage 1, ☒ Stage 2, ▲ Stage 3, ★ Stage 4



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# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R71913
Sample Ref :	50
Depth (m) :	31.90
Type of Discontinuity :	Saw cut
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00789
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	0 - 2	0 - 2
Lower Surface of Discontinuity :	0 - 2	0 - 2

## LOADING DETAILS

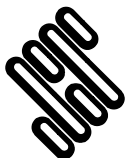
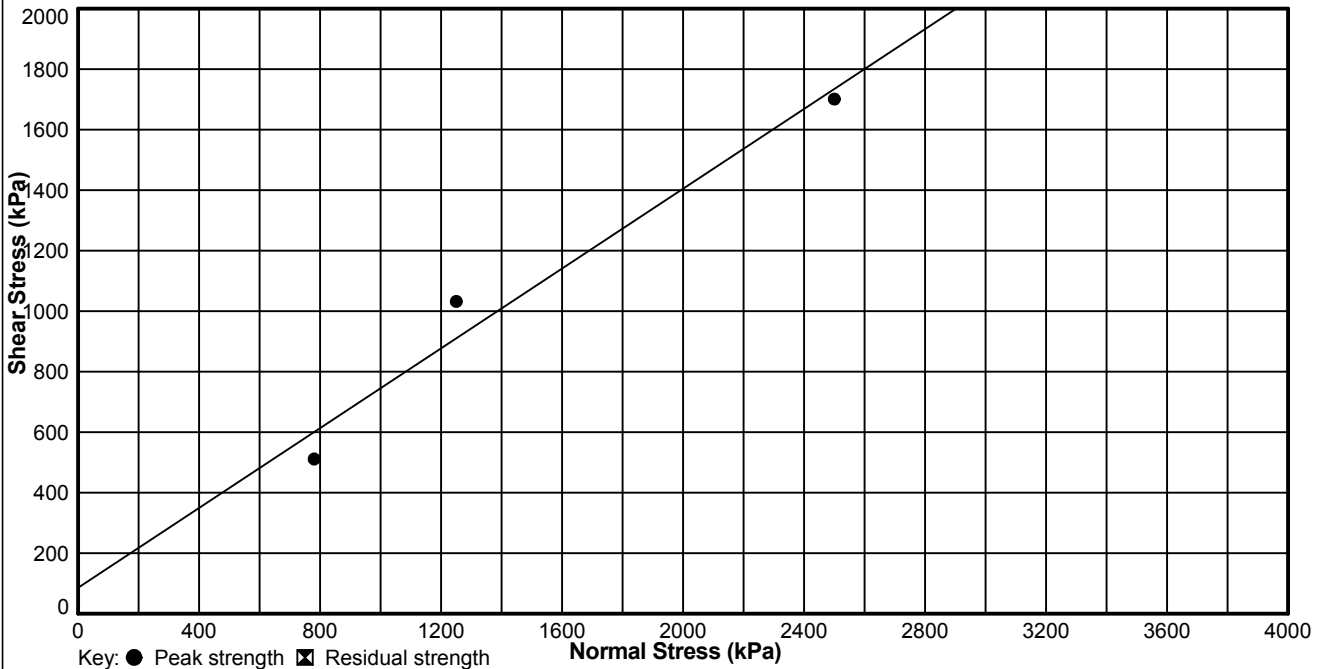
	1	2	3	4	5
Normal Stress (kPa) :	780	1250	2500	NA	NA
Shear Stress (kPa) :	511	1032	1701	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.0	0.1	0.7	NA	NA
Shear Displacement at Peak Load (mm) :	10.0	9.9	5.3	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	33.4
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	85.0
Residual Stress (kPa) :	NA



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Bristol  
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Compiled By

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ALAN FROST

19/12/18

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Contract Ref:

**A303 Stonehenge Phase 7 Ground Investigation**

**733442**



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Email: ask@soils.co.uk | 19/12/18 -

# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

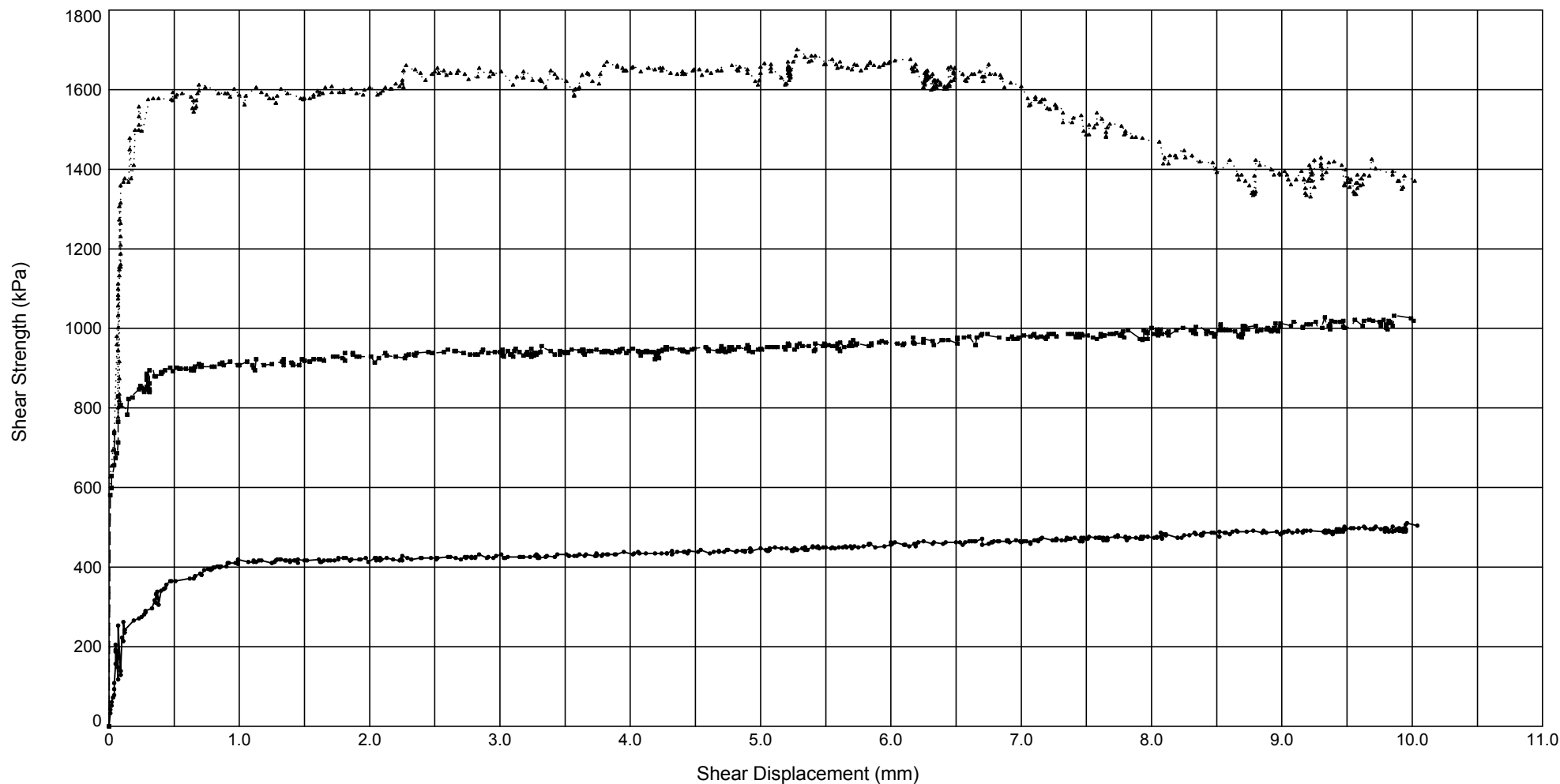
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : R71913

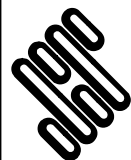
Sample Ref : 50

Sample Type : U

Depth (m) : 31.90



Legend: ● Stage 1, ■ Stage 2, ▲ Stage 3, ★ Stage 4



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<b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R71913
Sample Ref :	64
Depth (m) :	40.00
Type of Discontinuity :	Saw cut
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00793
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	0 - 2	0 - 2
Lower Surface of Discontinuity :	0 - 2	0 - 2

## LOADING DETAILS

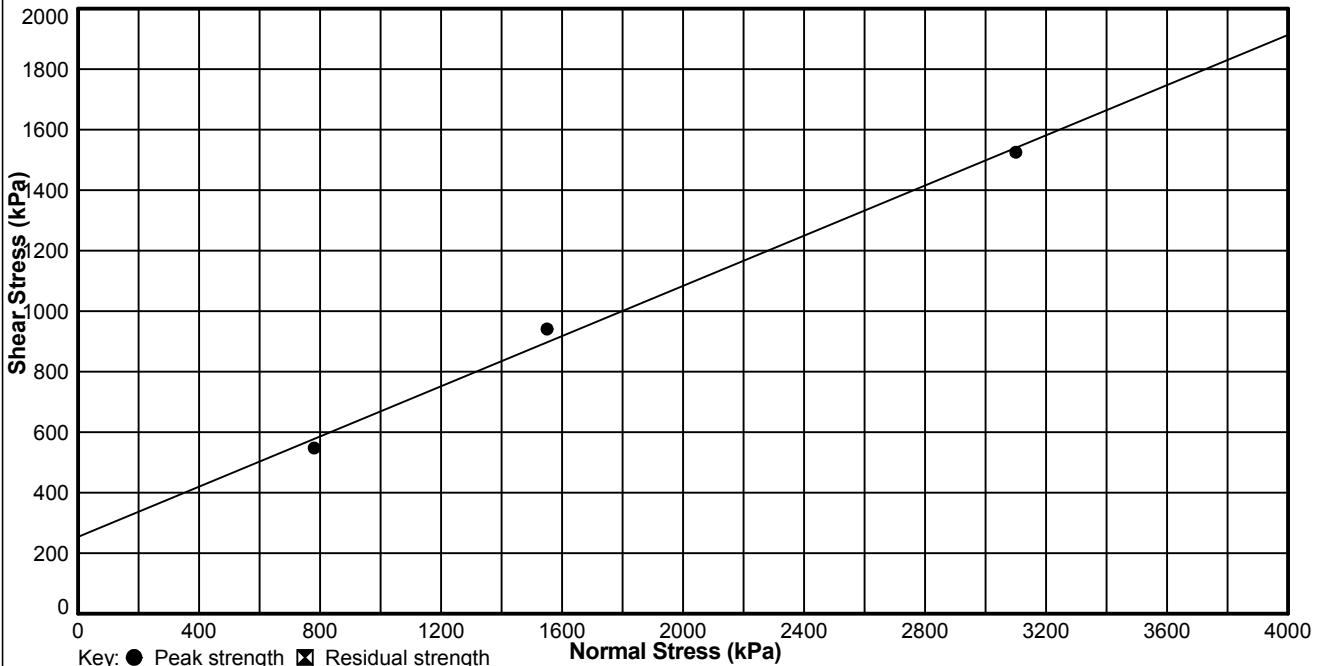
	1	2	3	4	5
Normal Stress (kPa) :	780	1550	3100	NA	NA
Shear Stress (kPa) :	547	941	1525	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.2	1.4	2.9	NA	NA
Shear Displacement at Peak Load (mm) :	9.5	2.5	9.9	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	22.5
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	253.1
Residual Stress (kPa) :	NA



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Contract		Contract Ref:
A303 Stonehenge Phase 7 Ground Investigation		733442



GINT\_LIBRARY\_v8.06.GLB LibVersion: v8.06 - Core+Full Bristol SI - 012 | Graph L - ROCK SBOX - 3 - A4L | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8.06  
 Structural Soils Ltd, Branch Office - Bristol Lab - Bristol Lab, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, 10:11 | AF3 |

ask@soils.co.uk | 19/12/18 -

# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

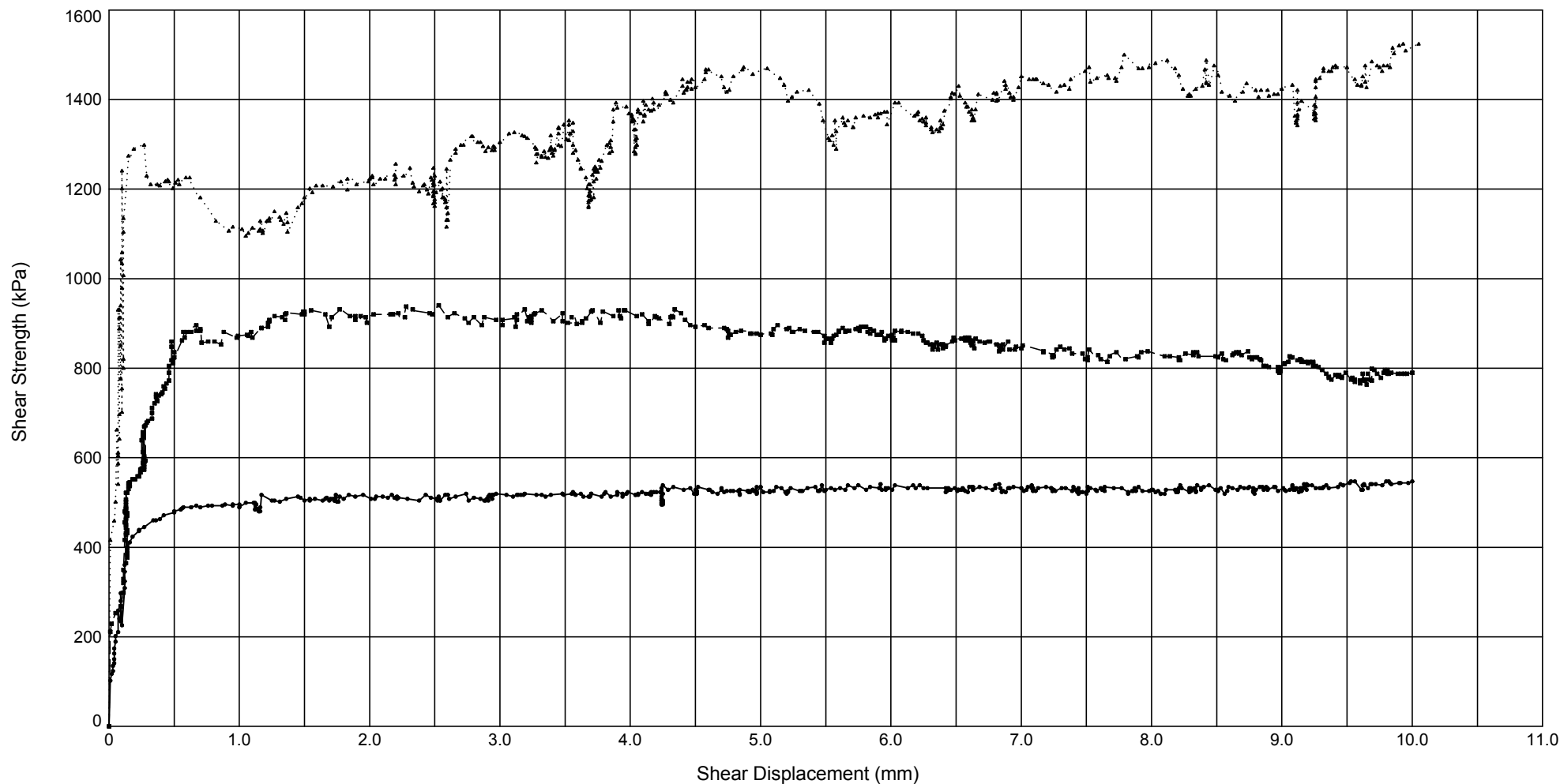
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : R71913

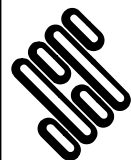
Sample Ref : 64

Sample Type : U

Depth (m) : 40.00



Legend: ● Stage 1, ■ Stage 2, ▲ Stage 3, ★ Stage 4



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 Bristol  
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Compiled By		Date	Contract Ref:
[Redacted]		19.12.18	
Contract			<b>733442</b>
<b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R72002
Sample Ref :	53
Depth (m) :	40.00
Type of Discontinuity :	Saw cut
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00803
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	0 - 2	6 - 8
Lower Surface of Discontinuity :	0 - 2	6 - 8

## LOADING DETAILS

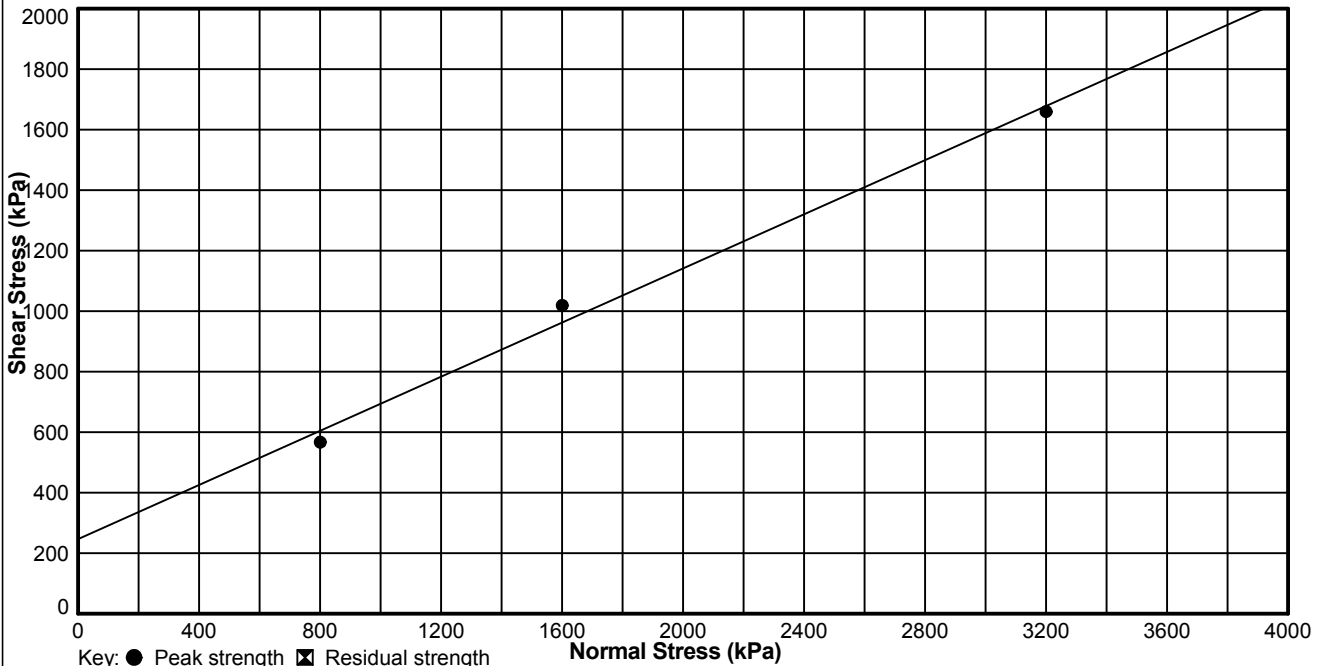
	1	2	3	4	5
Normal Stress (kPa) :	800	1600	3200	NA	NA
Shear Stress (kPa) :	567	1019	1659	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.1	1.1	3.3	NA	NA
Shear Displacement at Peak Load (mm) :	5.8	1.5	9.6	NA	NA

## APPARENT FRICTION ANGLE

Peak Stress (degrees) :	24.1
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	246.3
Residual Stress (kPa) :	NA



GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - ROCK SBOX - 1 - A4P | 733442 - A3003 STONEHENGE PHASE 6\_GROUND\_INVESTIGATION.GPJ - v8\_06.  
 Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117 947 1000, Fax: 0117 947 1004, Email: ask@scs.co.uk | 19/02/19 - 09:51 | AF3



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Compiled By		Date
[REDACTED]		19/02/19
Contract	Contract Ref:	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

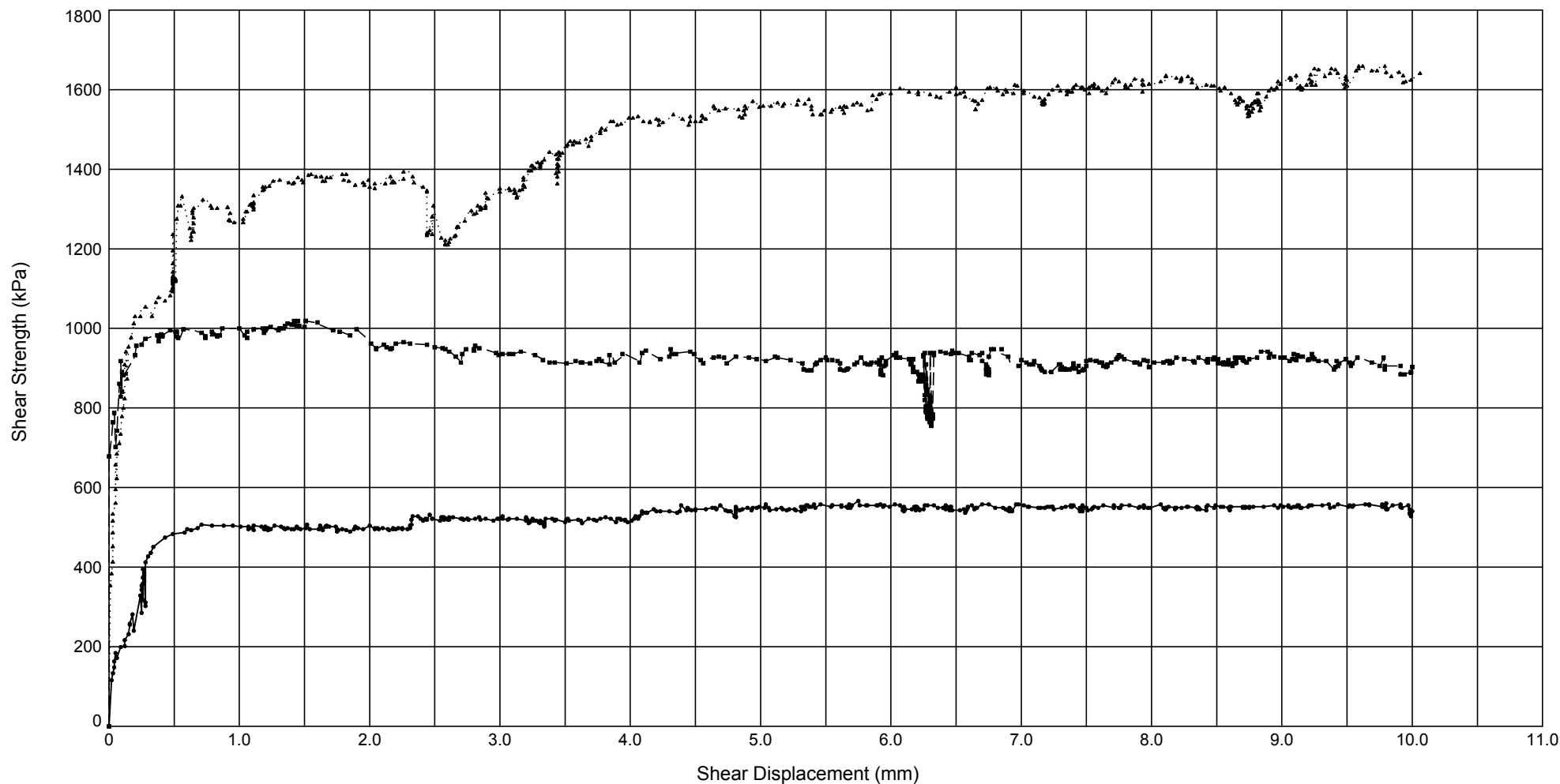
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : **R72002**

Sample Ref : **53**

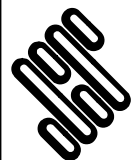
Sample Type : **U**

Depth (m) : **40.00**



Legend: ● Stage 1, ■ Stage 2, ▲ Stage 3, ★ Stage 4

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Graph L - ROCK SBOX - 3 - A4L | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06  
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Contract			<b>733442</b>
<b>A303 Stonehenge Phase 7 Ground Investigation</b>			



# DIRECT SHEAR STRENGTH TEST OF ROCK UNDER CONSTANT NORMAL STRESS

In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

## SAMPLE DETAILS

Borehole :	R72003
Sample Ref :	23
Depth (m) :	17.37
Type of Discontinuity :	Joint
Initial Cross Sectional Area (m <sup>2</sup> ) :	0.00855
Type of Encapsulating Material :	Gypsum Plaster
Description :	White CHALK
Remarks :	None

## JOINT ROUGHNESS COEFFICIENT

	Pre-test	Post-test
Upper Surface of Discontinuity :	8 - 10	6 - 8
Lower Surface of Discontinuity :	8 - 10	6 - 8

## LOADING DETAILS

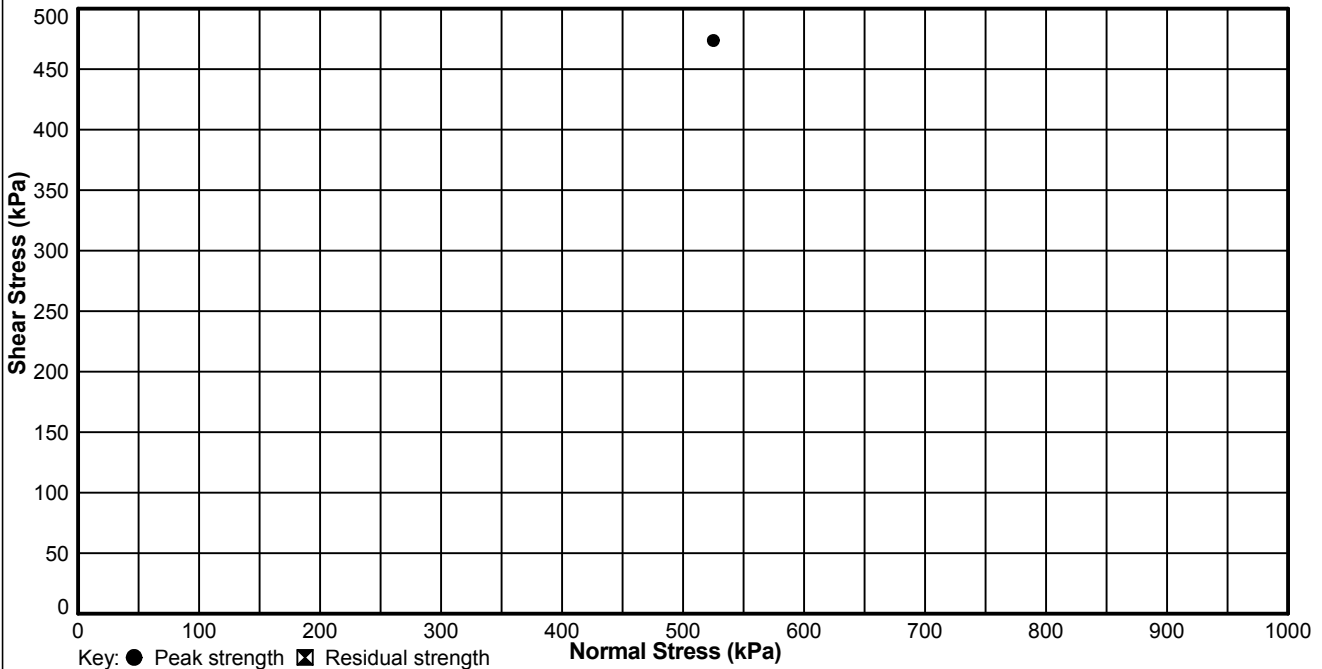
	1	2	3	4	5
Normal Stress (kPa) :	525	NA	NA	NA	NA
Shear Stress (kPa) :	474	NA	NA	NA	NA
Residual Stress (kPa) :	NA	NA	NA	NA	NA
Normal Displacement (mm) :	0.5	NA	NA	NA	NA
Shear Displacement at Peak Load (mm) :	8.5	NA	NA	NA	NA

## APPARENT FRICTION ANGLE

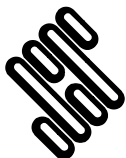
Peak Stress (degrees) :	NA
Residual Stress (degrees) :	NA

## SHEAR STRESS COHESION

Peak Stress (kPa) :	NA
Residual Stress (kPa) :	NA



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**STRUCTURAL SOILS**  
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Compiled By		Date
ALAN FROST		19/12/18
Contract	Contract Ref:	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	



# DIRECT SHEAR STRENGTH OF ROCK UNDER CONSTANT NORMAL STRESS

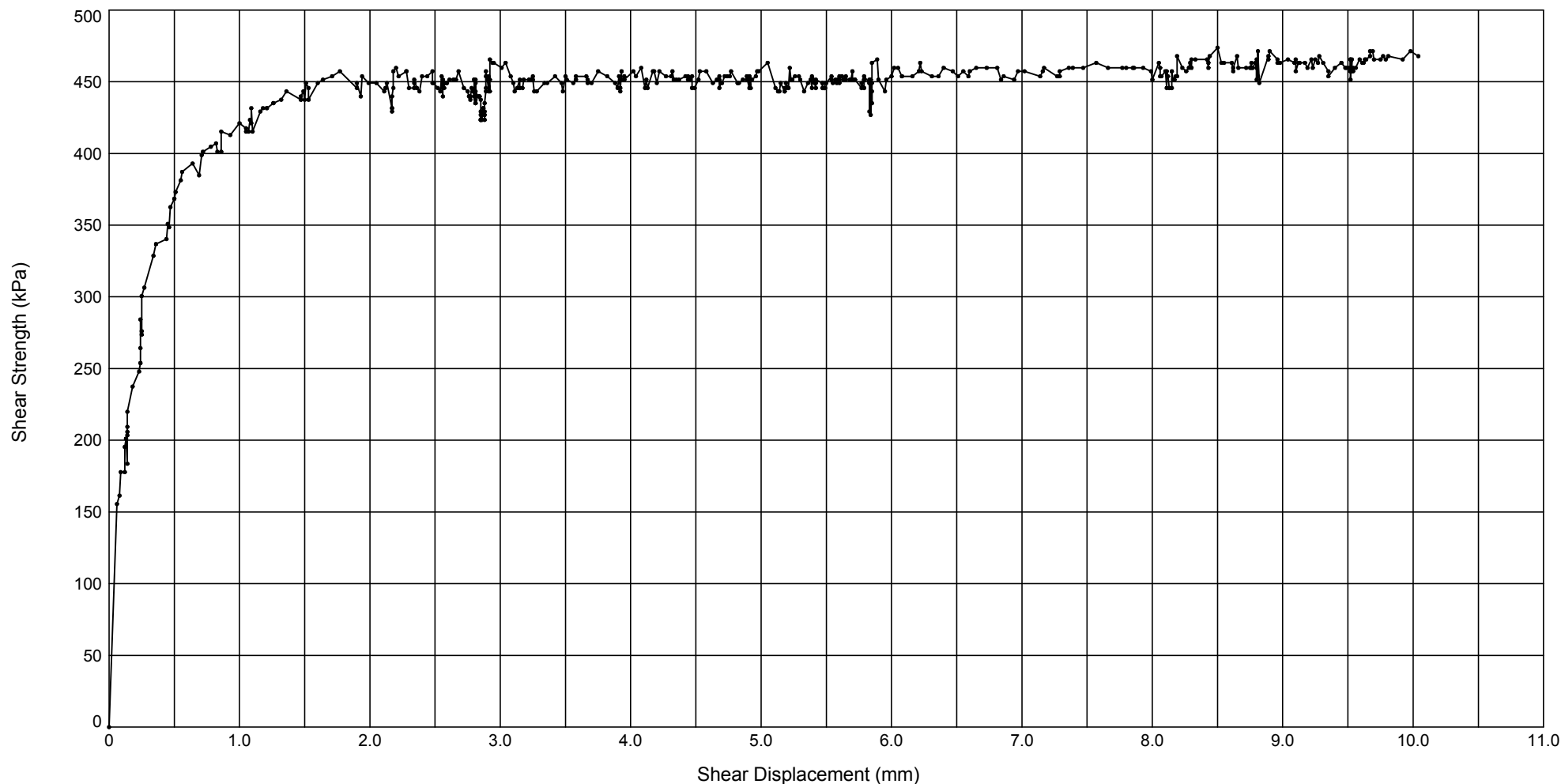
In house method based on ASTM D5607-95, and Rock Slope Engineering, Revised 3rd edition (1981).

Hole ID : R72003

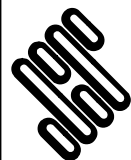
Sample Ref : 23

Sample Type : U

Depth (m) : 17.37



Legend: ● Stage 1, ☒ Stage 2, ▲ Stage 3, ★ Stage 4



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<b>A303 Stonehenge Phase 7 Ground Investigation</b>			





# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R602**                  Sample Ref: **20**                  Sample Type: **U**                  Depth (m): **17.50**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.01</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.61</b>	Moisture Content (%): <b>25</b>
Length (mm): <b>213.87</b>	Diameter (mm): <b>99.67</b>	Length/Diameter Ratio: <b>2.15</b>
Test Duration (mins:secs): <b>3:03</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>28.3</b>
UCS (MPa): <b>3.6</b>	Failure Type: <b>Axial cleavage</b>	

Note: **Axis of loading parallel to core axis**  
Description: **Light brown and off white CHALK**  
Specimen Preparation: **Specimen was not recored.**  
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
Remarks: **Non-standard test**



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

 <b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	<b>ABBY MITCHELL</b>		<b>28/09/18</b>
	Contract		Job No
	<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: <b>R602</b>	Sample Ref: <b>31</b>	Sample Type: <b>U</b>	Depth (m): <b>25.65</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>2.07</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.67</b>	Moisture Content (%): <b>24</b>	
Length (mm): <b>215.04</b>	Diameter (mm): <b>99.77</b>	Length/Diameter Ratio: <b>2.16</b>	
Test Duration (mins:secs): <b>1:51</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>18.9</b>	
UCS (MPa): <b>2.4</b>		Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **Light brown and off white CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

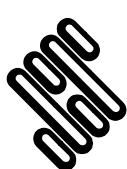


Front view (post-test)



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  
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Compiled By		Date
[Redacted]	<b>ABBY MITCHELL</b>	<b>28/09/18</b>
Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: <b>R602</b>	Sample Ref: <b>36</b>	Sample Type: <b>U</b>	Depth (m): <b>29.40</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>2.00</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.59</b>	Moisture Content (%): <b>26</b>	
Length (mm): <b>213.61</b>	Diameter (mm): <b>99.73</b>	Length/Diameter Ratio: <b>2.14</b>	
Test Duration (mins:secs): <b>4:03</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>26.6</b>	
UCS (MPa): <b>3.4</b>	Failure Type: <b>Axial cleavage</b>		

**Note: Axis of loading parallel to core axis**  
 Description: **Off white CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



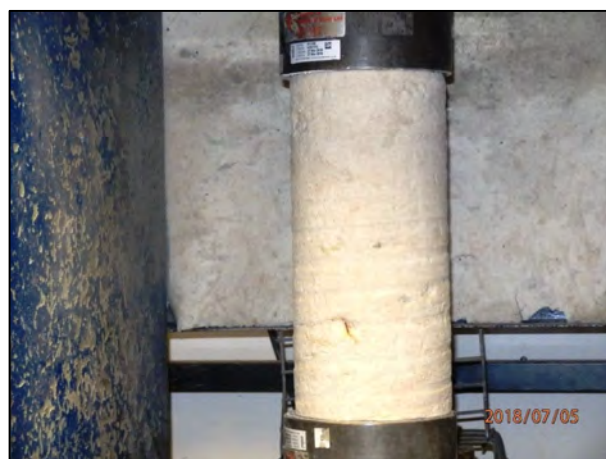
Front view (pre-test)



Rear view (pre-test)

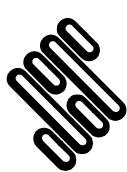


Front view (post-test)



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**  
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Compiled By		Date
██████████	<b>ABBY MITCHELL</b>	<b>28/09/18</b>
Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>

## UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: <b>R602</b>	Sample Ref: <b>41</b>	Sample Type: <b>U</b>	Depth (m): <b>34.20</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>2.00</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.60</b>	Moisture Content (%): <b>25</b>	
Length (mm): <b>214.70</b>	Diameter (mm): <b>99.53</b>	Length/Diameter Ratio: <b>2.16</b>	
Test Duration (mins:secs): <b>3:14</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>17.4</b>	
UCS (MPa): <b>2.2</b>		Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
Description: **Off white CHALK**  
Specimen Preparation: **Specimen was not recored.**  
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
Remarks: **Non-standard test**



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

	<p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By	Date	
		<div style="background-color: black; color: black;">[REDACTED]</div>	<b>ABBY MITCHELL</b>	28/09/18
	Contract	Job No	<b>733442</b>	
		<b>A303 Stonehenge Phase 6 Ground Investigation</b>		

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R606**                          Sample Ref: **15**                          Sample Type: **U**                          Depth (m): **10.85**

Bulk Density ( $\text{Mg}/\text{m}^3$ ): **1.98**                          Dry Density ( $\text{Mg}/\text{m}^3$ ): **1.57**                          Moisture Content (%): **26**  
 Length (mm): **188.73**                          Diameter (mm): **100.82**                          Length/Diameter Ratio: **1.87**  
 Test Duration (mins:secs): **3:19**                          Stress Rate (kN/min): **6.0**                          Load at Failure (kN): **21.5**  
    UCS (MPa): **2.7**                          Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**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  $>4^{\circ}\text{C}$   
 Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06\_018 Core+Full Bristol SI - 012 | GrctText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_01  
 Structural Soils Ltd. Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 29/09/18 - 08:37 | AF3

<p><b>STRUCTURAL SOILS</b>          1a Princess Street          Bedminster          Bristol          BS3 4AG</p>	Compiled By		Date
		<b>EMY HOWARD</b>	<b>29/09/18</b>
	Contract	<b>A303 Stonehenge Phase 6 Ground Investigation</b>	
			<b>733442</b>

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R606**                      Sample Ref: **29**                      Sample Type: **U**                      Depth (m): **23.00**

Bulk Density ( $\text{Mg/m}^3$ ): **1.97**                      Dry Density ( $\text{Mg/m}^3$ ): **1.58**                      Moisture Content (%): **25**  
Length (mm): **199.33**                      Diameter (mm): **100.64**                      Length/Diameter Ratio: **1.98**  
Test Duration (mins:secs): **3:11**                      Stress Rate (kN/min): **6.0**                      Load at Failure (kN): **19.7**  
UCS (MPa): **2.5**                      Failure Type: **Shear**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

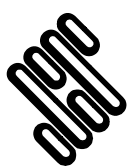


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures  $>4^{\circ}\text{C}$   
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

**EMY HOWARD**

**29/09/18**

Contract

Job No

**A303 Stonehenge Phase 6 Ground Investigation**

**733442**



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R606**      Sample Ref: **32**      Sample Type: **U**      Depth (m): **25.15**

Bulk Density ( $Mg/m^3$ ): **1.99**      Dry Density ( $Mg/m^3$ ): **1.58**      Moisture Content (%): **26**  
 Length (mm): **215.31**      Diameter (mm): **100.46**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **2:45**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **27.0**  
    UCS (MPa): **3.4**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

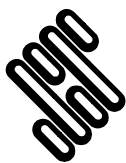


**Front view (post-test)**



**Rear view (post-test)**

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



**STRUCTURAL SOILS**  
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Compiled By		Date
<b>EMY HOWARD</b>		<b>29/09/18</b>
Contract	Job No	
<b>A303 Stonehenge Phase 6 Ground Investigation</b>	<b>733442</b>	

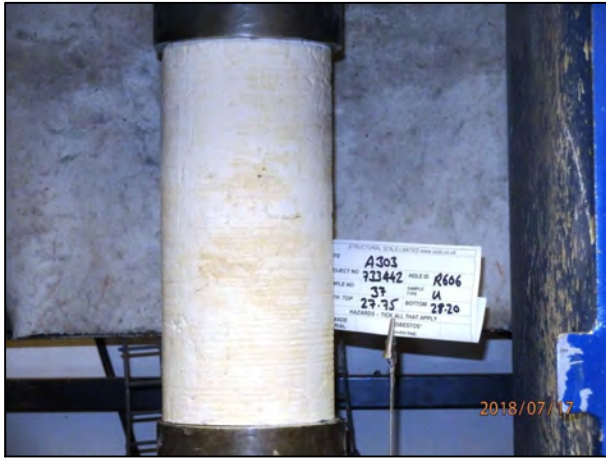
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R606**                      Sample Ref: **37**                      Sample Type: **U**                      Depth (m): **27.75**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.02</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.64</b>	Moisture Content (%): <b>23</b>
Length (mm): <b>214.52</b>	Diameter (mm): <b>100.16</b>	Length/Diameter Ratio: <b>2.14</b>
Test Duration (mins:secs): <b>3:00</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>24.6</b>
UCS (MPa): <b>3.1</b>	Failure Type: <b>Axial cleavage</b>	

Note: **Axis of loading parallel to core axis**  
Description: **White CHALK**  
Specimen Preparation: **Specimen was not recored.**  
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

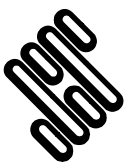


Front view (post-test)



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

**EMY HOWARD**

**29/09/18**

Contract

Job No

**A303 Stonehenge Phase 6 Ground Investigation**

**733442**





# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R606**      Sample Ref: **41**      Sample Type: **U**      Depth (m): **30.70**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.59**      Moisture Content (%): **25**  
 Length (mm): **215.58**      Diameter (mm): **99.68**      Length/Diameter Ratio: **2.16**  
 Test Duration (mins:secs): **3:06**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **27.0**  
 UCS (MPa): **3.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

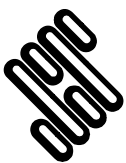


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R606**      Sample Ref: **46**      Sample Type: **U**      Depth (m): **37.15**

Bulk Density (Mg/m<sup>3</sup>): **1.97**      Dry Density (Mg/m<sup>3</sup>): **1.58**      Moisture Content (%): **25**  
 Length (mm): **214.48**      Diameter (mm): **99.21**      Length/Diameter Ratio: **2.16**  
 Test Duration (mins:secs): **4:25**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **26.6**  
 UCS (MPa): **3.4**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

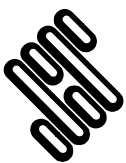


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R606**                      Sample Ref: **55**                      Sample Type: **U**                      Depth (m): **44.16**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.04</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.68</b>	Moisture Content (%): <b>22</b>
Length (mm): <b>214.74</b>	Diameter (mm): <b>100.26</b>	Length/Diameter Ratio: <b>2.14</b>
Test Duration (mins:secs): <b>6:00</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>39.7</b>
UCS (MPa): <b>5.0</b>		Failure Type: <b>Axial cleavage</b>

Note: **Axis of loading parallel to core axis**  
Description: **White CHALK**  
Specimen Preparation: **Specimen was not recored.**  
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

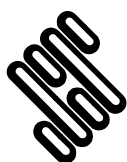


Front view (post-test)




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
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>
		

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R606**                      Sample Ref: **65**                      Sample Type: **U**                      Depth (m): **53.40**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.10</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.78</b>	Moisture Content (%): <b>18</b>
Length (mm): <b>215.04</b>	Diameter (mm): <b>100.63</b>	Length/Diameter Ratio: <b>2.14</b>
Test Duration (mins:secs): <b>5:18</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>48.4</b>
UCS (MPa): <b>6.1</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



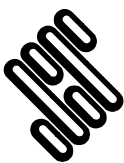
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4PI 733442 - AS003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 29/09/18 - 08:37 | AF3



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Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

**Borehole: R606**                      **Sample Ref: 69**                      **Sample Type: U**                      **Depth (m): 56.48**

**Bulk Density (Mg/m<sup>3</sup>): 2.14**                      **Dry Density (Mg/m<sup>3</sup>): 1.83**                      **Moisture Content (%): 17**  
**Length (mm): 214.53**                      **Diameter (mm): 100.42**                      **Length/Diameter Ratio: 2.14**  
**Test Duration (mins:secs): 5:32**                      **Stress Rate (kN/min): 6.0**                      **Load at Failure (kN): 59.2**  
**UCS (MPa): 7.5**                      **Failure Type: Axial cleavage**

**Note: Axis of loading parallel to core axis**  
**Description: White CHALK**  
**Specimen Preparation: Specimen was not recored.**  
**Sample tolerance checks: Straightness: FAIL. Flatness: FAIL. Perpendicularity: FAIL.**  
**Remarks: Non-standard test. Borehole number in photographs is incorrect**



**Front view (pre-test)**



**Rear view (pre-test)**



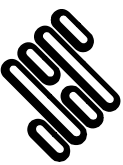

**Front view (post-test)**



**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

GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1 733442 - A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd. Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 29/09/18 - 08:37 | AF3

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Contract	Job No	
<b>A303 Stonehenge Phase 6 Ground Investigation</b>	<b>733442</b>	
		

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R606**      Sample Ref: **70**      Sample Type: **U**      Depth (m): **57.57**

Bulk Density (Mg/m<sup>3</sup>): **2.19**      Dry Density (Mg/m<sup>3</sup>): **1.88**      Moisture Content (%): **16**  
 Length (mm): **214.29**      Diameter (mm): **100.52**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **6:10**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **66.6**  
 UCS (MPa): **8.4**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

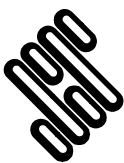


**Front view (post-test)**



**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**  
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**29/09/18**

Contract

**A303 Stonehenge Phase 6 Ground Investigation**

Job No

**733442**



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R606**                      Sample Ref: **11**                      Sample Type: **U**                      Depth (m): **7.88**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.97</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.57</b>	Moisture Content (%): <b>25</b>
Length (mm): <b>214.18</b>	Diameter (mm): <b>100.82</b>	Length/Diameter Ratio: <b>2.12</b>
Test Duration (mins:secs): <b>3:27</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>26.5</b>
UCS (MPa): <b>3.3</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

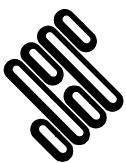


Front view (post-test)



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
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>

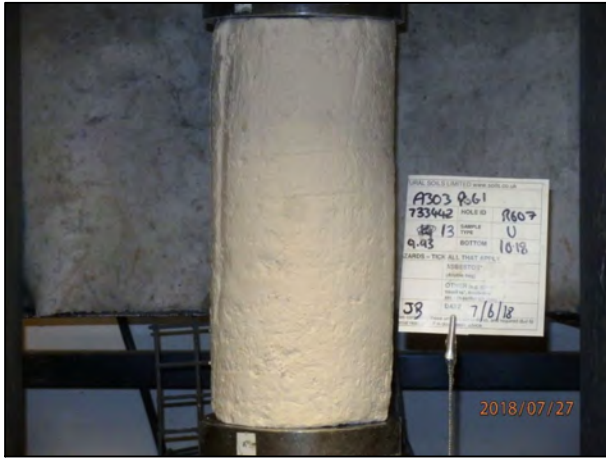
## UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R607**                      Sample Ref: **13**                      Sample Type: **U**                      Depth (m): **9.93**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.96</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.54</b>	Moisture Content (%): <b>27</b>
Length (mm): <b>214.36</b>	Diameter (mm): <b>100.04</b>	Length/Diameter Ratio: <b>2.14</b>
Test Duration (mins:secs): <b>4:43</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>15.1</b>
UCS (MPa): <b>1.9</b>	Failure Type: <b>Axial cleavage</b>	

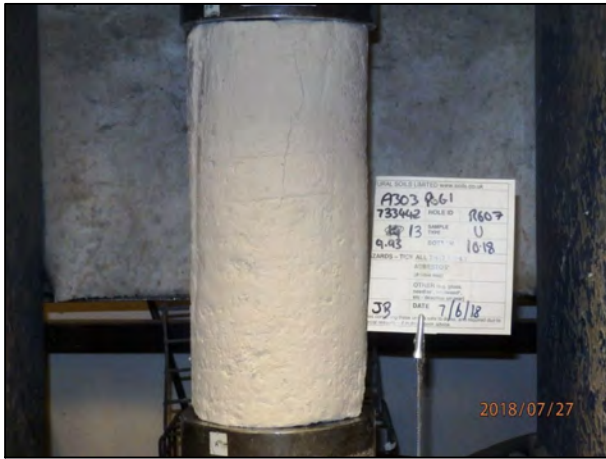
**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrctText L - UCS STRESS CONTROL - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 102/10/18 - 11:18 | AFS3

<p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
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	Contract		Job No
	<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R607**      Sample Ref: **27**      Sample Type: **U**      Depth (m): **20.50**

Bulk Density ( $Mg/m^3$ ): **2.02**      Dry Density ( $Mg/m^3$ ): **1.65**      Moisture Content (%): **23**  
 Length (mm): **187.38**      Diameter (mm): **100.64**      Length/Diameter Ratio: **1.86**  
 Test Duration (mins:secs): **5:39**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **17.3**  
 UCS (MPa): **2.2**      Failure Type: **Axial cleavage**

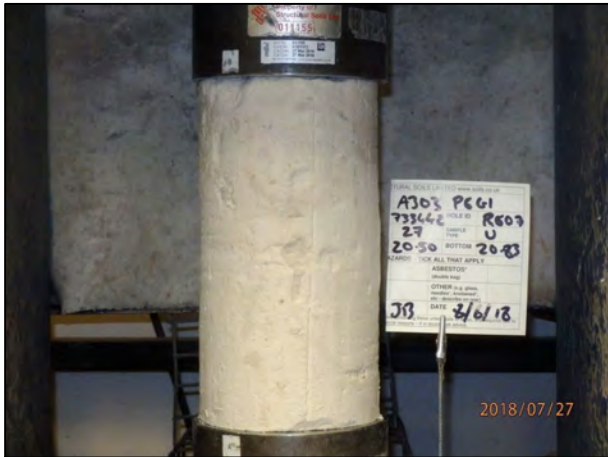
Note: **Axis of loading parallel to core axis**  
 Description: **White and light brown CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

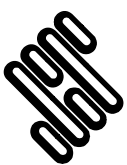


**Front view (post-test)**



**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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**733442**



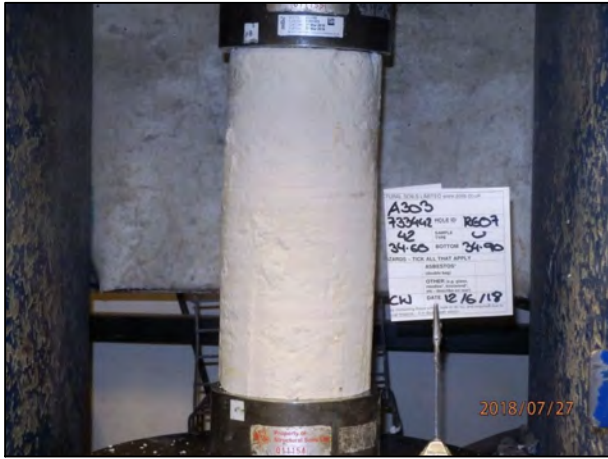
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R607**                      Sample Ref: **42**                      Sample Type: **U**                      Depth (m): **34.60**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.99</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.59</b>	Moisture Content (%): <b>25</b>
Length (mm): <b>214.15</b>	Diameter (mm): <b>99.44</b>	Length/Diameter Ratio: <b>2.15</b>
Test Duration (mins:secs): <b>4:55</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>21.7</b>
UCS (MPa): <b>2.8</b>	Failure Type: <b>Axial cleavage</b>	

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrctText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004 | Email: ask@soils.co.uk | 02/10/18 - 11:18 | AF3

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	[Redacted]		<b>EMY HOWARD</b>	<b>02/10/18</b>
	Contract <b>A303 Stonehenge Phase 6 Ground Investigation</b>		Job No <b>733442</b>	

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R607**      Sample Ref: **44**      Sample Type: **U**      Depth (m): **35.95**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **26**  
Length (mm): **214.44**      Diameter (mm): **100.49**      Length/Diameter Ratio: **2.13**  
Test Duration (mins:secs): **4:31**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **27.3**  
UCS (MPa): **3.4**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

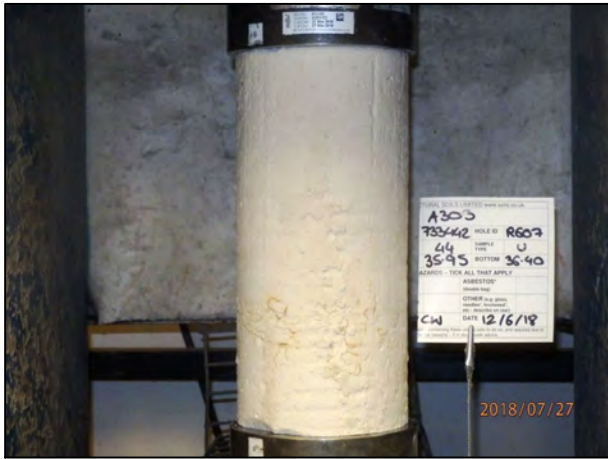
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

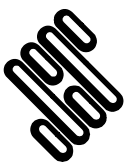


Front view (post-test)



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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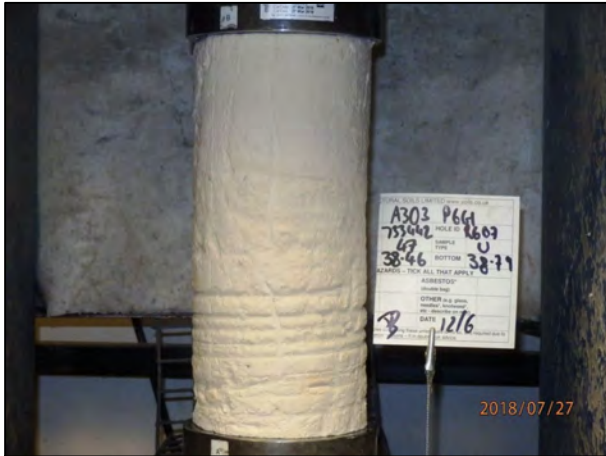
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R607**                      Sample Ref: **47**                      Sample Type: **U**                      Depth (m): **38.46**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.99</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.60</b>	Moisture Content (%): <b>25</b>
Length (mm): <b>214.50</b>	Diameter (mm): <b>97.95</b>	Length/Diameter Ratio: <b>2.19</b>
Test Duration (mins:secs): <b>4:26</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>15.4</b>
UCS (MPa): <b>2.0</b>	Failure Type: <b>Axial cleavage</b>	

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

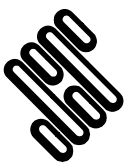


Front view (post-test)



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
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R607**                                      Sample Ref: **56**                                      Sample Type: **U**                                      Depth (m): **46.50**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.02</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.63</b>	Moisture Content (%): <b>24</b>
Length (mm): <b>215.14</b>	Diameter (mm): <b>99.92</b>	Length/Diameter Ratio: <b>2.15</b>
Test Duration (mins:secs): <b>4:12</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>26.9</b>
UCS (MPa): <b>3.4</b>	Failure Type: <b>Axial cleavage</b>	

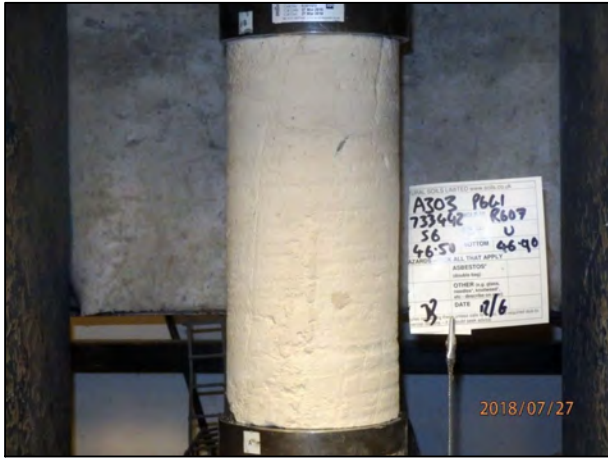
Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

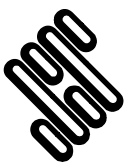


Front view (post-test)



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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GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol SI - 012 | GrcfText L - UCS STRESS CONTROL - A4PI 733442 - A303\_03\_Stonehenge\_Phase\_6\_Ground\_Investigation.GPJ - v8\_06\_018  
Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 102/10/18 - 11:18 | AFS3

## UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: <b>R607</b>	Sample Ref: <b>62</b>	Sample Type: <b>U</b>	Depth (m): <b>51.98</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>2.02</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.65</b>	Moisture Content (%): <b>23</b>	
Length (mm): <b>214.84</b>	Diameter (mm): <b>98.02</b>	Length/Diameter Ratio: <b>2.19</b>	
Test Duration (mins:secs): <b>3:49</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>29.8</b>	
UCS (MPa): <b>3.9</b>	Failure Type: <b>Axial cleavage</b>		

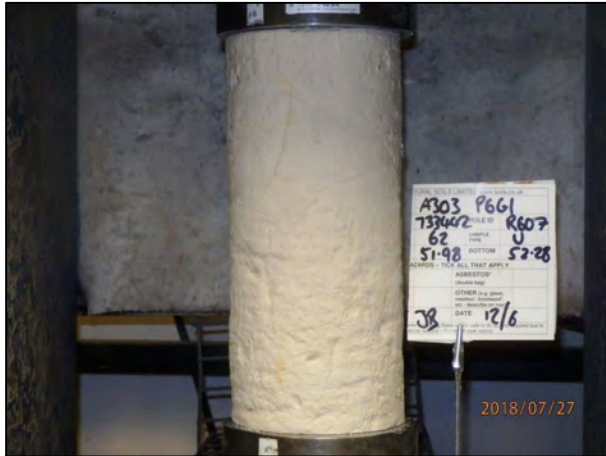
Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

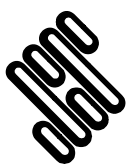


Front view (post-test)



Rear view (post-test)

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



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Contract	Job No	
<b>A303 Stonehenge Phase 6 Ground Investigation</b>	<b>733442</b>	

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R607**      Sample Ref: **64**      Sample Type: **U**      Depth (m): **54.07**

Bulk Density ( $\text{Mg/m}^3$ ): **2.00**      Dry Density ( $\text{Mg/m}^3$ ): **1.61**      Moisture Content (%): **24**  
 Length (mm): **214.75**      Diameter (mm): **94.54**      Length/Diameter Ratio: **2.27**  
 Test Duration (mins:secs): **4:48**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **33.8**  
 UCS (MPa): **4.8**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



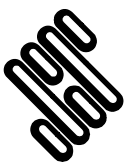
Front view (post-test)



Rear view (post-test)

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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 102/10/18 - 11:18 | AF3



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Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>

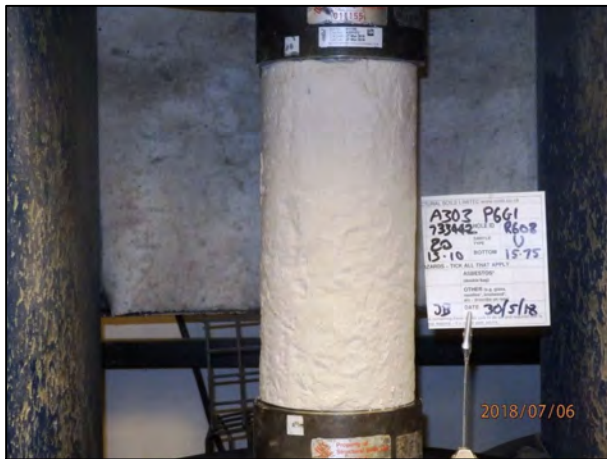
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R608**                      Sample Ref: **20**                      Sample Type: **U**                      Depth (m): **15.10**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.99</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.60</b>	Moisture Content (%): <b>25</b>
Length (mm): <b>215.32</b>	Diameter (mm): <b>100.70</b>	Length/Diameter Ratio: <b>2.14</b>
Test Duration (mins:secs): <b>4:29</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>14.9</b>
UCS (MPa): <b>1.9</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 20/10/18 - 07:21 | AF3

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By	Date	
		[Redacted]	<b>ABBY MITCHELL</b>	<b>20/10/18</b>
	Contract	<b>A303 Stonehenge Phase 6 Ground Investigation</b>	Job No	<b>733442</b>





# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R608**                      Sample Ref: **29**                      Sample Type: **U**                      Depth (m): **21.83**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.97</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.56</b>	Moisture Content (%): <b>26</b>
Length (mm): <b>214.70</b>	Diameter (mm): <b>100.90</b>	Length/Diameter Ratio: <b>2.13</b>
Test Duration (mins:secs): <b>4:09</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>25.3</b>
UCS (MPa): <b>3.2</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrcfText L - UCS STRESS CONTROL - A4P1733442 - A303. STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06. Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 20/10/18 - 07:21 | AF3

 <b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[Redacted]	<b>ABBY MITCHELL</b>	<b>20/10/18</b>
	Contract <b>A303 Stonehenge Phase 6 Ground Investigation</b>		Job No <b>733442</b>

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R608**                      Sample Ref: **39**                      Sample Type: **U**                      Depth (m): **29.45**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.98</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.57</b>	Moisture Content (%): <b>26</b>
Length (mm): <b>214.21</b>	Diameter (mm): <b>100.04</b>	Length/Diameter Ratio: <b>2.14</b>
Test Duration (mins:secs): <b>4:46</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>22.9</b>
UCS (MPa): <b>2.9</b>	Failure Type: <b>Shear</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

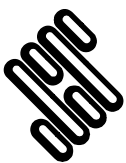


Front view (post-test)



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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<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R608**                      Sample Ref: **55**                      Sample Type: **U**                      Depth (m): **42.28**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.03</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.64</b>	Moisture Content (%): <b>24</b>
Length (mm): <b>215.22</b>	Diameter (mm): <b>100.28</b>	Length/Diameter Ratio: <b>2.15</b>
Test Duration (mins:secs): <b>5:41</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>39.9</b>
UCS (MPa): <b>5.1</b>	Failure Type: <b>Axial cleavage</b>	

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



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
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R608**      Sample Ref: **66**      Sample Type: **U**      Depth (m): **51.00**

Bulk Density (Mg/m<sup>3</sup>): **2.15**      Dry Density (Mg/m<sup>3</sup>): **1.82**      Moisture Content (%): **18**  
Length (mm): **214.79**      Diameter (mm): **100.94**      Length/Diameter Ratio: **2.13**  
Test Duration (mins:secs): **6:28**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **66.0**  
UCS (MPa): **8.2**      Failure Type: **Axial cleavage**

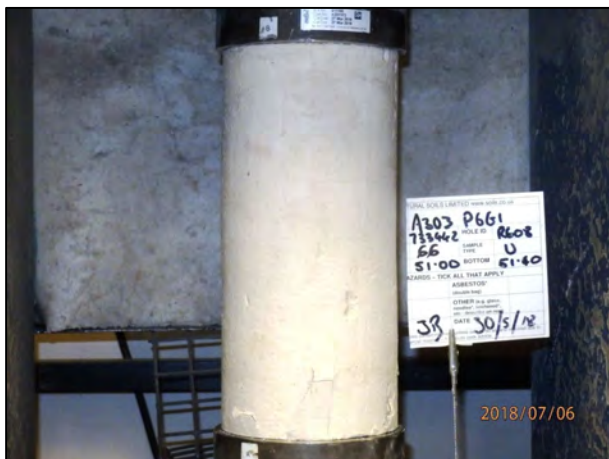
Note: **Axis of loading parallel to core axis**  
Description: **White CHALK**  
Specimen Preparation: **Specimen was not recored.**  
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

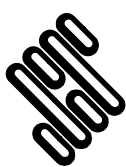


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R608**                      Sample Ref: **68**                      Sample Type: **U**                      Depth (m): **52.90**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.12</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.80</b>	Moisture Content (%): <b>18</b>
Length (mm): <b>215.53</b>	Diameter (mm): <b>100.35</b>	Length/Diameter Ratio: <b>2.15</b>
Test Duration (mins:secs): <b>5:50</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>54.4</b>
UCS (MPa): <b>6.9</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R608**                      Sample Ref: **74**                      Sample Type: **U**                      Depth (m): **57.80**

Bulk Density (Mg/m<sup>3</sup>): **2.10**                      Dry Density (Mg/m<sup>3</sup>): **1.75**                      Moisture Content (%): **20**  
 Length (mm): **215.26**                      Diameter (mm): **100.43**                      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **6:41**                      Stress Rate (kN/min): **6.0**                      Load at Failure (kN): **43.4**  
 UCS (MPa): **5.5**                      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



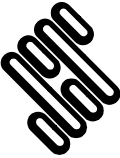


Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Bristol Office - 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 20/10/18 - 07:21 | AF3

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
			ABBY MITCHELL 20/10/18
	Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>	

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R610**                      Sample Ref: **34**                      Sample Type: **U**                      Depth (m): **21.50**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.04</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.65</b>	Moisture Content (%): <b>24</b>
Length (mm): <b>214.76</b>	Diameter (mm): <b>100.22</b>	Length/Diameter Ratio: <b>2.14</b>
Test Duration (mins:secs): <b>2:17</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>20.5</b>
UCS (MPa): <b>2.6</b>	Failure Type: <b>Axial cleavage</b>	

**Note:** Axis of loading parallel to core axis  
**Description:** Off white CHALK  
**Specimen Preparation:** Specimen was not recored.  
**Sample tolerance checks:** Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
**Remarks:** Non-standard test



**Front view (pre-test)**



**Rear view (pre-test)**

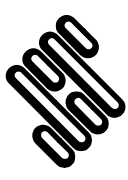


**Front view (post-test)**



**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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GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcfText L - UCS STRESS CONTROL - A4P | 733442 - AS003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd. Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 20/10/18 - 09:09 | AF3 |



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R610**                      Sample Ref: **38**                      Sample Type: **U**                      Depth (m): **27.00**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.01</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.62</b>	Moisture Content (%): <b>24</b>
Length (mm): <b>215.52</b>	Diameter (mm): <b>100.14</b>	Length/Diameter Ratio: <b>2.15</b>
Test Duration (mins:secs): <b>2:05</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>24.6</b>
UCS (MPa): <b>3.1</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 20/10/18 - 09:09 | AF3

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	Contract <b>A303 Stonehenge Phase 6 Ground Investigation</b>		Job No <b>733442</b>	



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R610** Sample Ref: **55** Sample Type: **U** Depth (m): **40.90**

Bulk Density ( $Mg/m^3$ ): **1.99** Dry Density ( $Mg/m^3$ ): **1.58** Moisture Content (%): **26**  
 Length (mm): **214.80** Diameter (mm): **100.32** Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **5:56** Stress Rate (kN/min): **6.0** Load at Failure (kN): **36.9**  
 UCS (MPa): **4.7** Failure Type: **Axial cleavage**

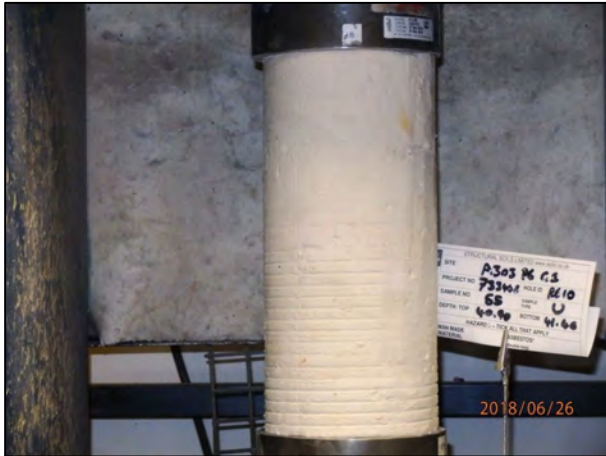
Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

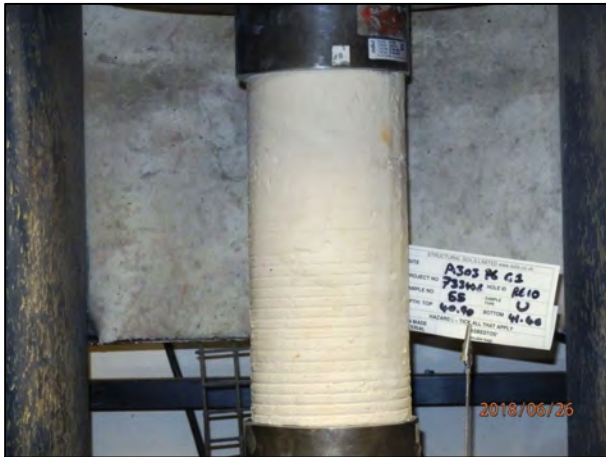
Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

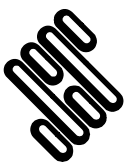


**Front view (post-test)**



**Rear view (post-test)**

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



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Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>



GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 PpjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 20/10/18 - 09:10 | AF3 |

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R610**                      Sample Ref: **61**                      Sample Type: **U**                      Depth (m): **45.30**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.03</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.65</b>	Moisture Content (%): <b>23</b>
Length (mm): <b>215.14</b>	Diameter (mm): <b>100.76</b>	Length/Diameter Ratio: <b>2.14</b>
Test Duration (mins:secs): <b>5:23</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>32.6</b>
UCS (MPa): <b>4.1</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

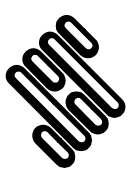


**Front view (post-test)**



**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
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R610**                      Sample Ref: **68**                      Sample Type: **U**                      Depth (m): **50.50**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.07</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.69</b>	Moisture Content (%): <b>22</b>
Length (mm): <b>215.09</b>	Diameter (mm): <b>100.22</b>	Length/Diameter Ratio: <b>2.15</b>
Test Duration (mins:secs): <b>5:46</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>36.3</b>
UCS (MPa): <b>4.6</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

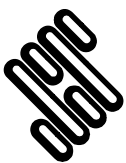


Front view (post-test)



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	
<b>A303 Stonehenge Phase 6 Ground Investigation</b>	<b>733442</b>	

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R611** Sample Ref: **23** Sample Type: **U** Depth (m): **17.45**

Bulk Density ( $Mg/m^3$ ): **1.96** Dry Density ( $Mg/m^3$ ): **1.56** Moisture Content (%): **26**  
 Length (mm): **217.45** Diameter (mm): **99.78** Length/Diameter Ratio: **2.18**  
 Test Duration (mins:secs): **4:09** Stress Rate (kN/min): **6.0** Load at Failure (kN): **18.1**  
 UCS (MPa): **2.3** Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



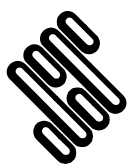
**Front view (post-test)**



**Rear view (post-test)**

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

GINT\_LIBRARY\_V8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_018 | AF3 | Email: ask@soils.co.uk | 106/11/18 - 10:17 | AF3 |



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R611**                      Sample Ref: **50**                      Sample Type: **U**                      Depth (m): **37.60**

Bulk Density (Mg/m<sup>3</sup>): **2.02**                      Dry Density (Mg/m<sup>3</sup>): **1.64**                      Moisture Content (%): **23**  
 Length (mm): **213.90**                      Diameter (mm): **98.66**                      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **7:10**                      Stress Rate (kN/min): **6.0**                      Load at Failure (kN): **18.7**  
 UCS (MPa): **2.4**                      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



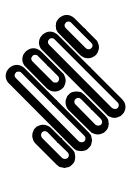
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Full Bristol SI - 012 | Grctext L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 106/11/18 - 10:17 | AF3 |



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R611**

Sample Ref: **53**

Sample Type: **U**

Depth (m): **40.60**

Bulk Density ( $\text{Mg/m}^3$ ): **2.08**

Dry Density ( $\text{Mg/m}^3$ ): **1.69**

Moisture Content (%): **23**

Length (mm): **201.48**

Diameter (mm): **97.96**

Length/Diameter Ratio: **2.06**

Test Duration (mins:secs): **4:48**

Stress Rate (kN/min): **6.0**

Load at Failure (kN): **34.1**

UCS (MPa): **4.5**

Failure Type: **Axial cleavage**

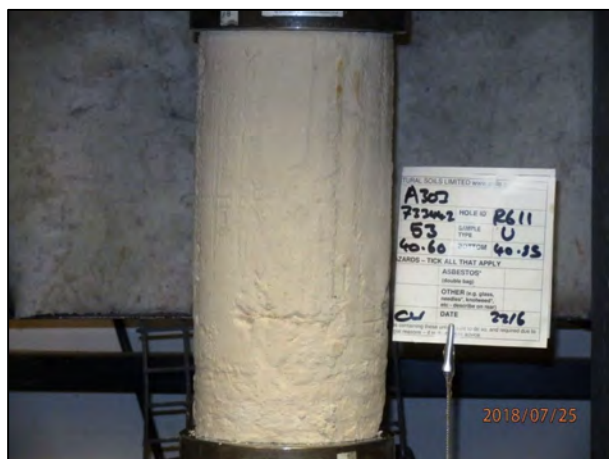
Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

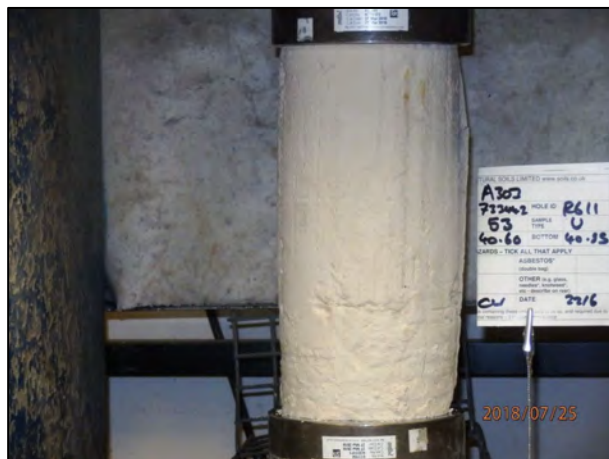
Remarks: **Non-standard test**



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  $>4^{\circ}\text{C}$   
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076



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**CALEB ROWLANDS**

**06/11/18**

Contract

Job No

**A303 Stonehenge Phase 6 Ground Investigation**

**733442**

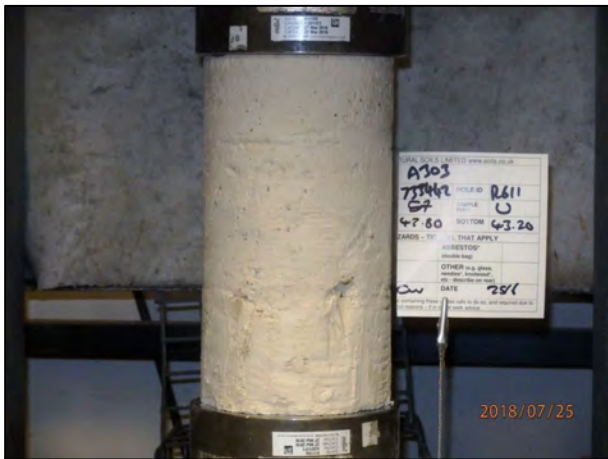


## UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: <b>R611</b>	Sample Ref: <b>57</b>	Sample Type: <b>U</b>	Depth (m): <b>42.80</b>
Bulk Density ( $\text{Mg/m}^3$ ): <b>2.01</b>	Dry Density ( $\text{Mg/m}^3$ ): <b>1.62</b>	Moisture Content (%): <b>24</b>	
Length (mm): <b>179.65</b>	Diameter (mm): <b>98.48</b>	Length/Diameter Ratio: <b>1.82</b>	
Test Duration (mins:secs): <b>5:50</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>30.2</b>	
UCS (MPa): <b>4.0</b>	Failure Type: <b>Axial cleavage</b>		

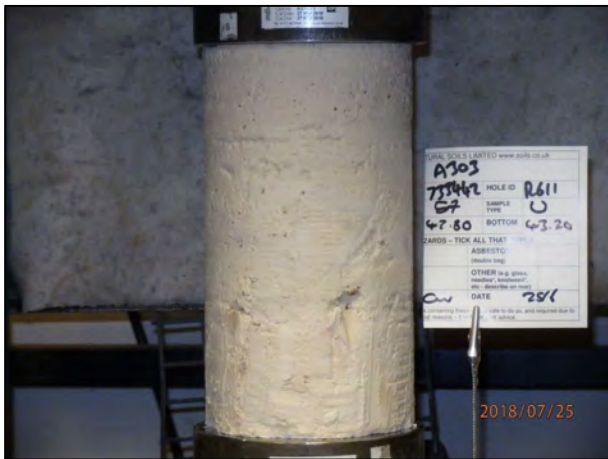
**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

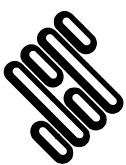


**Front view (post-test)**



**Rear view (post-test)**

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



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R611**                      Sample Ref: **62**                      Sample Type: **U**                      Depth (m): **46.49**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.96</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.57</b>	Moisture Content (%): <b>25</b>
Length (mm): <b>214.16</b>	Diameter (mm): <b>99.41</b>	Length/Diameter Ratio: <b>2.15</b>
Test Duration (mins:secs): <b>4:15</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>30.4</b>
UCS (MPa): <b>3.9</b>	Failure Type: <b>Axial cleavage</b>	

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 06/11/18 - 10:18 | AF3

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	[Redacted]	<b>CALEB ROWLANDS</b>	<b>06/11/18</b>
Contract		Job No	
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>	

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R612**                      Sample Ref: **14**                      Sample Type: **U**                      Depth (m): **12.75**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.97</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.55</b>	Moisture Content (%): <b>27</b>
Length (mm): <b>214.24</b>	Diameter (mm): <b>101.05</b>	Length/Diameter Ratio: <b>2.12</b>
Test Duration (mins:secs): <b>3:09</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>26.7</b>
UCS (MPa): <b>3.3</b>	Failure Type: <b>Axial cleavage</b>	

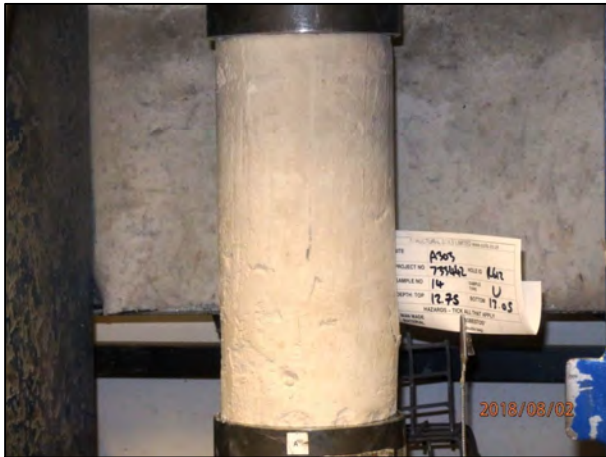
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

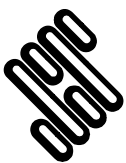


Front view (post-test)



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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		<b>06/11/18</b>



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R612**                      Sample Ref: **24**                      Sample Type: **U**                      Depth (m): **20.20**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.97</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.58</b>	Moisture Content (%): <b>25</b>
Length (mm): <b>213.66</b>	Diameter (mm): <b>100.25</b>	Length/Diameter Ratio: <b>2.13</b>
Test Duration (mins:secs): <b>3:05</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>22.5</b>
UCS (MPa): <b>2.9</b>	Failure Type: <b>Axial cleavage</b>	

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



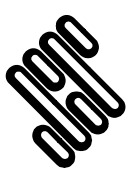
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - AS003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 06/11/18 - 11:51 | AF3



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Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R612** Sample Ref: **35** Sample Type: **U** Depth (m): **29.25**

Bulk Density (Mg/m<sup>3</sup>): **1.99** Dry Density (Mg/m<sup>3</sup>): **1.60** Moisture Content (%): **25**  
 Length (mm): **215.45** Diameter (mm): **100.90** Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **4:48** Stress Rate (kN/min): **6.0** Load at Failure (kN): **23.0**  
 UCS (MPa): **2.9** Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



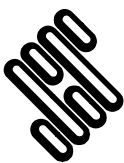
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrcfText L - UCS STRESS CONTROL - A4P1733442 - A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 06/11/18 - 11:51 | AF3



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R612**

Sample Ref: **47**

Sample Type: **U**

Depth (m): **38.50**

Bulk Density ( $Mg/m^3$ ): **1.97**

Dry Density ( $Mg/m^3$ ): **1.57**

Moisture Content (%): **26**

Length (mm): **213.24**

Diameter (mm): **101.32**

Length/Diameter Ratio: **2.10**

Test Duration (mins:secs): **4:10**

Stress Rate (kN/min): **6.0**

Load at Failure (kN): **27.6**

UCS (MPa): **3.4**

Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



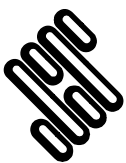
Front view (post-test)



Rear view (post-test)

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

GINT\_LIBRARIY\_V8\_06\_GLOB.LibVersion: v8\_06\_018 PpjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4PI 733442 - AS003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_018  
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Job No

**A303 Stonehenge Phase 6 Ground Investigation**

**733442**



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R612**                      Sample Ref: **56**                      Sample Type: **U**                      Depth (m): **45.20**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.01</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.62</b>	Moisture Content (%): <b>24</b>
Length (mm): <b>214.35</b>	Diameter (mm): <b>97.56</b>	Length/Diameter Ratio: <b>2.20</b>
Test Duration (mins:secs): <b>4:04</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>31.0</b>
UCS (MPa): <b>4.1</b>	Failure Type: <b>Axial cleavage</b>	

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

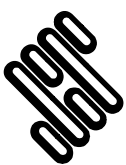


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R612**

Sample Ref: **60**

Sample Type: **U**

Depth (m): **48.77**

Bulk Density ( $\text{Mg/m}^3$ ): **2.00**

Dry Density ( $\text{Mg/m}^3$ ): **1.63**

Moisture Content (%): **23**

Length (mm): **215.68**

Diameter (mm): **101.05**

Length/Diameter Ratio: **2.13**

Test Duration (mins:secs): **3:44**

Stress Rate (kN/min): **6.0**

Load at Failure (kN): **28.3**

UCS (MPa): **3.5**

Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

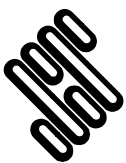


**Front view (post-test)**




**Rear view (post-test)**

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



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GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_018 | Email: ask@soils.co.uk | 06/11/18 - 11:51 | AF3



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R613**                      Sample Ref: **29**                      Sample Type: **U**                      Depth (m): **22.70**

Bulk Density ( $Mg/m^3$ ): <b>1.97</b>	Dry Density ( $Mg/m^3$ ): <b>1.57</b>	Moisture Content (%): <b>25</b>
Length (mm): <b>217.46</b>	Diameter (mm): <b>100.50</b>	Length/Diameter Ratio: <b>2.16</b>
Test Duration (mins:secs): <b>1:56</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>17.7</b>
UCS (MPa): <b>2.2</b>		Failure Type: <b>Axial cleavage</b>

**Note: Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

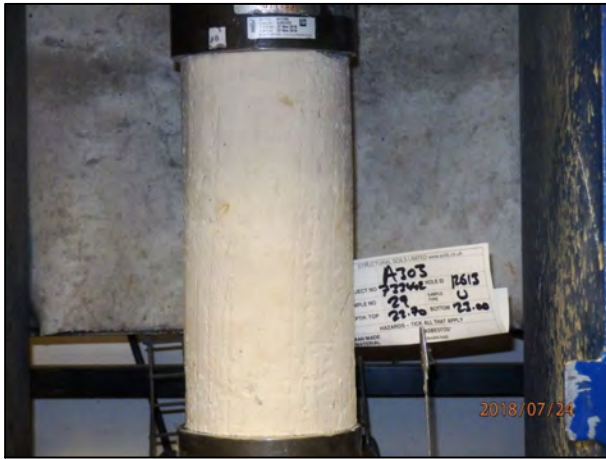
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

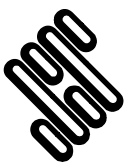


Front view (post-test)



Rear view (post-test)

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



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<div style="background-color: black; width: 50px; height: 20px; display: inline-block;"></div>	<b>EMY HOWARD</b>	<b>07/11/18</b>
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<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>





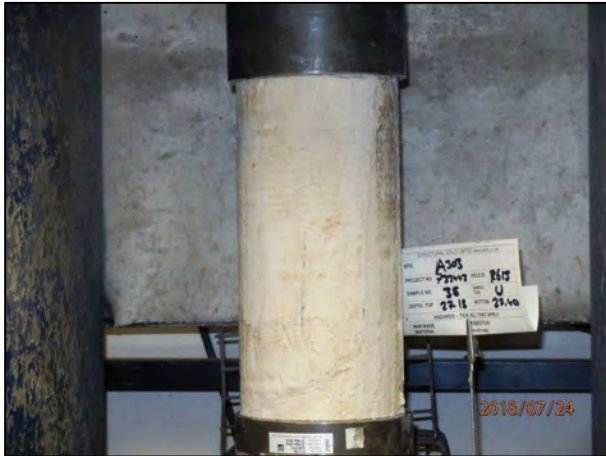
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R613**                      Sample Ref: **35**                      Sample Type: **U**                      Depth (m): **27.18**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.98</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.60</b>	Moisture Content (%): <b>24</b>
Length (mm): <b>202.78</b>	Diameter (mm): <b>100.25</b>	Length/Diameter Ratio: <b>2.02</b>
Test Duration (mins:secs): <b>6:14</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>21.3</b>
UCS (MPa): <b>2.7</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 107711/18 - 06:55 | AF3

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	Contract <b>A303 Stonehenge Phase 6 Ground Investigation</b>		Job No <b>733442</b>	

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R613** Sample Ref: **46** Sample Type: **U** Depth (m): **33.95**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.98</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.56</b>	Moisture Content (%): <b>27</b>
Length (mm): <b>215.39</b>	Diameter (mm): <b>99.46</b>	Length/Diameter Ratio: <b>2.17</b>
Test Duration (mins:secs): <b>2:51</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>31.1</b>
UCS (MPa): <b>4.0</b>	Failure Type: <b>Axial cleavage</b>	

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



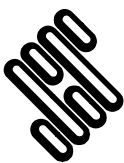
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core=Full Bristol.SI - 012 | GrfcText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd. Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk, | 07/11/18 - 06:55 | AF3 |



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R613**                      Sample Ref: **52**                      Sample Type: **U**                      Depth (m): **38.70**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.03</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.68</b>	Moisture Content (%): <b>21</b>
Length (mm): <b>215.43</b>	Diameter (mm): <b>98.76</b>	Length/Diameter Ratio: <b>2.18</b>
Test Duration (mins:secs): <b>3:53</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>19.9</b>
UCS (MPa): <b>2.6</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



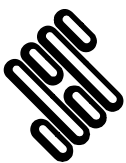
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk, | 07/11/18 - 06:55 | AF3 ]



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 BS3 4AG

Compiled By		Date
[REDACTED]		<b>CALEB ROWLANDS</b>
Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R613**                      Sample Ref: **55**                      Sample Type: **U**                      Depth (m): **41.64**

Bulk Density ( $Mg/m^3$ ): <b>2.07</b>	Dry Density ( $Mg/m^3$ ): <b>1.73</b>	Moisture Content (%): <b>20</b>
Length (mm): <b>215.64</b>	Diameter (mm): <b>100.30</b>	Length/Diameter Ratio: <b>2.15</b>
Test Duration (mins:secs): <b>4:07</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>40.8</b>
UCS (MPa): <b>5.2</b>	Failure Type: <b>Axial cleavage</b>	

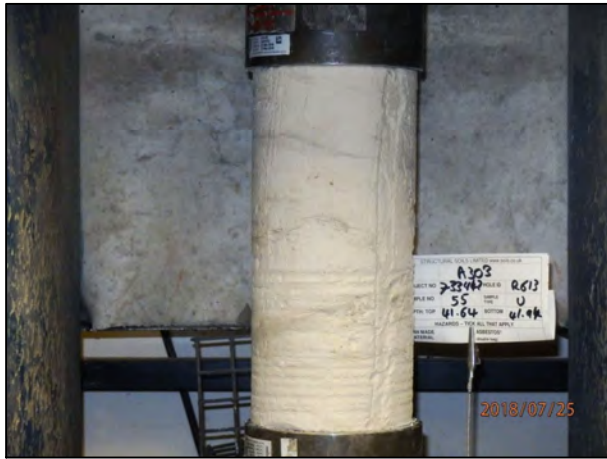
**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



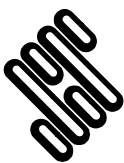
**Front view (post-test)**



**Rear view (post-test)**

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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrctText L - UCS STRESS CONTROL - A4P1733442 - A8003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 10/7/11/18 - 06:55 | AF3



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Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R613**      Sample Ref: **58**      Sample Type: **U**      Depth (m): **43.54**

Bulk Density ( $\text{Mg/m}^3$ ): **2.01**      Dry Density ( $\text{Mg/m}^3$ ): **1.65**      Moisture Content (%): **22**  
Length (mm): **214.72**      Diameter (mm): **99.34**      Length/Diameter Ratio: **2.16**  
Test Duration (mins:secs): **5:46**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **29.8**  
UCS (MPa): **3.8**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

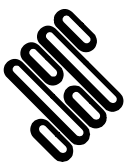


Front view (post-test)



Rear view (post-test)

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



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R613**                      Sample Ref: **61**                      Sample Type: **U**                      Depth (m): **45.95**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.94</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.57</b>	Moisture Content (%): <b>24</b>
Length (mm): <b>214.72</b>	Diameter (mm): <b>98.96</b>	Length/Diameter Ratio: <b>2.17</b>
Test Duration (mins:secs): <b>2:57</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>18.1</b>
UCS (MPa): <b>2.4</b>		Failure Type: <b>Axial cleavage</b>

Note: **Axis of loading parallel to core axis**  
Description: **White CHALK**  
Specimen Preparation: **Specimen was not recored.**  
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A303. STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_06  
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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R613**

Sample Ref: **66**

Sample Type: **U**

Depth (m): **49.71**

Bulk Density ( $Mg/m^3$ ): **2.05**

Dry Density ( $Mg/m^3$ ): **1.70**

Moisture Content (%): **21**

Length (mm): **215.93**

Diameter (mm): **97.54**

Length/Diameter Ratio: **2.21**

Test Duration (mins:secs): **4:13**

Stress Rate (kN/min): **6.0**

Load at Failure (kN): **38.8**

UCS (MPa): **5.2**

Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

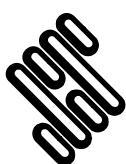


Front view (post-test)



Rear view (post-test)

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



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Contract

Job No

**A303 Stonehenge Phase 6 Ground  
Investigation**

**733442**



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R614**                      Sample Ref: **23**                      Sample Type: **U**                      Depth (m): **15.55**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.96</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.53</b>	Moisture Content (%): <b>28</b>
Length (mm): <b>199.11</b>	Diameter (mm): <b>100.30</b>	Length/Diameter Ratio: <b>1.99</b>
Test Duration (mins:secs): <b>4:12</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>18.8</b>
UCS (MPa): <b>2.4</b>		Failure Type: <b>Axial cleavage</b>

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

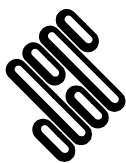


**Front view (post-test)**



**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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		<b>AGS</b>

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A303. STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06. Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 107711/18 - 08:11 | AF3

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R614**      Sample Ref: **31**      Sample Type: **U**      Depth (m): **21.34**

Bulk Density (Mg/m<sup>3</sup>): **1.97**      Dry Density (Mg/m<sup>3</sup>): **1.56**      Moisture Content (%): **26**  
 Length (mm): **211.67**      Diameter (mm): **100.42**      Length/Diameter Ratio: **2.11**  
 Test Duration (mins:secs): **3:35**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **23.1**  
 UCS (MPa): **2.9**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 PrjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd. Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 107/11/18 - 08:11 | AF3



Front view (pre-test)



Rear view (pre-test)

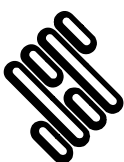


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R614**                      Sample Ref: **37**                      Sample Type: **U**                      Depth (m): **26.30**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.97</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.56</b>	Moisture Content (%): <b>26</b>
Length (mm): <b>212.94</b>	Diameter (mm): <b>100.02</b>	Length/Diameter Ratio: <b>2.13</b>
Test Duration (mins:secs): <b>3:46</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>26.6</b>
UCS (MPa): <b>3.4</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R614**                      Sample Ref: **52**                      Sample Type: **U**                      Depth (m): **35.42**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.00</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.61</b>	Moisture Content (%): <b>24</b>
Length (mm): <b>214.43</b>	Diameter (mm): <b>98.75</b>	Length/Diameter Ratio: <b>2.17</b>
Test Duration (mins:secs): <b>3:30</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>29.0</b>
UCS (MPa): <b>3.8</b>	Failure Type: <b>Axial cleavage</b>	

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

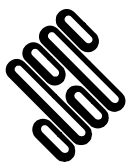


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R614**      Sample Ref: **66**      Sample Type: **U**      Depth (m): **45.60**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.67**      Moisture Content (%): **22**  
 Length (mm): **214.75**      Diameter (mm): **100.32**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **4:29**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **38.0**  
 UCS (MPa): **4.8**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

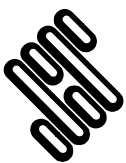


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: <b>R614</b>	Sample Ref: <b>74</b>	Sample Type: <b>U</b>	Depth (m): <b>51.40</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>2.12</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.80</b>	Moisture Content (%): <b>18</b>	
Length (mm): <b>210.05</b>	Diameter (mm): <b>99.49</b>	Length/Diameter Ratio: <b>2.11</b>	
Test Duration (mins:secs): <b>5:18</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>41.6</b>	
UCS (MPa): <b>5.4</b>		Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
**Description: White CHALK**  
**Specimen Preparation: Specimen was not recored.**  
**Sample tolerance checks: Straightness: FAIL. Flatness: FAIL. Perpendicularity: FAIL.**  
**Remarks: Non-standard test**



Front view (pre-test)



Rear view (pre-test)

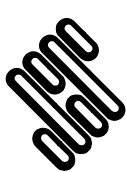


Front view (post-test)



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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	Compiled By	Date
	<b>EMY HOWARD</b>	<b>07/11/18</b>
Contract	Job No	
<b>A303 Stonehenge Phase 6 Ground Investigation</b>	<b>733442</b>	



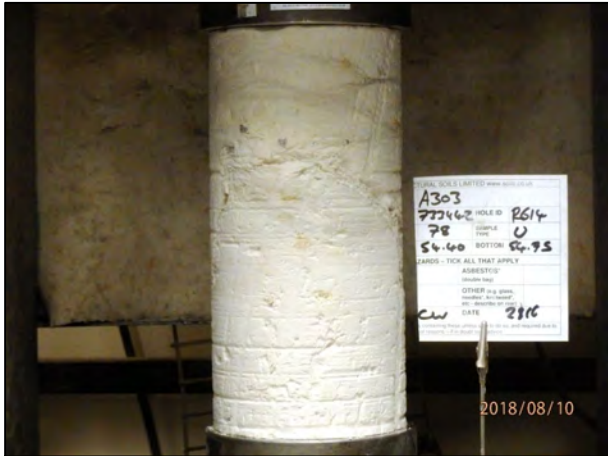
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R614**                      Sample Ref: **78**                      Sample Type: **U**                      Depth (m): **54.40**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.08</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.73</b>	Moisture Content (%): <b>20</b>
Length (mm): <b>204.23</b>	Diameter (mm): <b>99.94</b>	Length/Diameter Ratio: <b>2.04</b>
Test Duration (mins:secs): <b>5:24</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>26.8</b>
UCS (MPa): <b>3.4</b>	Failure Type: <b>Axial cleavage</b>	

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



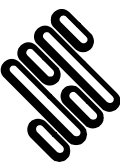


**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk, | 07/11/18 - 08:11 | AF3 ]

 STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
			EMY HOWARD 07/11/18
	Contract		Job No
A303 Stonehenge Phase 6 Ground Investigation		733442	

## UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: <b>R614</b>	Sample Ref: <b>81</b>	Sample Type: <b>U</b>	Depth (m): <b>55.55</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>2.00</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.67</b>	Moisture Content (%): <b>20</b>	
Length (mm): <b>212.44</b>	Diameter (mm): <b>99.66</b>	Length/Diameter Ratio: <b>2.13</b>	
Test Duration (mins:secs): <b>5:00</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>28.9</b>	
UCS (MPa): <b>3.7</b>		Failure Type: <b>Axial cleavage</b>	

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

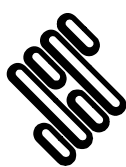


Front view (post-test)



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]		<b>EMY HOWARD</b> 07/11/18
Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R615**      Sample Ref: **31**      Sample Type: **U**      Depth (m): **23.57**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **26**  
 Length (mm): **207.02**      Diameter (mm): **100.96**      Length/Diameter Ratio: **2.05**  
 Test Duration (mins:secs): **4:32**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **32.4**  
 UCS (MPa): **4.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



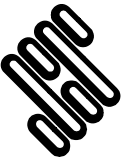

**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_01  
 Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 1077/11/18 - 08:12 | AF3

 <b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[Redacted]		EMY HOWARD
	Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>	
			

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R615**                      Sample Ref: **38**                      Sample Type: **U**                      Depth (m): **29.55**

Bulk Density ( $Mg/m^3$ ): <b>1.96</b>	Dry Density ( $Mg/m^3$ ): <b>1.54</b>	Moisture Content (%): <b>27</b>
Length (mm): <b>210.96</b>	Diameter (mm): <b>100.38</b>	Length/Diameter Ratio: <b>2.10</b>
Test Duration (mins:secs): <b>3:08</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>25.1</b>
UCS (MPa): <b>3.2</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



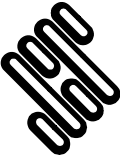
Front view (post-test)



Rear view (post-test)

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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, | 107/11/18 - 09:12 | AF3

	STRUCTURAL SOILS 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[REDACTED]		EMY HOWARD	07/11/18
	Contract <b>A303 Stonehenge Phase 6 Ground Investigation</b>		Job No <b>733442</b>	



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: <b>R615</b>	Sample Ref: <b>45</b>	Sample Type: <b>U</b>	Depth (m): <b>35.09</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>1.98</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.59</b>	Moisture Content (%): <b>25</b>	
Length (mm): <b>210.94</b>	Diameter (mm): <b>100.76</b>	Length/Diameter Ratio: <b>2.09</b>	
Test Duration (mins:secs): <b>3:49</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>32.9</b>	
UCS (MPa): <b>4.1</b>		Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

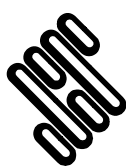


Front view (post-test)



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  
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Compiled By		Date
[REDACTED]		EMY HOWARD
07/11/18		
Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: <b>R615</b>	Sample Ref: <b>54</b>	Sample Type: <b>U</b>	Depth (m): <b>42.60</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>1.99</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.60</b>	Moisture Content (%): <b>25</b>	
Length (mm): <b>210.10</b>	Diameter (mm): <b>98.47</b>	Length/Diameter Ratio: <b>2.13</b>	
Test Duration (mins:secs): <b>3:56</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>34.9</b>	
UCS (MPa): <b>4.6</b>	Failure Type: <b>Axial cleavage</b>		

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol SI - 012 | Gfctext L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 1077/11/18 - 09:13 | AF3

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
			<b>EMY HOWARD</b>	<b>07/11/18</b>
	Contract		Job No	
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>		



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R615**                      Sample Ref: **62**                      Sample Type: **U**                      Depth (m): **49.95**

Bulk Density (Mg/m<sup>3</sup>): **2.03**                      Dry Density (Mg/m<sup>3</sup>): **1.65**                      Moisture Content (%): **23**  
 Length (mm): **211.30**                      Diameter (mm): **100.46**                      Length/Diameter Ratio: **2.10**  
 Test Duration (mins:secs): **5:20**                      Stress Rate (kN/min): **6.0**                      Load at Failure (kN): **39.3**  
 UCS (MPa): **5.0**                      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



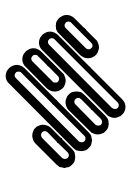


**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk, 107711/18 - 09:13 | AF3 ]

 <b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
			<b>EMY HOWARD</b> 07/11/18
	Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b> 	



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R616**                      Sample Ref: **19**                      Sample Type: **U**                      Depth (m): **15.70**

Bulk Density (Mg/m<sup>3</sup>): **1.95**                      Dry Density (Mg/m<sup>3</sup>): **1.58**                      Moisture Content (%): **23**  
Length (mm): **184.36**                      Diameter (mm): **99.30**                      Length/Diameter Ratio: **1.86**  
Test Duration (mins:secs): **3:28**                      Stress Rate (kN/min): **6.0**                      Load at Failure (kN): **14.6**  
UCS (MPa): **1.9**                      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
Description: **White CHALK**  
Specimen Preparation: **Specimen was not recored.**  
Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

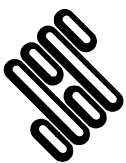


Front view (post-test)



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]	<b>EMY HOWARD</b>	<b>07/11/18</b>
Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>











# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R616**                      Sample Ref: **53**                      Sample Type: **U**                      Depth (m): **38.70**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.96</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.54</b>	Moisture Content (%): <b>27</b>
Length (mm): <b>215.64</b>	Diameter (mm): <b>98.44</b>	Length/Diameter Ratio: <b>2.19</b>
Test Duration (mins:secs): <b>1:54</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>15.0</b>
UCS (MPa): <b>2.0</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

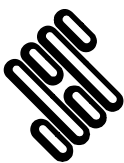


Front view (post-test)



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  
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Compiled By		Date
[REDACTED]	<b>EMY HOWARD</b>	<b>07/11/18</b>
Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R616**                      Sample Ref: **77**                      Sample Type: **U**                      Depth (m): **55.50**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.05</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.80</b>	Moisture Content (%): <b>14</b>
Length (mm): <b>211.80</b>	Diameter (mm): <b>100.85</b>	Length/Diameter Ratio: <b>2.10</b>
Test Duration (mins:secs): <b>4:56</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>58.2</b>
UCS (MPa): <b>7.3</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
**Description: White CHALK**  
**Specimen Preparation: Specimen was not recored.**  
**Sample tolerance checks: Straightness: FAIL. Flatness: FAIL. Perpendicularity: FAIL.**  
**Remarks: Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcfText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 10/7/11/18 - 10:06 | AF3 |

<p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date
	[REDACTED]		EMY HOWARD
	Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>	



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R619**                      Sample Ref: **22**                      Sample Type: **U**                      Depth (m): **21.90**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.01</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.59</b>	Moisture Content (%): <b>27</b>
Length (mm): <b>215.82</b>	Diameter (mm): <b>98.71</b>	Length/Diameter Ratio: <b>2.19</b>
Test Duration (mins:secs): <b>7:05</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>21.3</b>
UCS (MPa): <b>2.8</b>	Failure Type: <b>Axial cleavage</b>	

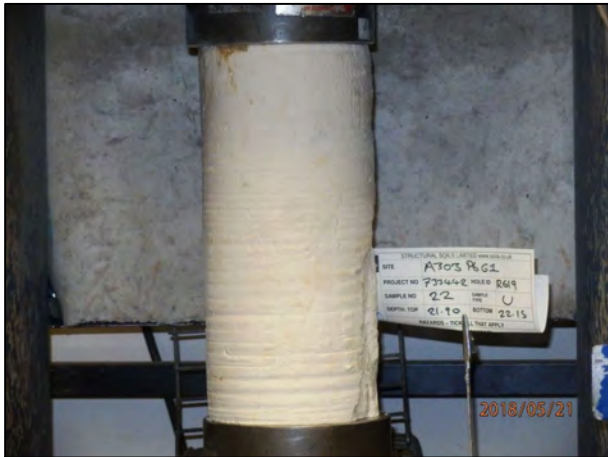
**Note: Axis of loading parallel to core axis**  
**Description: White CHALK**  
**Specimen Preparation: Specimen was not recored.**  
**Sample tolerance checks: Straightness: FAIL. Flatness: FAIL. Perpendicularity: FAIL.**  
**Remarks: Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 28/06/18 - 08:24 | AF3

<p><b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG</p>	Compiled By		Date
	[REDACTED]		EMY HOWARD
	Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>	





# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **RZ603**      Sample Ref: **11**      Sample Type: **U**      Depth (m): **9.90**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.56**      Moisture Content (%): **27**  
 Length (mm): **214.81**      Diameter (mm): **97.54**      Length/Diameter Ratio: **2.20**  
 Test Duration (mins:secs): **2:38**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **21.9**  
 UCS (MPa): **2.9**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



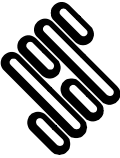

Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 10/7/11/18 - 11:34 | AF3

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	Contract		Job No
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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **RZ603**      Sample Ref: **14**      Sample Type: **U**      Depth (m): **11.75**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.59**      Moisture Content (%): **25**  
 Length (mm): **215.83**      Diameter (mm): **100.71**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **5:08**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **31.0**  
 UCS (MPa): **3.9**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

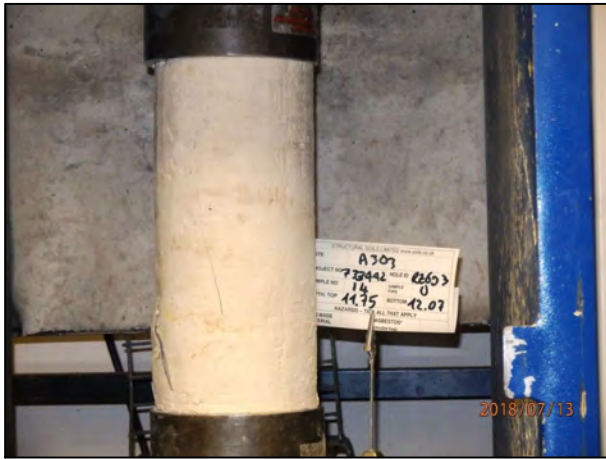
Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

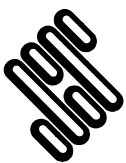


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **RZ603**      Sample Ref: **22**      Sample Type: **U**      Depth (m): **17.46**

Bulk Density (Mg/m<sup>3</sup>): **2.07**      Dry Density (Mg/m<sup>3</sup>): **1.67**      Moisture Content (%): **24**  
 Length (mm): **215.33**      Diameter (mm): **98.20**      Length/Diameter Ratio: **2.19**  
 Test Duration (mins:secs): **4:12**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **16.0**  
 UCS (MPa): **2.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

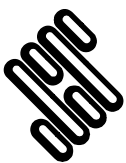


**Front view (post-test)**



**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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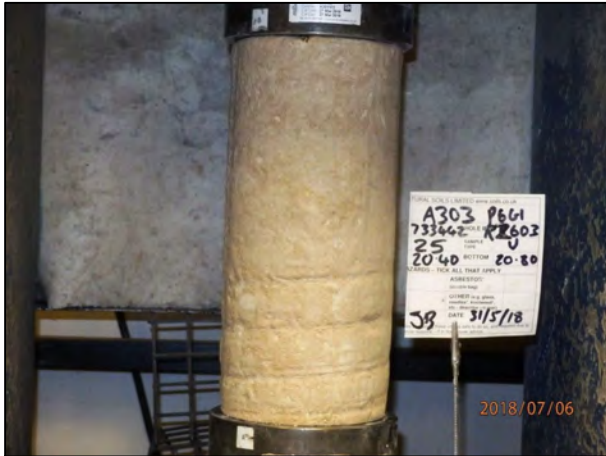
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **RZ603**      Sample Ref: **25**      Sample Type: **U**      Depth (m): **20.40**

Bulk Density (Mg/m<sup>3</sup>): **2.02**      Dry Density (Mg/m<sup>3</sup>): **1.59**      Moisture Content (%): **27**  
 Length (mm): **213.62**      Diameter (mm): **99.44**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **3:48**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **23.1**  
 UCS (MPa): **3.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

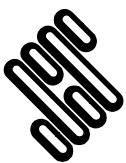


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **RZ603**      Sample Ref: **28**      Sample Type: **U**      Depth (m): **22.20**

Bulk Density (Mg/m<sup>3</sup>): **2.04**      Dry Density (Mg/m<sup>3</sup>): **1.63**      Moisture Content (%): **25**  
 Length (mm): **214.33**      Diameter (mm): **99.55**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **5:40**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **22.3**  
 UCS (MPa): **2.9**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

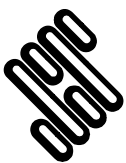


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **RZ603**      Sample Ref: **34**      Sample Type: **U**      Depth (m): **26.80**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.59**      Moisture Content (%): **25**  
 Length (mm): **176.95**      Diameter (mm): **99.98**      Length/Diameter Ratio: **1.77**  
 Test Duration (mins:secs): **5:46**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **18.2**  
 UCS (MPa): **2.3**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **Off white CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

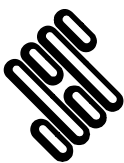


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **RZ603**                      Sample Ref: **35**                      Sample Type: **U**                      Depth (m): **28.06**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.03</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.62</b>	Moisture Content (%): <b>25</b>
Length (mm): <b>214.42</b>	Diameter (mm): <b>99.87</b>	Length/Diameter Ratio: <b>2.15</b>
Test Duration (mins:secs): <b>5:43</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>31.4</b>
UCS (MPa): <b>4.0</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **Off white CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

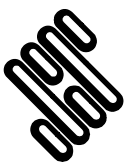


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **RZ603**      Sample Ref: **44**      Sample Type: **U**      Depth (m): **34.48**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.64**      Moisture Content (%): **24**  
 Length (mm): **215.50**      Diameter (mm): **99.75**      Length/Diameter Ratio: **2.16**  
 Test Duration (mins:secs): **4:42**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **22.0**  
 UCS (MPa): **2.8**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

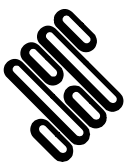


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **20**      Sample Type: **U**      Depth (m): **18.10**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **27**  
 Length (mm): **214.57**      Diameter (mm): **99.72**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **4:12**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **25.3**  
 UCS (MPa): **3.2**      Failure Type: **Axial cleavage**

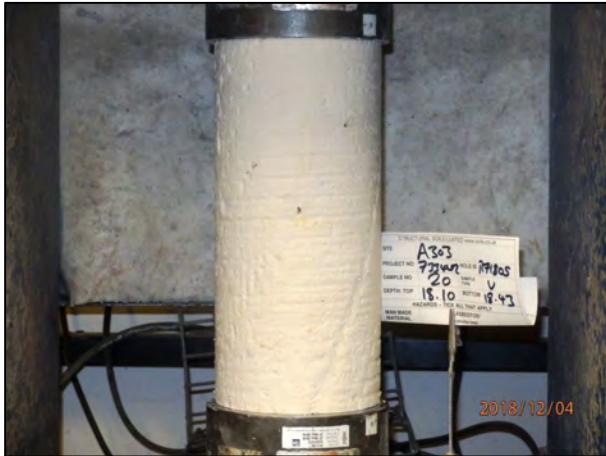
Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

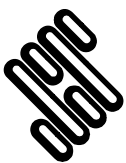


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **29**      Sample Type: **U**      Depth (m): **25.82**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.64**      Moisture Content (%): **24**  
 Length (mm): **214.55**      Diameter (mm): **100.23**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **3:45**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **29.8**  
 UCS (MPa): **3.8**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

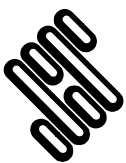


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **38**      Sample Type: **U**      Depth (m): **33.60**

Bulk Density (Mg/m<sup>3</sup>): **2.01**      Dry Density (Mg/m<sup>3</sup>): **1.61**      Moisture Content (%): **25**  
 Length (mm): **215.02**      Diameter (mm): **101.16**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **5:21**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **24.4**  
 UCS (MPa): **3.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core=Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 19/12/18 - 09:26 | AF3



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **48**      Sample Type: **U**      Depth (m): **40.20**

Bulk Density (Mg/m<sup>3</sup>): **2.05**      Dry Density (Mg/m<sup>3</sup>): **1.67**      Moisture Content (%): **23**  
 Length (mm): **213.81**      Diameter (mm): **100.81**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **4:25**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **30.9**  
 UCS (MPa): **3.9**      Failure Type: **Axial cleavage**

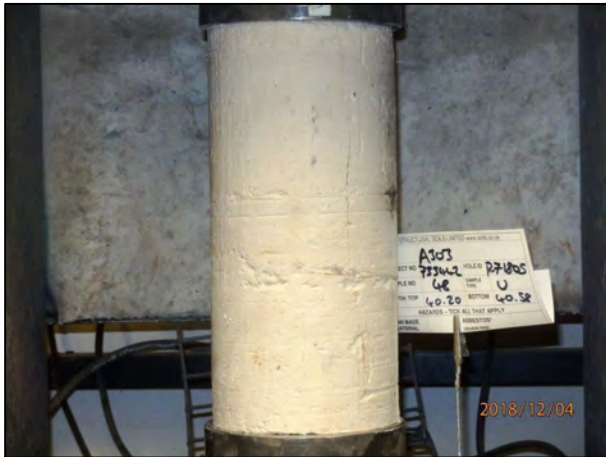
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

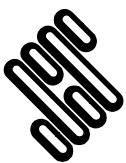


Front view (post-test)



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	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **52**      Sample Type: **U**      Depth (m): **43.55**

Bulk Density (Mg/m<sup>3</sup>): **2.08**      Dry Density (Mg/m<sup>3</sup>): **1.72**      Moisture Content (%): **21**  
 Length (mm): **214.61**      Diameter (mm): **100.86**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **6:29**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **52.5**  
 UCS (MPa): **6.6**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

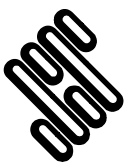


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **51**      Sample Type: **U**      Depth (m): **45.80**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.67**      Moisture Content (%): **22**  
 Length (mm): **213.51**      Diameter (mm): **100.47**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **5:56**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **43.6**  
 UCS (MPa): **5.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



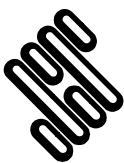
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core=Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/12/18 - 09:26 | AF3



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<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71809**      Sample Ref: **33**      Sample Type: **U**      Depth (m): **33.82**

Bulk Density (Mg/m<sup>3</sup>): **2.04**      Dry Density (Mg/m<sup>3</sup>): **1.66**      Moisture Content (%): **23**  
 Length (mm): **214.21**      Diameter (mm): **98.69**      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **2:54**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **35.2**  
 UCS (MPa): **4.6**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

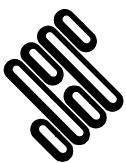


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: <b>R71906</b>	Sample Ref: <b>55</b>	Sample Type: <b>U</b>	Depth (m): <b>41.23</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>2.14</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.82</b>	Moisture Content (%): <b>18</b>	
Length (mm): <b>214.72</b>	Diameter (mm): <b>100.46</b>	Length/Diameter Ratio: <b>2.14</b>	
Test Duration (mins:secs): <b>7:26</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>55.6</b>	
UCS (MPa): <b>7.0</b>	Failure Type: <b>Axial cleavage</b>		

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

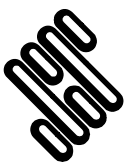


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71906**      Sample Ref: **59**      Sample Type: **U**      Depth (m): **44.00**

Bulk Density (Mg/m<sup>3</sup>): **2.20**      Dry Density (Mg/m<sup>3</sup>): **1.91**      Moisture Content (%): **15**  
 Length (mm): **214.05**      Diameter (mm): **98.49**      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **5:02**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **37.4**  
 UCS (MPa): **4.9**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



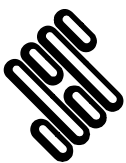
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4PI 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:26 | AF3



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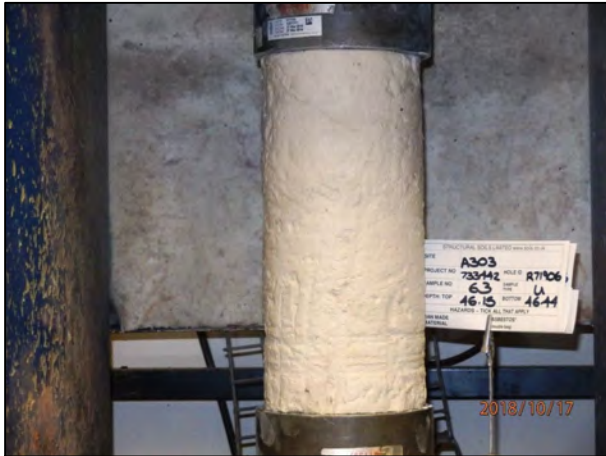
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71906**      Sample Ref: **63**      Sample Type: **U**      Depth (m): **46.15**

Bulk Density (Mg/m<sup>3</sup>): **2.09**      Dry Density (Mg/m<sup>3</sup>): **1.72**      Moisture Content (%): **21**  
 Length (mm): **215.22**      Diameter (mm): **99.13**      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **4:27**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.3**  
 UCS (MPa): **2.6**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

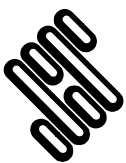


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71906**      Sample Ref: **69**      Sample Type: **U**      Depth (m): **50.65**

Bulk Density (Mg/m<sup>3</sup>): **2.19**      Dry Density (Mg/m<sup>3</sup>): **1.89**      Moisture Content (%): **16**  
 Length (mm): **216.06**      Diameter (mm): **100.80**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **6:18**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **67.5**  
 UCS (MPa): **8.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **39**      Sample Type: **U**      Depth (m): **32.47**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.58**      Moisture Content (%): **26**  
 Length (mm): **214.37**      Diameter (mm): **98.92**      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **4:19**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **8.6**  
 UCS (MPa): **1.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

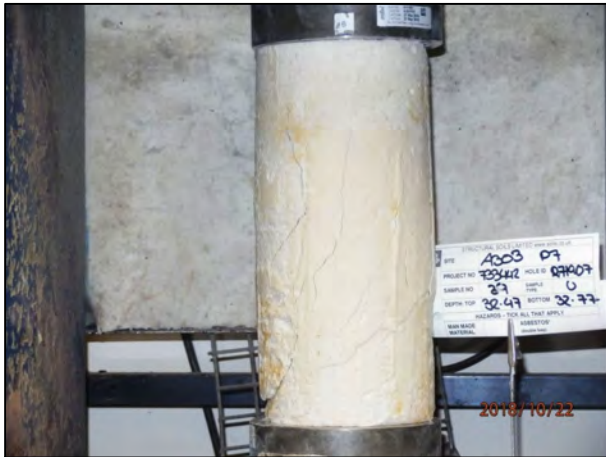
Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

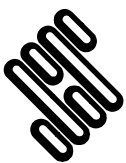


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **48**      Sample Type: **U**      Depth (m): **39.48**

Bulk Density (Mg/m<sup>3</sup>): **2.00**      Dry Density (Mg/m<sup>3</sup>): **1.60**      Moisture Content (%): **25**  
 Length (mm): **214.24**      Diameter (mm): **96.94**      Length/Diameter Ratio: **2.21**  
 Test Duration (mins:secs): **4:54**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.0**  
 UCS (MPa): **2.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



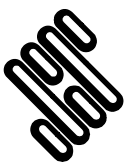
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_06  
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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **50**      Sample Type: **U**      Depth (m): **41.00**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.65**      Moisture Content (%): **23**  
 Length (mm): **214.00**      Diameter (mm): **99.04**      Length/Diameter Ratio: **2.16**  
 Test Duration (mins:secs): **4:00**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **26.7**  
 UCS (MPa): **3.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

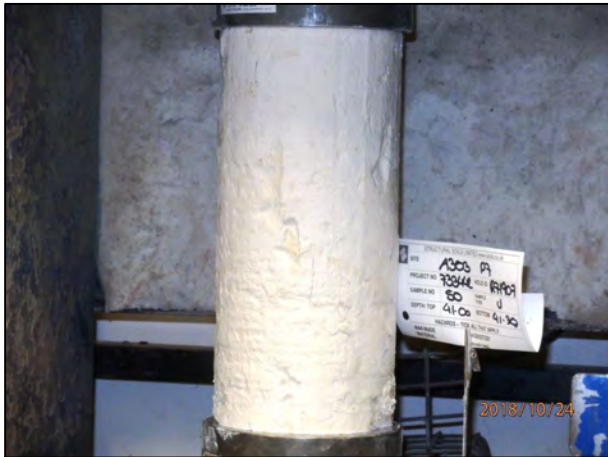
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

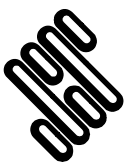


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **60**      Sample Type: **U**      Depth (m): **47.35**

Bulk Density (Mg/m<sup>3</sup>): **2.04**      Dry Density (Mg/m<sup>3</sup>): **1.65**      Moisture Content (%): **24**  
 Length (mm): **212.81**      Diameter (mm): **99.14**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **4:08**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **16.2**  
 UCS (MPa): **2.1**      Failure Type: **Axial cleavage**

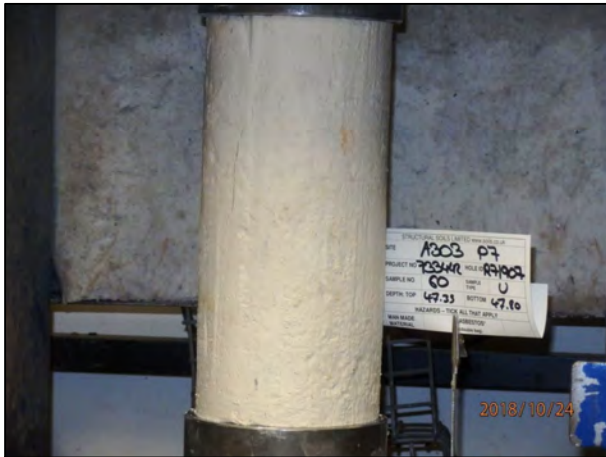
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:27 | AF3

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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **66**      Sample Type: **U**      Depth (m): **52.20**

Bulk Density (Mg/m<sup>3</sup>): **2.05**      Dry Density (Mg/m<sup>3</sup>): **1.70**      Moisture Content (%): **21**  
 Length (mm): **215.12**      Diameter (mm): **95.27**      Length/Diameter Ratio: **2.26**  
 Test Duration (mins:secs): **5:41**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **27.7**  
 UCS (MPa): **3.9**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



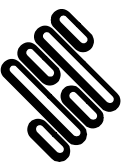

Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_06  
 Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/12/18 - 09:27 | AF3

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	Contract		Job No
<p><b>A303 Stonehenge Phase 7 Ground Investigation</b></p>		<p><b>733442</b></p>	



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **72**      Sample Type: **U**      Depth (m): **56.90**

Bulk Density (Mg/m<sup>3</sup>): **2.05**      Dry Density (Mg/m<sup>3</sup>): **1.68**      Moisture Content (%): **22**  
 Length (mm): **213.40**      Diameter (mm): **96.93**      Length/Diameter Ratio: **2.20**  
 Test Duration (mins:secs): **6:17**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **33.4**  
 UCS (MPa): **4.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



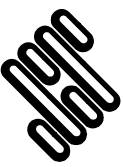
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core=Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/12/18 - 09:27 | AF3

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	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **79**      Sample Type: **U**      Depth (m): **61.85**

Bulk Density (Mg/m<sup>3</sup>): **2.15**      Dry Density (Mg/m<sup>3</sup>): **1.84**      Moisture Content (%): **17**  
 Length (mm): **215.32**      Diameter (mm): **100.96**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **8:03**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **58.5**  
 UCS (MPa): **7.3**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

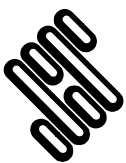


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **83**      Sample Type: **U**      Depth (m): **64.86**

Bulk Density (Mg/m<sup>3</sup>): **2.06**      Dry Density (Mg/m<sup>3</sup>): **1.70**      Moisture Content (%): **21**  
 Length (mm): **211.15**      Diameter (mm): **98.39**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **6:00**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **31.7**  
 UCS (MPa): **4.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

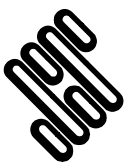


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**                      Sample Ref: **18**                      Sample Type: **U**                      Depth (m): **11.50**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.99</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.58</b>	Moisture Content (%): <b>26</b>
Length (mm): <b>212.51</b>	Diameter (mm): <b>100.53</b>	Length/Diameter Ratio: <b>2.11</b>
Test Duration (mins:secs): <b>3:31</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>22.5</b>
UCS (MPa): <b>0.0</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

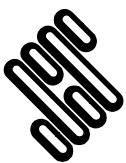


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **24**      Sample Type: **U**      Depth (m): **16.15**

Bulk Density (Mg/m<sup>3</sup>): **1.97**      Dry Density (Mg/m<sup>3</sup>): **1.54**      Moisture Content (%): **28**  
 Length (mm): **213.31**      Diameter (mm): **100.57**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **5:28**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **9.5**  
 UCS (MPa): **1.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

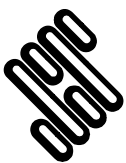


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **28**      Sample Type: **U**      Depth (m): **19.13**

Bulk Density (Mg/m<sup>3</sup>): **1.96**      Dry Density (Mg/m<sup>3</sup>): **1.53**      Moisture Content (%): **28**  
 Length (mm): **215.04**      Diameter (mm): **100.99**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **3:45**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **21.5**  
 UCS (MPa): **2.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

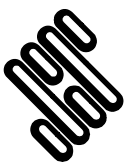


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **34**      Sample Type: **U**      Depth (m): **24.50**

Bulk Density (Mg/m<sup>3</sup>): **1.95**      Dry Density (Mg/m<sup>3</sup>): **1.52**      Moisture Content (%): **28**  
 Length (mm): **214.77**      Diameter (mm): **100.98**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **3:28**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **17.8**  
 UCS (MPa): **2.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

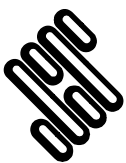


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **40**      Sample Type: **U**      Depth (m): **28.15**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.56**      Moisture Content (%): **27**  
 Length (mm): **214.29**      Diameter (mm): **100.44**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **4:05**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **23.8**  
 UCS (MPa): **3.0**      Failure Type: **Axial cleavage**

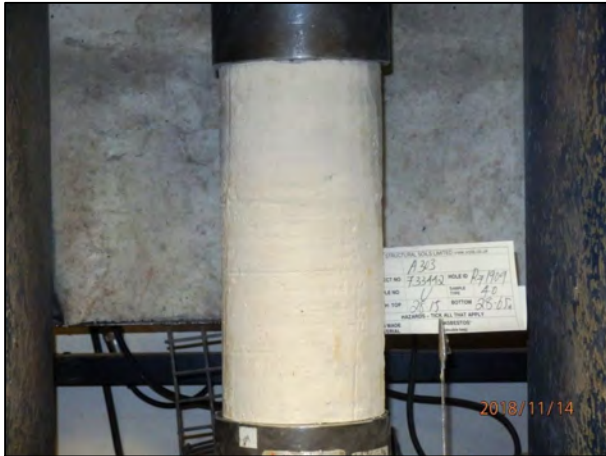
Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

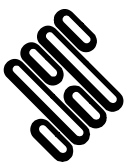


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **43**      Sample Type: **U**      Depth (m): **31.40**

Bulk Density (Mg/m<sup>3</sup>): **1.85**      Dry Density (Mg/m<sup>3</sup>): **1.44**      Moisture Content (%): **28**  
 Length (mm): **214.32**      Diameter (mm): **100.38**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **5:23**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **24.9**  
 UCS (MPa): **3.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

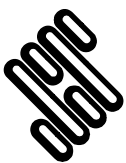


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **52**      Sample Type: **D**      Depth (m): **40.60**

Bulk Density (Mg/m<sup>3</sup>): **1.97**      Dry Density (Mg/m<sup>3</sup>): **1.55**      Moisture Content (%): **27**  
 Length (mm): **213.83**      Diameter (mm): **100.70**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **5:10**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **27.3**  
 UCS (MPa): **3.4**      Failure Type: **Axial cleavage**

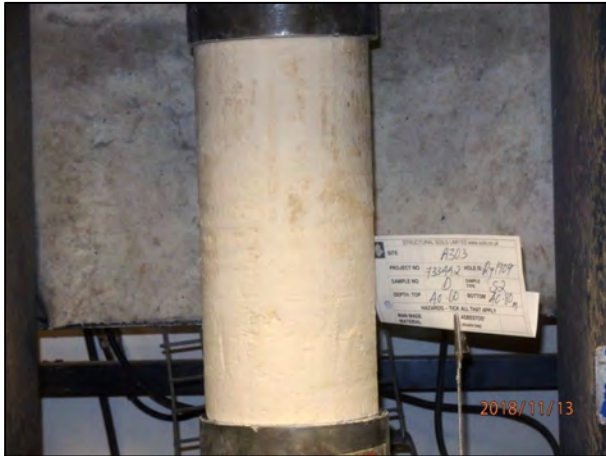
Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

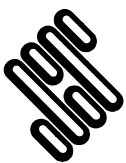


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **62**      Sample Type: **U**      Depth (m): **48.50**

Bulk Density (Mg/m<sup>3</sup>): **1.97**      Dry Density (Mg/m<sup>3</sup>): **1.55**      Moisture Content (%): **27**  
 Length (mm): **214.49**      Diameter (mm): **101.06**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **3:18**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **18.7**  
 UCS (MPa): **2.3**      Failure Type: **Axial cleavage**

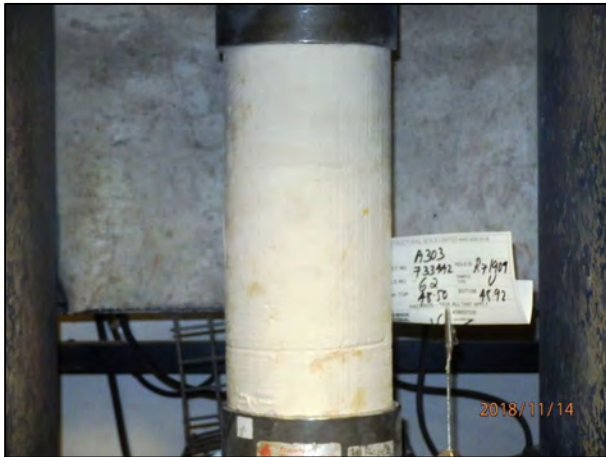
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

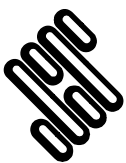


**Front view (post-test)**



**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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 BS3 4AG

Compiled By		Date
[REDACTED]		19/12/18
Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **71**      Sample Type: **U**      Depth (m): **55.60**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.58**      Moisture Content (%): **25**  
 Length (mm): **214.24**      Diameter (mm): **101.21**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **5:00**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **37.0**  
 UCS (MPa): **4.6**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

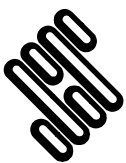


**Front view (post-test)**



**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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<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

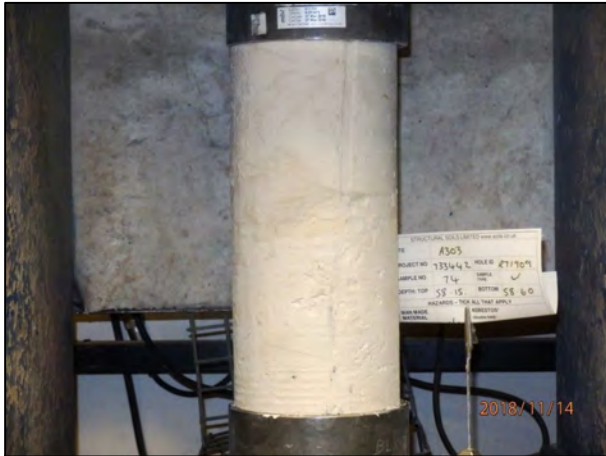
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **74**      Sample Type: **U**      Depth (m): **58.15**

Bulk Density (Mg/m<sup>3</sup>): **2.02**      Dry Density (Mg/m<sup>3</sup>): **1.64**      Moisture Content (%): **23**  
 Length (mm): **215.45**      Diameter (mm): **101.07**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **4:27**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **28.2**  
 UCS (MPa): **3.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

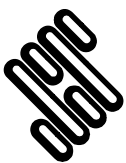


**Front view (post-test)**



**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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<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **78**      Sample Type: **U**      Depth (m): **61.10**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.66**      Moisture Content (%): **22**  
 Length (mm): **214.16**      Diameter (mm): **100.91**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **4:34**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **36.3**  
 UCS (MPa): **4.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

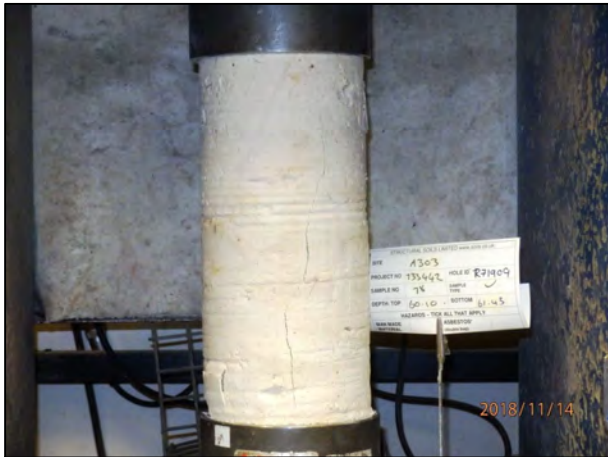
Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

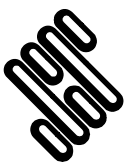


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **82**      Sample Type: **U**      Depth (m): **64.25**

Bulk Density (Mg/m<sup>3</sup>): **2.01**      Dry Density (Mg/m<sup>3</sup>): **1.62**      Moisture Content (%): **24**  
 Length (mm): **214.14**      Diameter (mm): **100.24**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **4:47**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **36.1**  
 UCS (MPa): **4.6**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

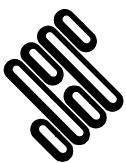


**Front view (post-test)**



**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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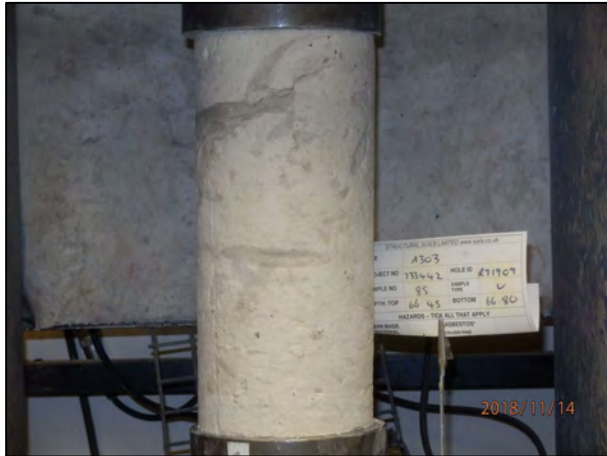
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **85**      Sample Type: **U**      Depth (m): **66.45**

Bulk Density (Mg/m<sup>3</sup>): **2.13**      Dry Density (Mg/m<sup>3</sup>): **1.80**      Moisture Content (%): **18**  
 Length (mm): **214.51**      Diameter (mm): **98.03**      Length/Diameter Ratio: **2.19**  
 Test Duration (mins:secs): **5:44**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **46.3**  
 UCS (MPa): **6.1**      Failure Type: **Axial cleavage**

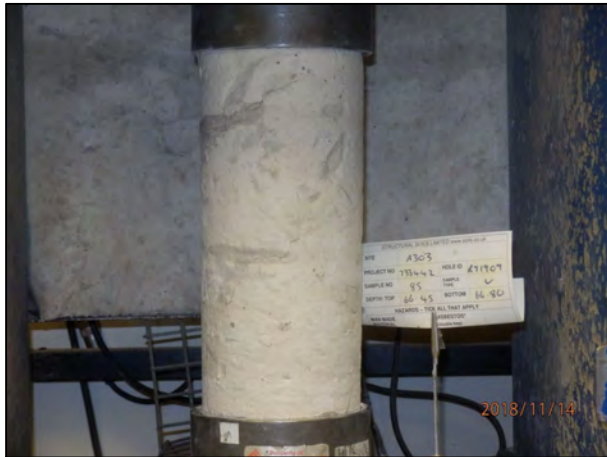
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



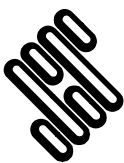
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, |19/12/18 - 09:28 | AF3



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **15**      Sample Type: **U**      Depth (m): **10.70**

Bulk Density (Mg/m<sup>3</sup>): **1.95**      Dry Density (Mg/m<sup>3</sup>): **1.51**      Moisture Content (%): **29**  
 Length (mm): **214.29**      Diameter (mm): **99.99**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **3:27**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.9**  
 UCS (MPa): **2.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

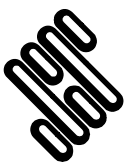


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **21**      Sample Type: **U**      Depth (m): **13.85**

Bulk Density (Mg/m<sup>3</sup>): **1.97**      Dry Density (Mg/m<sup>3</sup>): **1.56**      Moisture Content (%): **26**  
 Length (mm): **214.10**      Diameter (mm): **100.33**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **4:21**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **17.1**  
 UCS (MPa): **2.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



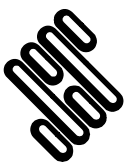
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, | 19/12/18 - 09:29 | AF3 |



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **28**      Sample Type: **U**      Depth (m): **18.28**

Bulk Density (Mg/m<sup>3</sup>): **1.96**      Dry Density (Mg/m<sup>3</sup>): **1.53**      Moisture Content (%): **28**  
 Length (mm): **215.34**      Diameter (mm): **100.07**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **2:44**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **25.8**  
 UCS (MPa): **3.3**      Failure Type: **Axial cleavage**

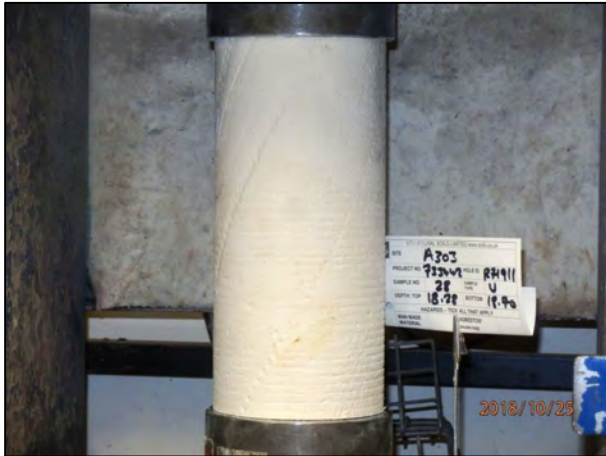
Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



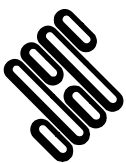
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/12/18 - 09:29 | AF3



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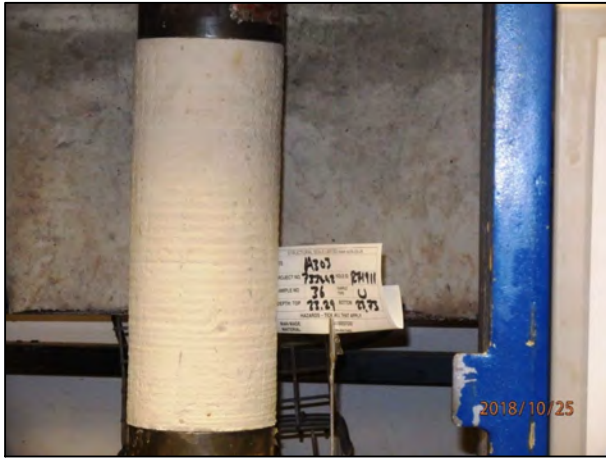
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **36**      Sample Type: **U**      Depth (m): **23.29**

Bulk Density (Mg/m<sup>3</sup>): **1.92**      Dry Density (Mg/m<sup>3</sup>): **1.48**      Moisture Content (%): **30**  
 Length (mm): **234.80**      Diameter (mm): **92.93**      Length/Diameter Ratio: **2.53**  
 Test Duration (mins:secs): **3:23**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.0**  
 UCS (MPa): **2.9**      Failure Type: **Axial cleavage**

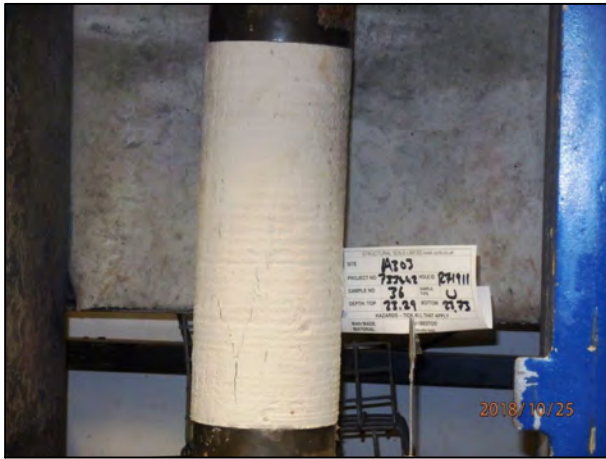
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



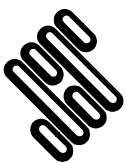
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - AS003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:29 | AF3



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **43**      Sample Type: **U**      Depth (m): **27.35**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **26**  
 Length (mm): **214.94**      Diameter (mm): **99.92**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **4:17**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **26.1**  
 UCS (MPa): **3.3**      Failure Type: **Axial cleavage**

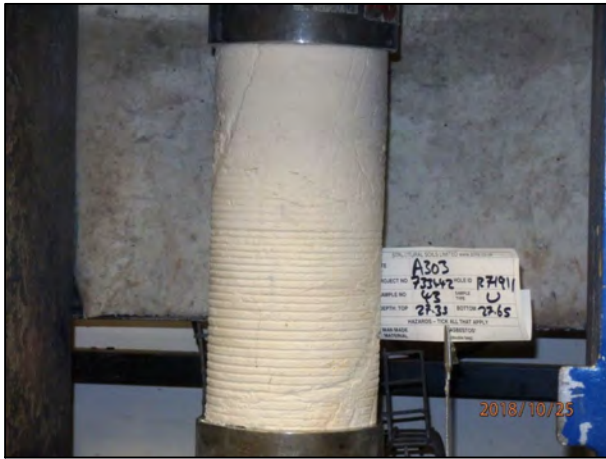
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



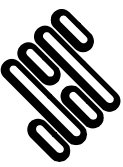
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core=Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/12/18 - 09:29 | AF3

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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **47**      Sample Type: **U**      Depth (m): **30.05**

Bulk Density (Mg/m<sup>3</sup>): **1.97**      Dry Density (Mg/m<sup>3</sup>): **1.55**      Moisture Content (%): **27**  
 Length (mm): **214.78**      Diameter (mm): **99.49**      Length/Diameter Ratio: **2.16**  
 Test Duration (mins:secs): **4:08**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.8**  
 UCS (MPa): **2.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



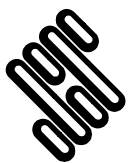
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_018 | Email: ask@soils.co.uk | 19/12/18 - 09:29 | AF3



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**                      Sample Ref: **82**                      Sample Type: **U**                      Depth (m): **51.10**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.99</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.56</b>	Moisture Content (%): <b>27</b>
Length (mm): <b>214.89</b>	Diameter (mm): <b>100.14</b>	Length/Diameter Ratio: <b>2.15</b>
Test Duration (mins:secs): <b>4.25</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>24.9</b>
UCS (MPa): <b>3.2</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:29 | AF3

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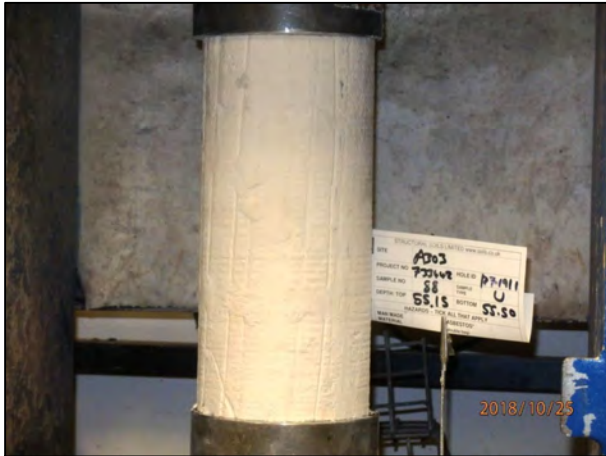
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **88**      Sample Type: **U**      Depth (m): **55.15**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **26**  
 Length (mm): **215.11**      Diameter (mm): **100.55**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **3:05**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **32.1**  
 UCS (MPa): **4.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

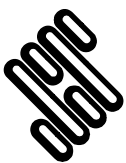


**Front view (post-test)**



**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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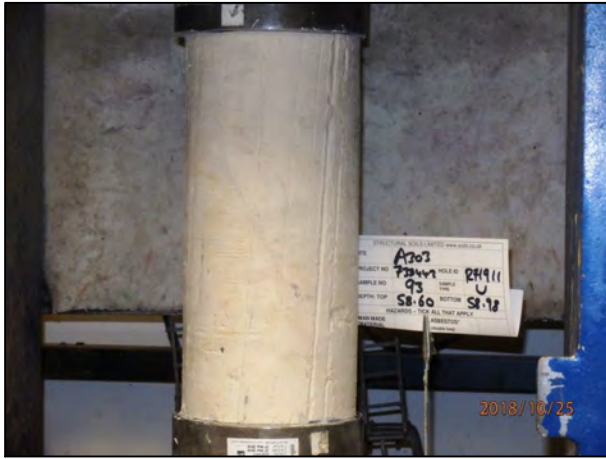
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **93**      Sample Type: **U**      Depth (m): **58.60**

Bulk Density (Mg/m<sup>3</sup>): **2.00**      Dry Density (Mg/m<sup>3</sup>): **1.60**      Moisture Content (%): **25**  
 Length (mm): **214.64**      Diameter (mm): **100.23**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **4:31**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **25.6**  
 UCS (MPa): **3.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

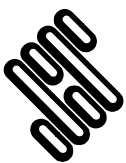


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**                      Sample Ref: **103**                      Sample Type: **U**                      Depth (m): **64.95**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.06</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.69</b>	Moisture Content (%): <b>22</b>
Length (mm): <b>213.91</b>	Diameter (mm): <b>100.02</b>	Length/Diameter Ratio: <b>2.14</b>
Test Duration (mins:secs): <b>5:20</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>41.6</b>
UCS (MPa): <b>5.3</b>	Failure Type: <b>Axial cleavage</b>	

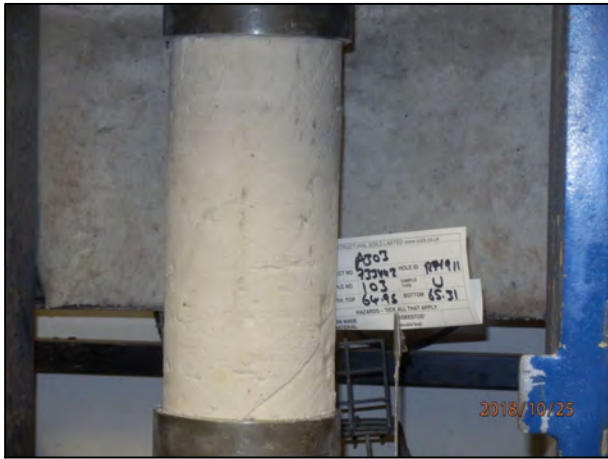
**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

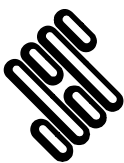


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **106**      Sample Type: **U**      Depth (m): **66.00**

Bulk Density (Mg/m<sup>3</sup>): **2.01**      Dry Density (Mg/m<sup>3</sup>): **1.62**      Moisture Content (%): **24**  
 Length (mm): **215.24**      Diameter (mm): **100.45**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **4:33**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **40.7**  
 UCS (MPa): **5.1**      Failure Type: **Axial cleavage**

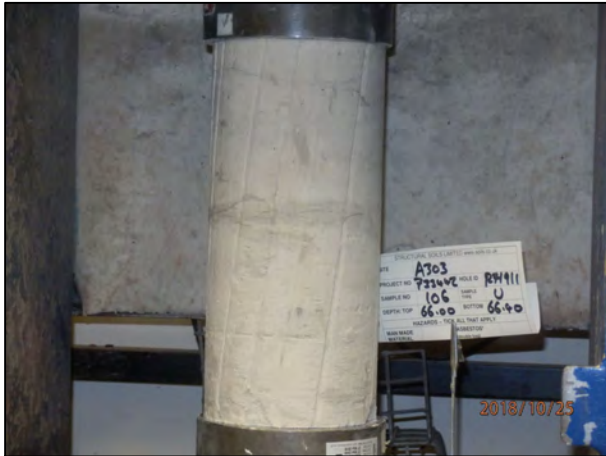
Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



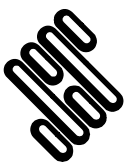
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 19/12/18 - 09:30 | AF3



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71913**      Sample Ref: **20**      Sample Type: **U**      Depth (m): **11.62**

Bulk Density (Mg/m<sup>3</sup>): **1.93**      Dry Density (Mg/m<sup>3</sup>): **1.48**      Moisture Content (%): **30**  
 Length (mm): **212.61**      Diameter (mm): **100.50**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **3:58**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.2**  
 UCS (MPa): **2.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

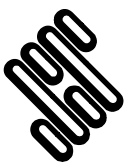


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71913**      Sample Ref: **26**      Sample Type: **U**      Depth (m): **16.18**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.65**      Moisture Content (%): **23**  
 Length (mm): **215.11**      Diameter (mm): **101.07**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **5:13**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **35.1**  
 UCS (MPa): **4.4**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



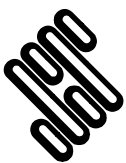
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:30 | AF3



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71913**      Sample Ref: **54**      Sample Type: **U**      Depth (m): **34.10**

Bulk Density (Mg/m<sup>3</sup>): **2.01**      Dry Density (Mg/m<sup>3</sup>): **1.61**      Moisture Content (%): **25**  
 Length (mm): **213.68**      Diameter (mm): **100.90**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **4:12**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **31.6**  
 UCS (MPa): **4.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

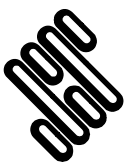


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71913**      Sample Ref: **63**      Sample Type: **U**      Depth (m): **39.61**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **26**  
 Length (mm): **213.13**      Diameter (mm): **100.72**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **06:47**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **18.9**  
 UCS (MPa): **2.4**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

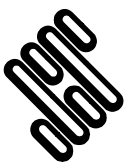


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71913**      Sample Ref: **72**      Sample Type: **U**      Depth (m): **44.81**

Bulk Density (Mg/m<sup>3</sup>): **2.00**      Dry Density (Mg/m<sup>3</sup>): **1.61**      Moisture Content (%): **24**  
 Length (mm): **214.40**      Diameter (mm): **101.08**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **4:23**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **25.2**  
 UCS (MPa): **3.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

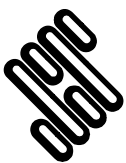


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71913**      Sample Ref: **78**      Sample Type: **U**      Depth (m): **49.00**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.59**      Moisture Content (%): **25**  
 Length (mm): **212.26**      Diameter (mm): **101.23**      Length/Diameter Ratio: **2.10**  
 Test Duration (mins:secs): **5:12**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **33.5**  
 UCS (MPa): **4.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



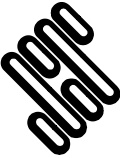


**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:30 | AF3

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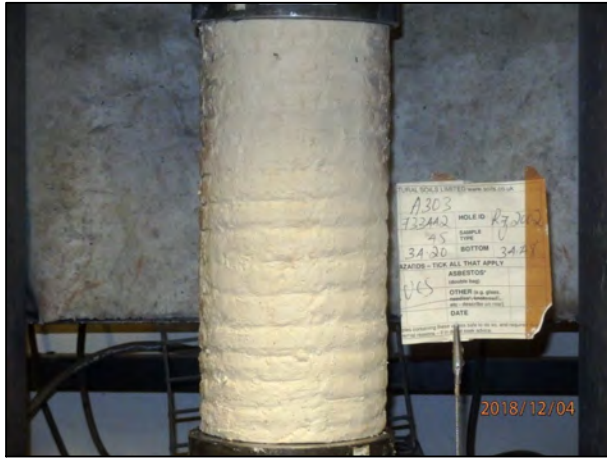
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72002**      Sample Ref: **45**      Sample Type: **U**      Depth (m): **34.20**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **26**  
 Length (mm): **213.89**      Diameter (mm): **100.49**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **4:54**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **22.8**  
 UCS (MPa): **2.9**      Failure Type: **Axial cleavage**

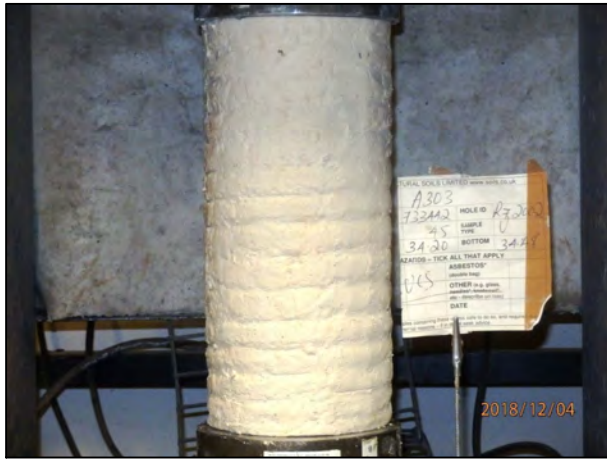
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

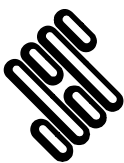


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72002**      Sample Ref: **48**      Sample Type: **U**      Depth (m): **36.45**

Bulk Density (Mg/m<sup>3</sup>): **1.97**      Dry Density (Mg/m<sup>3</sup>): **1.52**      Moisture Content (%): **29**  
 Length (mm): **215.08**      Diameter (mm): **98.94**      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **3:39**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.0**  
 UCS (MPa): **2.6**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

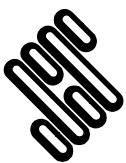


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72002**      Sample Ref: **59**      Sample Type: **U**      Depth (m): **44.98**

Bulk Density (Mg/m<sup>3</sup>): **2.02**      Dry Density (Mg/m<sup>3</sup>): **1.63**      Moisture Content (%): **24**  
 Length (mm): **215.01**      Diameter (mm): **100.83**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **3:40**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **28.7**  
 UCS (MPa): **3.6**      Failure Type: **Axial cleavage**

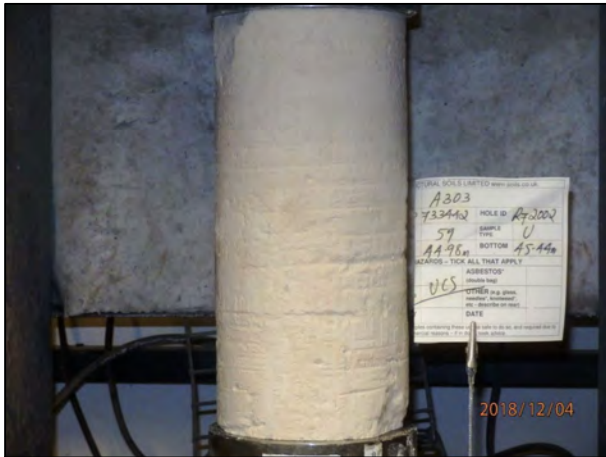
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

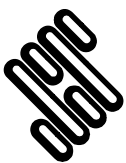


Front view (post-test)



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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<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72002**      Sample Ref: **77**      Sample Type: **U**      Depth (m): **58.35**

Bulk Density (Mg/m<sup>3</sup>): **2.10**      Dry Density (Mg/m<sup>3</sup>): **1.75**      Moisture Content (%): **20**  
 Length (mm): **215.22**      Diameter (mm): **100.60**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **4:58**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **43.3**  
 UCS (MPa): **5.4**      Failure Type: **Axial cleavage**

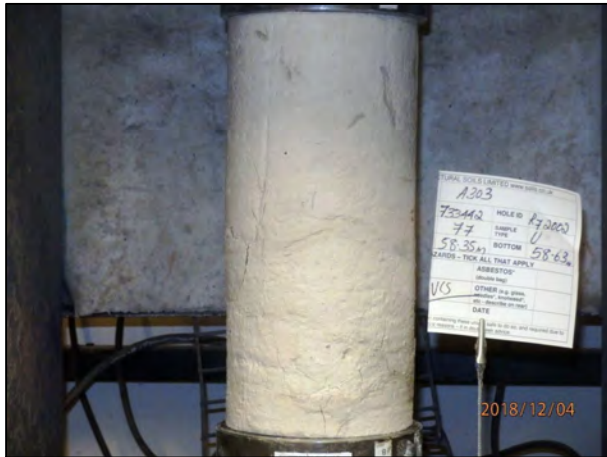
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

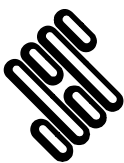


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72002**      Sample Ref: **80**      Sample Type: **U**      Depth (m): **60.45**

Bulk Density (Mg/m<sup>3</sup>): **2.12**      Dry Density (Mg/m<sup>3</sup>): **1.78**      Moisture Content (%): **19**  
 Length (mm): **213.54**      Diameter (mm): **101.11**      Length/Diameter Ratio: **2.11**  
 Test Duration (mins:secs): **3:44**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **24.4**  
 UCS (MPa): **3.0**      Failure Type: **Shear**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

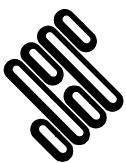


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72003**      Sample Ref: **25**      Sample Type: **U**      Depth (m): **19.03**

Bulk Density (Mg/m<sup>3</sup>): **2.02**      Dry Density (Mg/m<sup>3</sup>): **1.61**      Moisture Content (%): **25**  
 Length (mm): **215.06**      Diameter (mm): **99.73**      Length/Diameter Ratio: **2.16**  
 Test Duration (mins:secs): **3:45**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **25.3**  
 UCS (MPa): **3.2**      Failure Type: **Axial cleavage**

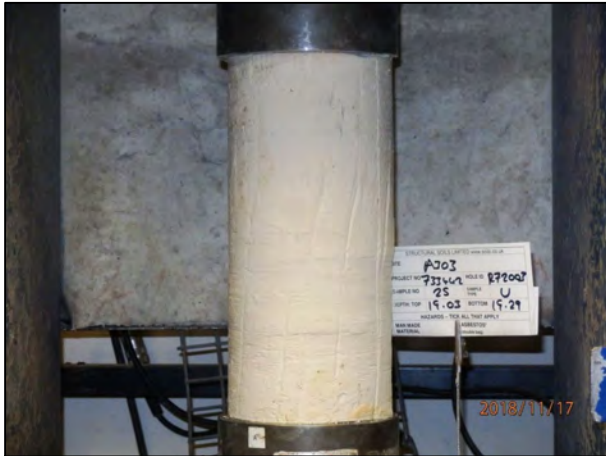
Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

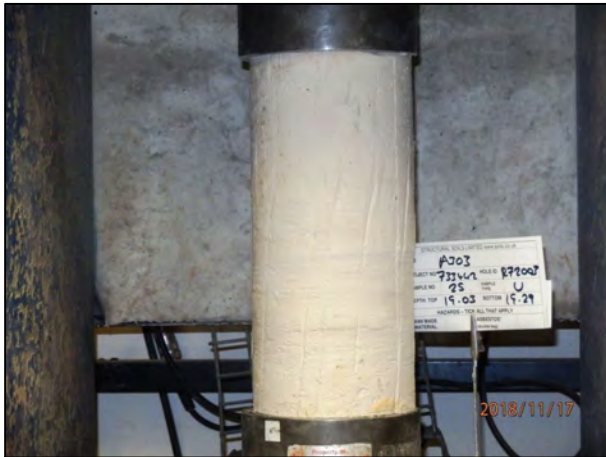
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

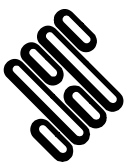


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72003**      Sample Ref: **34**      Sample Type: **U**      Depth (m): **26.47**

Bulk Density (Mg/m<sup>3</sup>): **1.97**      Dry Density (Mg/m<sup>3</sup>): **1.55**      Moisture Content (%): **27**  
 Length (mm): **210.27**      Diameter (mm): **99.44**      Length/Diameter Ratio: **2.11**  
 Test Duration (mins:secs): **4:31**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **23.3**  
 UCS (MPa): **3.0**      Failure Type: **Axial cleavage**

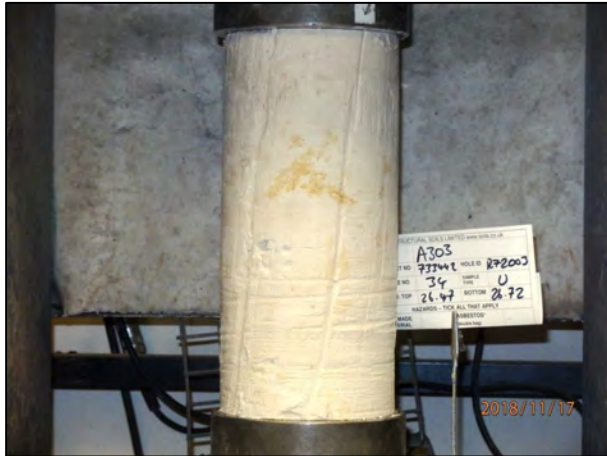
Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

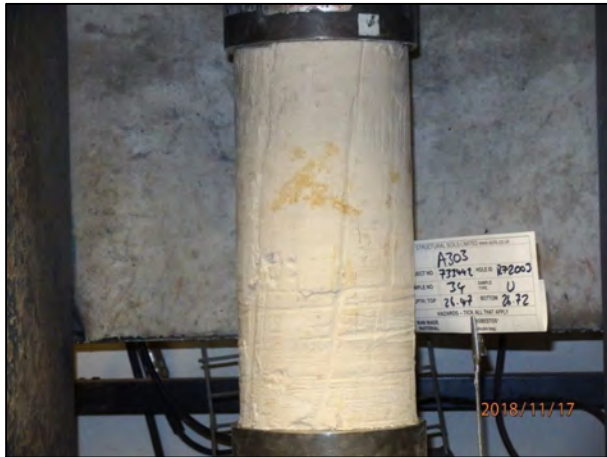
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

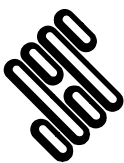


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72003**      Sample Ref: **46**      Sample Type: **U**      Depth (m): **36.45**

Bulk Density (Mg/m<sup>3</sup>): **1.95**      Dry Density (Mg/m<sup>3</sup>): **1.54**      Moisture Content (%): **27**  
 Length (mm): **213.61**      Diameter (mm): **99.49**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **3:37**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **21.7**  
 UCS (MPa): **2.8**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

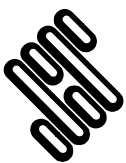


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72003**      Sample Ref: **55**      Sample Type: **U**      Depth (m): **44.65**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.65**      Moisture Content (%): **23**  
 Length (mm): **204.55**      Diameter (mm): **99.89**      Length/Diameter Ratio: **2.05**  
 Test Duration (mins:secs): **5:36**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **28.7**  
 UCS (MPa): **3.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

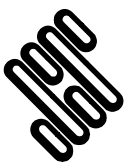


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71801**

Sample Ref: **18**

Sample Type: **U**

Depth (m): **14.22**

Bulk Density (Mg/m<sup>3</sup>): **1.99**

Dry Density (Mg/m<sup>3</sup>): **1.57**

Moisture Content (%): **27**

Length (mm): **213.06**

Diameter (mm): **100.83**

Length/Diameter Ratio: **2.11**

Test Duration (mins:secs): **2:46**

Stress Rate (kN/min): **6.0**

Load at Failure (kN): **9.4**

UCS (MPa): **1.2**

Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

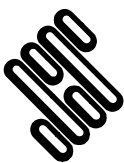


Front view (post-test)



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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Compiled By

Date

STACEY BROWN

19/02/19

Contract

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Job No

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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71801**      Sample Ref: **23**      Sample Type: **U**      Depth (m): **16.64**

Bulk Density (Mg/m<sup>3</sup>): **2.07**      Dry Density (Mg/m<sup>3</sup>): **1.68**      Moisture Content (%): **23**  
 Length (mm): **212.97**      Diameter (mm): **100.68**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **3:29**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **32.6**  
 UCS (MPa): **4.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



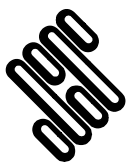
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/02/19 - 06:54 | AF3



**STRUCTURAL SOILS**  
 1a Princess Street  
 Bedminster  
 Bristol  
 BS3 4AG

Compiled By		Date
[REDACTED]		19/02/19
Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71801**      Sample Ref: **30**      Sample Type: **U**      Depth (m): **22.36**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.58**      Moisture Content (%): **26**  
 Length (mm): **215.15**      Diameter (mm): **99.71**      Length/Diameter Ratio: **2.16**  
 Test Duration (mins:secs): **1:45**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **13.6**  
 UCS (MPa): **1.7**      Failure Type: **Axial cleavage**

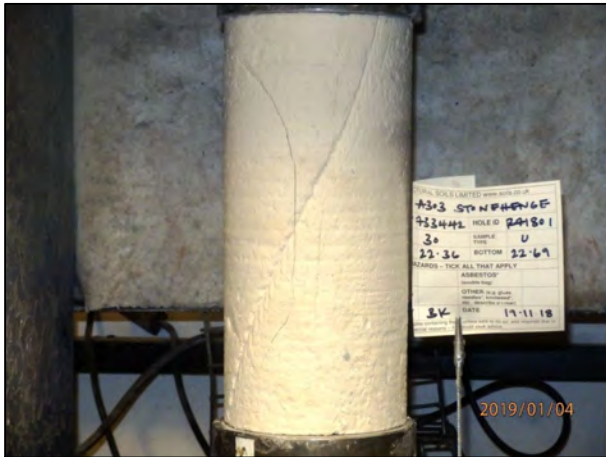
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



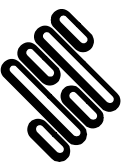

**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol SI - 012 | Gfctext L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/02/19 - 06:55 | AF3

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
	[Redacted]		19/02/19
	Contract		Job No
<p><b>A303 Stonehenge Phase 7 Ground Investigation</b></p>		<p><b>733442</b></p> 	

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71801**      Sample Ref: **38**      Sample Type: **U**      Depth (m): **28.37**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **27**  
 Length (mm): **170.65**      Diameter (mm): **99.90**      Length/Diameter Ratio: **1.71**  
 Test Duration (mins:secs): **4:10**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **17.7**  
 UCS (MPa): **2.3**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



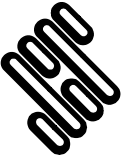
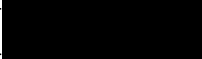

Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcfText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/02/19 - 06:55 | AF3

 <b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	 Contract		STACEY BROWN 19/02/19
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>	
			

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71801**      Sample Ref: **45**      Sample Type: **U**      Depth (m): **34.34**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **27**  
 Length (mm): **214.27**      Diameter (mm): **100.32**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **3:41**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **21.3**  
 UCS (MPa): **2.7**      Failure Type: **Axial cleavage**

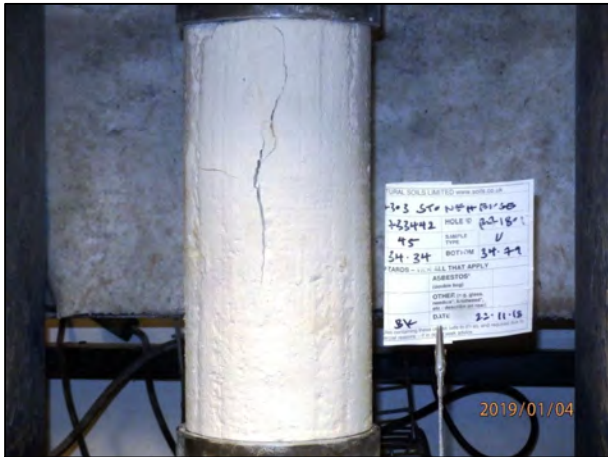
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



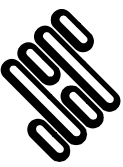

Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - AS003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, | 19/02/19 - 06:55 | AF3 ]

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
			<b>STACEY BROWN</b> 19/02/19
	Contract	<b>A303 Stonehenge Phase 7 Ground Investigation</b>	





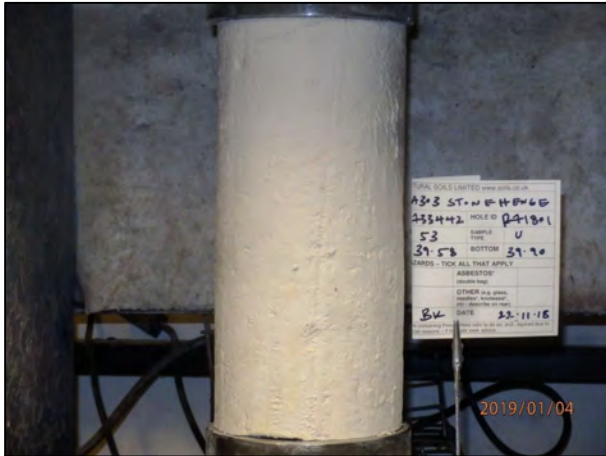
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71801**      Sample Ref: **53**      Sample Type: **U**      Depth (m): **39.58**

Bulk Density (Mg/m<sup>3</sup>): **2.04**      Dry Density (Mg/m<sup>3</sup>): **1.66**      Moisture Content (%): **23**  
 Length (mm): **213.25**      Diameter (mm): **100.55**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **3:41**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **34.8**  
 UCS (MPa): **4.4**      Failure Type: **Axial cleavage**

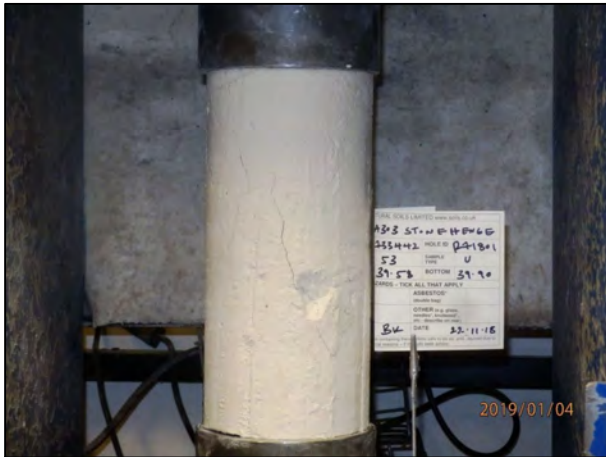
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



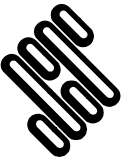


**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core=Full Bristol SI - 012 | GrcfText L - UCS STRESS CONTROL - A4P1733442 - AS003. STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06. Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/02/19 - 06:55 | AF3

 <b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
			<b>STACEY BROWN</b> 19/02/19
	Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b> 	



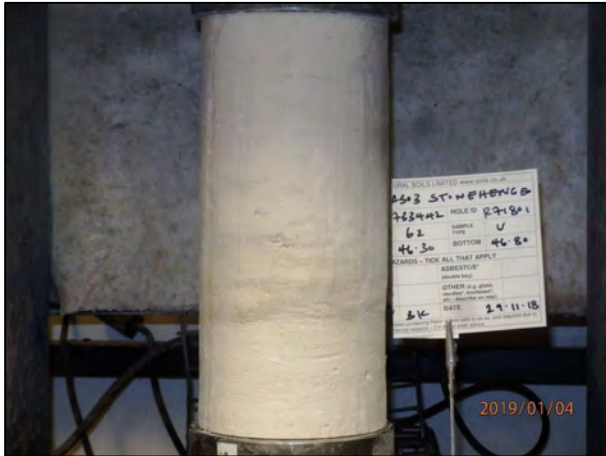
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

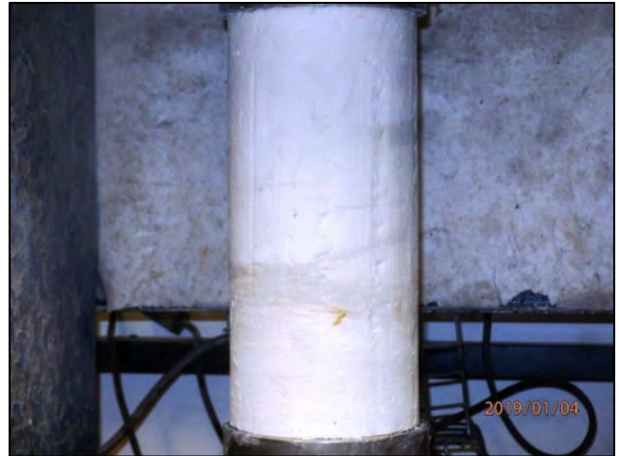
Borehole: **R71801**      Sample Ref: **62**      Sample Type: **U**      Depth (m): **46.30**

Bulk Density (Mg/m<sup>3</sup>): **2.10**      Dry Density (Mg/m<sup>3</sup>): **1.73**      Moisture Content (%): **21**  
 Length (mm): **215.84**      Diameter (mm): **100.37**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **6:45**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **50.4**  
 UCS (MPa): **6.4**      Failure Type: **Axial cleavage**

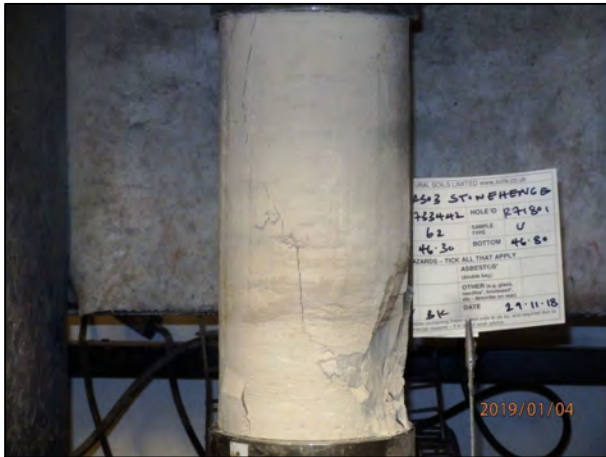
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

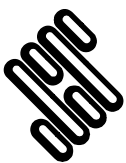


**Front view (post-test)**



**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]		19/02/19
Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71801**      Sample Ref: **66**      Sample Type: **U**      Depth (m): **49.38**

Bulk Density (Mg/m<sup>3</sup>): **2.06**      Dry Density (Mg/m<sup>3</sup>): **1.68**      Moisture Content (%): **22**  
 Length (mm): **215.58**      Diameter (mm): **100.90**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **4:55**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **36.8**  
 UCS (MPa): **4.6**      Failure Type: **Axial cleavage**

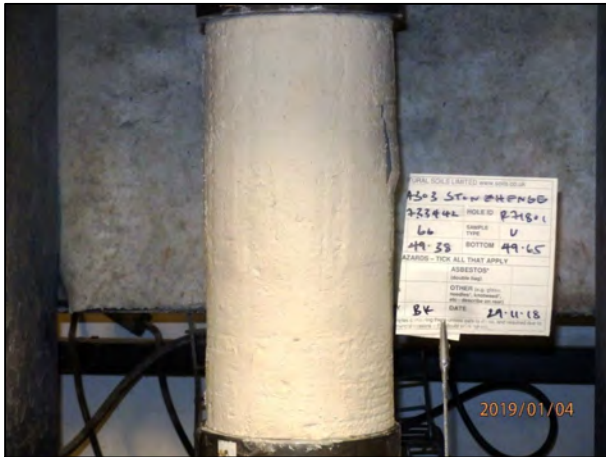
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



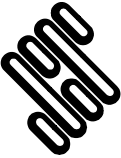


Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_06  
 Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/02/19 - 06:55 | AF3

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
			<b>STACEY BROWN</b> 19/02/19
	Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b> 	

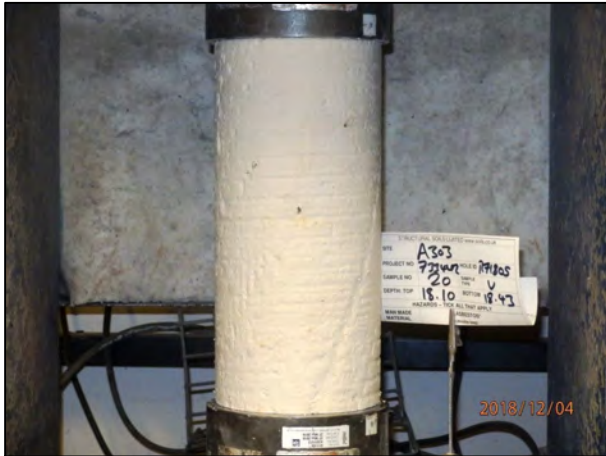
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**                      Sample Ref: **20**                      Sample Type: **U**                      Depth (m): **18.10**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.99</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.57</b>	Moisture Content (%): <b>27</b>
Length (mm): <b>214.57</b>	Diameter (mm): <b>99.72</b>	Length/Diameter Ratio: <b>2.15</b>
Test Duration (mins:secs): <b>4:12</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>25.3</b>
UCS (MPa): <b>3.2</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:26 | AF3

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[REDACTED]		<b>ALAN FROST</b>	<b>19/12/18</b>
	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>	

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **29**      Sample Type: **U**      Depth (m): **25.82**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.64**      Moisture Content (%): **24**  
 Length (mm): **214.55**      Diameter (mm): **100.23**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **3:45**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **29.8**  
 UCS (MPa): **3.8**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

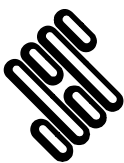


**Front view (post-test)**



**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  
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Compiled By		Date
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Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **38**      Sample Type: **U**      Depth (m): **33.60**

Bulk Density (Mg/m<sup>3</sup>): **2.01**      Dry Density (Mg/m<sup>3</sup>): **1.61**      Moisture Content (%): **25**  
 Length (mm): **215.02**      Diameter (mm): **101.16**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **5:21**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **24.4**  
 UCS (MPa): **3.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

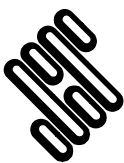


Front view (post-test)



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]		19/12/18
Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **48**      Sample Type: **U**      Depth (m): **40.20**

Bulk Density (Mg/m<sup>3</sup>): **2.05**      Dry Density (Mg/m<sup>3</sup>): **1.67**      Moisture Content (%): **23**  
 Length (mm): **213.81**      Diameter (mm): **100.81**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **4:25**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **30.9**  
 UCS (MPa): **3.9**      Failure Type: **Axial cleavage**

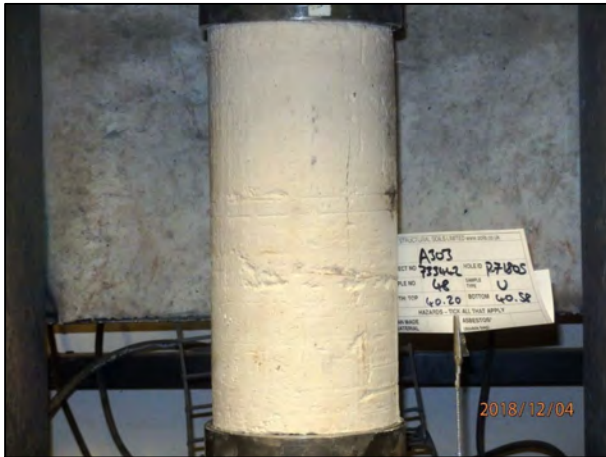
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

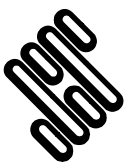


**Front view (post-test)**



**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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 Bristol  
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Compiled By		Date
[REDACTED]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **52**      Sample Type: **U**      Depth (m): **43.55**

Bulk Density (Mg/m<sup>3</sup>): **2.08**      Dry Density (Mg/m<sup>3</sup>): **1.72**      Moisture Content (%): **21**  
 Length (mm): **214.61**      Diameter (mm): **100.86**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **6:29**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **52.5**  
 UCS (MPa): **6.6**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



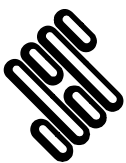
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 19/12/18 - 09:26 | AF3



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Contract	Job No	
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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **51**      Sample Type: **U**      Depth (m): **45.80**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.67**      Moisture Content (%): **22**  
 Length (mm): **213.51**      Diameter (mm): **100.47**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **5:56**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **43.6**  
 UCS (MPa): **5.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core=Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:26 | AF3

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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71809**                      Sample Ref: **33**                      Sample Type: **U**                      Depth (m): **33.82**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.04</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.66</b>	Moisture Content (%): <b>23</b>
Length (mm): <b>214.21</b>	Diameter (mm): <b>98.69</b>	Length/Diameter Ratio: <b>2.17</b>
Test Duration (mins:secs): <b>2:54</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>35.2</b>
UCS (MPa): <b>4.6</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



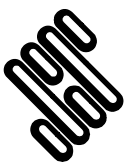
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_018 | Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:26 | AF3



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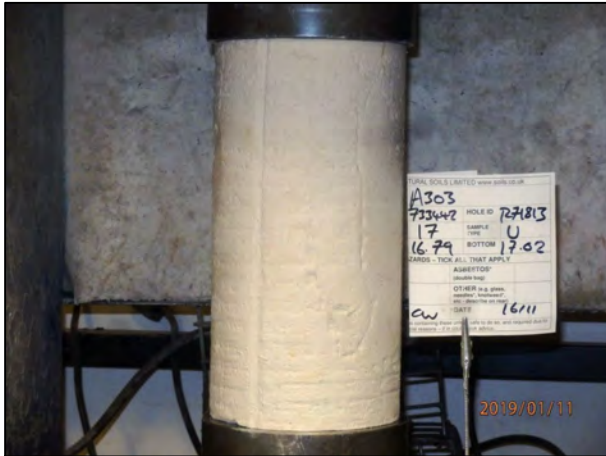
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71813**      Sample Ref: **17**      Sample Type: **U**      Depth (m): **16.79**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.56**      Moisture Content (%): **27**  
 Length (mm): **196.44**      Diameter (mm): **101.17**      Length/Diameter Ratio: **1.94**  
 Test Duration (mins:secs): **2:40**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **15.5**  
 UCS (MPa): **1.9**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



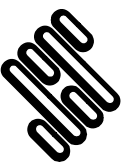

Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/02/19 - 07:02 | AF3

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	Contract		Job No
<p><b>A303 Stonehenge Phase 7 Ground Investigation</b></p>		<p><b>733442</b></p> 	

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71813**      Sample Ref: **42**      Sample Type: **U**      Depth (m): **36.00**

Bulk Density (Mg/m<sup>3</sup>): **2.01**      Dry Density (Mg/m<sup>3</sup>): **1.59**      Moisture Content (%): **26**  
 Length (mm): **212.52**      Diameter (mm): **99.93**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **3:11**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **24.8**  
 UCS (MPa): **3.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



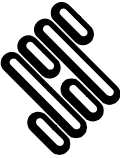


Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/02/19 - 07:02 | AF3

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	Contract		Job No
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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71813**      Sample Ref: **46**      Sample Type: **U**      Depth (m): **38.85**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.62**      Moisture Content (%): **25**  
 Length (mm): **210.90**      Diameter (mm): **99.04**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **4:41**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **25.1**  
 UCS (MPa): **3.3**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



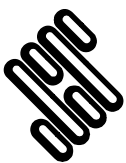
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_018 | Email: ask@soils.co.uk | 19/02/19 - 07:02 | AF3



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71813**      Sample Ref: **51**      Sample Type: **U**      Depth (m): **42.30**

Bulk Density (Mg/m<sup>3</sup>): **2.00**      Dry Density (Mg/m<sup>3</sup>): **1.60**      Moisture Content (%): **25**  
 Length (mm): **214.11**      Diameter (mm): **99.94**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **2:45**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **32.0**  
 UCS (MPa): **4.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

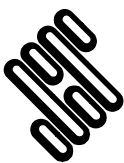


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71813**      Sample Ref: **53**      Sample Type: **U**      Depth (m): **43.80**

Bulk Density (Mg/m<sup>3</sup>): **2.07**      Dry Density (Mg/m<sup>3</sup>): **1.70**      Moisture Content (%): **22**  
 Length (mm): **214.15**      Diameter (mm): **100.70**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **3:30**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **40.4**  
 UCS (MPa): **5.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

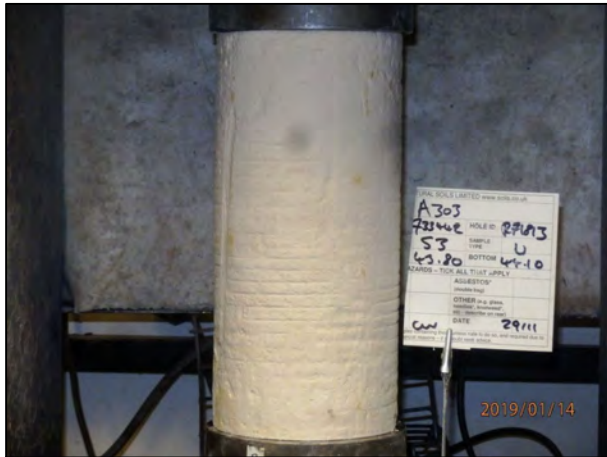
Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

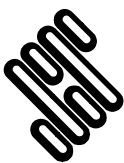


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71817**      Sample Ref: **33**      Sample Type: **U**      Depth (m): **26.00**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.58**      Moisture Content (%): **26**  
 Length (mm): **213.64**      Diameter (mm): **100.46**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **6:10**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **32.0**  
 UCS (MPa): **4.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

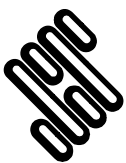


Front view (post-test)



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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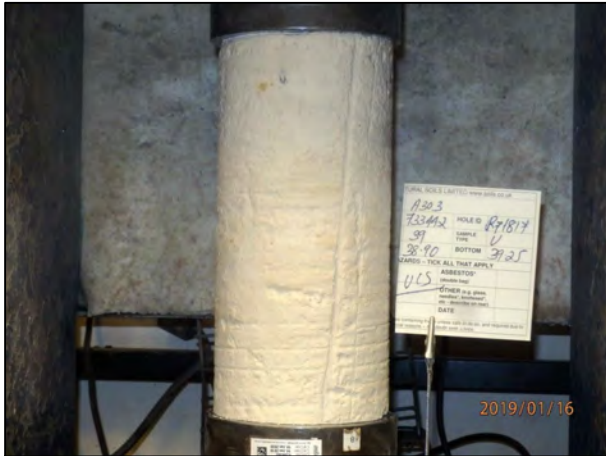
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71817**      Sample Ref: **47**      Sample Type: **U**      Depth (m): **38.90**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.66**      Moisture Content (%): **22**  
 Length (mm): **213.73**      Diameter (mm): **100.53**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **3:45**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **29.7**  
 UCS (MPa): **3.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

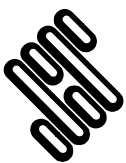


**Front view (post-test)**



**Rear view (post-test)**

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C  
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Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71817**      Sample Ref: **51**      Sample Type: **U**      Depth (m): **41.80**

Bulk Density (Mg/m<sup>3</sup>): **2.04**      Dry Density (Mg/m<sup>3</sup>): **1.66**      Moisture Content (%): **23**  
 Length (mm): **214.78**      Diameter (mm): **100.95**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **4:33**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **40.3**  
 UCS (MPa): **5.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

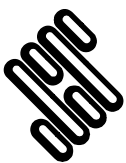


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71817**      Sample Ref: **54**      Sample Type: **U**      Depth (m): **43.90**

Bulk Density (Mg/m<sup>3</sup>): **2.05**      Dry Density (Mg/m<sup>3</sup>): **1.68**      Moisture Content (%): **22**  
 Length (mm): **213.34**      Diameter (mm): **101.47**      Length/Diameter Ratio: **2.10**  
 Test Duration (mins:secs): **4:49**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **40.4**  
 UCS (MPa): **5.0**      Failure Type: **Axial cleavage**

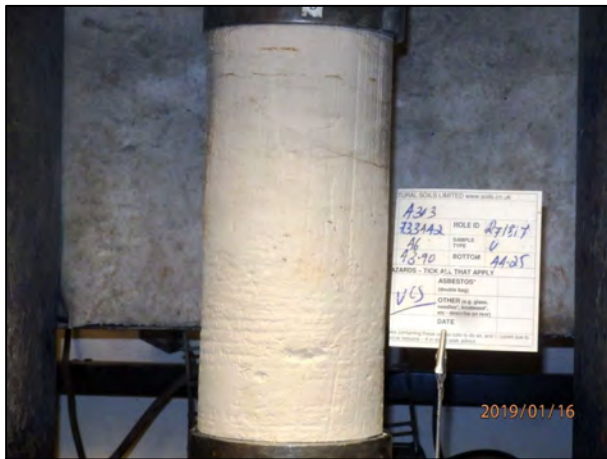
Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

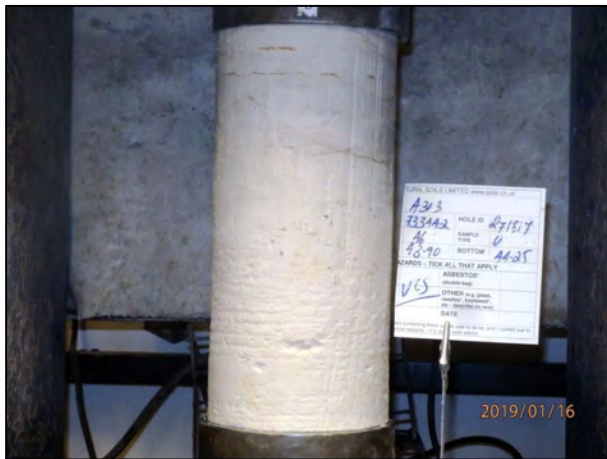
Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

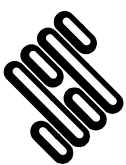


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71822**      Sample Ref: **23**      Sample Type: **U**      Depth (m): **19.84**

Bulk Density (Mg/m<sup>3</sup>): **2.02**      Dry Density (Mg/m<sup>3</sup>): **1.62**      Moisture Content (%): **25**  
 Length (mm): **213.39**      Diameter (mm): **97.42**      Length/Diameter Ratio: **2.19**  
 Test Duration (mins:secs): **3:41**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **13.2**  
 UCS (MPa): **1.8**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

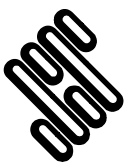


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71822**      Sample Ref: **34**      Sample Type: **U**      Depth (m): **30.10**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **26**  
 Length (mm): **214.75**      Diameter (mm): **96.32**      Length/Diameter Ratio: **2.23**  
 Test Duration (mins:secs): **3:05**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **21.8**  
 UCS (MPa): **3.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

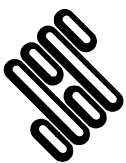


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71822**      Sample Ref: **37**      Sample Type: **U**      Depth (m): **32.20**

Bulk Density (Mg/m<sup>3</sup>): **2.00**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **27**  
 Length (mm): **214.51**      Diameter (mm): **96.66**      Length/Diameter Ratio: **2.22**  
 Test Duration (mins:secs): **3:59**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **21.5**  
 UCS (MPa): **2.9**      Failure Type: **Axial cleavage**

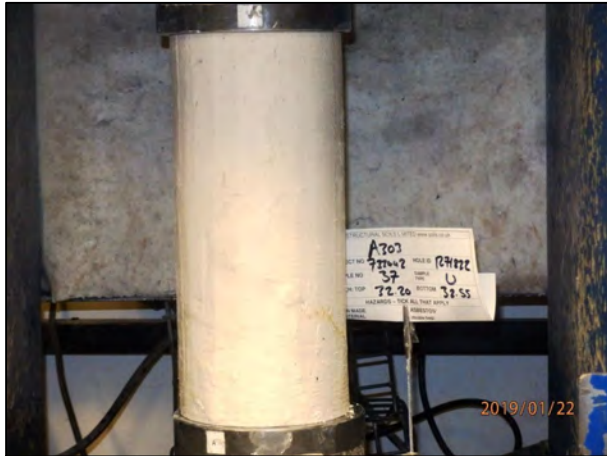
Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

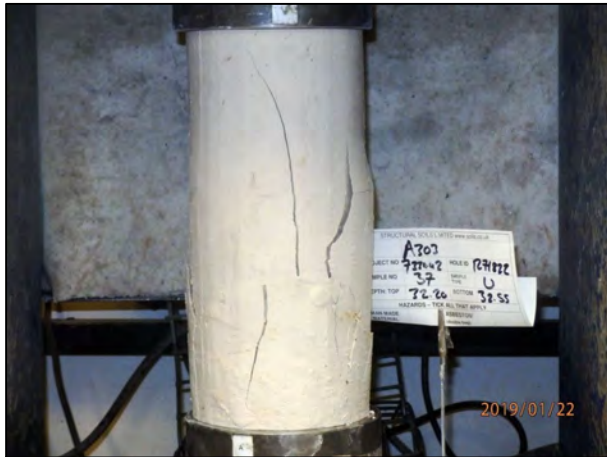
Remarks: **Non-standard test**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_018 | 19/02/19 - 07:04 | AF3 | ask@soils.co.uk



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71822**      Sample Ref: **52**      Sample Type: **U**      Depth (m): **45.30**

Bulk Density (Mg/m<sup>3</sup>): **2.00**      Dry Density (Mg/m<sup>3</sup>): **1.59**      Moisture Content (%): **26**  
 Length (mm): **214.70**      Diameter (mm): **97.24**      Length/Diameter Ratio: **2.21**  
 Test Duration (mins:secs): **4:17**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **22.8**  
 UCS (MPa): **3.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



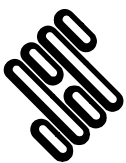
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/02/19 - 07:04 | AF3



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71822**      Sample Ref: **57**      Sample Type: **U**      Depth (m): **49.12**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.64**      Moisture Content (%): **24**  
 Length (mm): **214.84**      Diameter (mm): **96.06**      Length/Diameter Ratio: **2.24**  
 Test Duration (mins:secs): **3:31**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **18.3**  
 UCS (MPa): **2.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



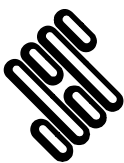
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/02/19 - 07:04 | AF3



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71906**      Sample Ref: **55**      Sample Type: **U**      Depth (m): **41.23**

Bulk Density (Mg/m<sup>3</sup>): **2.14**      Dry Density (Mg/m<sup>3</sup>): **1.82**      Moisture Content (%): **18**  
 Length (mm): **214.72**      Diameter (mm): **100.46**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **7:26**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **55.6**  
 UCS (MPa): **7.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

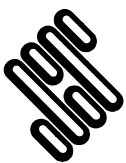


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71906**      Sample Ref: **59**      Sample Type: **U**      Depth (m): **44.00**

Bulk Density (Mg/m<sup>3</sup>): **2.20**      Dry Density (Mg/m<sup>3</sup>): **1.91**      Moisture Content (%): **15**  
 Length (mm): **214.05**      Diameter (mm): **98.49**      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **5:02**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **37.4**  
 UCS (MPa): **4.9**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



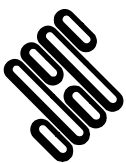
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:26 | AF3



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71906**      Sample Ref: **63**      Sample Type: **U**      Depth (m): **46.15**

Bulk Density (Mg/m<sup>3</sup>): **2.09**      Dry Density (Mg/m<sup>3</sup>): **1.72**      Moisture Content (%): **21**  
 Length (mm): **215.22**      Diameter (mm): **99.13**      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **4:27**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.3**  
 UCS (MPa): **2.6**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



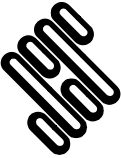

**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:26 | AF3

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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71906**      Sample Ref: **69**      Sample Type: **U**      Depth (m): **50.65**

Bulk Density (Mg/m<sup>3</sup>): **2.19**      Dry Density (Mg/m<sup>3</sup>): **1.89**      Moisture Content (%): **16**  
 Length (mm): **216.06**      Diameter (mm): **100.80**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **6:18**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **67.5**  
 UCS (MPa): **8.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

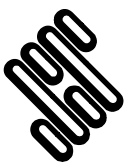


Front view (post-test)



Rear view (post-test)

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C  
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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **39**      Sample Type: **U**      Depth (m): **32.47**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.58**      Moisture Content (%): **26**  
 Length (mm): **214.37**      Diameter (mm): **98.92**      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **4:19**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **8.6**  
 UCS (MPa): **1.1**      Failure Type: **Axial cleavage**

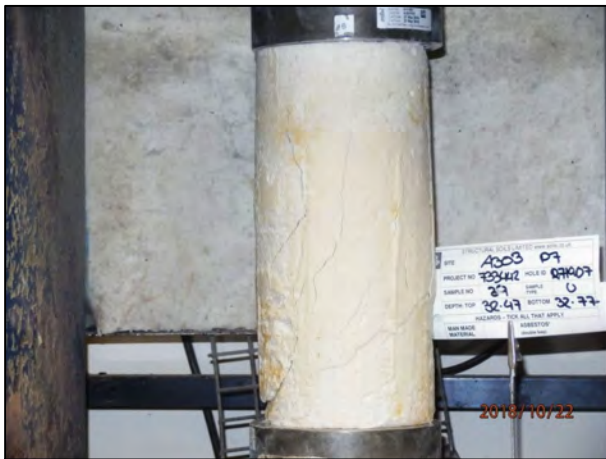
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_018 | Email: ask@soils.co.uk | 19/12/18 - 08:27 | AF3



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ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **48**      Sample Type: **U**      Depth (m): **39.48**

Bulk Density (Mg/m<sup>3</sup>): **2.00**      Dry Density (Mg/m<sup>3</sup>): **1.60**      Moisture Content (%): **25**  
 Length (mm): **214.24**      Diameter (mm): **96.94**      Length/Diameter Ratio: **2.21**  
 Test Duration (mins:secs): **4:54**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.0**  
 UCS (MPa): **2.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



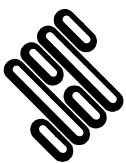
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_018 | Email: ask@soils.co.uk | 19/12/18 - 09:27 | AF3



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **50**      Sample Type: **U**      Depth (m): **41.00**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.65**      Moisture Content (%): **23**  
 Length (mm): **214.00**      Diameter (mm): **99.04**      Length/Diameter Ratio: **2.16**  
 Test Duration (mins:secs): **4:00**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **26.7**  
 UCS (MPa): **3.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



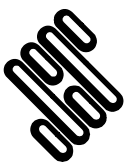
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 19/12/18 - 09:27 | AF3



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **60**      Sample Type: **U**      Depth (m): **47.35**

Bulk Density (Mg/m<sup>3</sup>): **2.04**      Dry Density (Mg/m<sup>3</sup>): **1.65**      Moisture Content (%): **24**  
 Length (mm): **212.81**      Diameter (mm): **99.14**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **4:08**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **16.2**  
 UCS (MPa): **2.1**      Failure Type: **Axial cleavage**

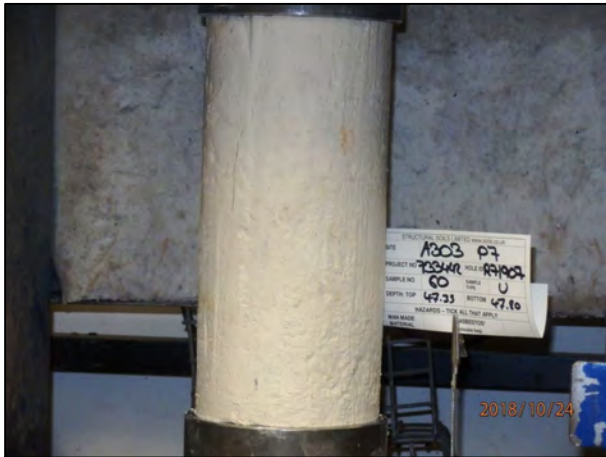
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **66**      Sample Type: **U**      Depth (m): **52.20**

Bulk Density (Mg/m<sup>3</sup>): **2.05**      Dry Density (Mg/m<sup>3</sup>): **1.70**      Moisture Content (%): **21**  
 Length (mm): **215.12**      Diameter (mm): **95.27**      Length/Diameter Ratio: **2.26**  
 Test Duration (mins:secs): **5:41**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **27.7**  
 UCS (MPa): **3.9**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

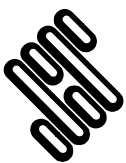


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **72**      Sample Type: **U**      Depth (m): **56.90**

Bulk Density (Mg/m<sup>3</sup>): **2.05**      Dry Density (Mg/m<sup>3</sup>): **1.68**      Moisture Content (%): **22**  
 Length (mm): **213.40**      Diameter (mm): **96.93**      Length/Diameter Ratio: **2.20**  
 Test Duration (mins:secs): **6:17**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **33.4**  
 UCS (MPa): **4.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



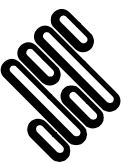
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core=Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/12/18 - 09:27 | AF3

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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **79**      Sample Type: **U**      Depth (m): **61.85**

Bulk Density (Mg/m<sup>3</sup>): **2.15**      Dry Density (Mg/m<sup>3</sup>): **1.84**      Moisture Content (%): **17**  
 Length (mm): **215.32**      Diameter (mm): **100.96**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **8:03**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **58.5**  
 UCS (MPa): **7.3**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



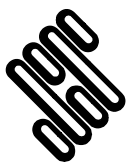
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - AS003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_018 | AF3 | Email: ask@soils.co.uk | 19/12/18 - 08:27



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **83**      Sample Type: **U**      Depth (m): **64.86**

Bulk Density (Mg/m<sup>3</sup>): **2.06**      Dry Density (Mg/m<sup>3</sup>): **1.70**      Moisture Content (%): **21**  
 Length (mm): **211.15**      Diameter (mm): **98.39**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **6:00**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **31.7**  
 UCS (MPa): **4.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

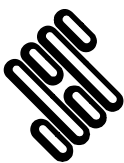


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **18**      Sample Type: **U**      Depth (m): **11.50**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.58**      Moisture Content (%): **26**  
 Length (mm): **212.51**      Diameter (mm): **100.53**      Length/Diameter Ratio: **2.11**  
 Test Duration (mins:secs): **3:31**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **22.5**  
 UCS (MPa): **0.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

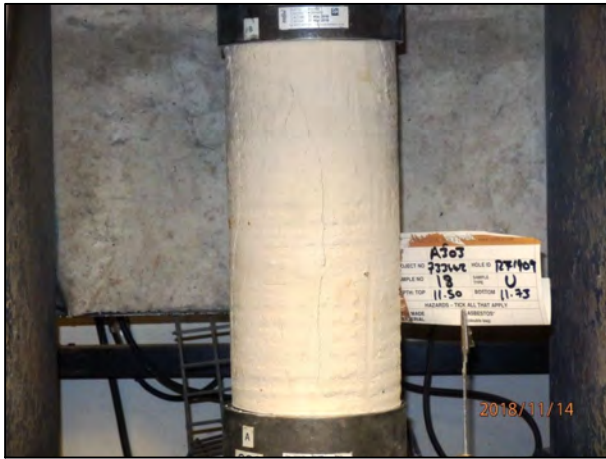
Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

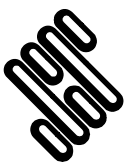


**Front view (post-test)**



**Rear view (post-test)**

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C  
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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **24**      Sample Type: **U**      Depth (m): **16.15**

Bulk Density (Mg/m<sup>3</sup>): **1.97**      Dry Density (Mg/m<sup>3</sup>): **1.54**      Moisture Content (%): **28**  
 Length (mm): **213.31**      Diameter (mm): **100.57**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **5:28**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **9.5**  
 UCS (MPa): **1.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



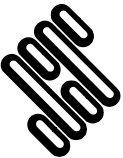


**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, | 19/12/18 - 09:27 | AF3

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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **34**      Sample Type: **U**      Depth (m): **24.50**

Bulk Density (Mg/m<sup>3</sup>): **1.95**      Dry Density (Mg/m<sup>3</sup>): **1.52**      Moisture Content (%): **28**  
 Length (mm): **214.77**      Diameter (mm): **100.98**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **3:28**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **17.8**  
 UCS (MPa): **2.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

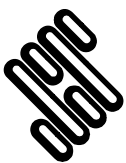


**Front view (post-test)**



**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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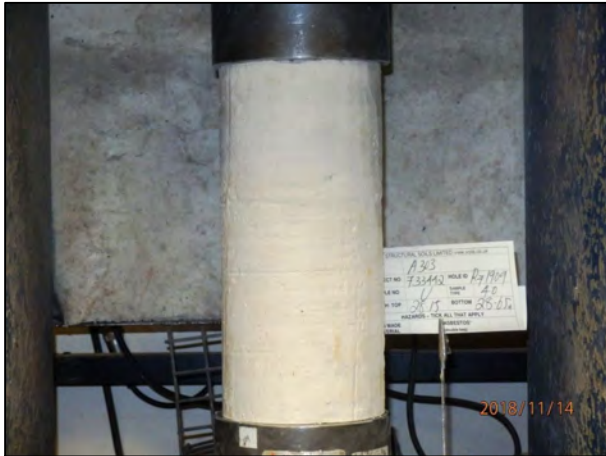
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **40**      Sample Type: **U**      Depth (m): **28.15**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.56**      Moisture Content (%): **27**  
 Length (mm): **214.29**      Diameter (mm): **100.44**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **4:05**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **23.8**  
 UCS (MPa): **3.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

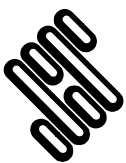


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **43**      Sample Type: **U**      Depth (m): **31.40**

Bulk Density (Mg/m<sup>3</sup>): **1.85**      Dry Density (Mg/m<sup>3</sup>): **1.44**      Moisture Content (%): **28**  
 Length (mm): **214.32**      Diameter (mm): **100.38**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **5:23**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **24.9**  
 UCS (MPa): **3.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

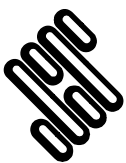


**Front view (post-test)**



**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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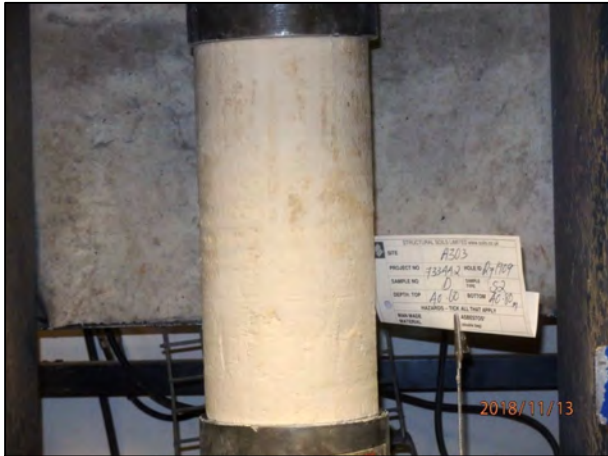
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **52**      Sample Type: **D**      Depth (m): **40.60**

Bulk Density (Mg/m<sup>3</sup>): **1.97**      Dry Density (Mg/m<sup>3</sup>): **1.55**      Moisture Content (%): **27**  
 Length (mm): **213.83**      Diameter (mm): **100.70**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **5:10**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **27.3**  
 UCS (MPa): **3.4**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

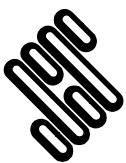


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **62**      Sample Type: **U**      Depth (m): **48.50**

Bulk Density (Mg/m<sup>3</sup>): **1.97**      Dry Density (Mg/m<sup>3</sup>): **1.55**      Moisture Content (%): **27**  
 Length (mm): **214.49**      Diameter (mm): **101.06**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **3:18**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **18.7**  
 UCS (MPa): **2.3**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

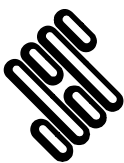


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **71**      Sample Type: **U**      Depth (m): **55.60**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.58**      Moisture Content (%): **25**  
 Length (mm): **214.24**      Diameter (mm): **101.21**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **5:00**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **37.0**  
 UCS (MPa): **4.6**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



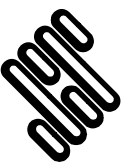

**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - AS003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 19/12/18 - 09:28 | AF3

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
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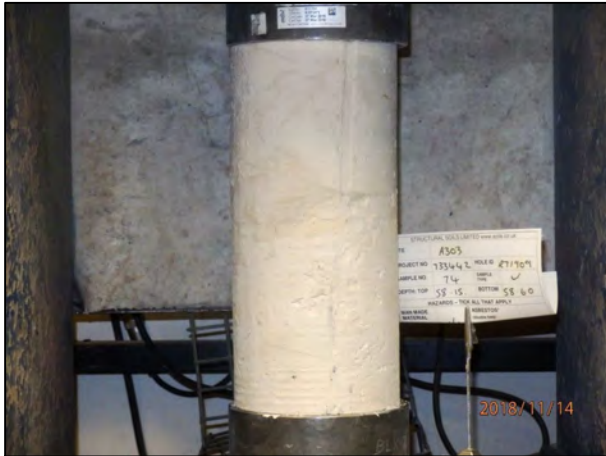
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **74**      Sample Type: **U**      Depth (m): **58.15**

Bulk Density (Mg/m<sup>3</sup>): **2.02**      Dry Density (Mg/m<sup>3</sup>): **1.64**      Moisture Content (%): **23**  
 Length (mm): **215.45**      Diameter (mm): **101.07**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **4:27**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **28.2**  
 UCS (MPa): **3.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

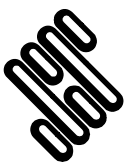


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **78**      Sample Type: **U**      Depth (m): **61.10**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.66**      Moisture Content (%): **22**  
 Length (mm): **214.16**      Diameter (mm): **100.91**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **4:34**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **36.3**  
 UCS (MPa): **4.5**      Failure Type: **Axial cleavage**

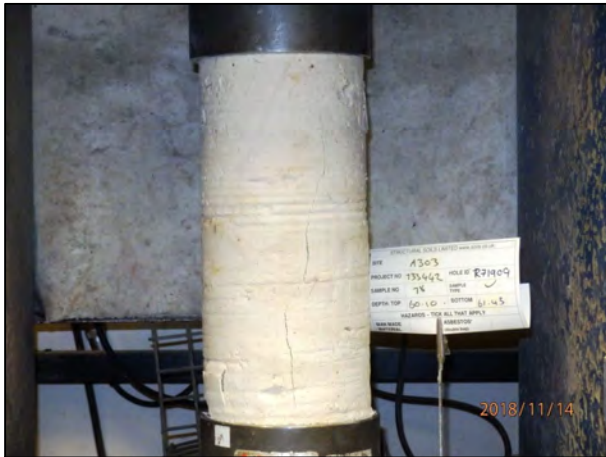
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

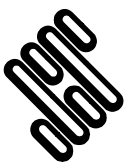


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **82**      Sample Type: **U**      Depth (m): **64.25**

Bulk Density (Mg/m<sup>3</sup>): **2.01**      Dry Density (Mg/m<sup>3</sup>): **1.62**      Moisture Content (%): **24**  
 Length (mm): **214.14**      Diameter (mm): **100.24**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **4:47**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **36.1**  
 UCS (MPa): **4.6**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

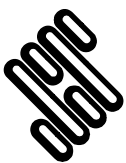


**Front view (post-test)**



**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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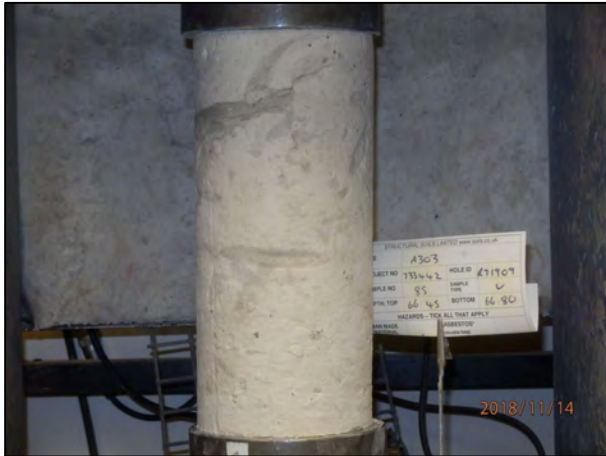
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **85**      Sample Type: **U**      Depth (m): **66.45**

Bulk Density (Mg/m<sup>3</sup>): **2.13**      Dry Density (Mg/m<sup>3</sup>): **1.80**      Moisture Content (%): **18**  
 Length (mm): **214.51**      Diameter (mm): **98.03**      Length/Diameter Ratio: **2.19**  
 Test Duration (mins:secs): **5:44**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **46.3**  
 UCS (MPa): **6.1**      Failure Type: **Axial cleavage**

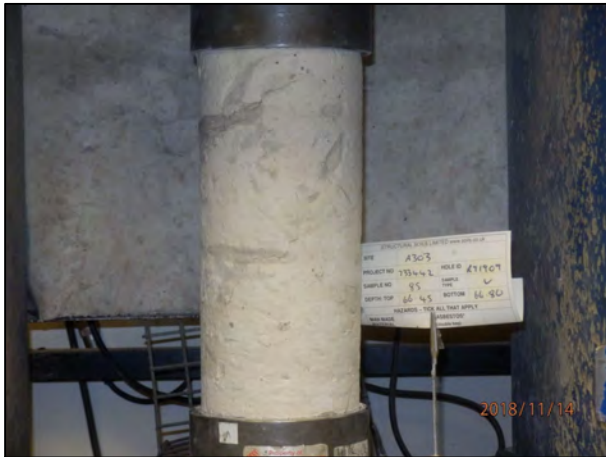
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



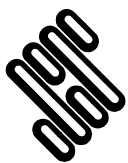
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:28 | AF3



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **15**      Sample Type: **U**      Depth (m): **10.70**

Bulk Density (Mg/m<sup>3</sup>): **1.95**      Dry Density (Mg/m<sup>3</sup>): **1.51**      Moisture Content (%): **29**  
 Length (mm): **214.29**      Diameter (mm): **99.99**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **3:27**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.9**  
 UCS (MPa): **2.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



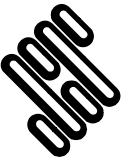


**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, | 19/12/18 - 09:29 | AF3

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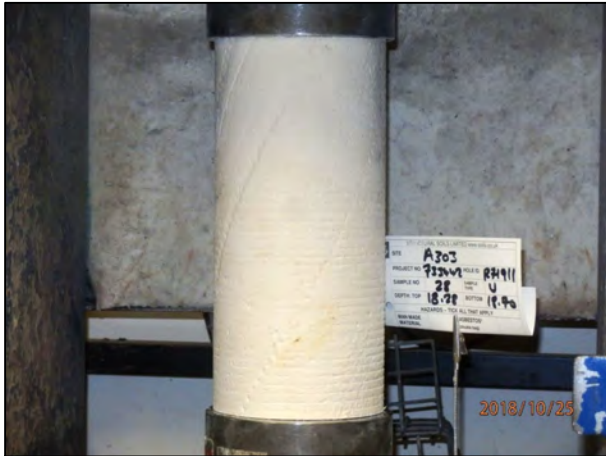
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**                      Sample Ref: **28**                      Sample Type: **U**                      Depth (m): **18.28**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.96</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.53</b>	Moisture Content (%): <b>28</b>
Length (mm): <b>215.34</b>	Diameter (mm): <b>100.07</b>	Length/Diameter Ratio: <b>2.15</b>
Test Duration (mins:secs): <b>2:44</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>25.8</b>
UCS (MPa): <b>3.3</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

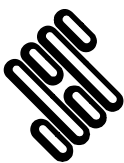


Front view (post-test)



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
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>

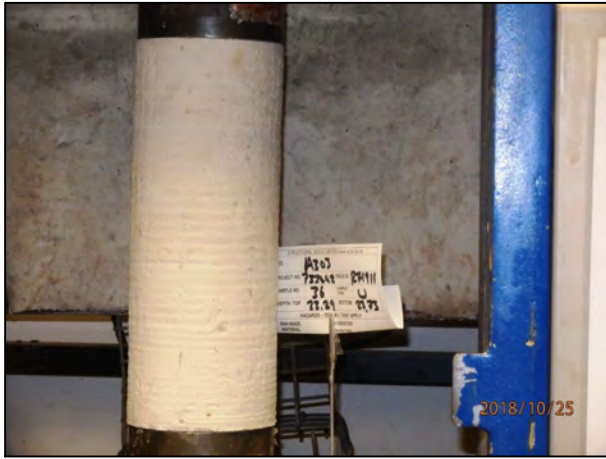
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **36**      Sample Type: **U**      Depth (m): **23.29**

Bulk Density (Mg/m<sup>3</sup>): **1.92**      Dry Density (Mg/m<sup>3</sup>): **1.48**      Moisture Content (%): **30**  
 Length (mm): **234.80**      Diameter (mm): **92.93**      Length/Diameter Ratio: **2.53**  
 Test Duration (mins:secs): **3:23**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.0**  
 UCS (MPa): **2.9**      Failure Type: **Axial cleavage**

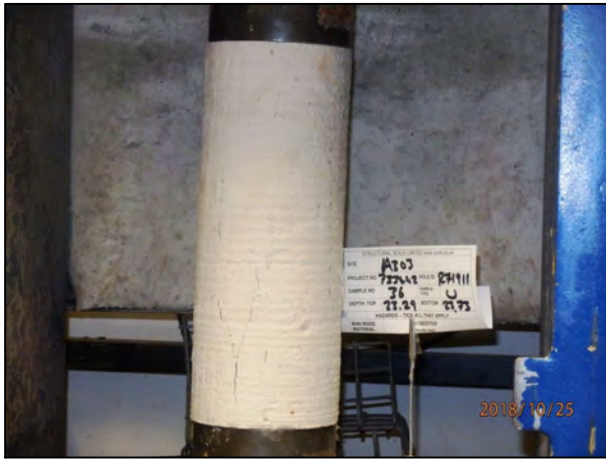
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



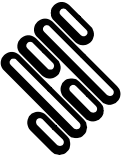
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, | 19/12/18 - 09:29 | AF3

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	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>



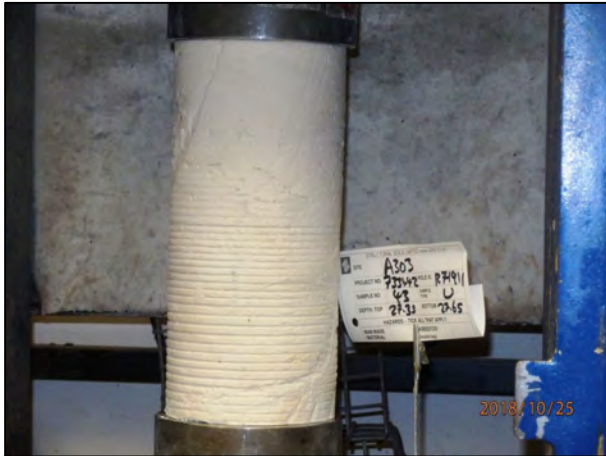
# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **43**      Sample Type: **U**      Depth (m): **27.35**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **26**  
 Length (mm): **214.94**      Diameter (mm): **99.92**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **4:17**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **26.1**  
 UCS (MPa): **3.3**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



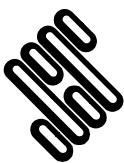
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core=Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/12/18 - 09:29 | AF3



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **47**      Sample Type: **U**      Depth (m): **30.05**

Bulk Density (Mg/m<sup>3</sup>): **1.97**      Dry Density (Mg/m<sup>3</sup>): **1.55**      Moisture Content (%): **27**  
 Length (mm): **214.78**      Diameter (mm): **99.49**      Length/Diameter Ratio: **2.16**  
 Test Duration (mins:secs): **4:08**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.8**  
 UCS (MPa): **2.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

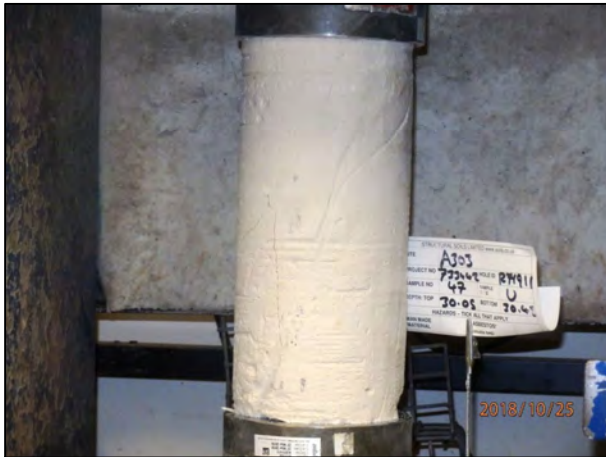
Remarks: **Non-standard test**



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **53**      Sample Type: **U**      Depth (m): **33.20**

Bulk Density (Mg/m<sup>3</sup>): **1.95**      Dry Density (Mg/m<sup>3</sup>): **1.51**      Moisture Content (%): **29**  
 Length (mm): **214.63**      Diameter (mm): **100.11**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **5:03**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.9**  
 UCS (MPa): **2.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



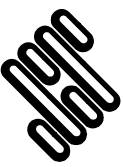

Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS STRESS CONTROL - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/12/18 - 09:29 | AF3

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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **82**      Sample Type: **U**      Depth (m): **51.10**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.56**      Moisture Content (%): **27**  
 Length (mm): **214.89**      Diameter (mm): **100.14**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **4.25**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **24.9**  
 UCS (MPa): **3.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

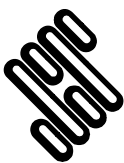


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **93**      Sample Type: **U**      Depth (m): **58.60**

Bulk Density (Mg/m<sup>3</sup>): **2.00**      Dry Density (Mg/m<sup>3</sup>): **1.60**      Moisture Content (%): **25**  
 Length (mm): **214.64**      Diameter (mm): **100.23**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **4:31**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **25.6**  
 UCS (MPa): **3.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

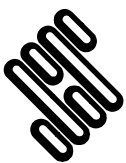


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**                      Sample Ref: **103**                      Sample Type: **U**                      Depth (m): **64.95**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.06</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.69</b>	Moisture Content (%): <b>22</b>
Length (mm): <b>213.91</b>	Diameter (mm): <b>100.02</b>	Length/Diameter Ratio: <b>2.14</b>
Test Duration (mins:secs): <b>5:20</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>41.6</b>
UCS (MPa): <b>5.3</b>	Failure Type: <b>Axial cleavage</b>	

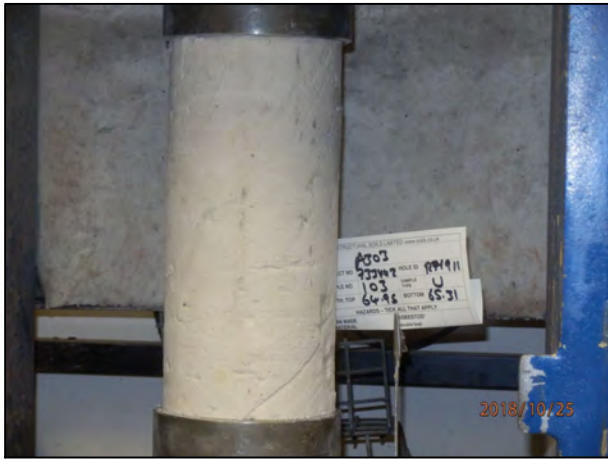
**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

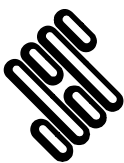


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **106**      Sample Type: **U**      Depth (m): **66.00**

Bulk Density (Mg/m<sup>3</sup>): **2.01**      Dry Density (Mg/m<sup>3</sup>): **1.62**      Moisture Content (%): **24**  
 Length (mm): **215.24**      Diameter (mm): **100.45**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **4:33**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **40.7**  
 UCS (MPa): **5.1**      Failure Type: **Axial cleavage**

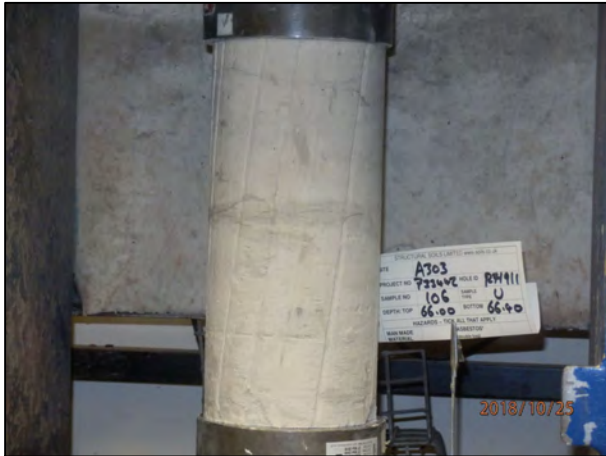
Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

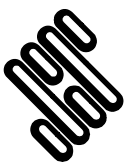


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71913**      Sample Ref: **20**      Sample Type: **U**      Depth (m): **11.62**

Bulk Density (Mg/m<sup>3</sup>): **1.93**      Dry Density (Mg/m<sup>3</sup>): **1.48**      Moisture Content (%): **30**  
 Length (mm): **212.61**      Diameter (mm): **100.50**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **3:58**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.2**  
 UCS (MPa): **2.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



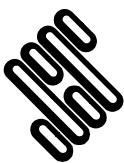
**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71913**      Sample Ref: **26**      Sample Type: **U**      Depth (m): **16.18**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.65**      Moisture Content (%): **23**  
 Length (mm): **215.11**      Diameter (mm): **101.07**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **5:13**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **35.1**  
 UCS (MPa): **4.4**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



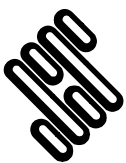
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4P1733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:30 | AF3



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71913**      Sample Ref: **54**      Sample Type: **U**      Depth (m): **34.10**

Bulk Density (Mg/m<sup>3</sup>): **2.01**      Dry Density (Mg/m<sup>3</sup>): **1.61**      Moisture Content (%): **25**  
 Length (mm): **213.68**      Diameter (mm): **100.90**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **4:12**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **31.6**  
 UCS (MPa): **4.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

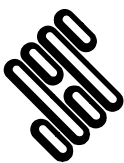


**Front view (post-test)**



**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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Compiled By		Date
[REDACTED]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71913**      Sample Ref: **63**      Sample Type: **U**      Depth (m): **39.61**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **26**  
 Length (mm): **213.13**      Diameter (mm): **100.72**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **06:47**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **18.9**  
 UCS (MPa): **2.4**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

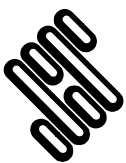


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71913**      Sample Ref: **72**      Sample Type: **U**      Depth (m): **44.81**

Bulk Density (Mg/m<sup>3</sup>): **2.00**      Dry Density (Mg/m<sup>3</sup>): **1.61**      Moisture Content (%): **24**  
 Length (mm): **214.40**      Diameter (mm): **101.08**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **4:23**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **25.2**  
 UCS (MPa): **3.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

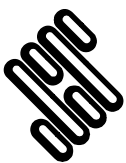


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71913**      Sample Ref: **78**      Sample Type: **U**      Depth (m): **49.00**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.59**      Moisture Content (%): **25**  
 Length (mm): **212.26**      Diameter (mm): **101.23**      Length/Diameter Ratio: **2.10**  
 Test Duration (mins:secs): **5:12**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **33.5**  
 UCS (MPa): **4.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recorded.**  
 Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

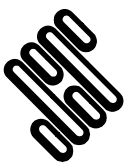


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72002**      Sample Ref: **45**      Sample Type: **U**      Depth (m): **34.20**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **26**  
 Length (mm): **213.89**      Diameter (mm): **100.49**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **4:54**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **22.8**  
 UCS (MPa): **2.9**      Failure Type: **Axial cleavage**

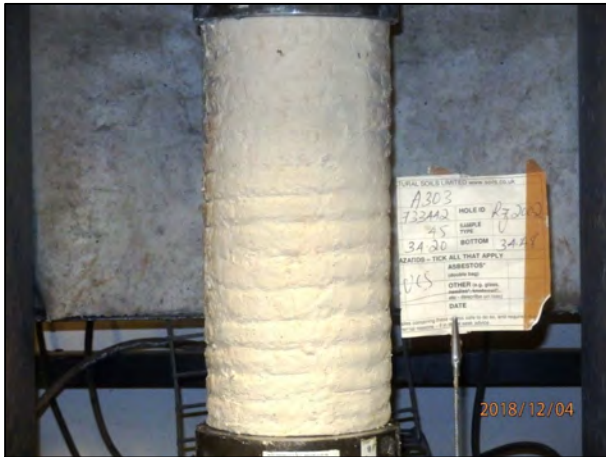
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

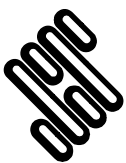


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72002**      Sample Ref: **48**      Sample Type: **U**      Depth (m): **36.45**

Bulk Density (Mg/m<sup>3</sup>): **1.97**      Dry Density (Mg/m<sup>3</sup>): **1.52**      Moisture Content (%): **29**  
 Length (mm): **215.08**      Diameter (mm): **98.94**      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **3:39**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.0**  
 UCS (MPa): **2.6**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

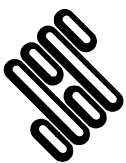


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72002**      Sample Ref: **59**      Sample Type: **U**      Depth (m): **44.98**

Bulk Density (Mg/m<sup>3</sup>): **2.02**      Dry Density (Mg/m<sup>3</sup>): **1.63**      Moisture Content (%): **24**  
 Length (mm): **215.01**      Diameter (mm): **100.83**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **3:40**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **28.7**  
 UCS (MPa): **3.6**      Failure Type: **Axial cleavage**

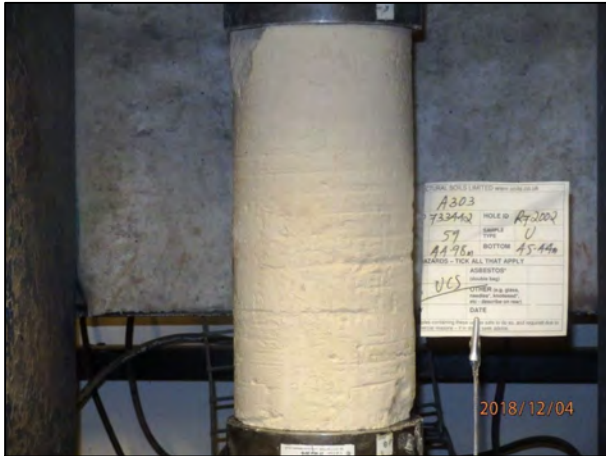
Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

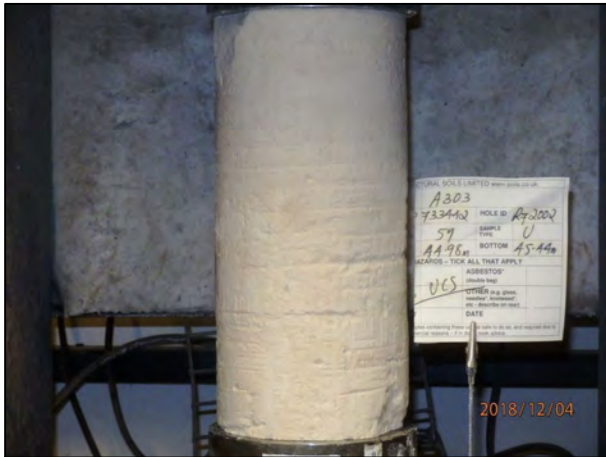
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

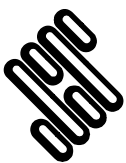


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72002**      Sample Ref: **77**      Sample Type: **U**      Depth (m): **58.35**

Bulk Density (Mg/m<sup>3</sup>): **2.10**      Dry Density (Mg/m<sup>3</sup>): **1.75**      Moisture Content (%): **20**  
 Length (mm): **215.22**      Diameter (mm): **100.60**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **4:58**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **43.3**  
 UCS (MPa): **5.4**      Failure Type: **Axial cleavage**

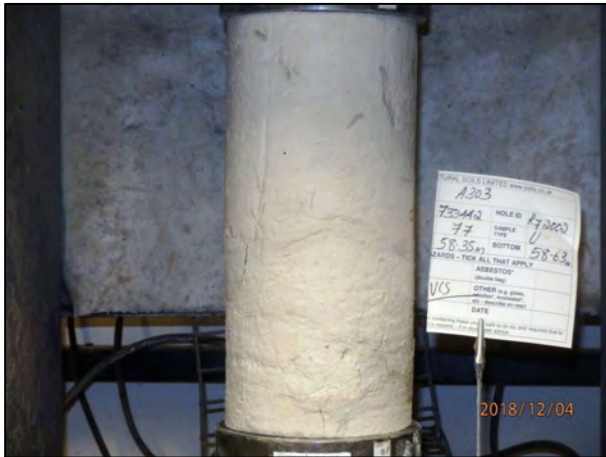
Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

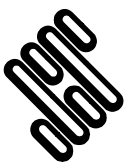


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72002**      Sample Ref: **80**      Sample Type: **U**      Depth (m): **60.45**

Bulk Density (Mg/m<sup>3</sup>): **2.12**      Dry Density (Mg/m<sup>3</sup>): **1.78**      Moisture Content (%): **19**  
 Length (mm): **213.54**      Diameter (mm): **101.11**      Length/Diameter Ratio: **2.11**  
 Test Duration (mins:secs): **3:44**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **24.4**  
 UCS (MPa): **3.0**      Failure Type: **Shear**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



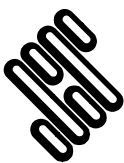
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS STRESS CONTROL - A4PI 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_018 | AF3 | Email: ask@soils.co.uk | 19/12/18 - 08:31



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# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72003**      Sample Ref: **25**      Sample Type: **U**      Depth (m): **19.03**

Bulk Density (Mg/m<sup>3</sup>): **2.02**      Dry Density (Mg/m<sup>3</sup>): **1.61**      Moisture Content (%): **25**  
 Length (mm): **215.06**      Diameter (mm): **99.73**      Length/Diameter Ratio: **2.16**  
 Test Duration (mins:secs): **3:45**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **25.3**  
 UCS (MPa): **3.2**      Failure Type: **Axial cleavage**

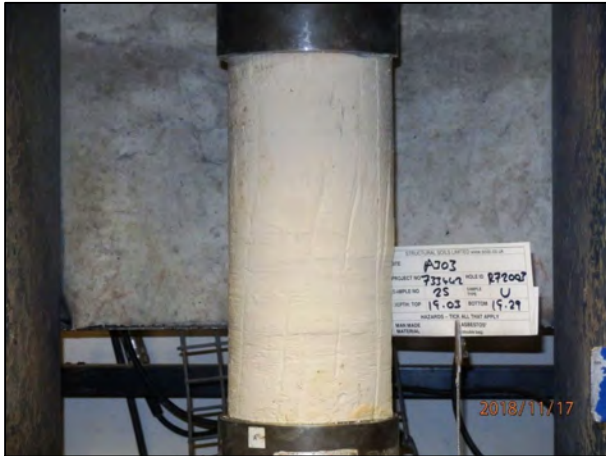
Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

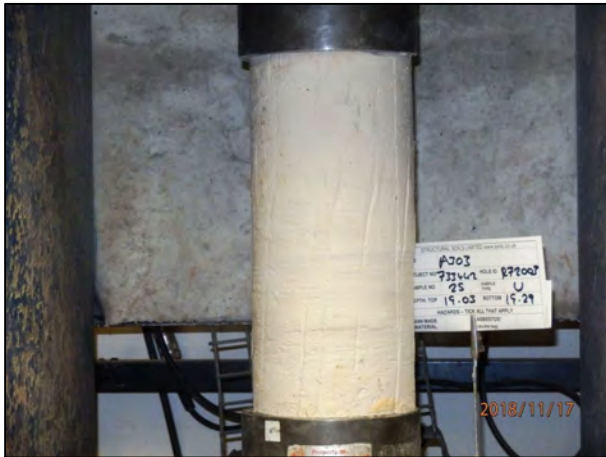
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

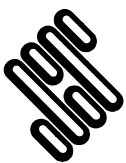


Front view (post-test)



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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72003**      Sample Ref: **34**      Sample Type: **U**      Depth (m): **26.47**

Bulk Density (Mg/m<sup>3</sup>): **1.97**      Dry Density (Mg/m<sup>3</sup>): **1.55**      Moisture Content (%): **27**  
 Length (mm): **210.27**      Diameter (mm): **99.44**      Length/Diameter Ratio: **2.11**  
 Test Duration (mins:secs): **4:31**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **23.3**  
 UCS (MPa): **3.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

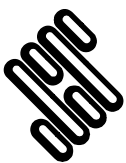


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72003**      Sample Ref: **46**      Sample Type: **U**      Depth (m): **36.45**

Bulk Density (Mg/m<sup>3</sup>): **1.95**      Dry Density (Mg/m<sup>3</sup>): **1.54**      Moisture Content (%): **27**  
 Length (mm): **213.61**      Diameter (mm): **99.49**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **3:37**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **21.7**  
 UCS (MPa): **2.8**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

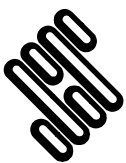


**Front view (post-test)**



**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

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72003**      Sample Ref: **55**      Sample Type: **U**      Depth (m): **44.65**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.65**      Moisture Content (%): **23**  
 Length (mm): **204.55**      Diameter (mm): **99.89**      Length/Diameter Ratio: **2.05**  
 Test Duration (mins:secs): **5:36**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **28.7**  
 UCS (MPa): **3.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

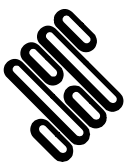


Front view (post-test)



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

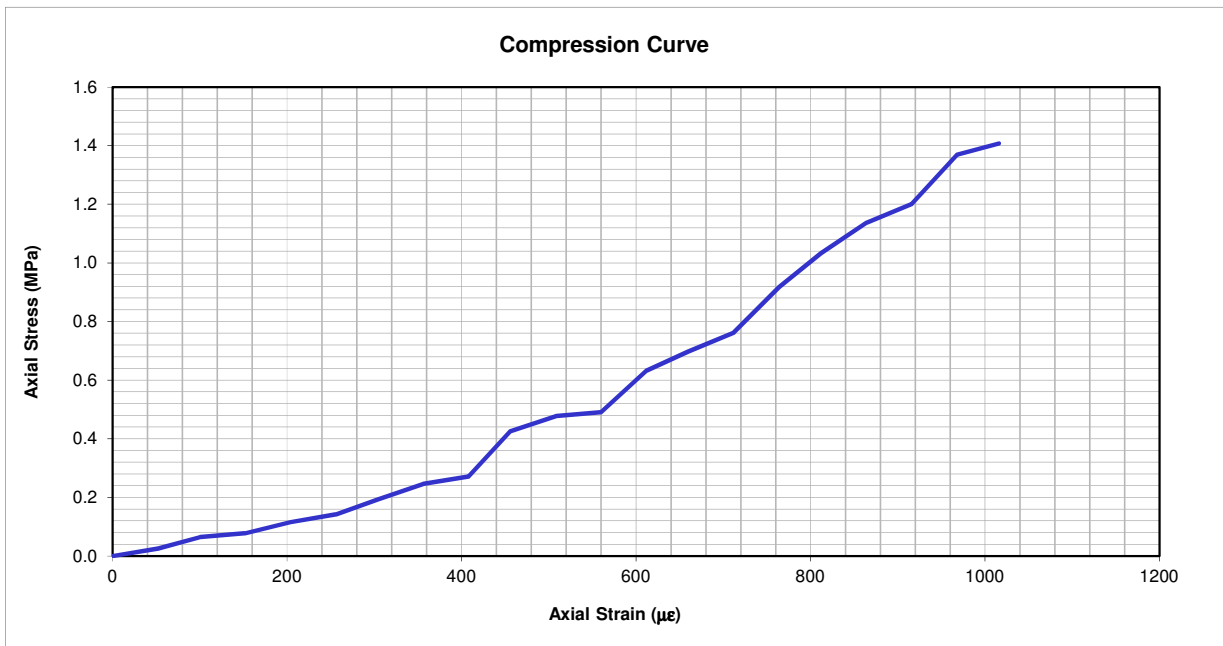
Test Date 03/07/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>77.41 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>215.55 mm</u>
BH No	<u>BHR602</u>	Max. strength	<u>1.41 MPa</u>
Specimen Depth	<u>15.80 - 16.10m</u>	E <sub>tan</sub> (*)	<u>1.35 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>1.06 GPa</u>

(\*) Calculated for axial  $\sigma = 0.70$  MPa  
 (^) Calculated for axial  $\sigma = 0.70$  MPa  
*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



## Graph 2

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

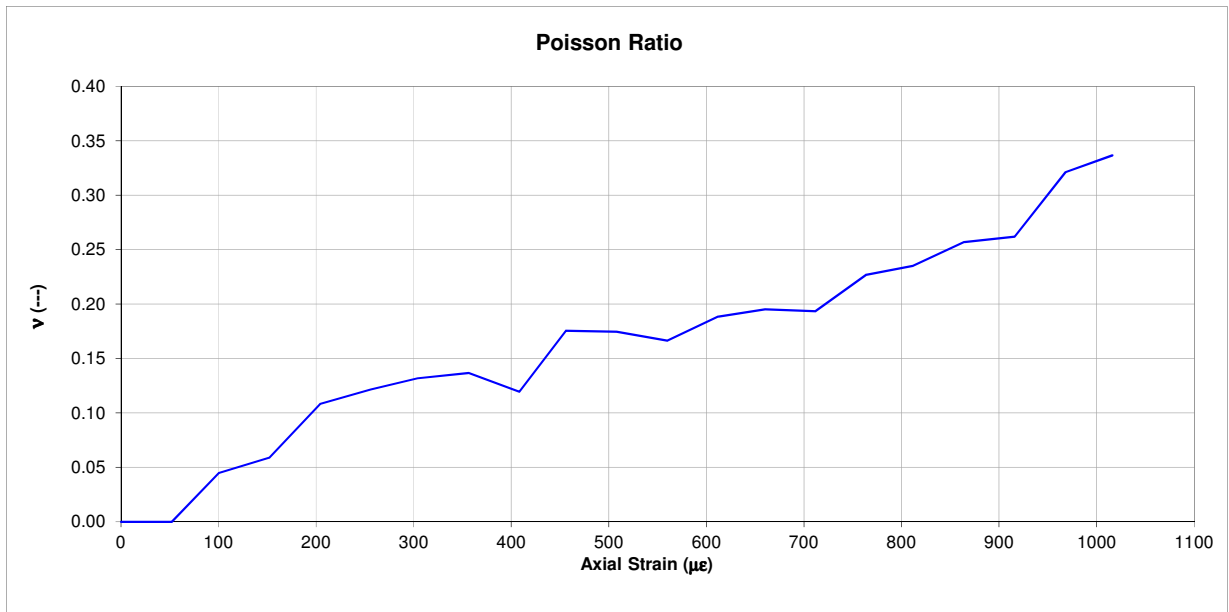
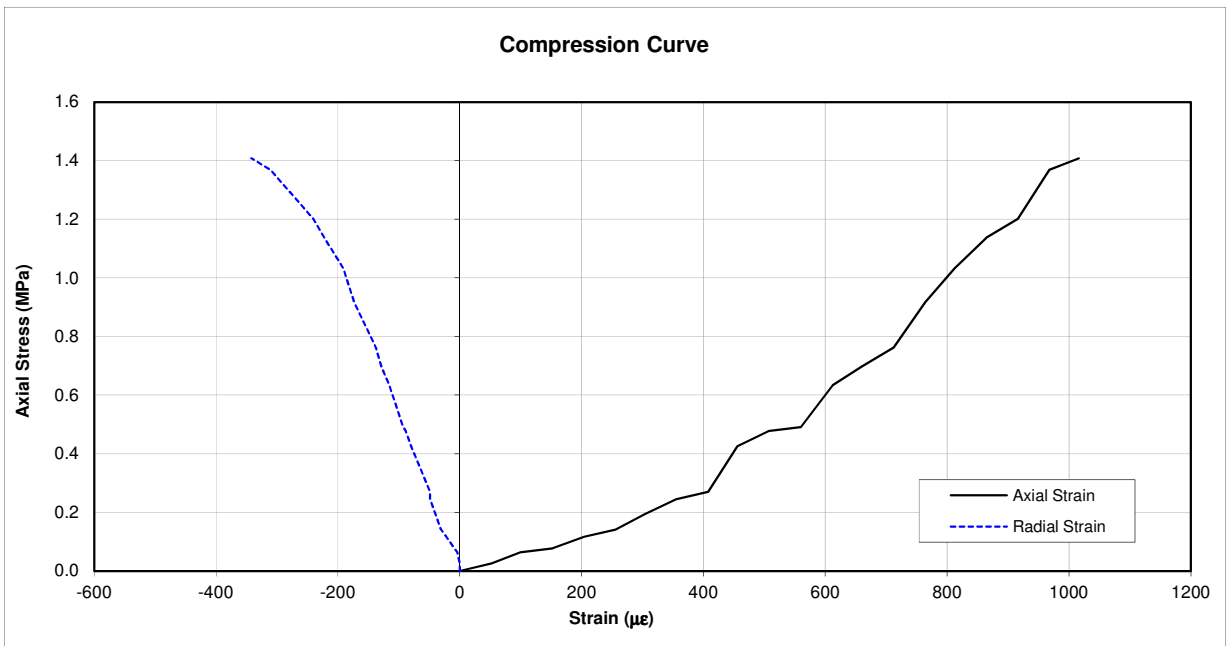
Test Date 03/07/2018

### UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	733442	Cross section	77.41 cm <sup>2</sup>
Site		Height	215.55 mm
BH No	BHR602	Max. strength	1.41 MPa
Specimen Depth	15.80 - 16.10m	Poisson at failure	0.337
Specimen Type	C	Poisson (*)	0.195
(*) Calculated for axial $\sigma =$ <u>0.70 MPa</u>			

NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen







# Graph1


**STRUCTURAL SOILS**  
 1A Princess Street  
 Bristol BS3 4AG

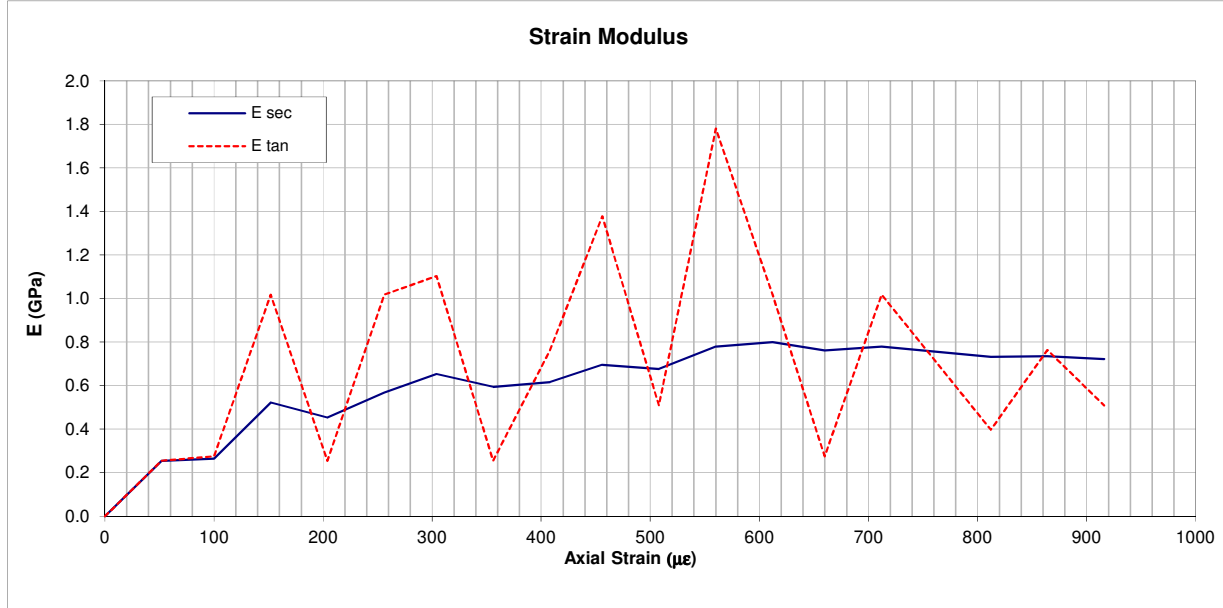
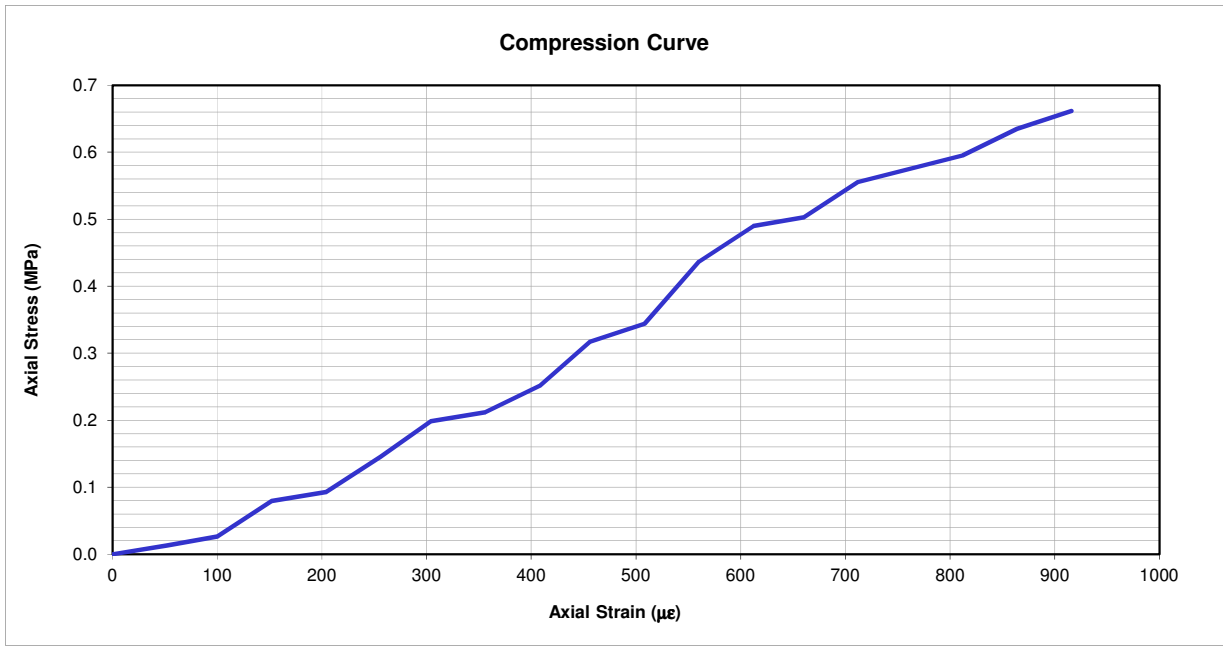
Test Date 03/07/2018

## UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>75.57 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>213.81 mm</u>
BH No	<u>BHR602</u>	Max. strength	<u>0.66 MPa</u>
Specimen Depth	<u>23.80 - 24.10m</u>	E <sub>tan</sub> (*)	<u>1.38 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>0.70 GPa</u>

(\*) Calculated for axial  $\sigma = 0.33$  Mpa  
 (^) Calculated for axial  $\sigma = 0.33$  MPa  
*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



Graph 2

**STRUCTURAL SOILS**  
 1A Princess Street  
 Bristol BS3 4AG

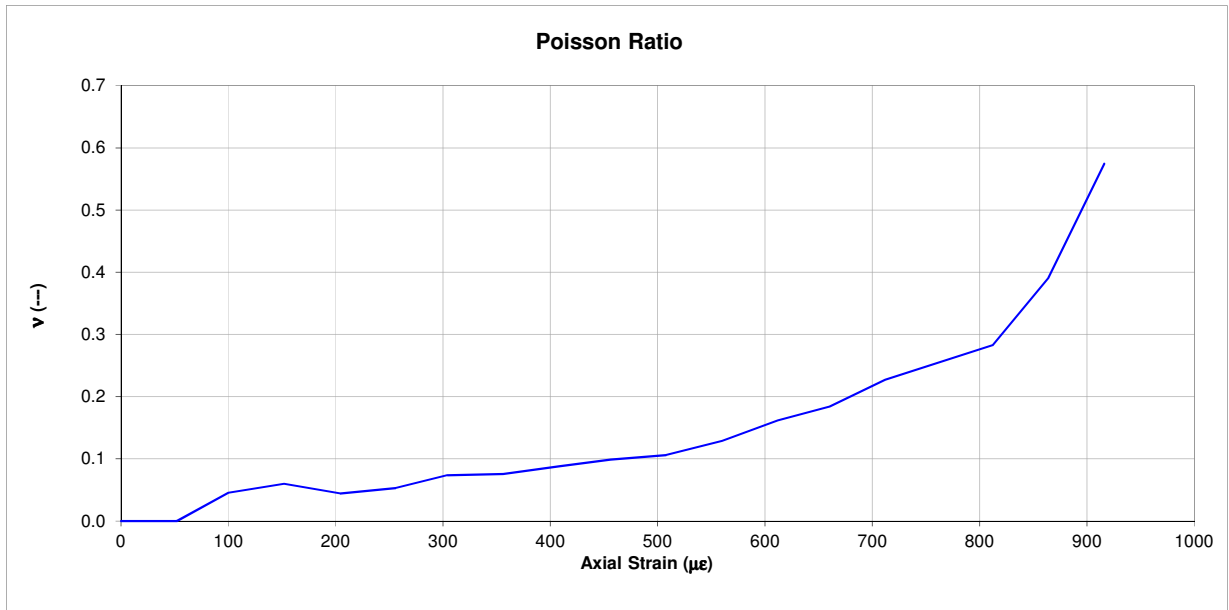
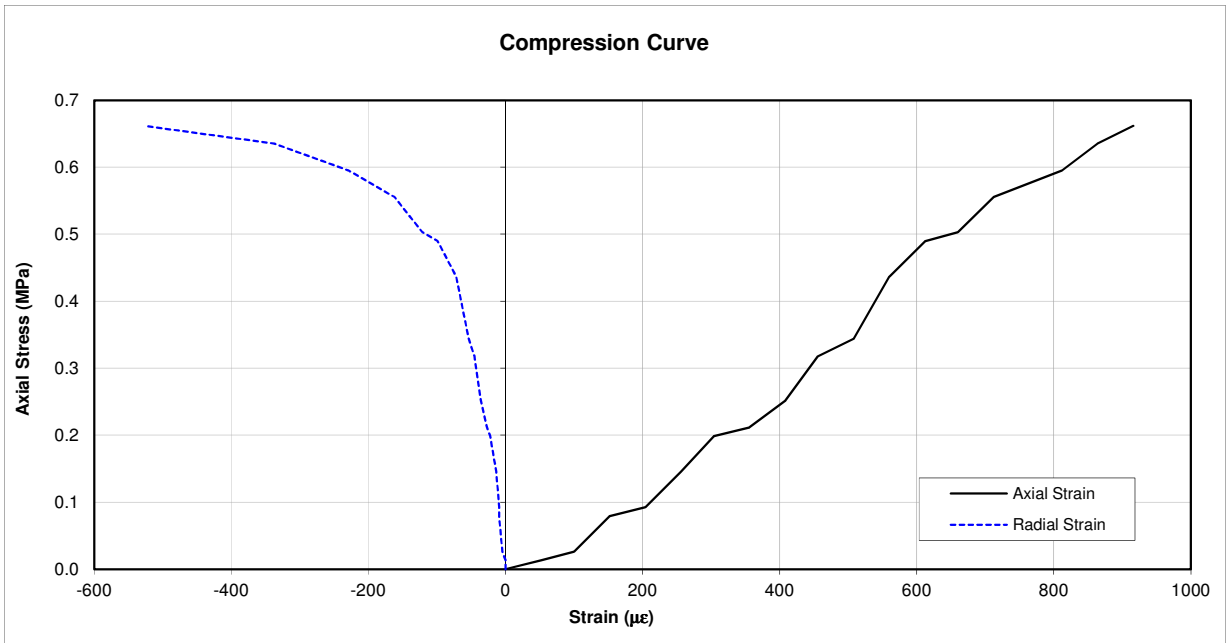
Test Date 03/07/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>75.57 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>213.81 mm</u>
BH No	<u>BHR602</u>	Max. strength	<u>0.66 MPa</u>
Specimen Depth	<u>23.80 - 24.10m</u>	Poisson at failure	<u>0.575</u>
Specimen Type	<u>C</u>	Poisson (*)	<u>0.099</u>
(*) Calculated for axial $\sigma =$ <u>0.33 Mpa</u>			

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





**STRUCTURAL SOILS**  
 1A Princess Street  
 Bristol BS3 4AG

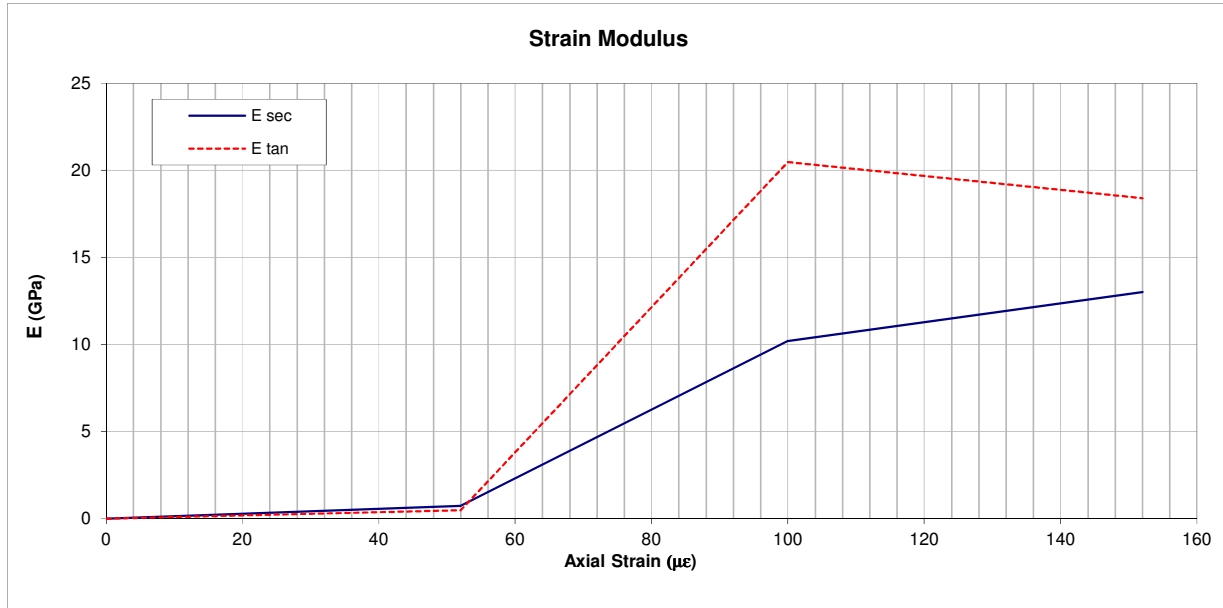
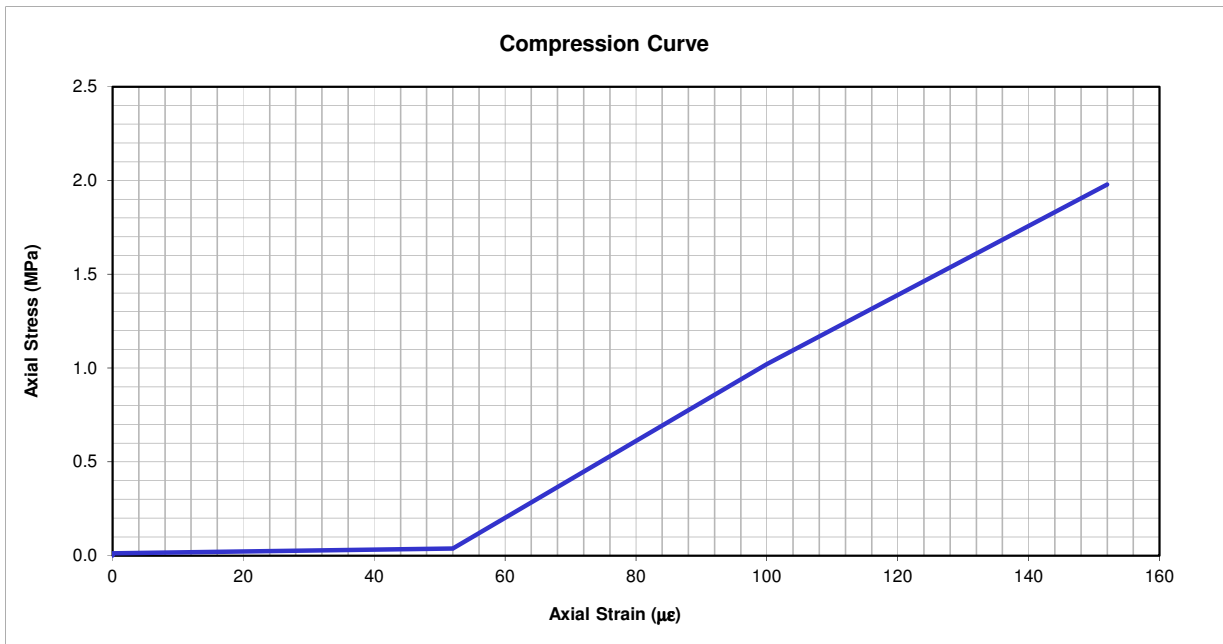
Test Date 16/07/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>78.34 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>214.21 mm</u>
BH No	<u>BHR606</u>	Max. strength	<u>1.98 MPa</u>
Specimen Depth	<u>15.90 - 16.20m</u>	E <sub>tan</sub> (*)	<u>0.49 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>0.74 GPa</u>

(\*) Calculated for axial  $\sigma = 0.99$  MPa  
 (^) Calculated for axial  $\sigma = 0.99$  MPa  
*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



## Graph 2

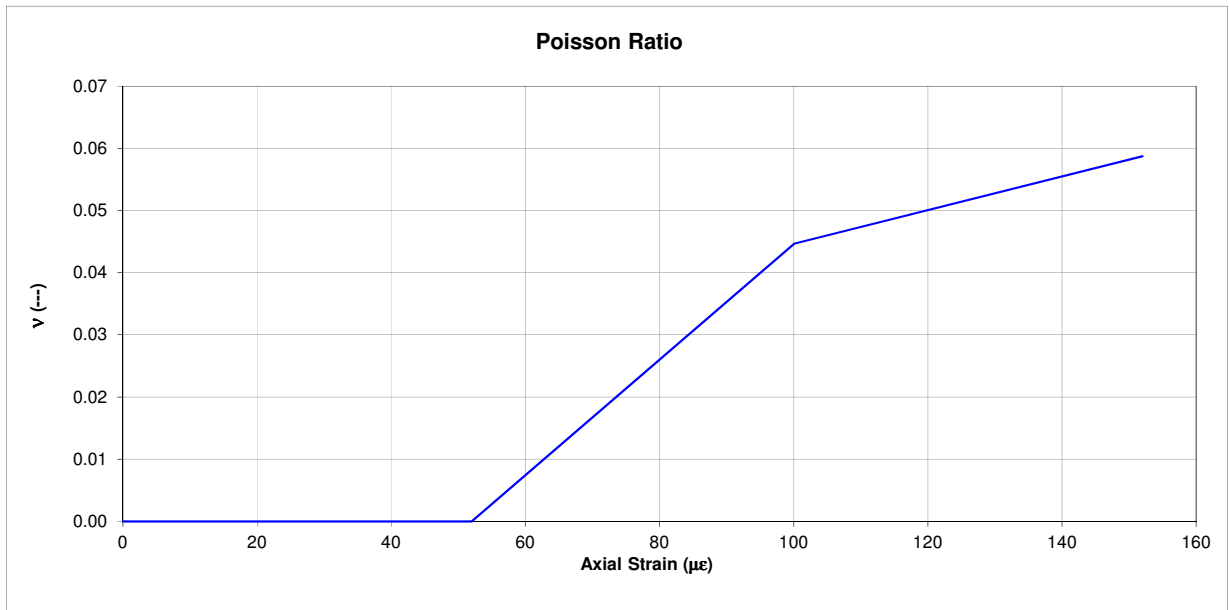
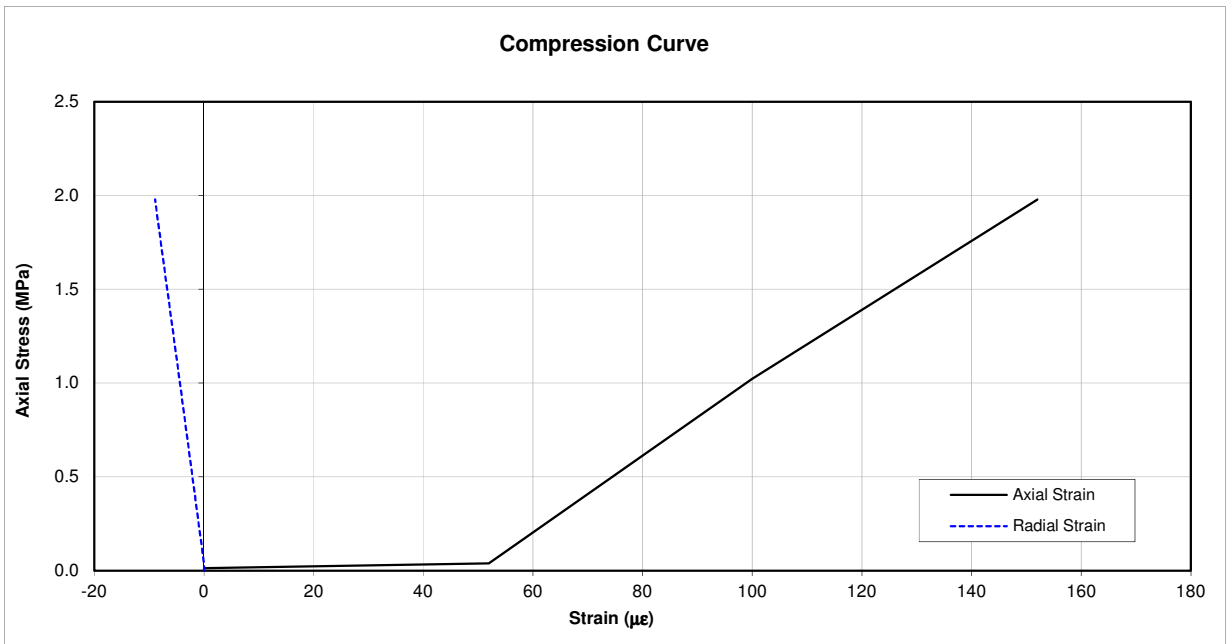
	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 16/07/2018

### UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	733442	Cross section	78.34 cm <sup>2</sup>
Site		Height	214.21 mm
BH No	BHR606	Max. strength	1.98 MPa
Specimen Depth	15.90 - 16.20m	Poisson at failure	0.059
Specimen Type	C	Poisson (*)	NA
(*) Calculated for axial $\sigma =$ <u>0.99 MPa</u>		<i>NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen</i>	





# Graph1

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 16/07/2018

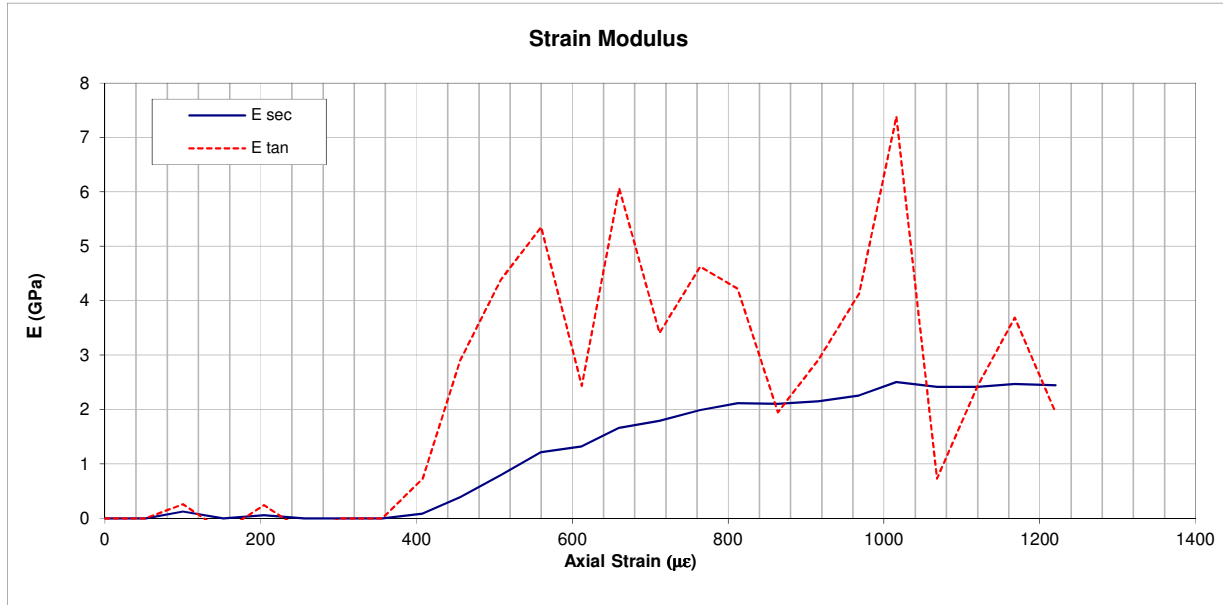
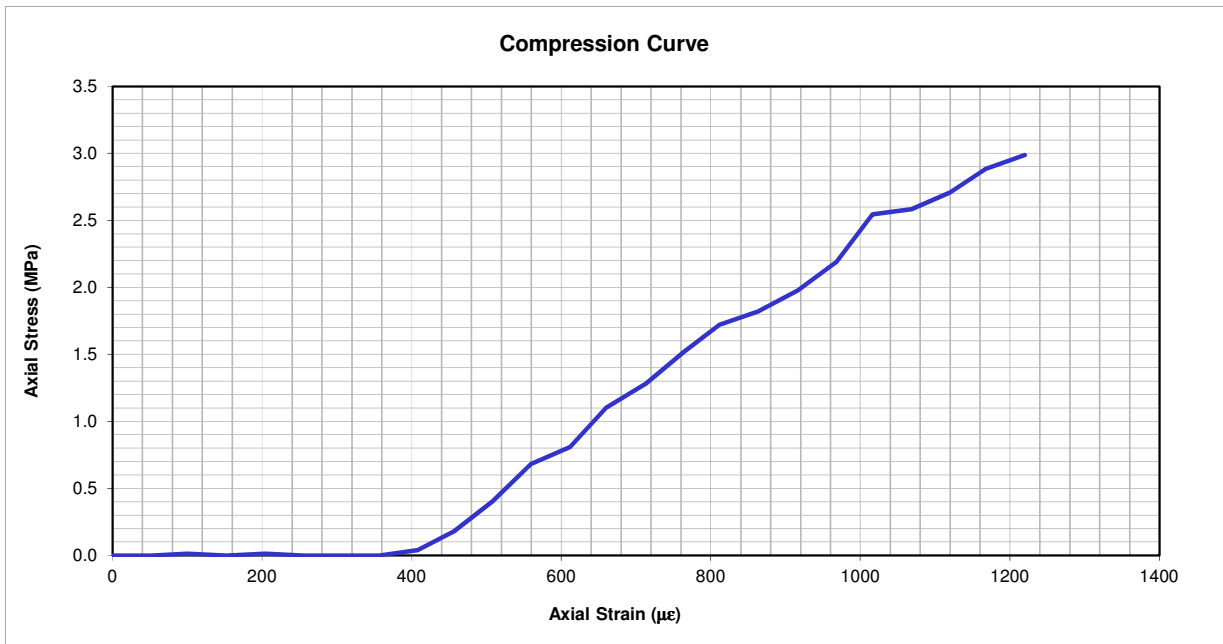
## UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>78.98 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>215.21 mm</u>
BH No	<u>BHR606</u>	Max. strength	<u>2.99 MPa</u>
Specimen Depth	<u>28.95 - 29.36m</u>	E <sub>tan</sub> (*)	<u>3.41 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>1.80 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.49 Mpa NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen

(^) Calculated for axial  $\sigma =$  1.49 MPa





Graph 2

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

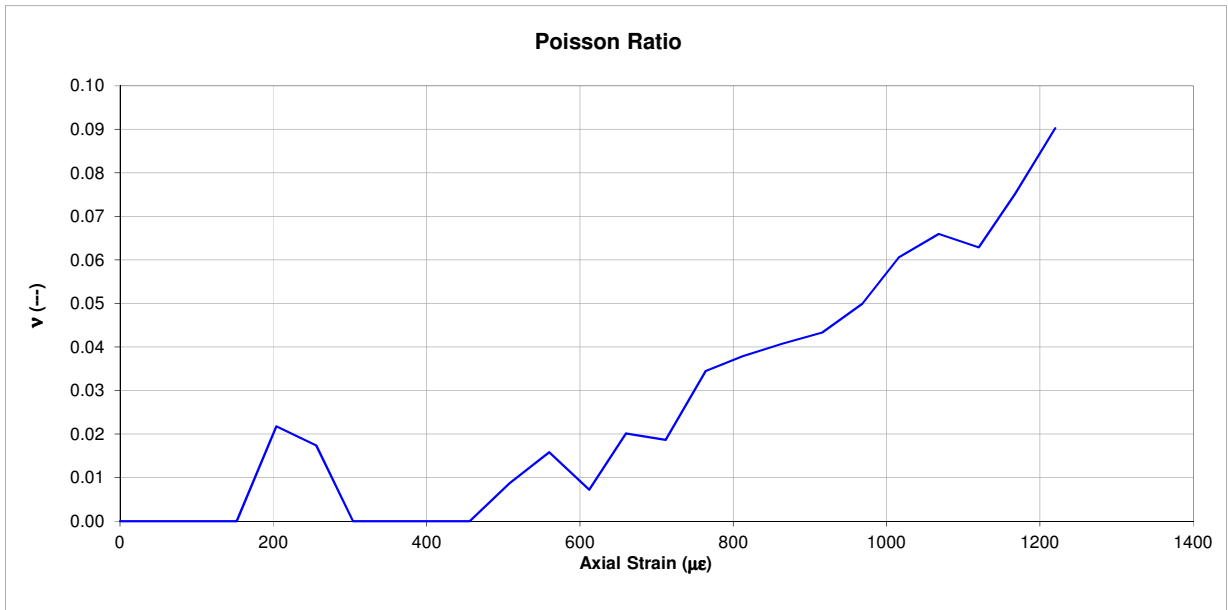
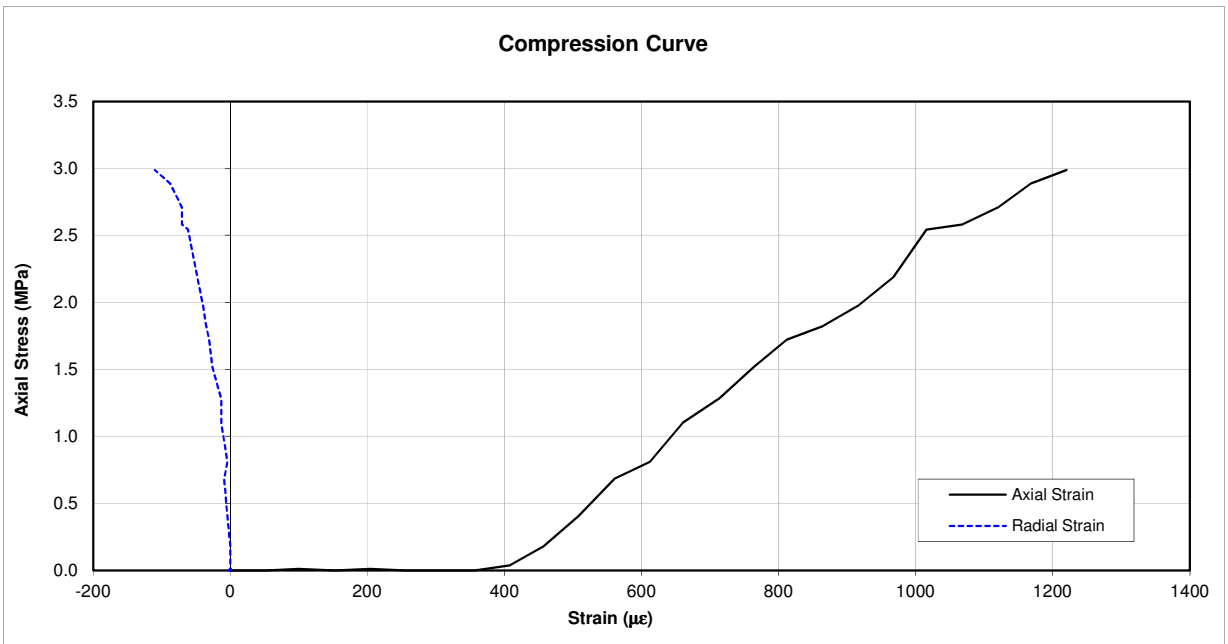
Test Date 16/07/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>78.98 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>215.21 mm</u>
BH No	<u>BHR606</u>	Max. strength	<u>2.99 MPa</u>
Specimen Depth	<u>28.95 - 29.36m</u>	Poisson at failure	<u>0.090</u>
Specimen Type	<u>C</u>	Poisson (*)	<u>0.019</u>
(*) Calculated for axial $\sigma =$ <u>1.49 Mpa</u>			

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 27/07/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

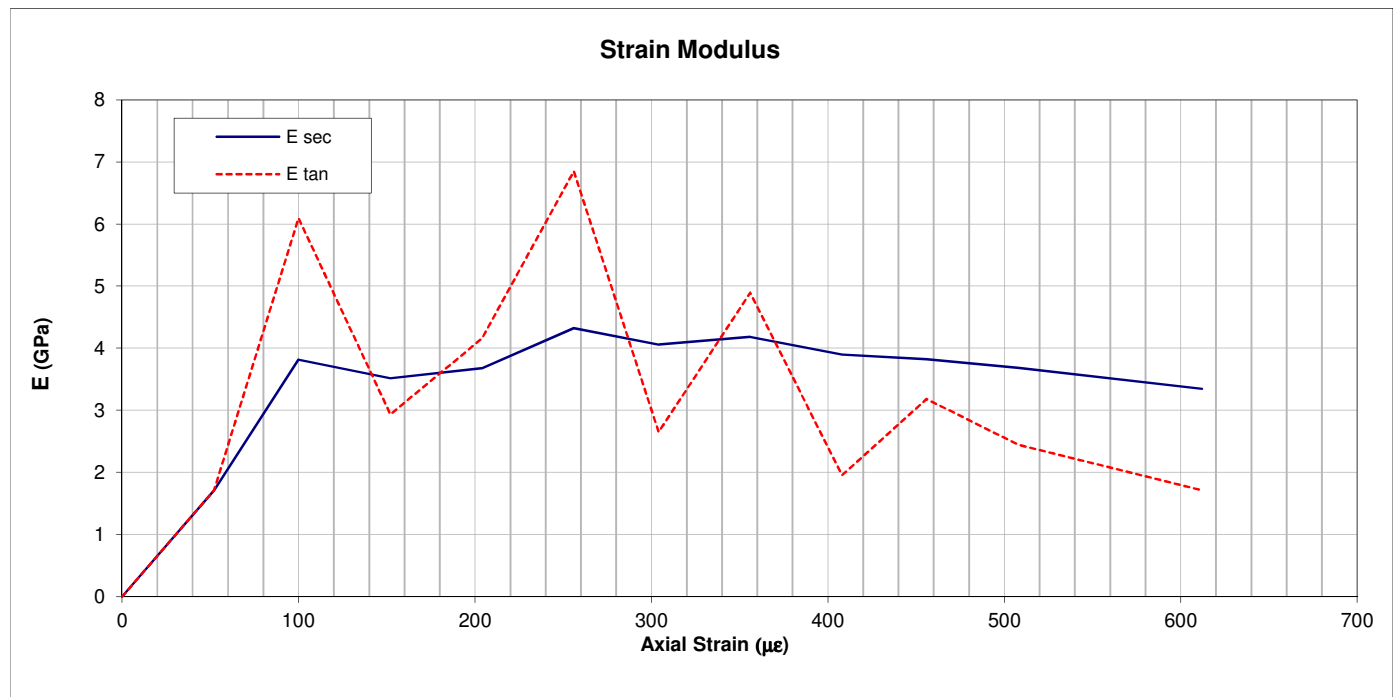
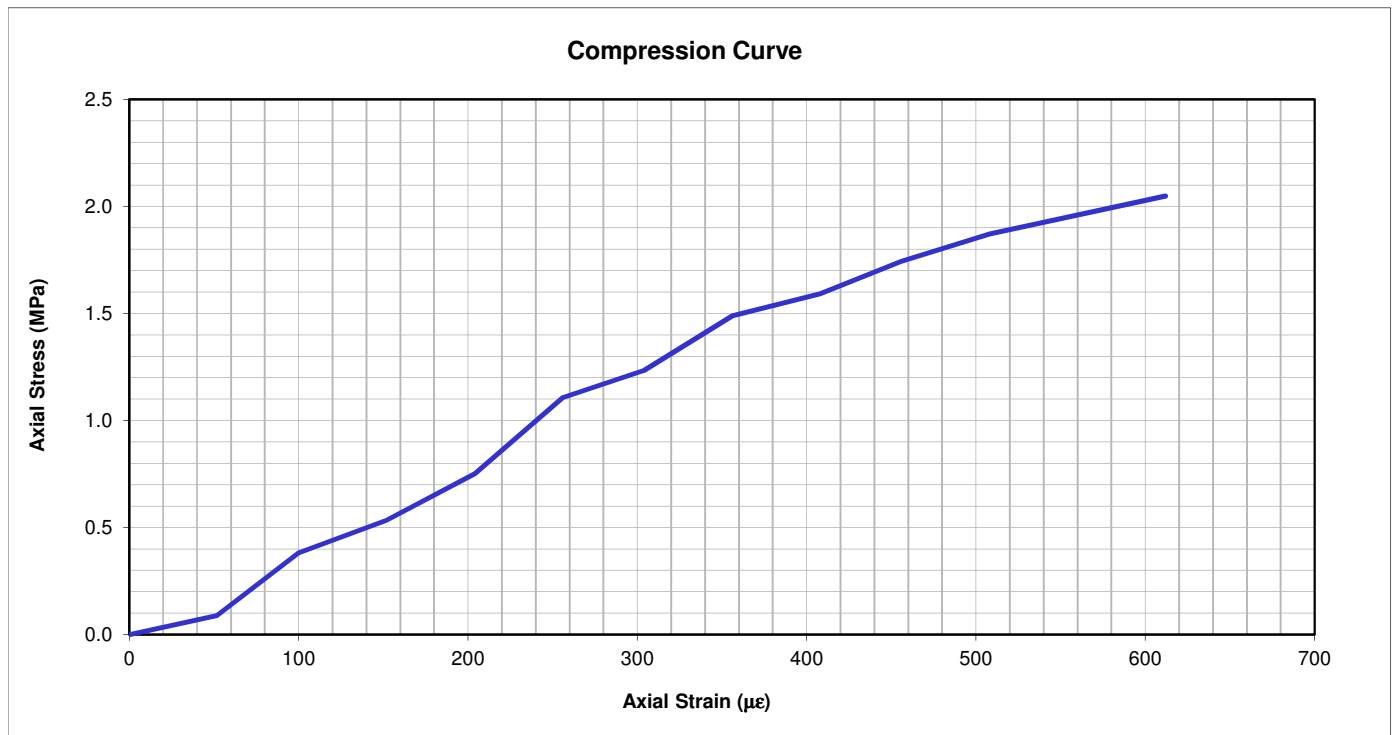
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No BHR607  
 Specimen Depth 13.90 - 14.28m  
 Specimen Type C

Cross section area 78.60 cm<sup>2</sup>  
 Height 214.62 mm  
 Max logged strength 2.05 MPa  
 E<sub>tan</sub> (\*) 4.16 GPa  
 E<sub>sec</sub> (^) 3.68 GPa

(\*) Calculated for axial  $\sigma =$  1.02 MPa  
 (^) Calculated for axial  $\sigma =$  1.02 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 27/07/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

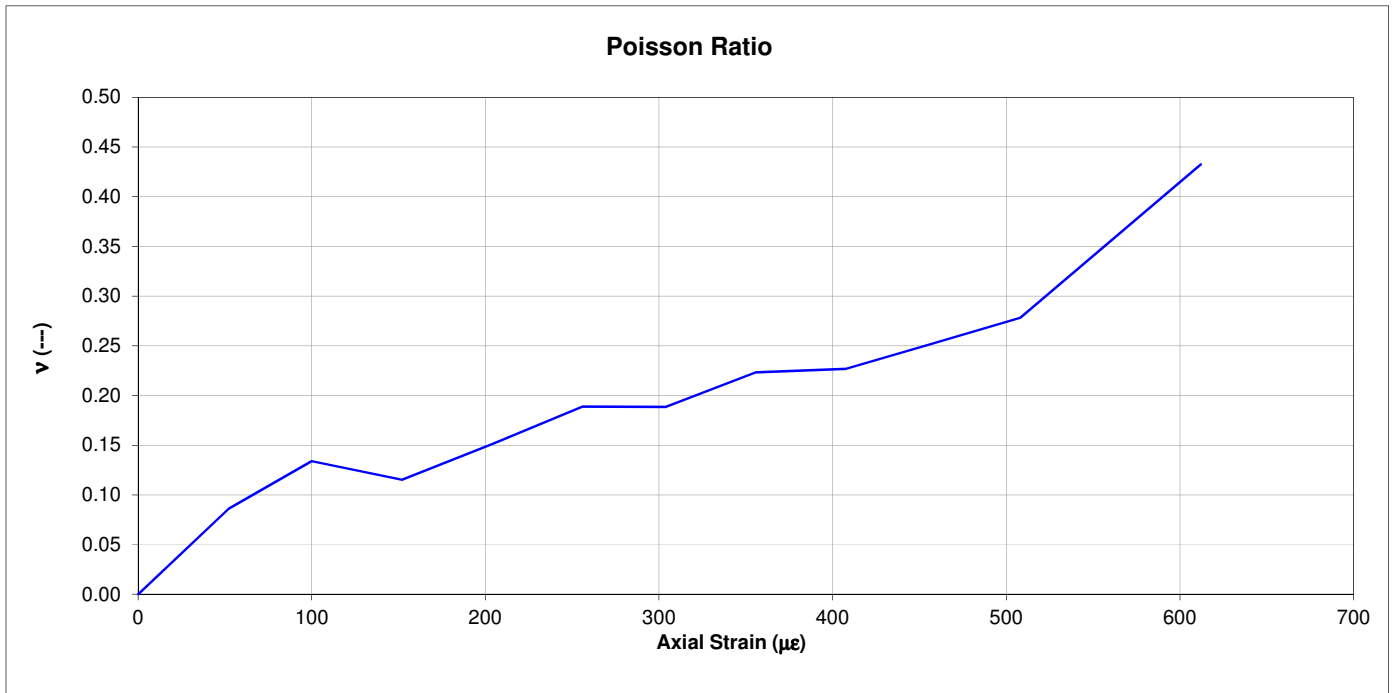
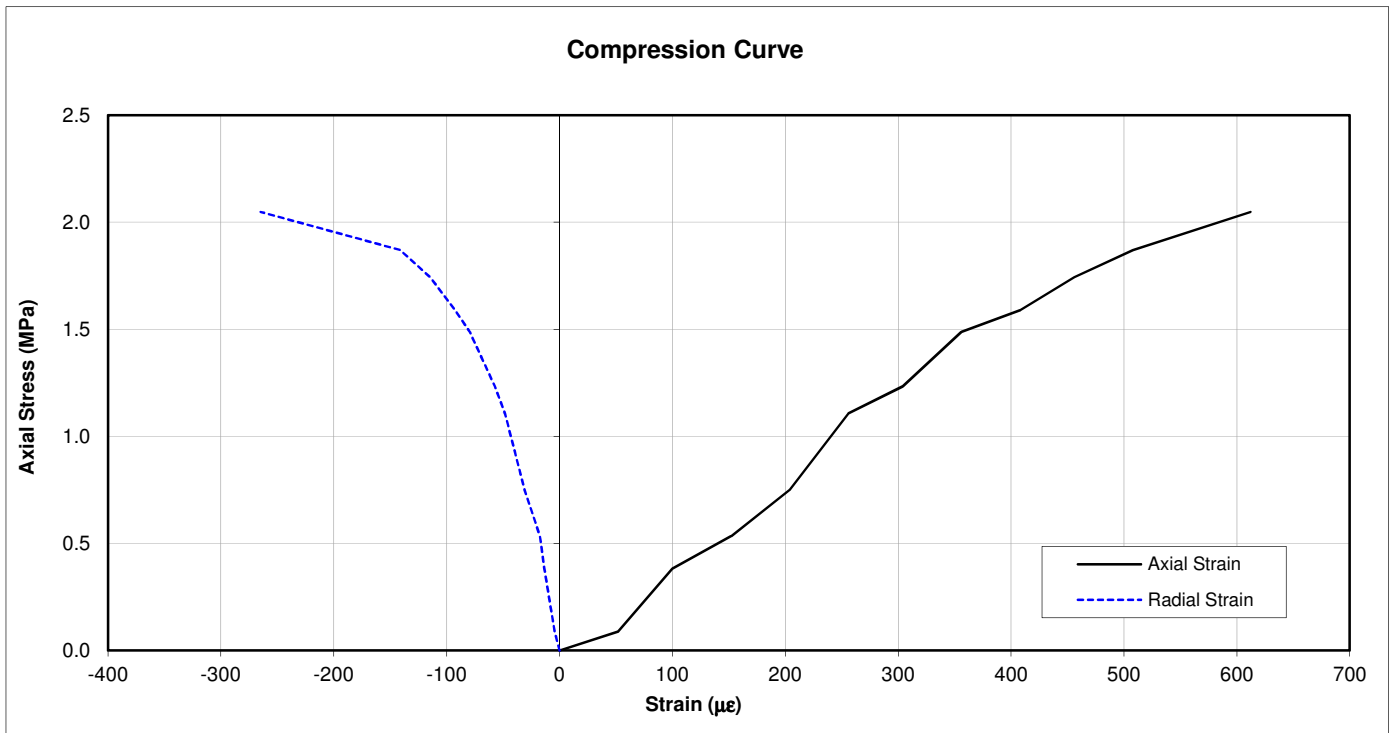
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No BHR607  
 Specimen Depth 13.90 - 14.28m  
 Specimen Type C

Cross section area 78.60 cm<sup>2</sup>  
 Height 214.62 mm  
 Max logged strength 2.05 MPa  
 Poisson at failure 0.433  
 Poisson (\*) 0.151

(\*) Calculated for axial  $\sigma =$  1.02 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 27/07/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

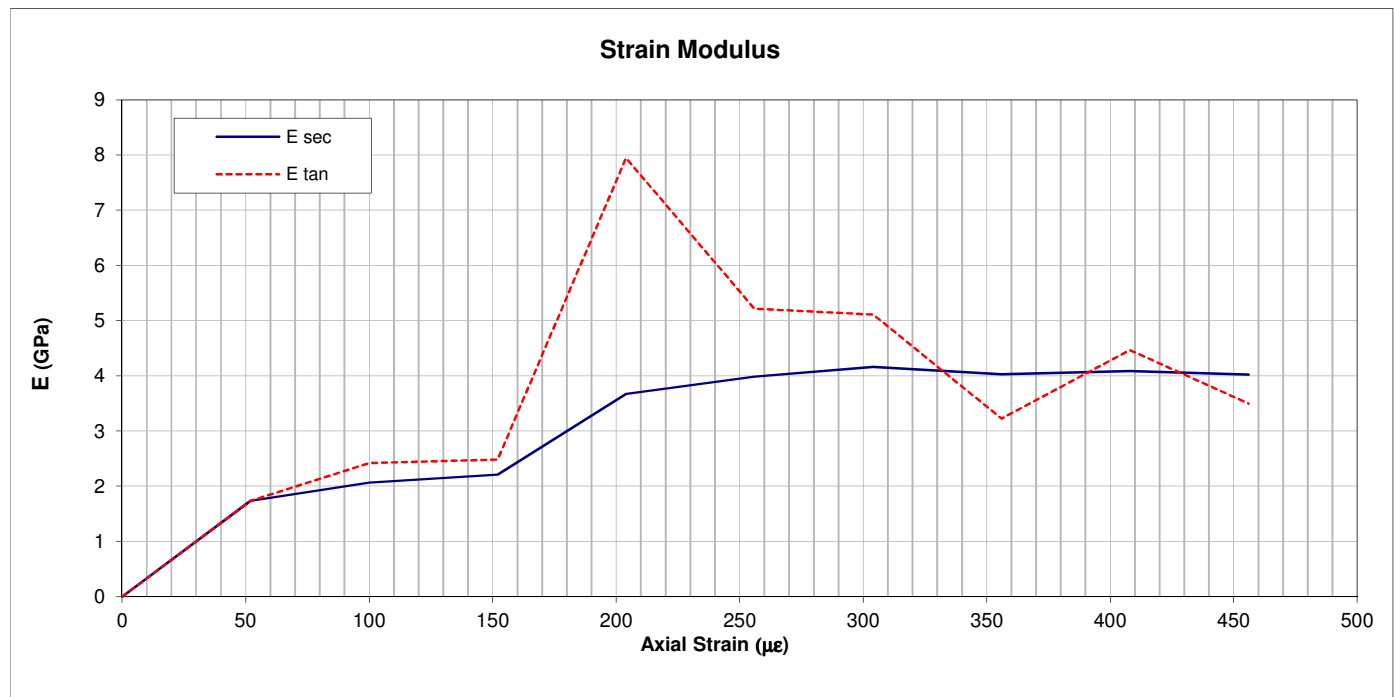
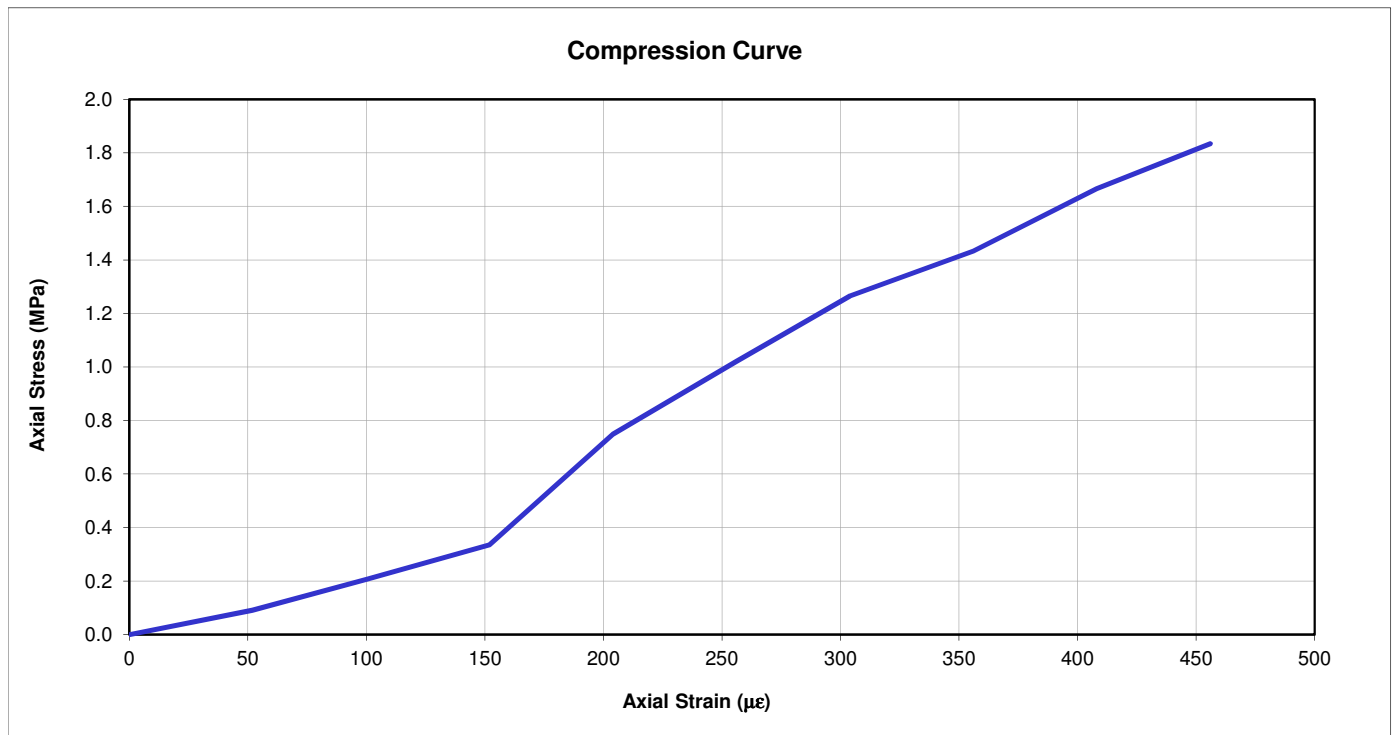
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>BHR607</u>
Specimen Depth	<u>25.37 - 25.70m</u>
Specimen Type	<u>C</u>

Cross section area	<u>77.43 cm<sup>2</sup></u>
Height	<u>214.42 mm</u>
Max logged strength	<u>1.83 MPa</u>
E <sub>tan</sub> (*)	<u>7.95 GPa</u>
E <sub>sec</sub> (^)	<u>3.67 GPa</u>

(\*) Calculated for axial  $\sigma =$  0.92 MPa  
 (^) Calculated for axial  $\sigma =$  0.92 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 27/07/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

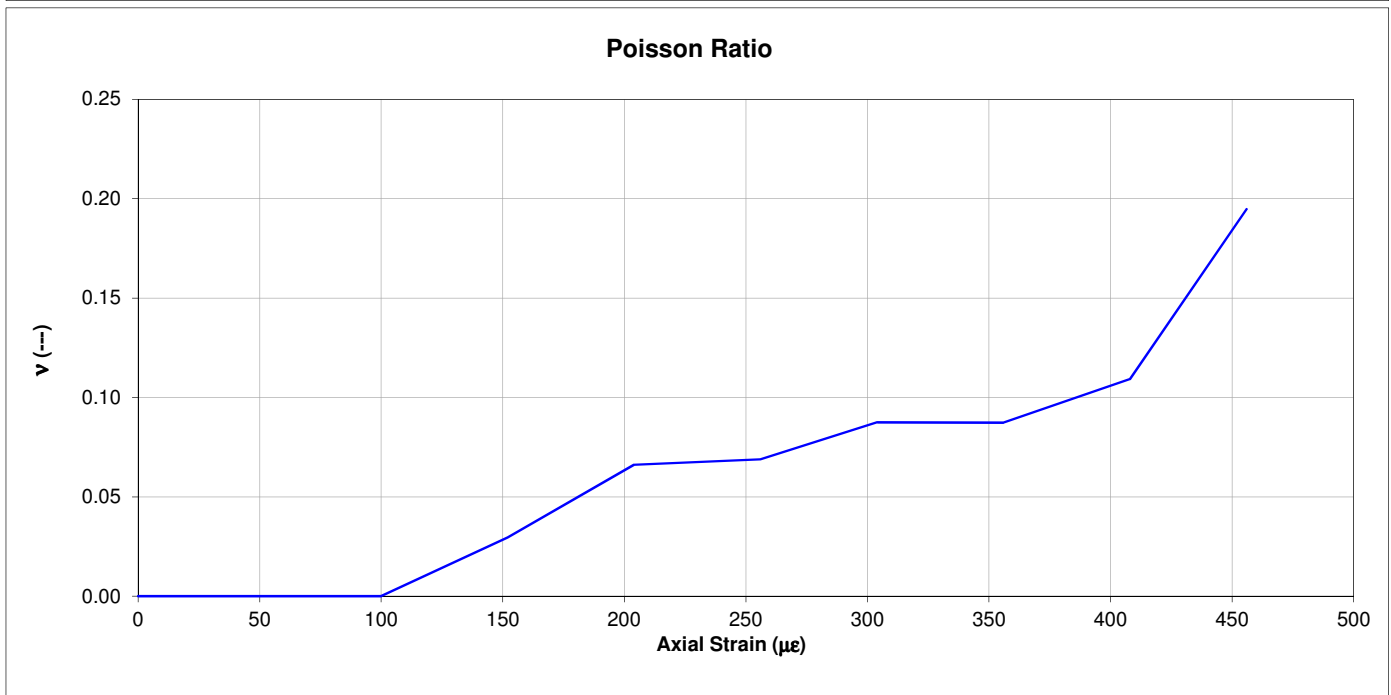
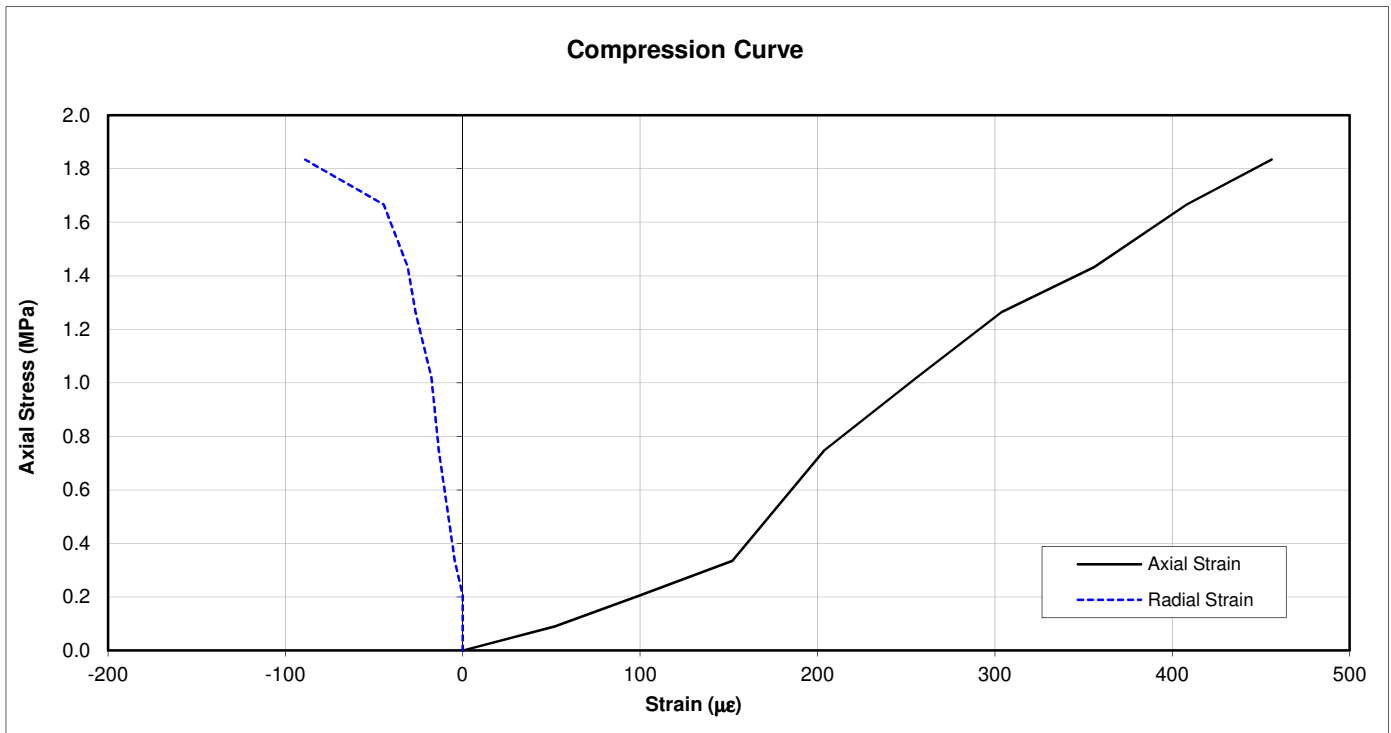
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No BHR607  
 Specimen Depth 25.37 - 25.70m  
 Specimen Type C

Cross section area 77.43 cm<sup>2</sup>  
 Height 214.42 mm  
 Max logged strength 1.83 MPa  
 Poisson at failure 0.195  
 Poisson (\*) 0.066

(\*) Calculated for axial  $\sigma =$  0.92 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R608**      Sample Ref: **35**      Sample Type: **U**      Depth (m): **26.20**

Bulk Density (Mg/m<sup>3</sup>): **2.02**      Dry Density (Mg/m<sup>3</sup>): **1.65**      Moisture Content (%): **23**  
 Length (mm): **214.57**      Diameter (mm): **99.27**      Length/Diameter Ratio: **2.16**  
 Test Duration (mins:secs): **3:15**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **29.5**  
 UCS (MPa): **3.8**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



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]		20/10/18
Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 05/07/2018

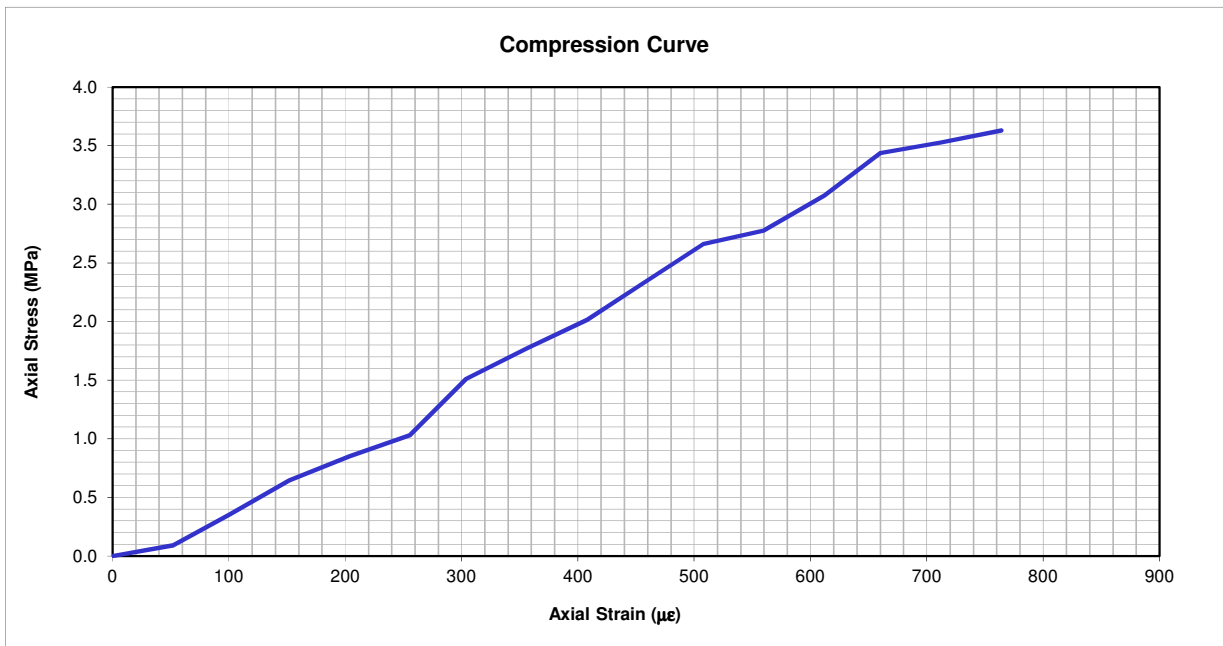
**UNIAXIAL COMPRESSION TEST with DEFORMATION**

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>77.40 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>214.57 mm</u>
BH No	<u>BHR608</u>	Max. strength	<u>3.63 MPa</u>
Specimen Depth	<u>26.20 - 26.50m</u>	E <sub>tan</sub> (*)	<u>4.97 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>4.97 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.82 MPa NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen

(^) Calculated for axial  $\sigma =$  1.82 MPa



## Graph 2

	STRUCTURAL SOILS 1A Princess Street Bristol BS3 4AG
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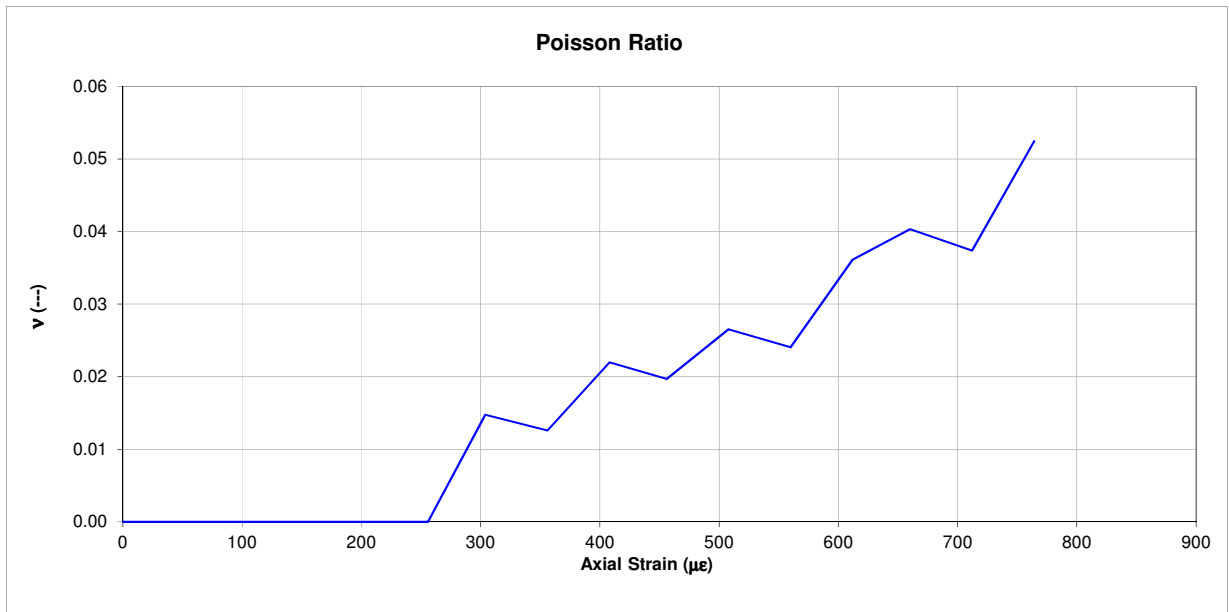
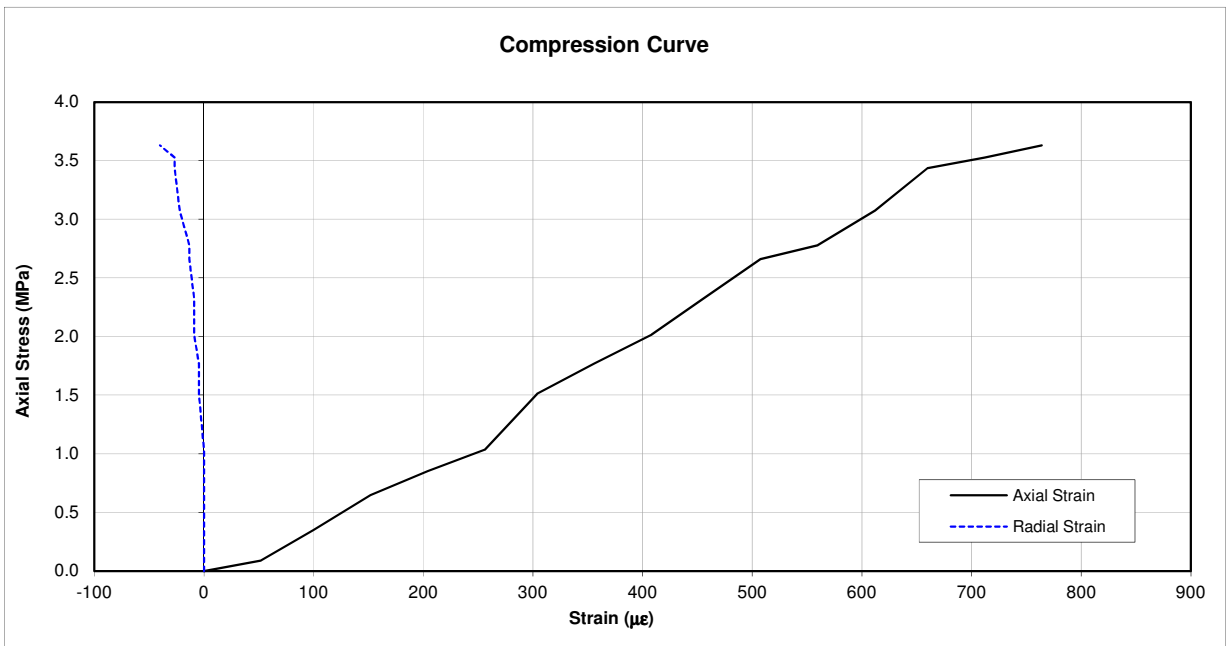
Test Date 05/07/2018

### UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	733442	Cross section	77.40 cm <sup>2</sup>
Site		Height	214.57 mm
BH No	BHR608	Max. strength	3.63 MPa
Specimen Depth	26.20 - 26.50m	Poisson at failure	0.052
Specimen Type	C	Poisson (*)	0.013
(*) Calculated for axial $\sigma =$ <u>1.82 MPa</u>			

NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

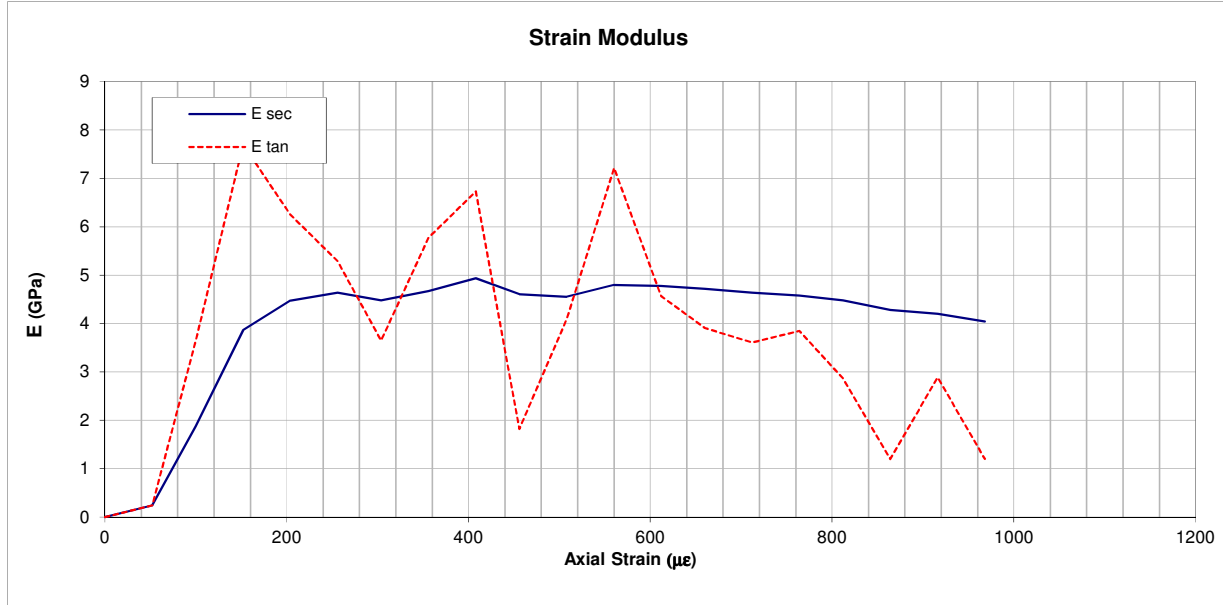
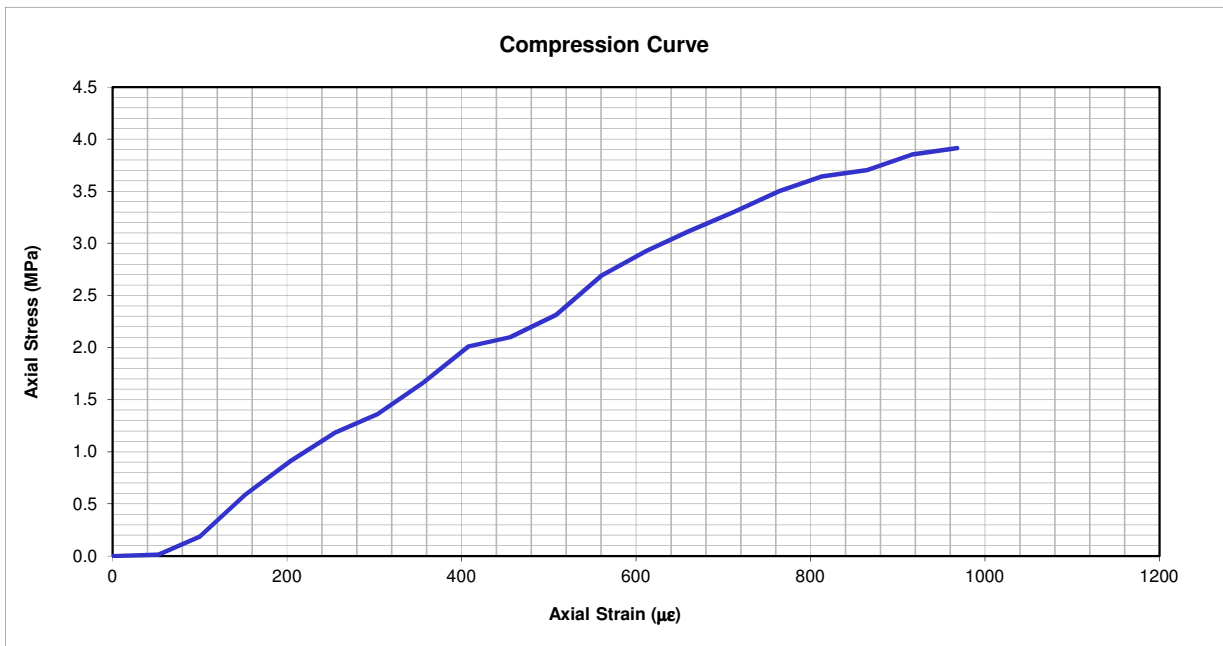
Test Date 05/07/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>79.94 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>214.91 mm</u>
BH No	<u>BHR608</u>	Max. strength	<u>3.92 MPa</u>
Specimen Depth	<u>39.90 - 40.25m</u>	E <sub>tan</sub> (*)	<u>5.77 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>4.67 GPa</u>

(\*) Calculated for axial  $\sigma = 1.96$  Mpa  
 (^) Calculated for axial  $\sigma = 1.96$  MPa  
*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



## Graph 2

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

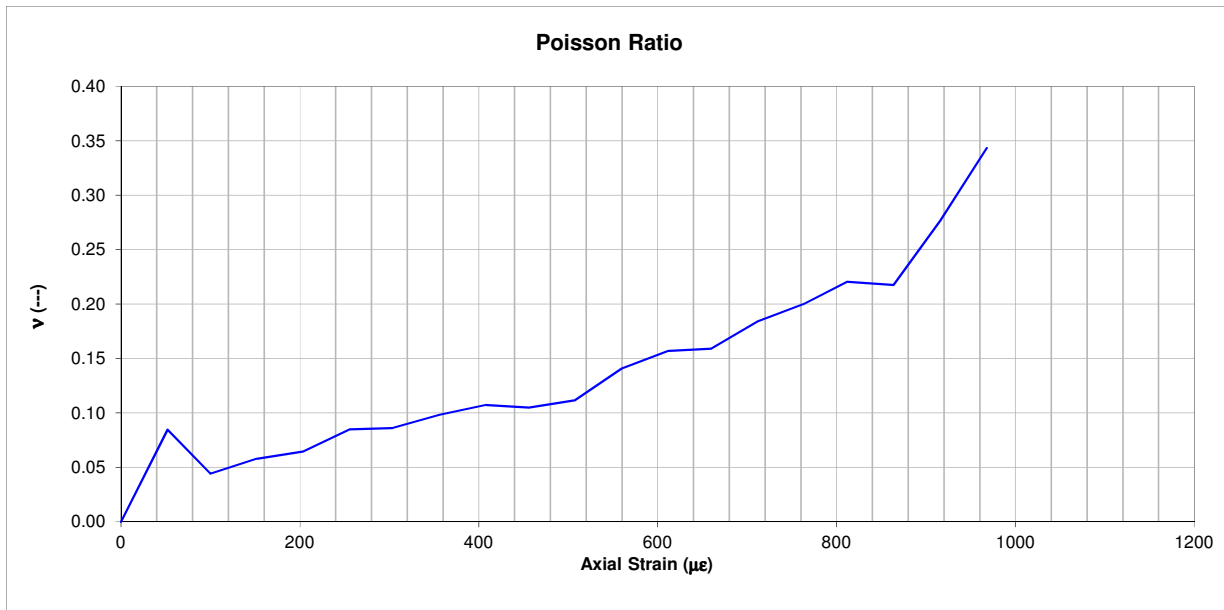
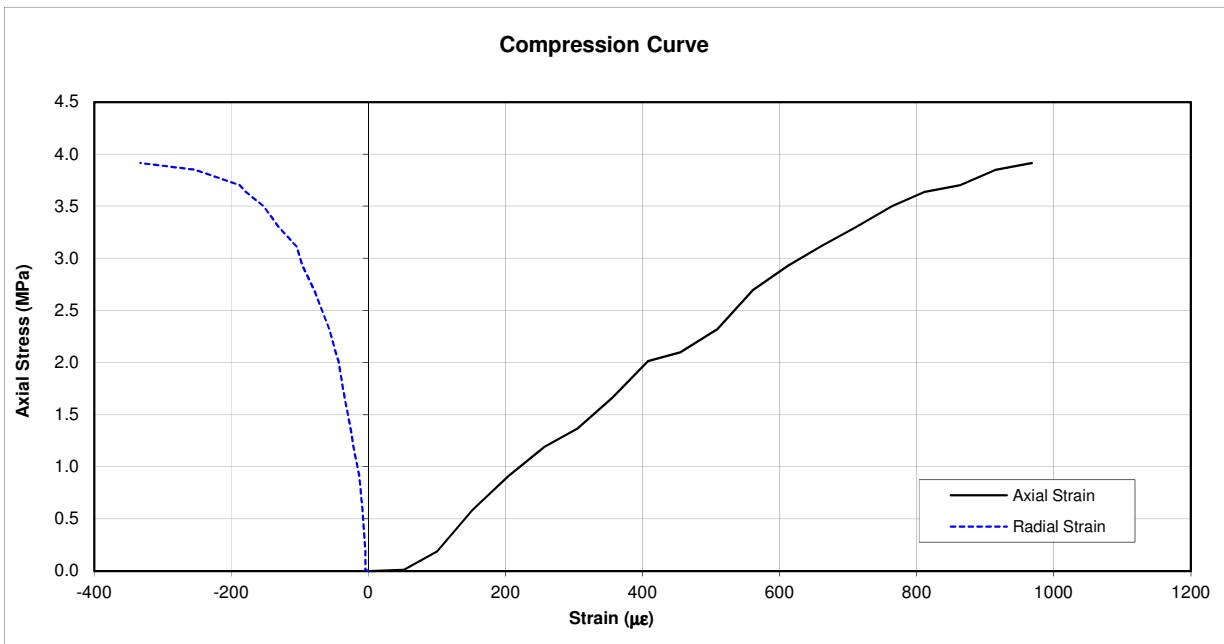
Test Date 05/07/2018

### UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1


Job No	733442	Cross section	79.94 cm <sup>2</sup>
Site		Height	214.91 mm
BH No	BHR608	Max. strength	3.92 MPa
Specimen Depth	39.90 - 40.25m	Poisson at failure	0.344
Specimen Type	C	Poisson (*)	0.098
(*) Calculated for axial $\sigma =$ <u>1.96 Mpa</u>			

NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen





# Graph1

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 28/06/2018

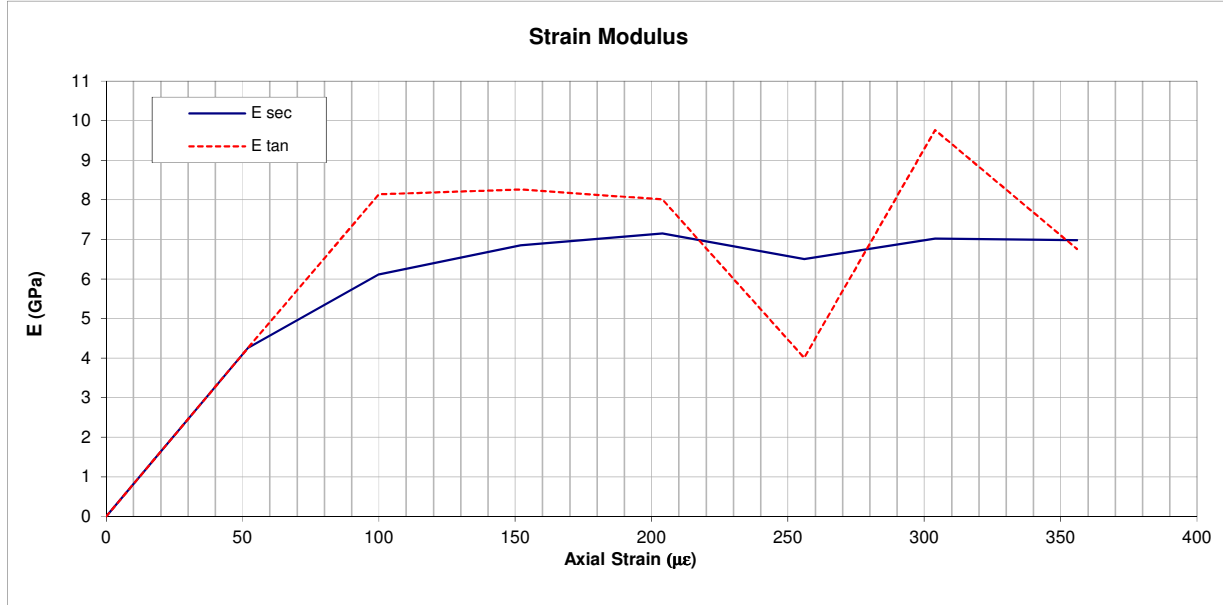
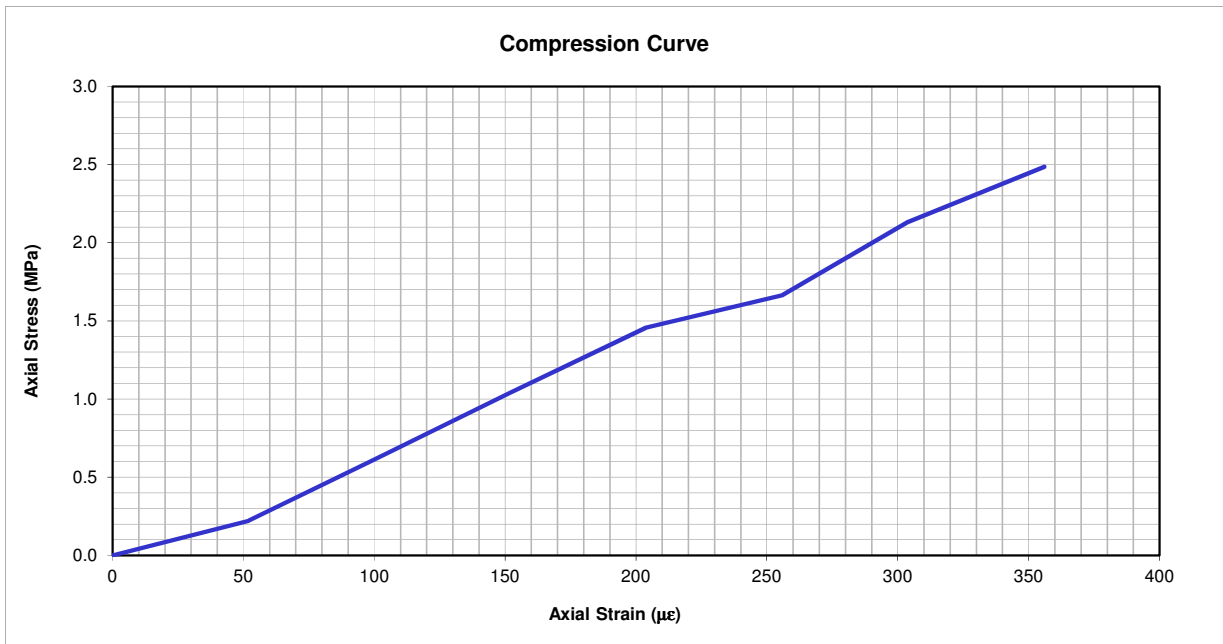
## UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>76.82 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>215.05 mm</u>
BH No	<u>BHR610</u>	Max. strength	<u>2.49 MPa</u>
Specimen Depth	<u>13.20 - 13.50m</u>	E <sub>tan</sub> (*)	<u>8.26 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>6.85 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.24 MPa NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen

(^) Calculated for axial  $\sigma =$  1.24 MPa



Graph 2

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

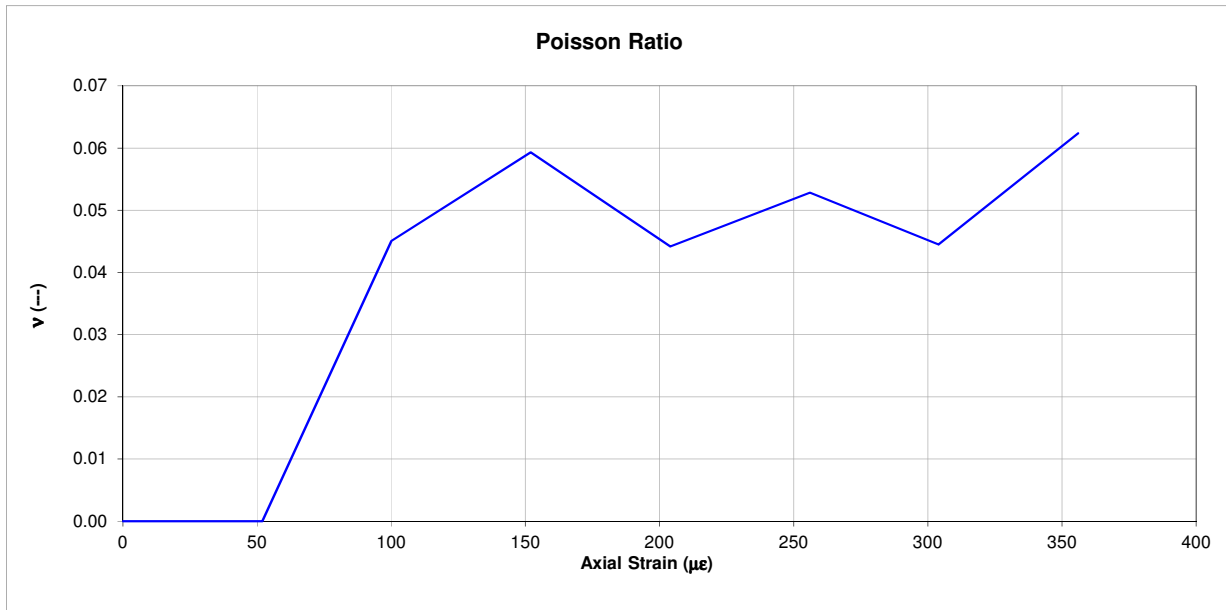
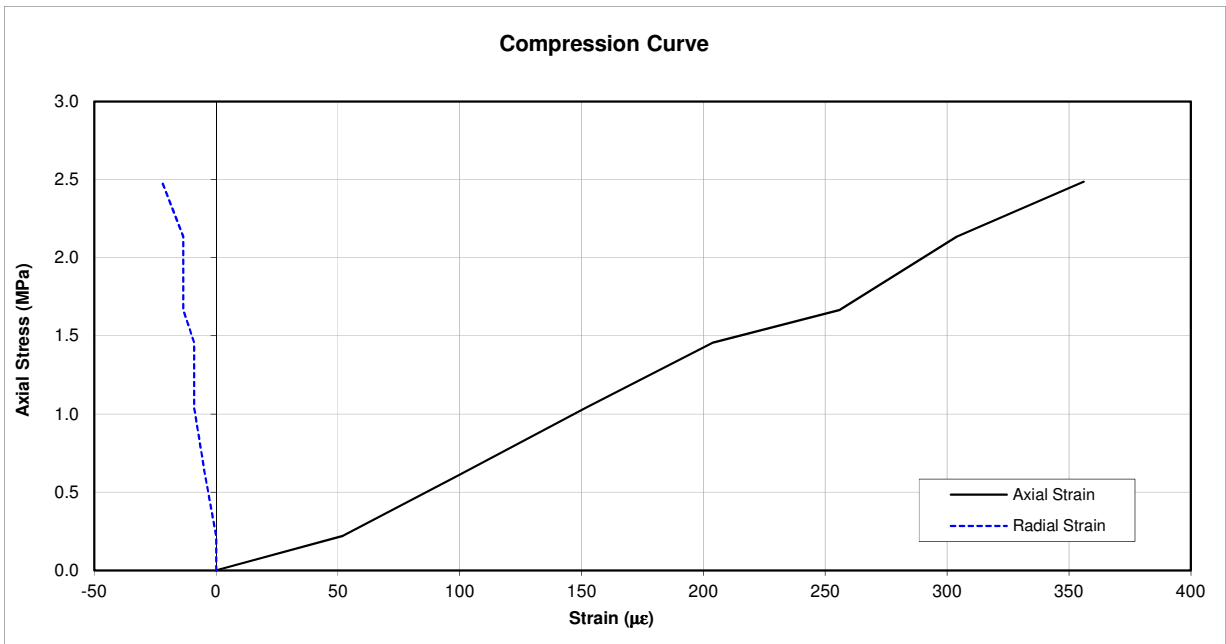
Test Date 28/06/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>76.82 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>215.05 mm</u>
BH No	<u>BHR610</u>	Max. strength	<u>2.49 MPa</u>
Specimen Depth	<u>13.20 - 13.50m</u>	Poisson at failure	<u>0.062</u>
Specimen Type	<u>C</u>	Poisson (*)	<u>0.059</u>
(*) Calculated for axial $\sigma =$ <u>1.24 MPa</u>			

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*







# Graph1



STRUCTURAL SOILS  
1A Princess Street  
Bristol BS3 4AG

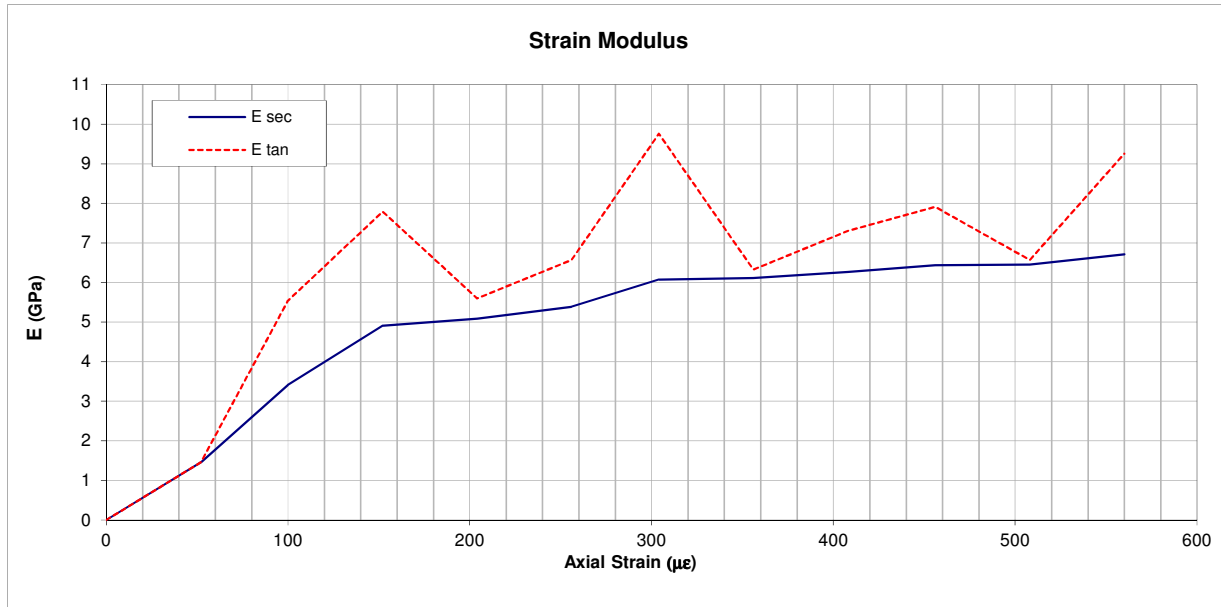
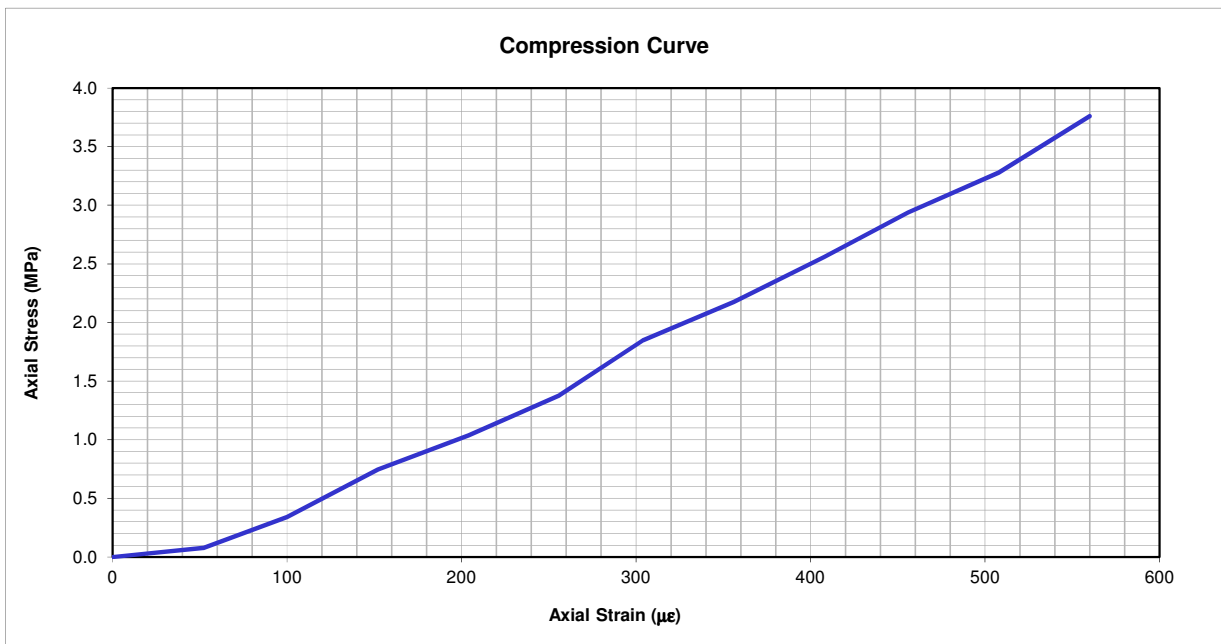
Test Date

28/06/2018

## UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	733442	Cross section	78.98 cm <sup>2</sup>
Site		Height	215.50 mm
BH No	BHR610	Max. strength	3.76 MPa
Specimen Depth	16.10 - 16.43m	E <sub>tan</sub> (*)	9.76 GPa
Specimen Type	C	E <sub>sec</sub> (^)	6.08 GPa
(*) Calculated for axial $\sigma = 1.88$ MPa		NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen	
(^) Calculated for axial $\sigma = 1.88$ MPa			



## Graph 2

	STRUCTURAL SOILS 1A Princess Street Bristol BS3 4AG
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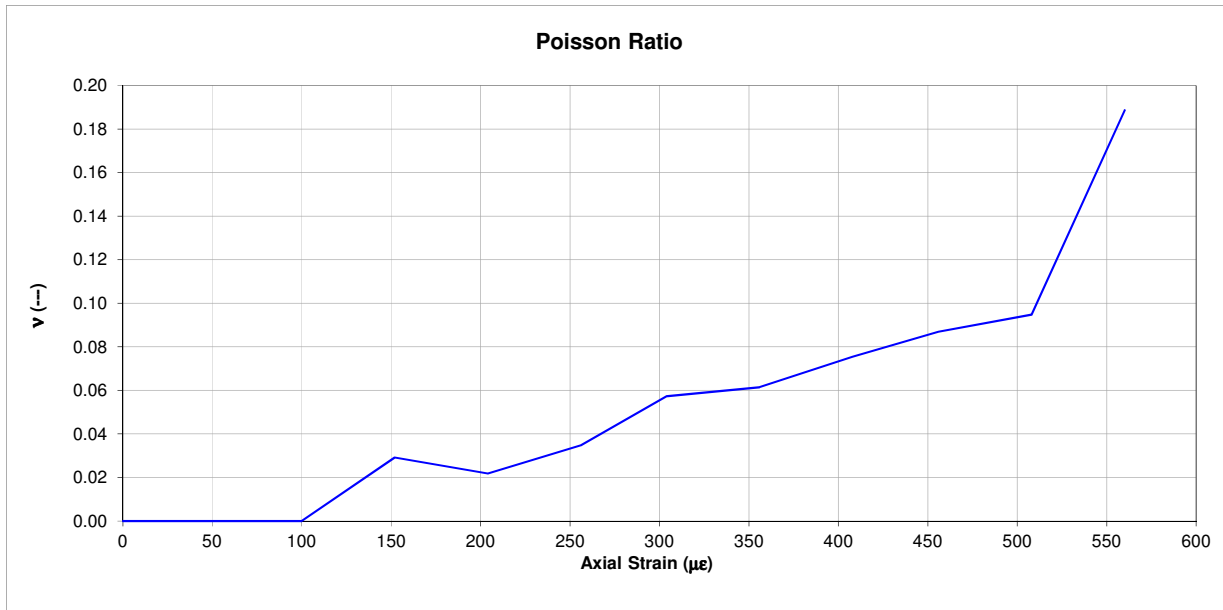
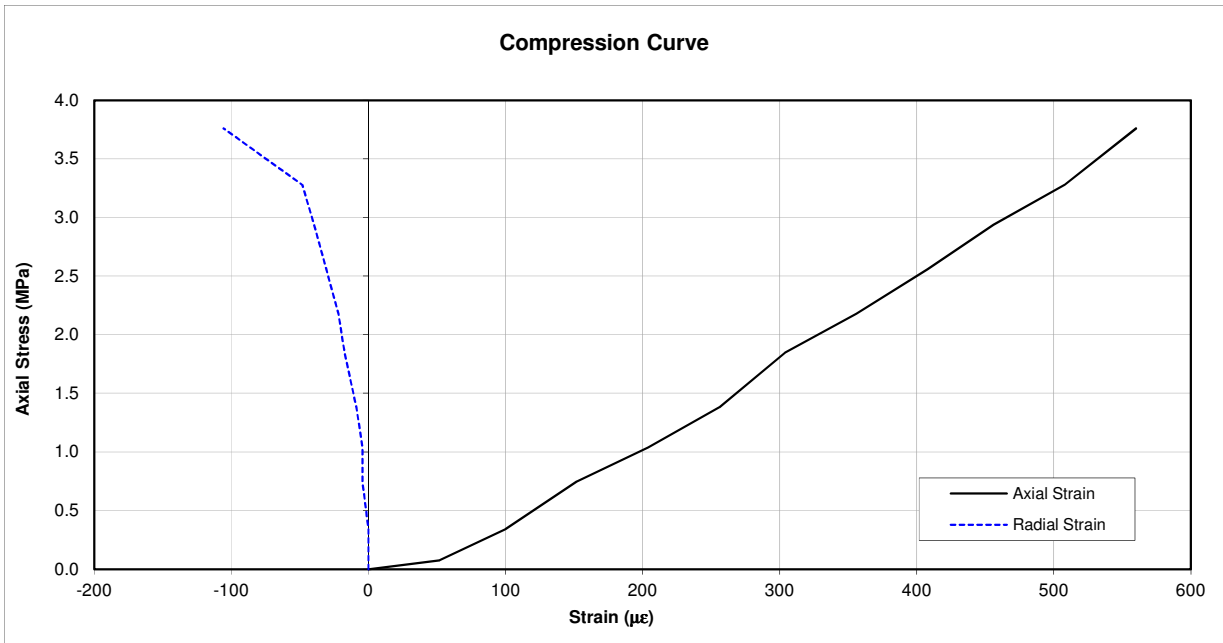
Test Date	28/06/2018
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### UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	733442	Cross section	78.98 cm <sup>2</sup>
Site		Height	215.50 mm
BH No	BHR610	Max. strength	3.76 MPa
Specimen Depth	16.10 - 16.43m	Poisson at failure	0.189
Specimen Type	C	Poisson (*)	0.057
(*) Calculated for axial $\sigma =$ <span style="border-bottom: 1px solid black; text-align: center;">1.88 MPa</span>			

NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen





	STRUCTURAL SOILS
	1A Princess Street
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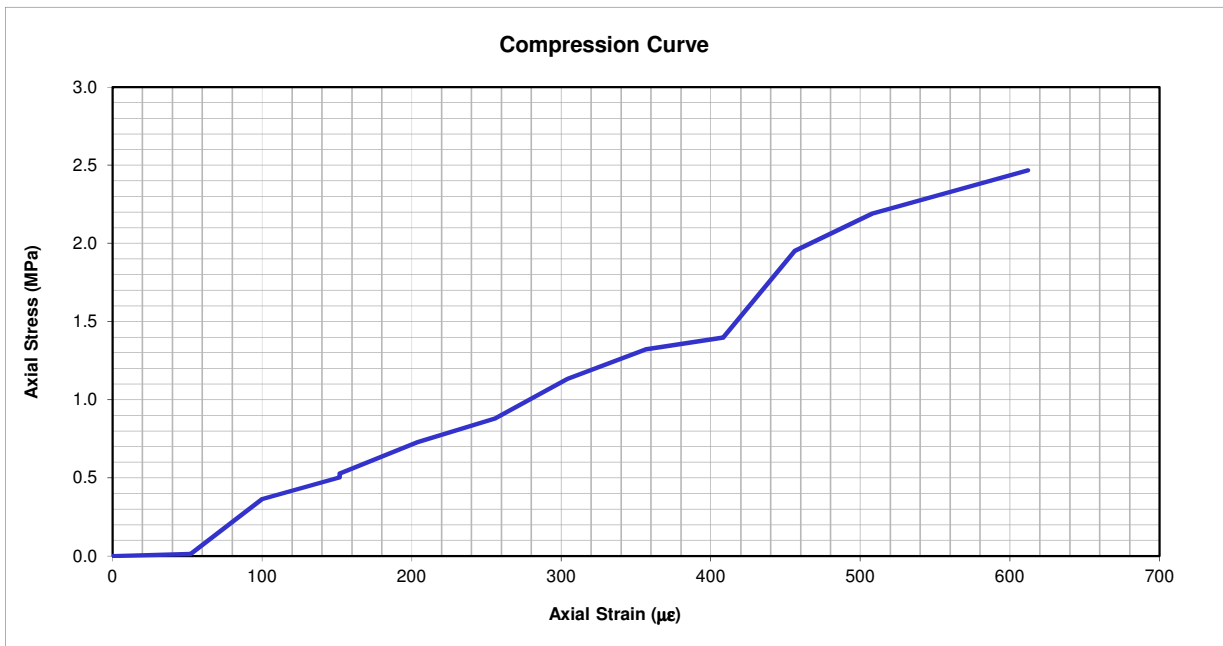
**UNIAXIAL COMPRESSION TEST with DEFORMATION**

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>79.42 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>214.90 mm</u>
BH No	<u>BHR610</u>	Max. strength	<u>2.47 MPa</u>
Specimen Depth	<u>19.89 - 20.28m</u>	E <sub>tan</sub> (*)	<u>5.25 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>3.73 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.23 MPa NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen

(^) Calculated for axial  $\sigma =$  1.23 MPa



Graph 2

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

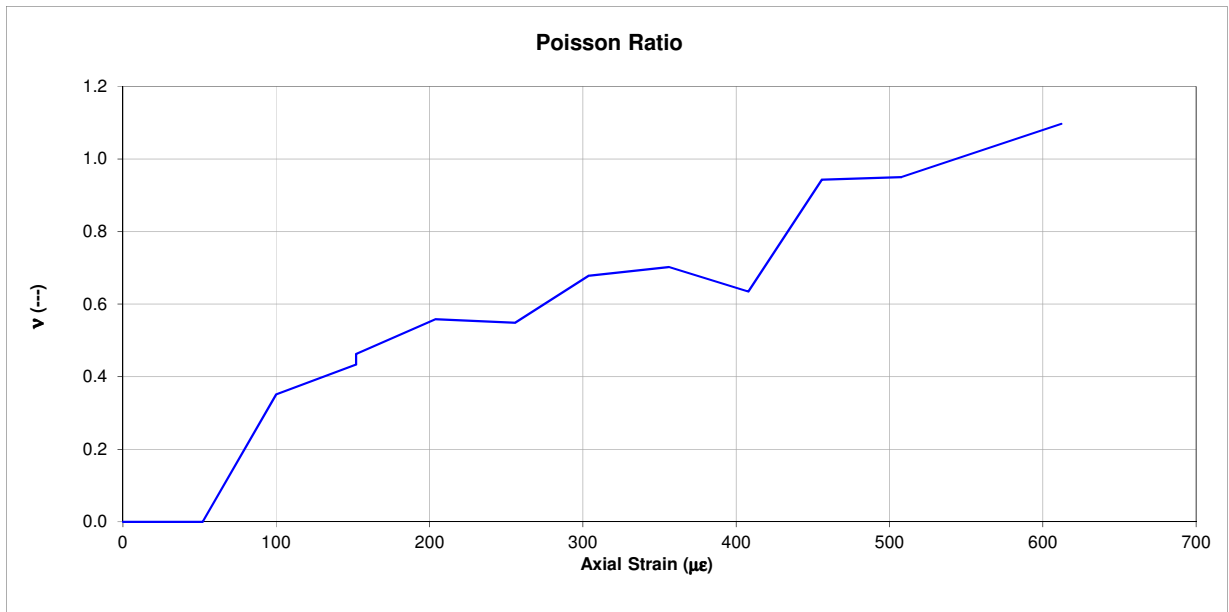
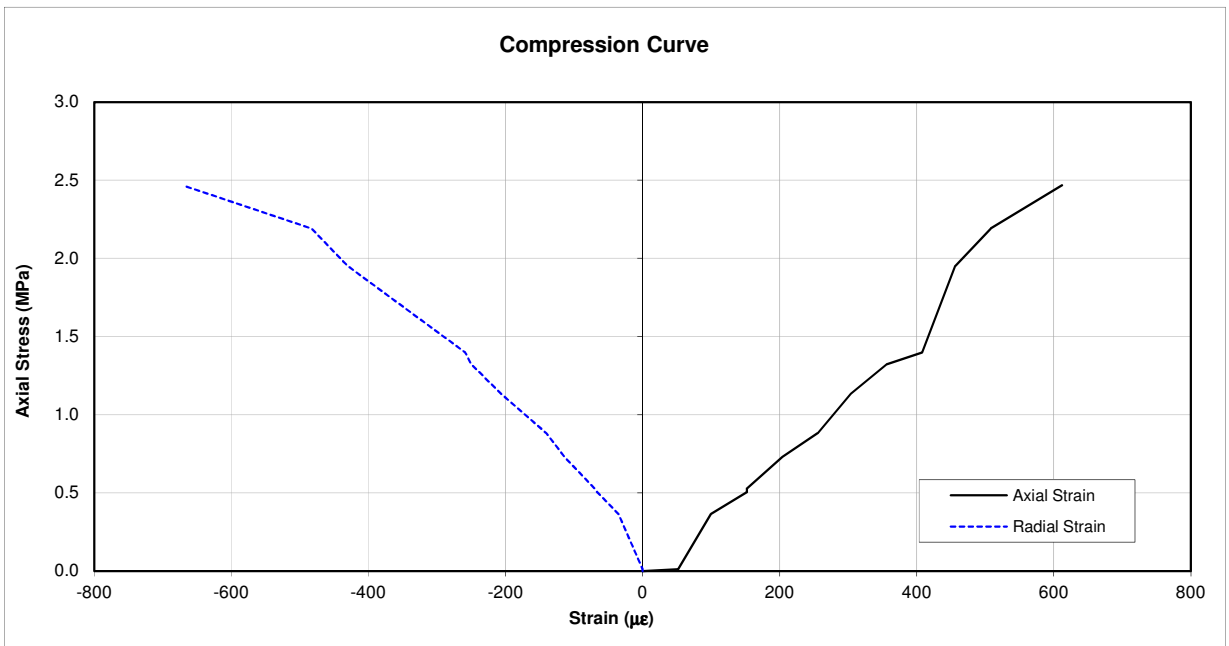
Test Date 28/06/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>79.42 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>214.90 mm</u>
BH No	<u>BHR610</u>	Max. strength	<u>2.47 MPa</u>
Specimen Depth	<u>19.89 - 20.28m</u>	Poisson at failure	<u>1.097</u>
Specimen Type	<u>C</u>	Poisson (*)	<u>0.679</u>
(*) Calculated for axial $\sigma =$ <u>1.23 MPa</u>			

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





# Graph1

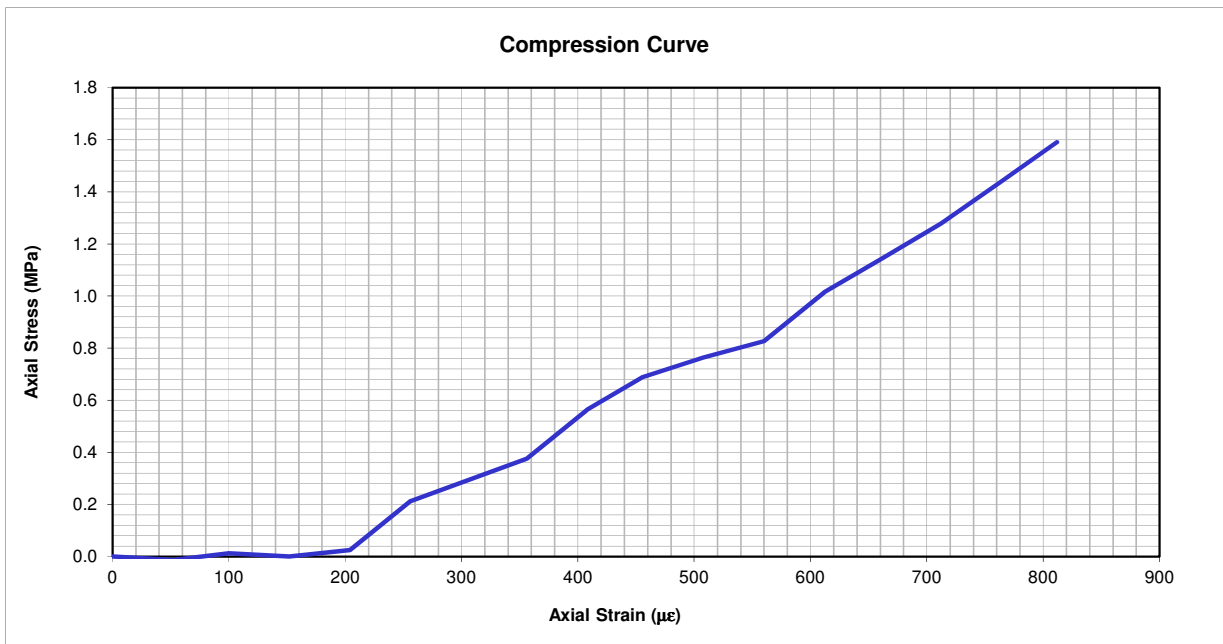

**STRUCTURAL SOILS**  
 1A Princess Street  
 Bristol BS3 4AG

Test Date 28/06/2018

## UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>79.83 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>214.50 mm</u>
BH No	<u>BHR610</u>	Max. strength	<u>1.59 MPa</u>
Specimen Depth	<u>30.96 - 31.43m</u>	E <sub>tan</sub> (*)	<u>1.45 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>1.50 GPa</u>
(*) Calculated for axial $\sigma =$	<u>0.80 MPa</u>	<i>NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen</i>	
(^) Calculated for axial $\sigma =$	<u>0.80 MPa</u>		





## Graph 2

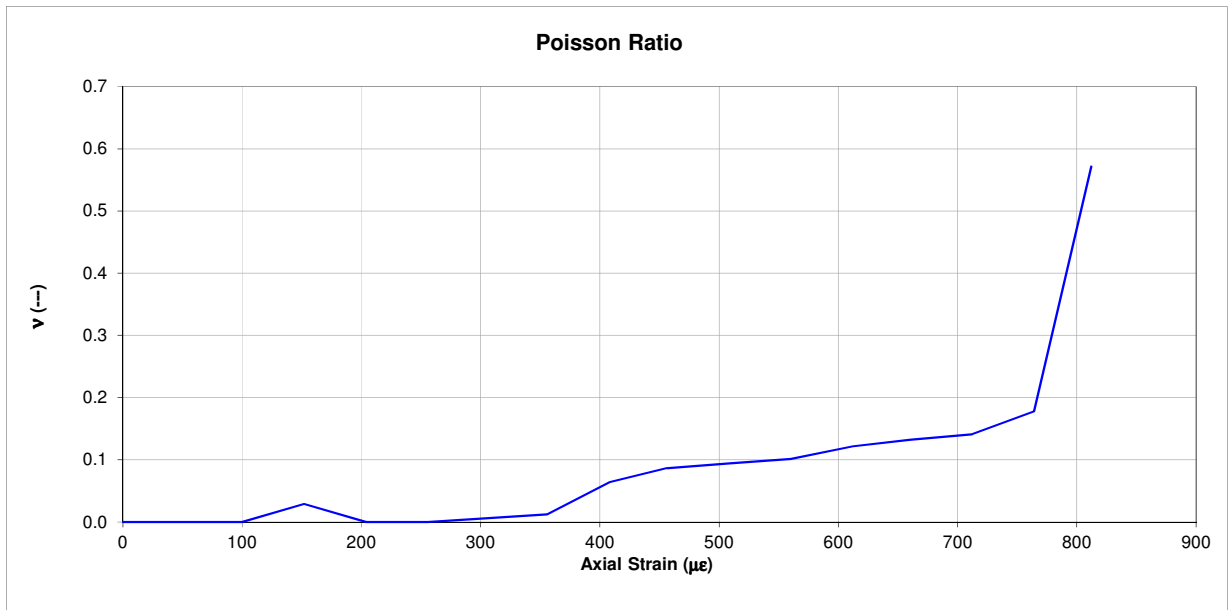
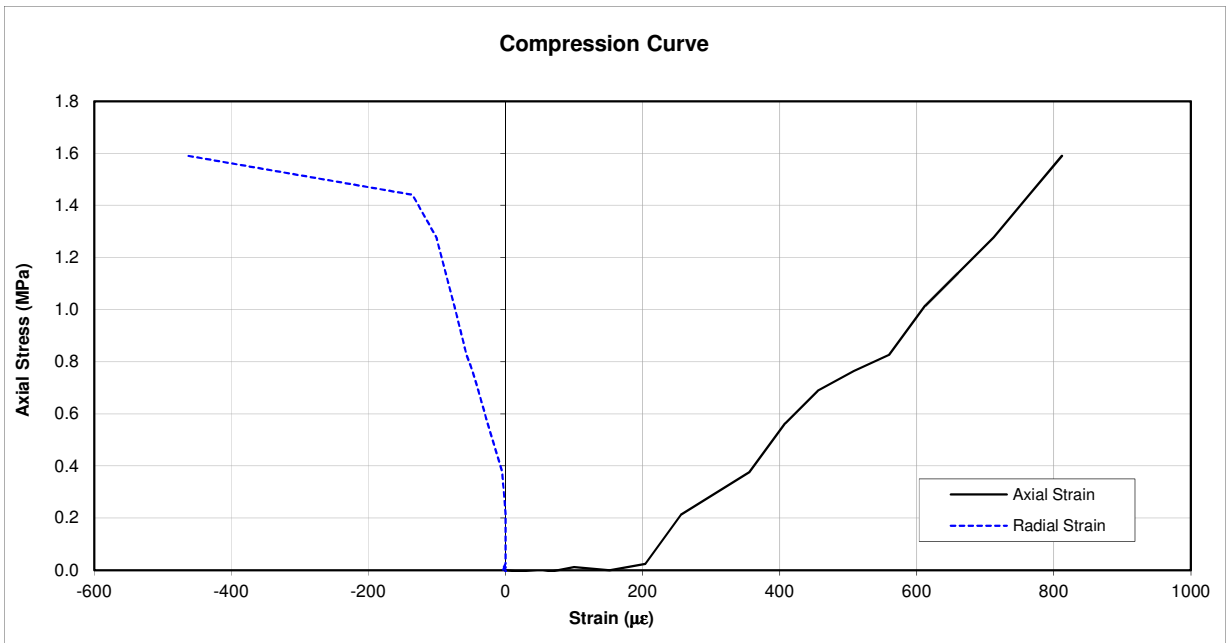
	STRUCTURAL SOILS 1A Princess Street Bristol BS3 4AG
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Test Date 28/06/2018

### UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	733442	Cross section	79.83 cm <sup>2</sup>
Site		Height	214.50 mm
BH No	BHR610	Max. strength	1.59 MPa
Specimen Depth	30.96 - 31.43m	Poisson at failure	0.572
Specimen Type	C	Poisson (*)	0.094
(*) Calculated for axial $\sigma =$ <u>0.80 MPa</u>		<i>NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen</i>	





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

25/07/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

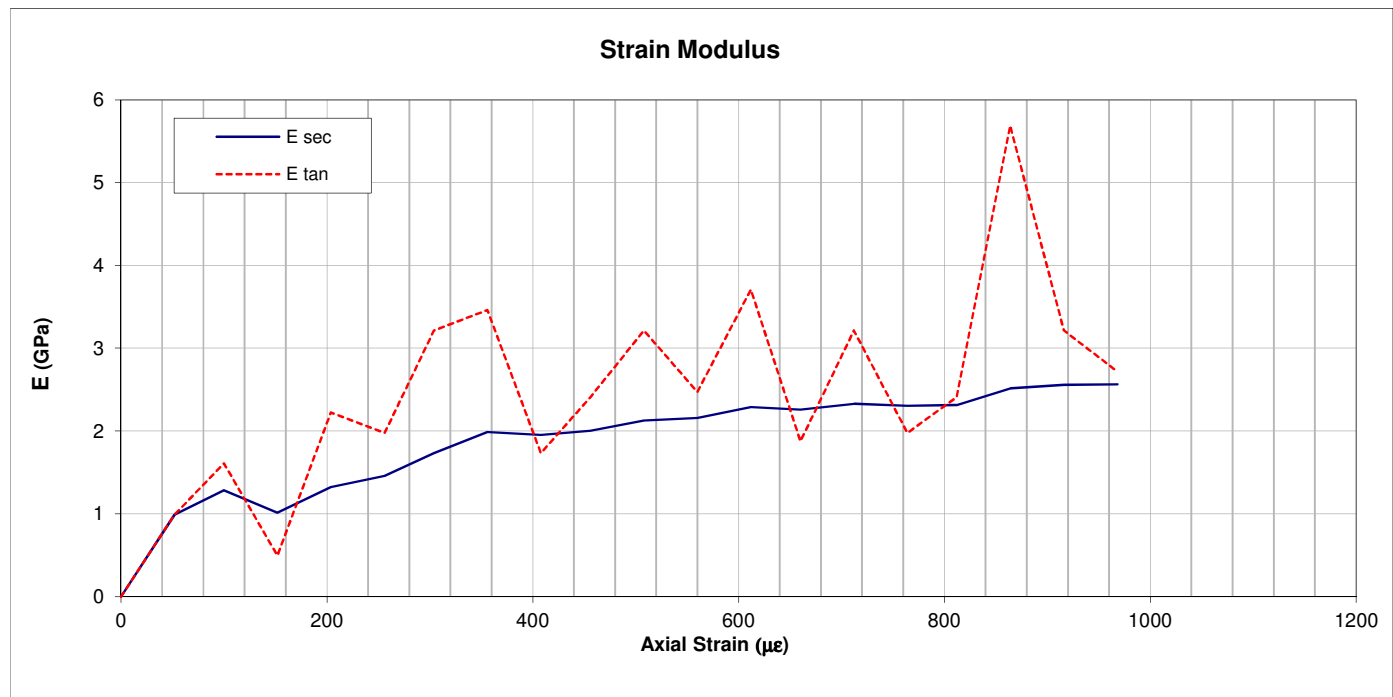
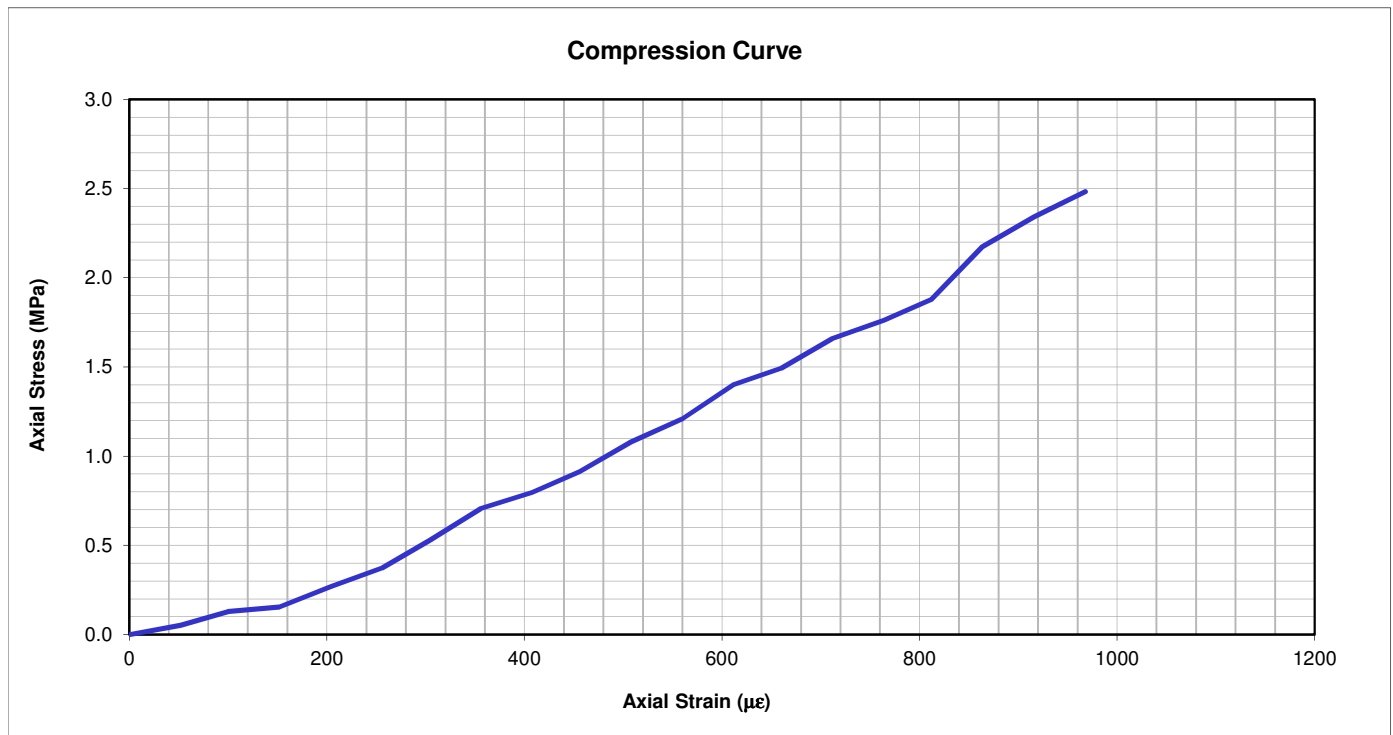
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>BHR611</u>
Specimen Depth	<u>29.40 - 29.75m</u>
Specimen Type	<u>C</u>

Cross section area	<u>77.74 cm<sup>2</sup></u>
Height	<u>215.57 mm</u>
Max logged strength	<u>2.48 MPa</u>
E <sub>tan</sub> (*)	<u>2.47 GPa</u>
E <sub>sec</sub> (^)	<u>2.16 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.24 MPa  
 (^) Calculated for axial  $\sigma =$  1.24 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



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	1A Princess Street
	Bristol BS3 4AG

Test Date 25/07/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

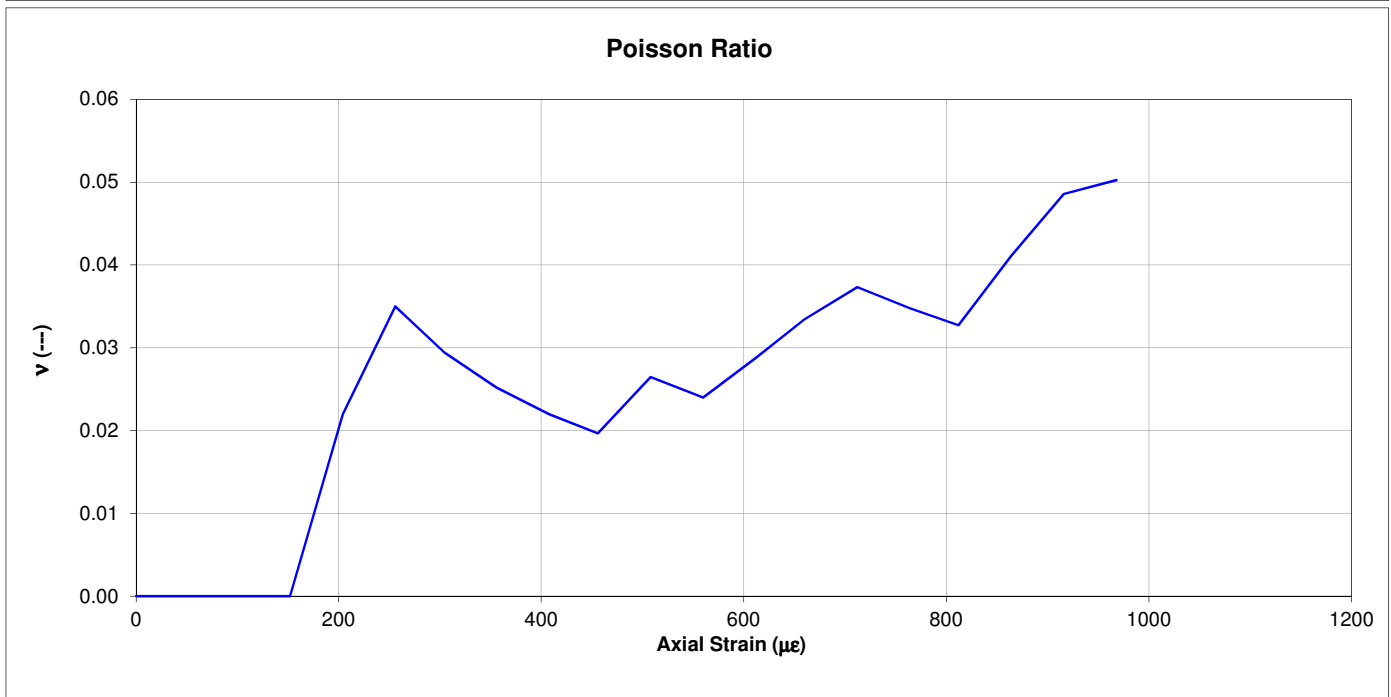
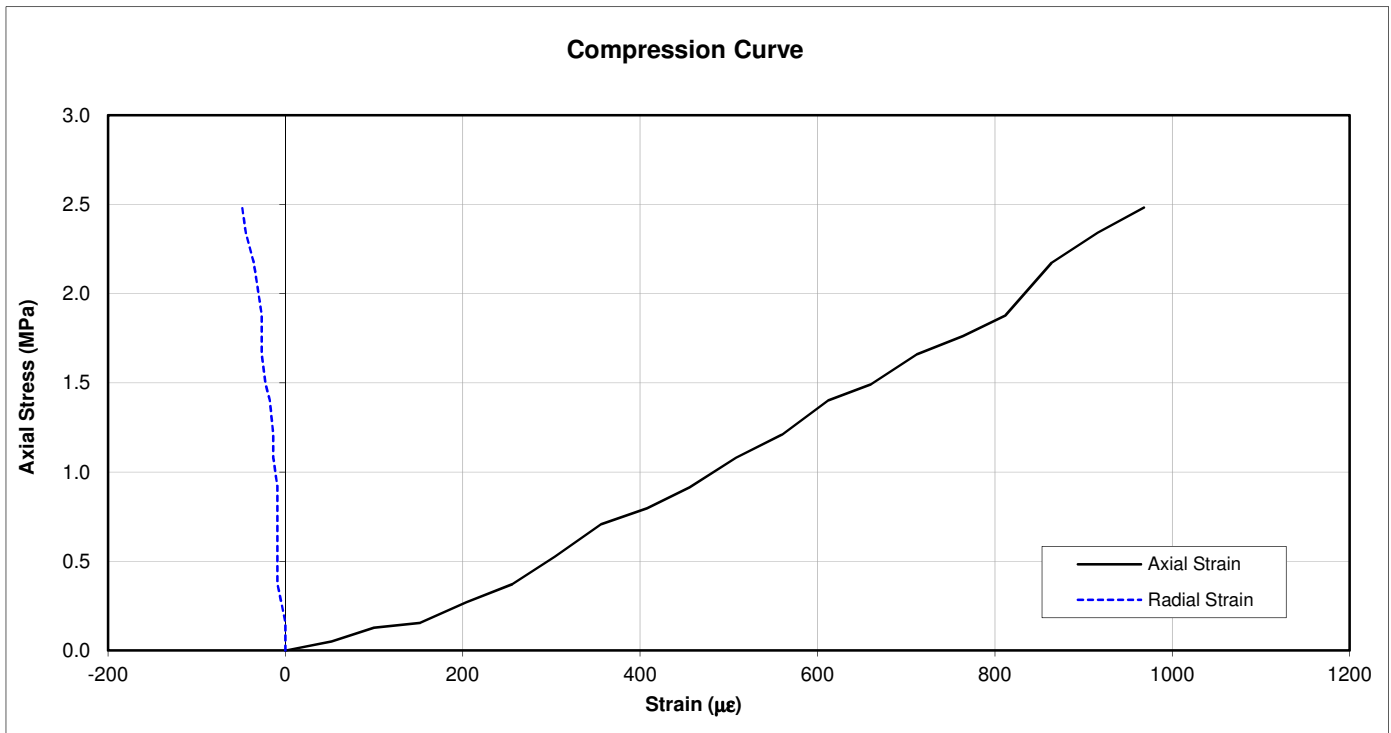
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No BHR611  
 Specimen Depth 29.40 - 29.75m  
 Specimen Type C

Cross section area 77.74 cm<sup>2</sup>  
 Height 215.57 mm  
 Max logged strength 2.48 MPa  
 Poisson at failure 0.050  
 Poisson (\*) 0.024

(\*) Calculated for axial  $\sigma =$  1.24 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

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**UNIAXIAL COMPRESSION TEST with DEFORMATION**

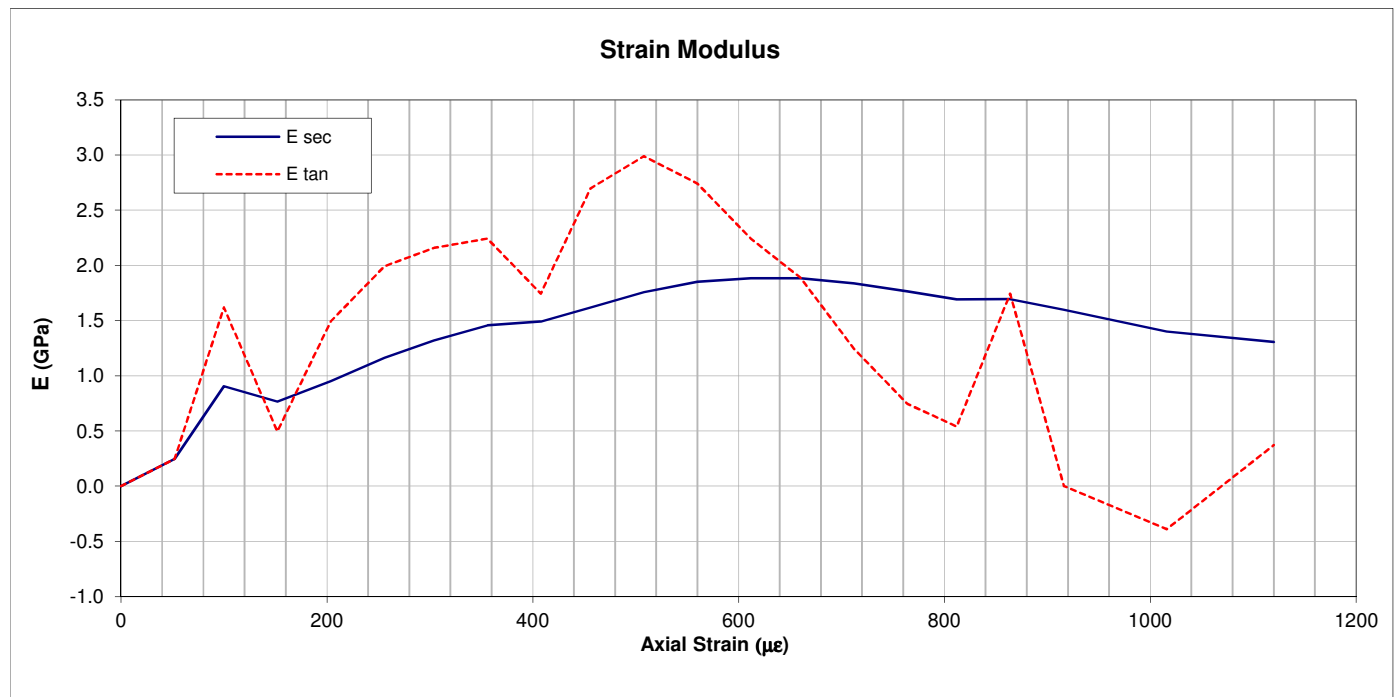
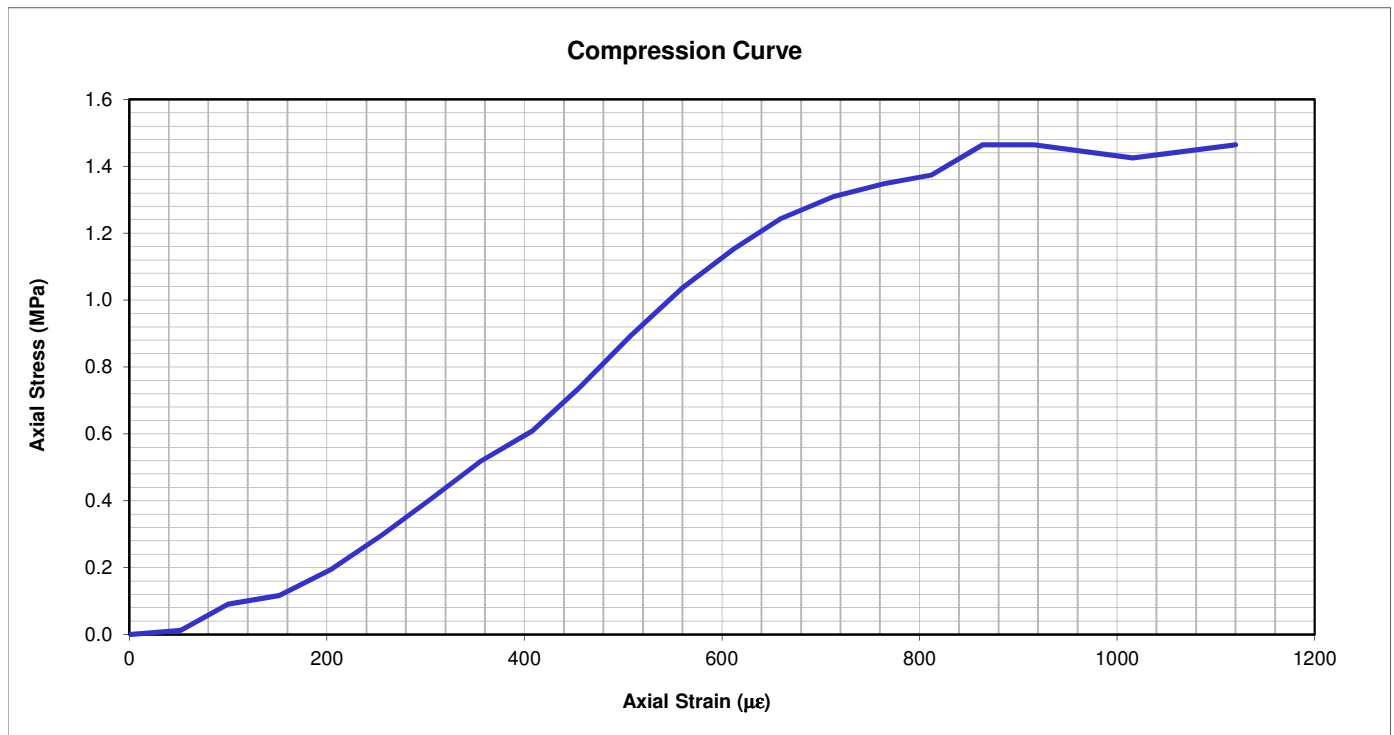
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No BHR611  
 Specimen Depth 32.90 - 33.20m  
 Specimen Type C

Cross section area 77.18 cm<sup>2</sup>  
 Height 214.44 mm  
 Max logged strength 1.46 MPa  
 E<sub>tan</sub> (\*) 1.74 GPa  
 E<sub>sec</sub> (^) 1.49 GPa

(\*) Calculated for axial  $\sigma =$  0.73 MPa  
 (^) Calculated for axial  $\sigma =$  0.73 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

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**UNIAXIAL COMPRESSION TEST with DEFORMATION**

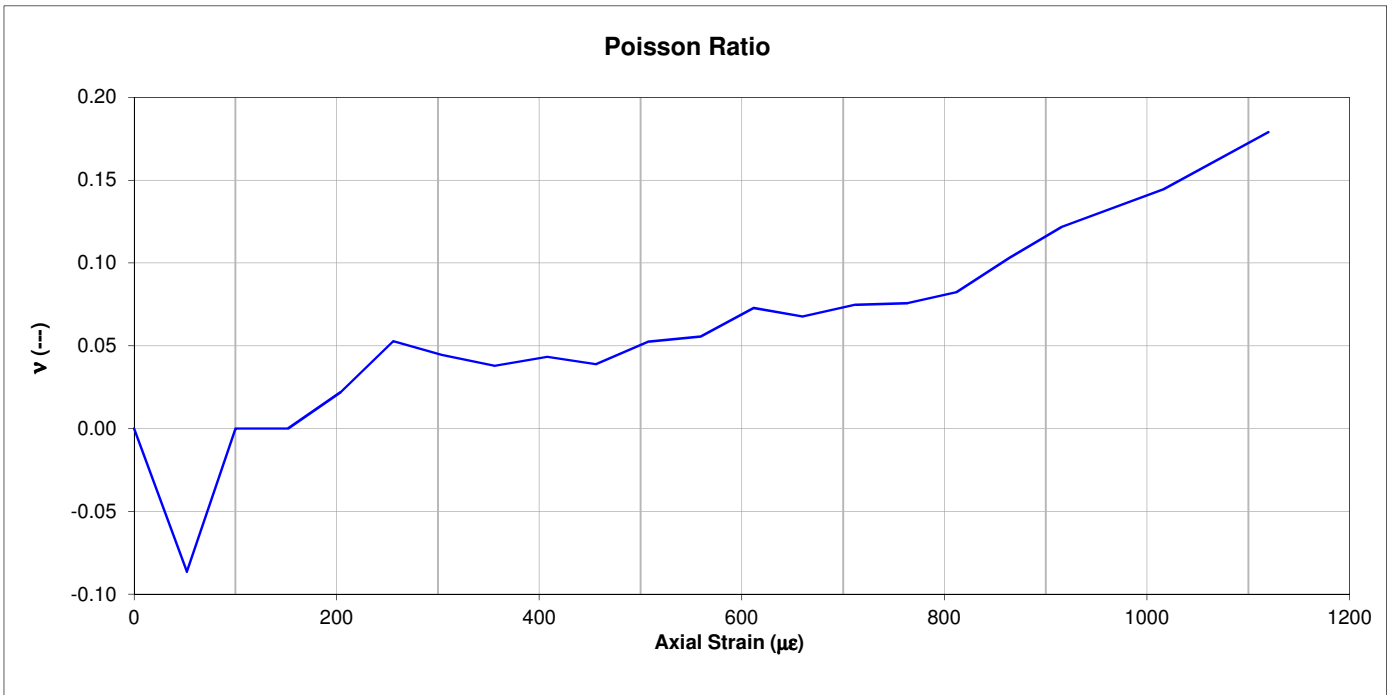
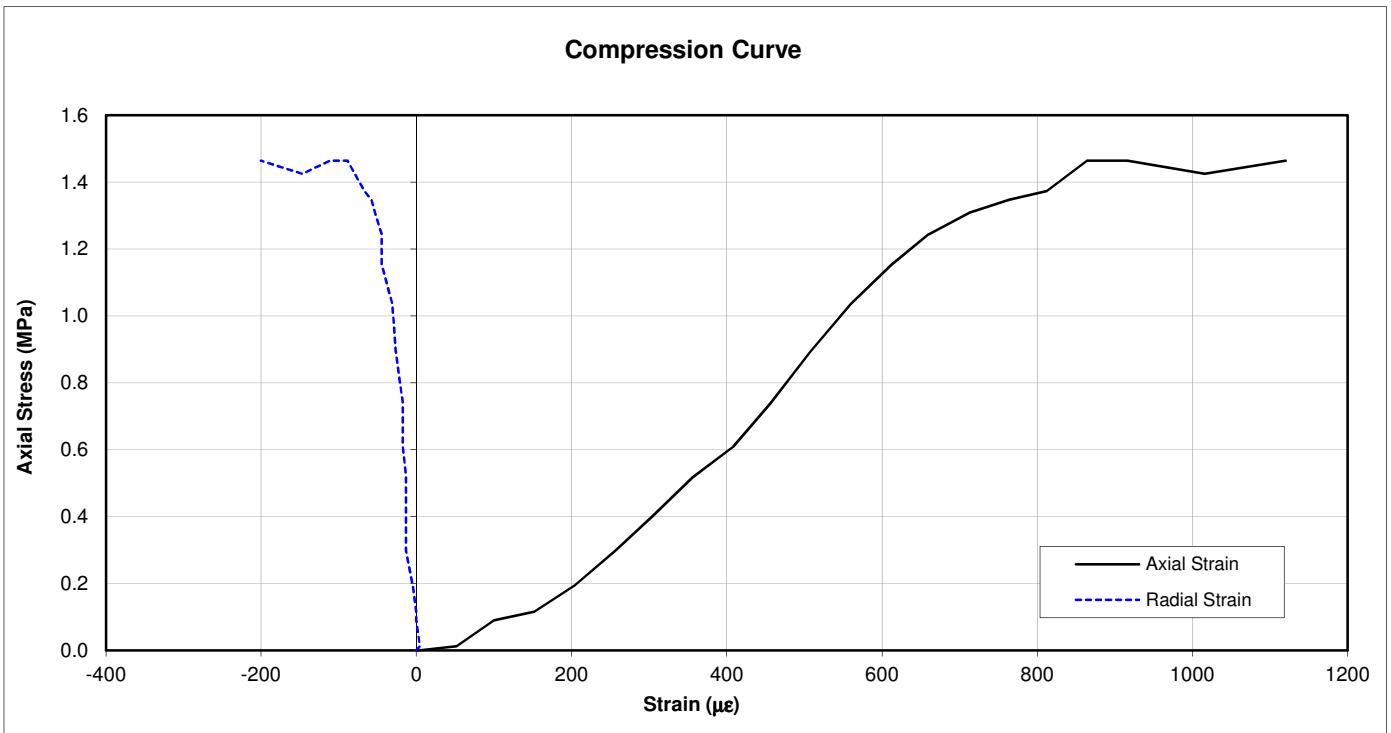
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No BHR611  
 Specimen Depth 32.90 - 33.20m  
 Specimen Type C

Cross section area 77.18 cm<sup>2</sup>  
 Height 214.44 mm  
 Max logged strength 1.46 MPa  
 Poisson at failure 0.122  
 Poisson (\*) 0.043

(\*) Calculated for axial  $\sigma =$  0.73 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*







	STRUCTURAL SOILS
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Test Date 02/08/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

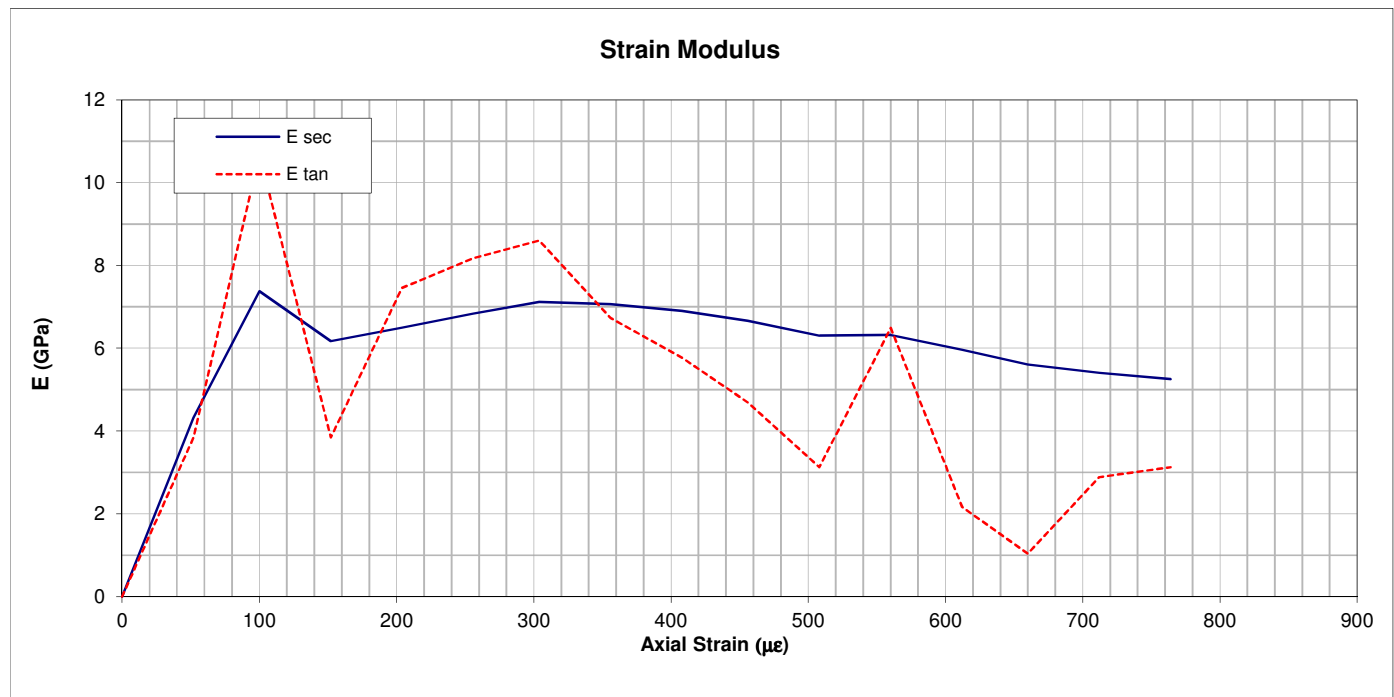
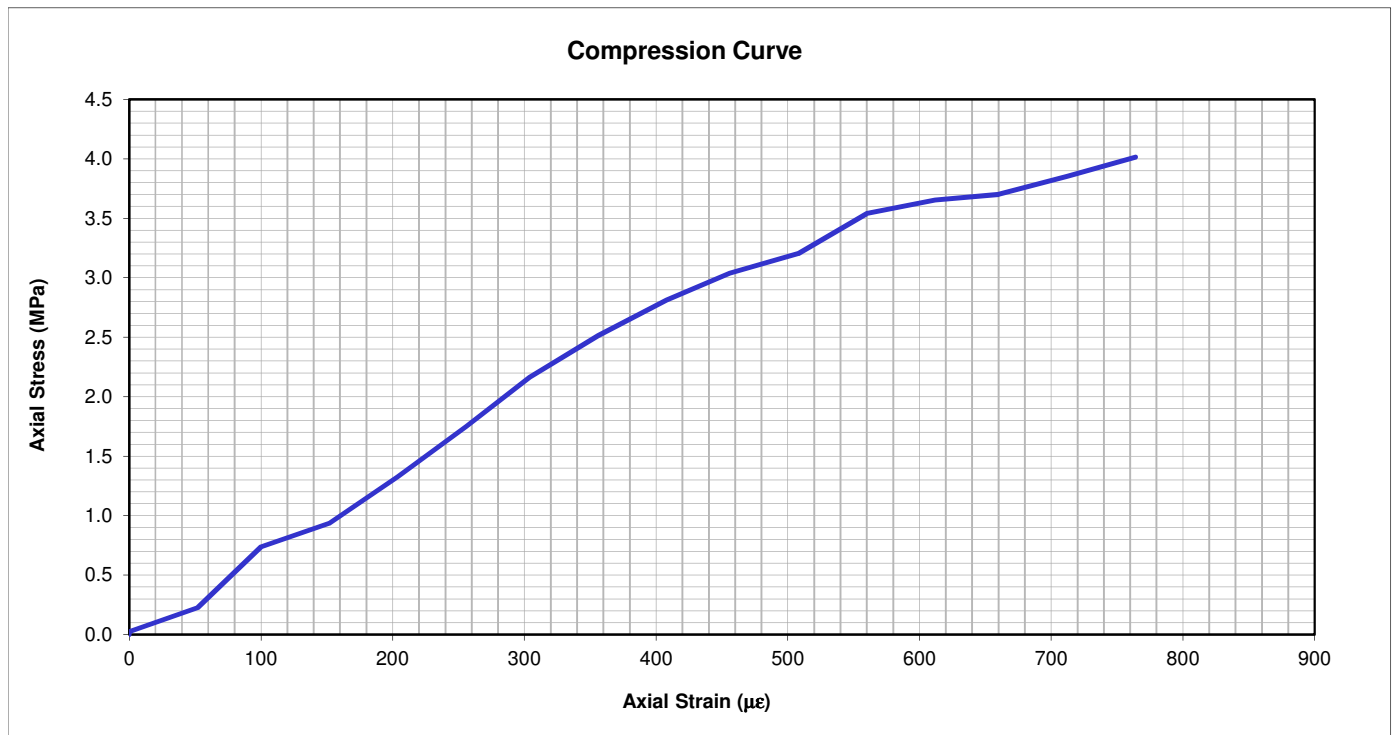
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>BHR612</u>
Specimen Depth	<u>26.00 - 26.37m</u>
Specimen Type	<u>C</u>

Cross section area	<u>79.96 cm<sup>2</sup></u>
Height	<u>214.98 mm</u>
Max logged strength	<u>4.01 MPa</u>
E <sub>tan</sub>	<u>(*) 8.18 GPa</u>
E <sub>sec</sub>	<u>(^) 6.84 GPa</u>

(\*) Calculated for axial  $\sigma =$  2.01 MPa  
 (^) Calculated for axial  $\sigma =$  2.01 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
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	Bristol BS3 4AG

Test Date 02/08/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

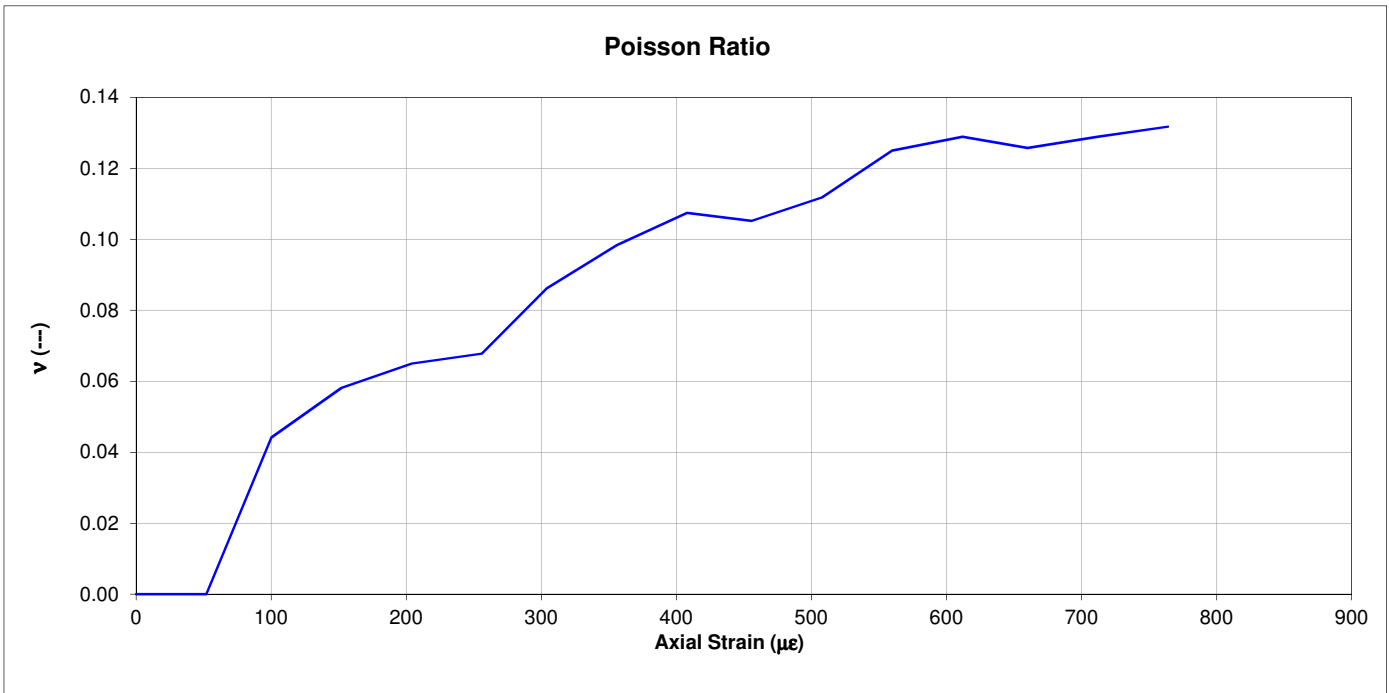
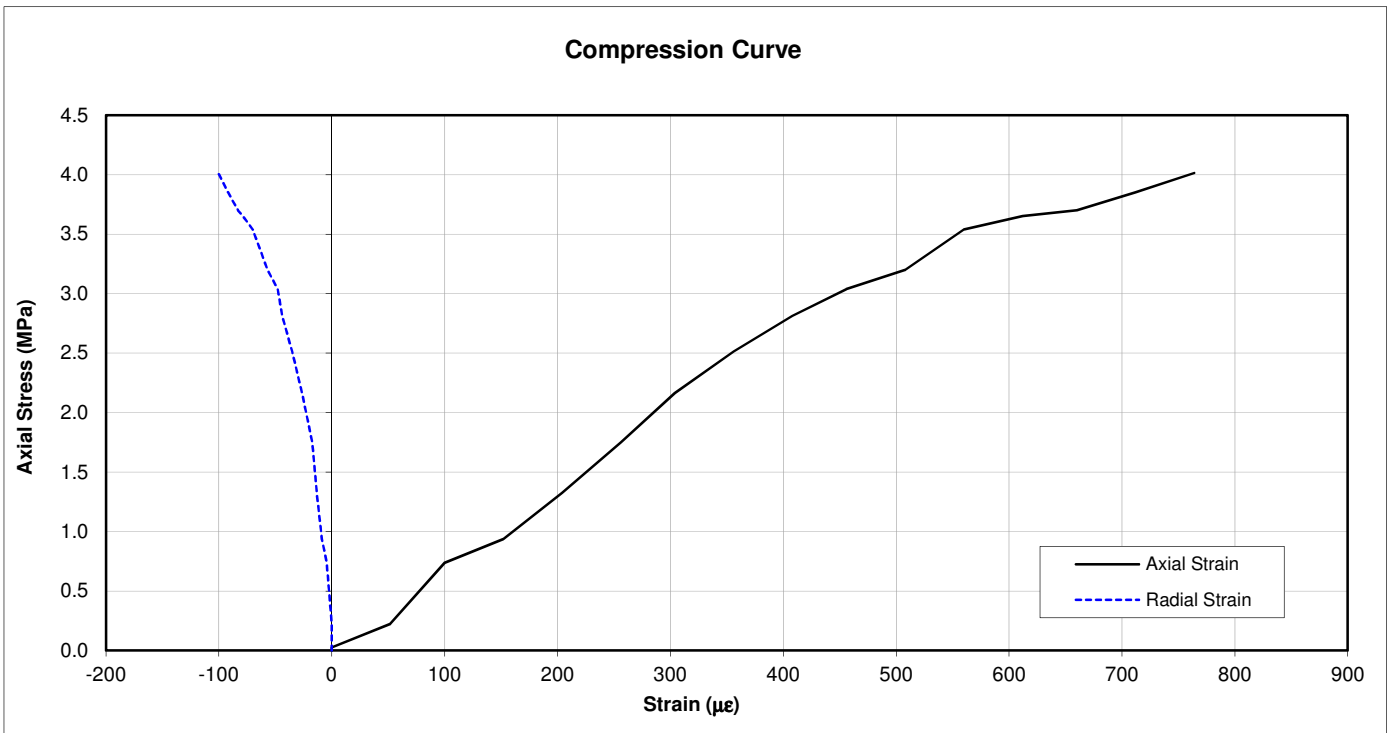
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No BHR612  
 Specimen Depth 26.00 - 26.37m  
 Specimen Type C

Cross section area 79.96 cm<sup>2</sup>  
 Height 214.98 mm  
 Max logged strength 4.01 MPa  
 Poisson at failure 0.132  
 Poisson (\*) 0.068

(\*) Calculated for axial  $\sigma =$  2.01 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

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**UNIAXIAL COMPRESSION TEST with DEFORMATION**

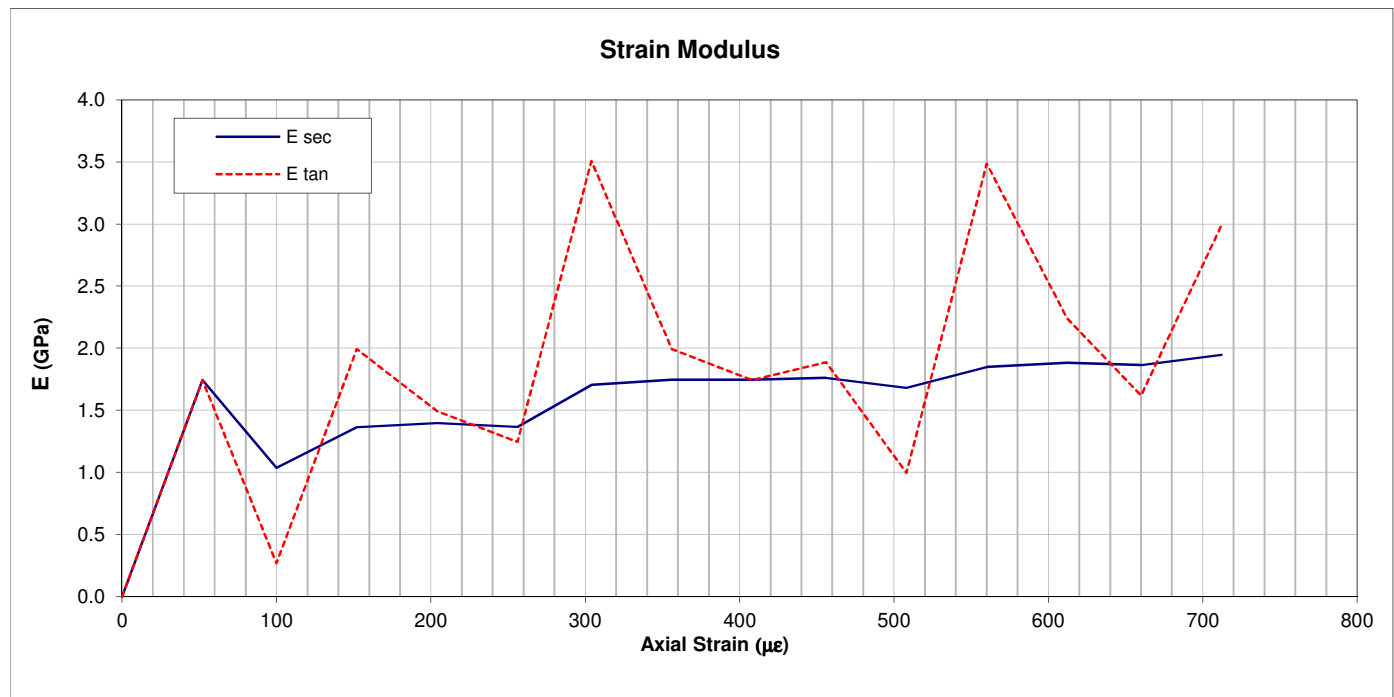
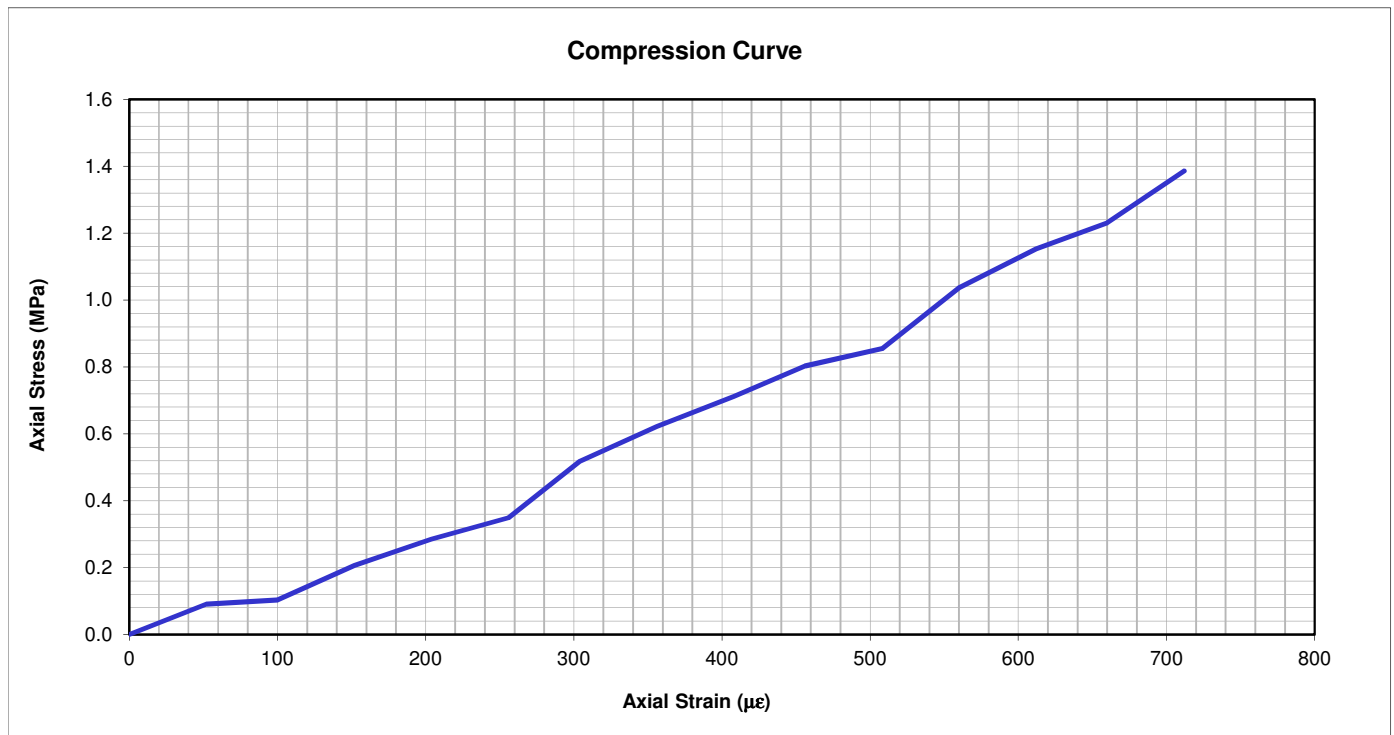
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>BHR613</u>
Specimen Depth	<u>18.85 - 19.30m</u>
Specimen Type	<u>C</u>

Cross section area	<u>77.21 cm<sup>2</sup></u>
Height	<u>197.73 mm</u>
Max logged strength	<u>1.39 MPa</u>
E <sub>tan</sub> (*)	<u>1.99 GPa</u>
E <sub>sec</sub> (^)	<u>1.75 GPa</u>

(\*) Calculated for axial  $\sigma =$  0.69 MPa  
 (^) Calculated for axial  $\sigma =$  0.69 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



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**UNIAXIAL COMPRESSION TEST with DEFORMATION**

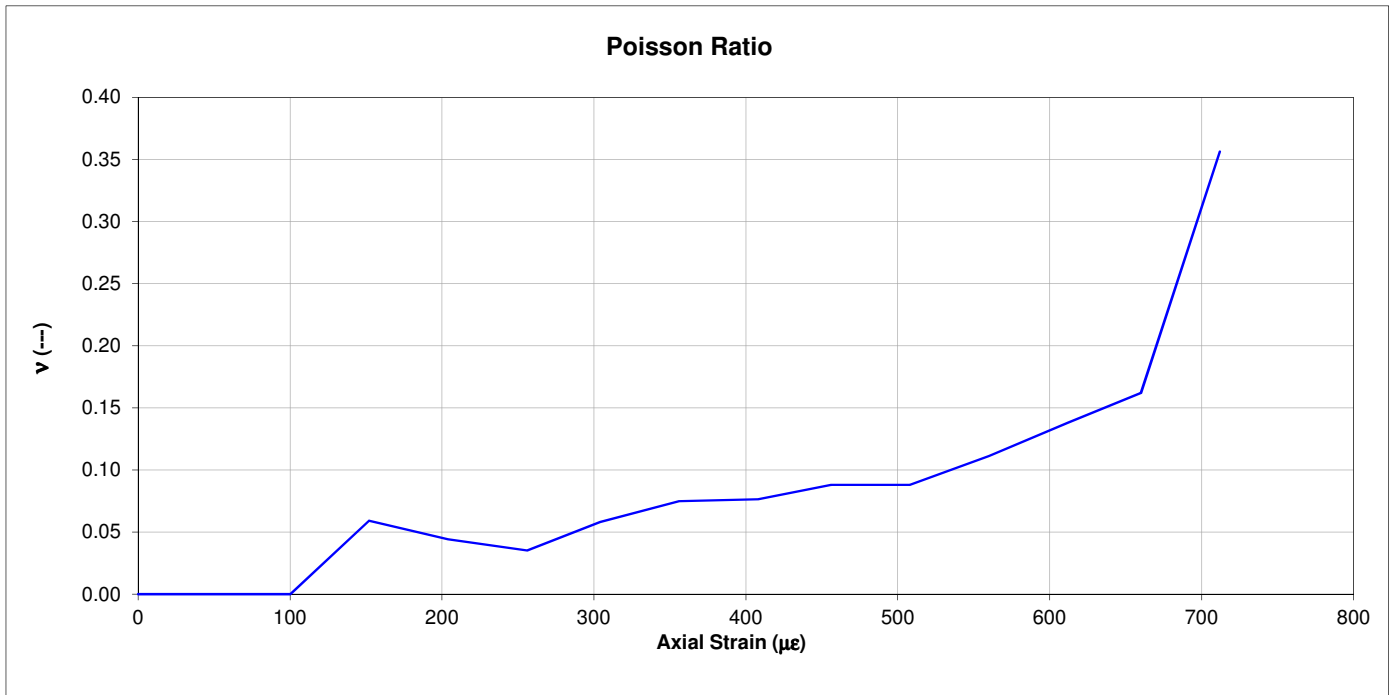
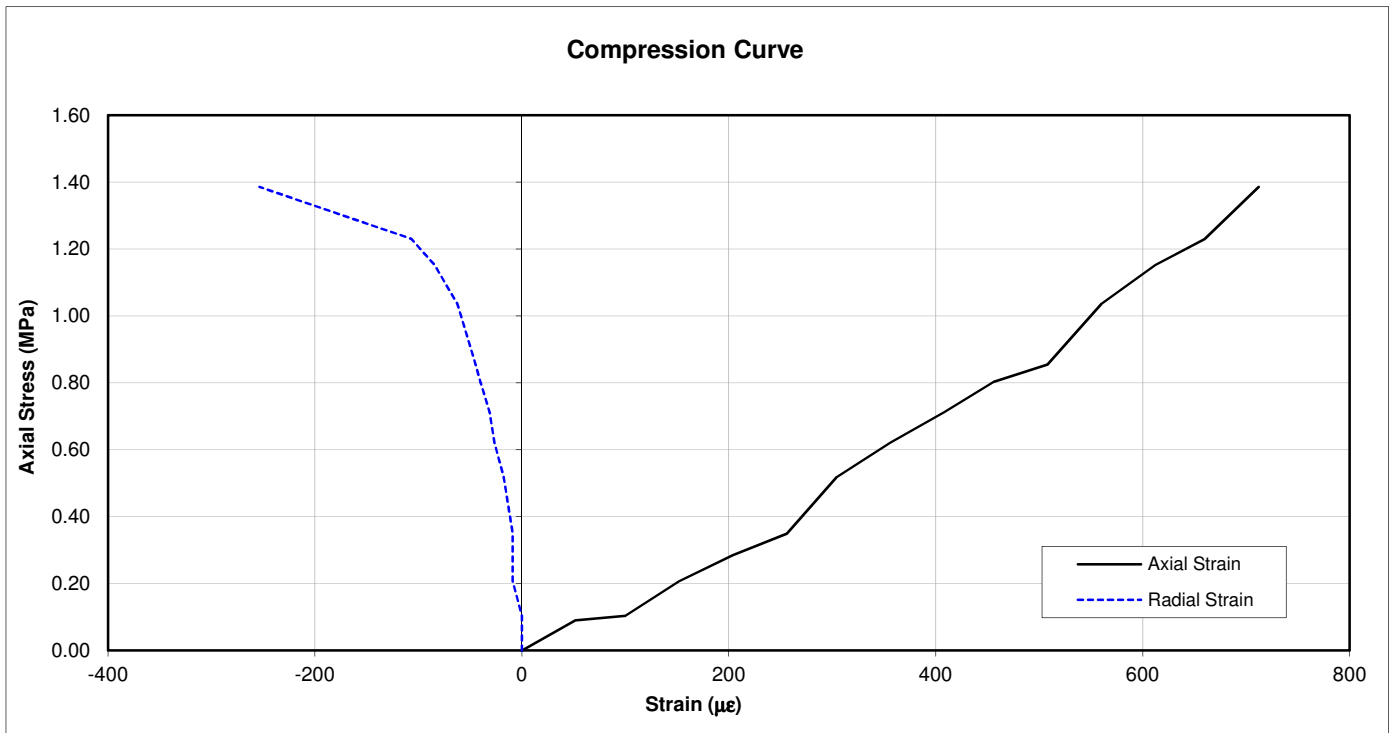
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No BHR613  
 Specimen Depth 18.85 - 19.30m  
 Specimen Type C

Cross section area 77.21 cm<sup>2</sup>  
 Height 197.73 mm  
 Max logged strength 1.39 MPa  
 Poisson at failure 0.356  
 Poisson (\*) 0.075

(\*) Calculated for axial  $\sigma =$  0.69 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





	STRUCTURAL SOILS
	1A Princess Street
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**UNIAXIAL COMPRESSION TEST with DEFORMATION**

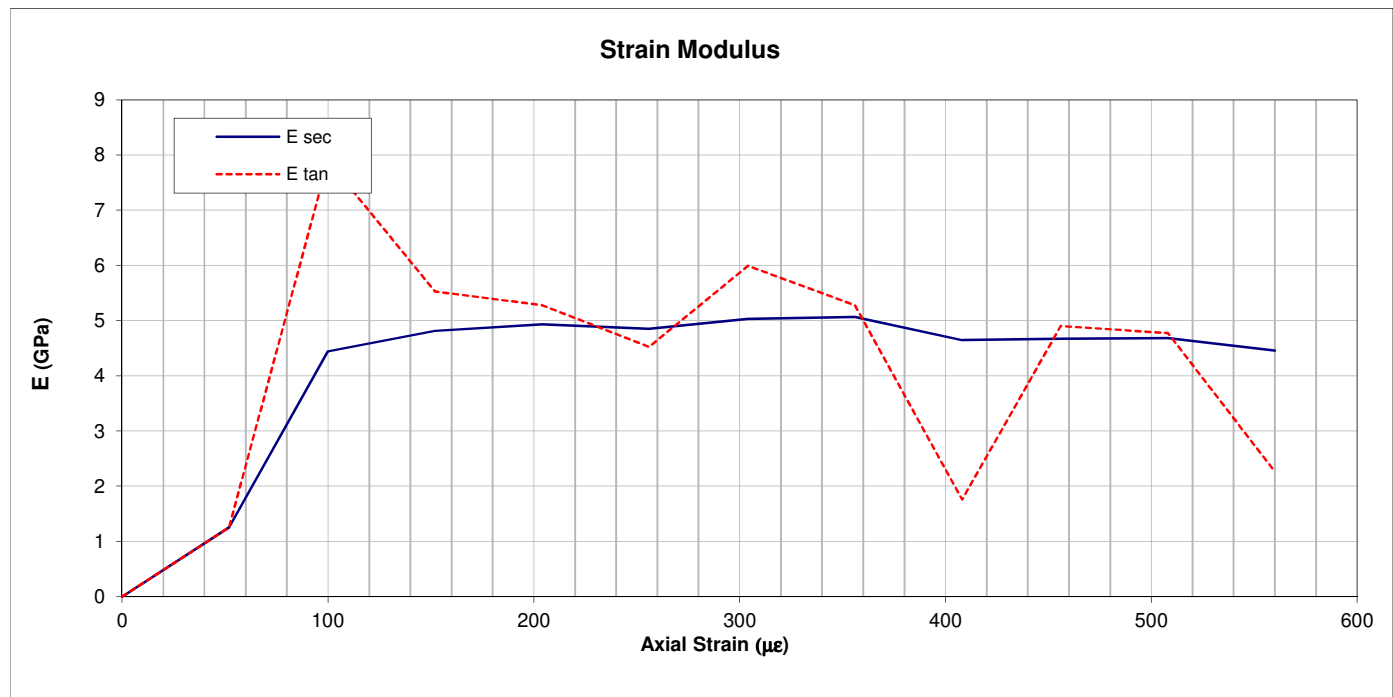
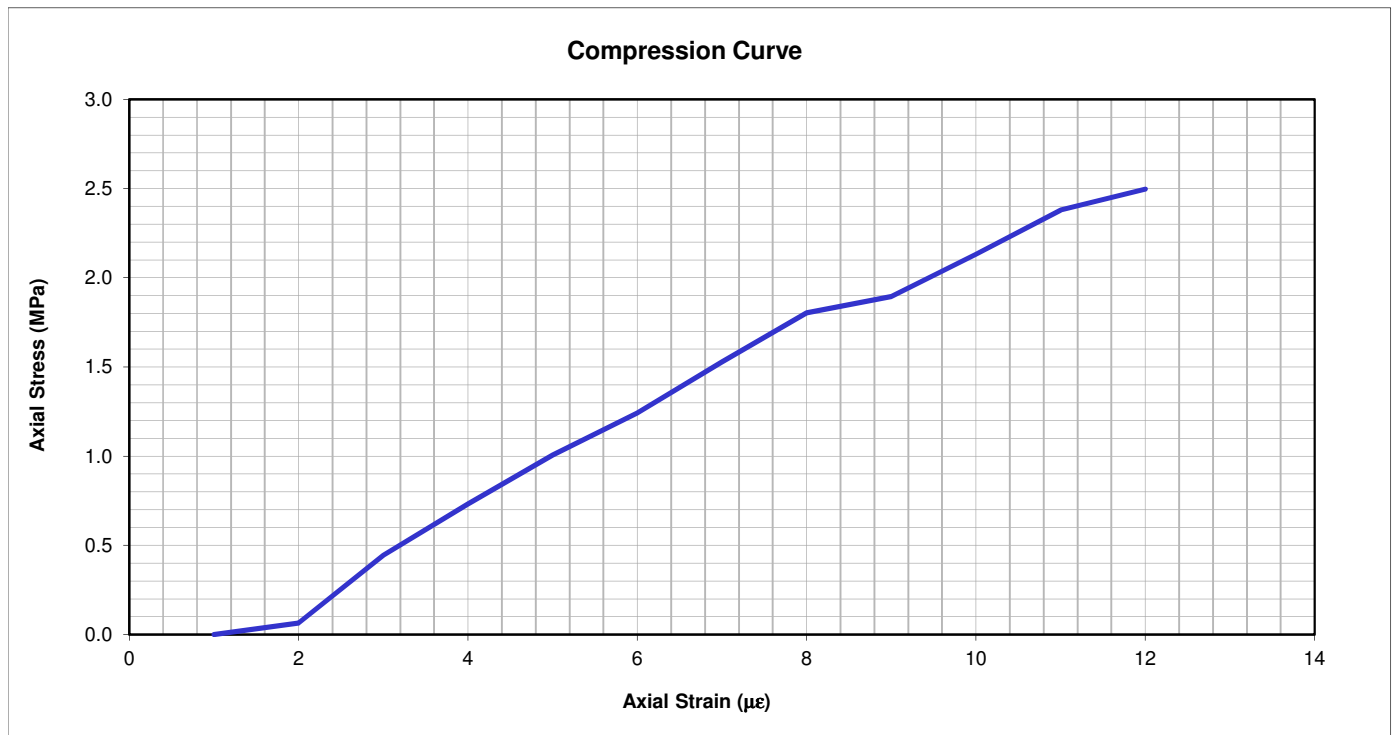
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>BHR613</u>
Specimen Depth	<u>31.45 - 31.75m</u>
Specimen Type	<u>C</u>

Cross section area	<u>76.50 cm<sup>2</sup></u>
Height	<u>214.21 mm</u>
Max logged strength	<u>2.50 MPa</u>
E <sub>tan</sub> (*)	<u>4.53 GPa</u>
E <sub>sec</sub> (^)	<u>4.85 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.25 MPa  
 (^) Calculated for axial  $\sigma =$  1.25 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



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	Bristol BS3 4AG

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**UNIAXIAL COMPRESSION TEST with DEFORMATION**

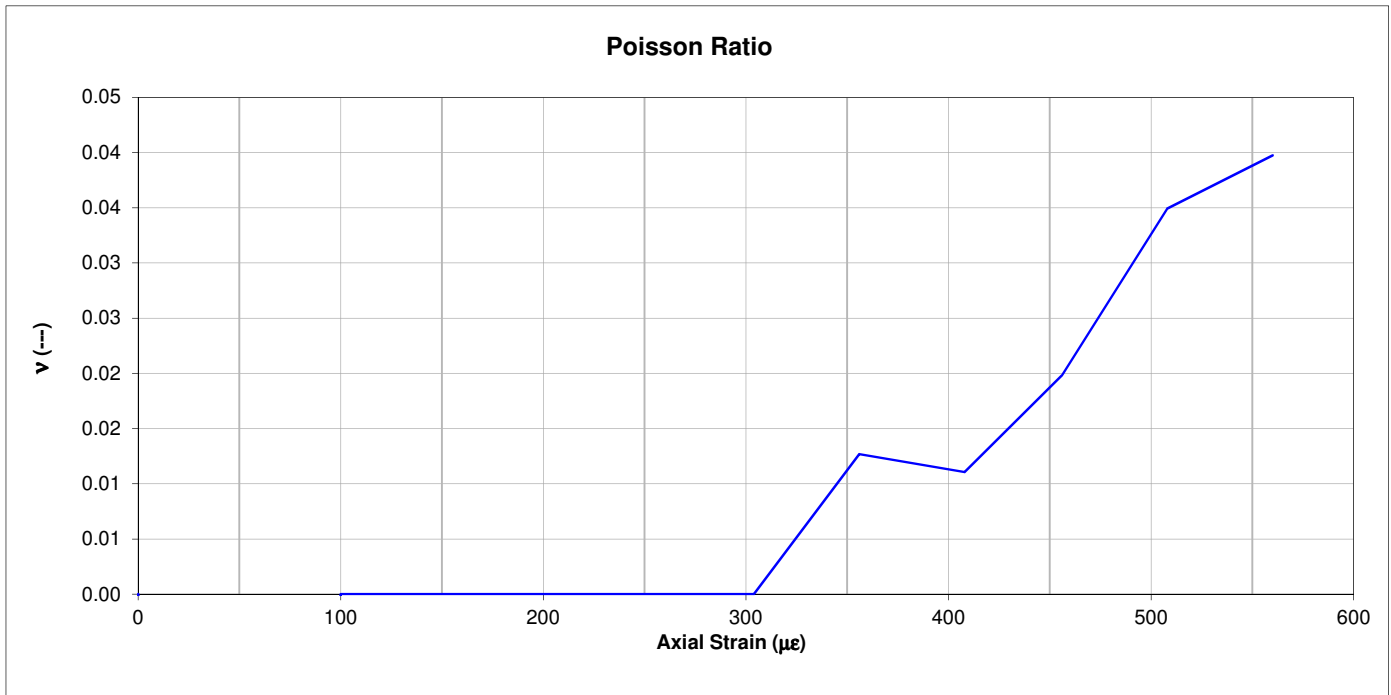
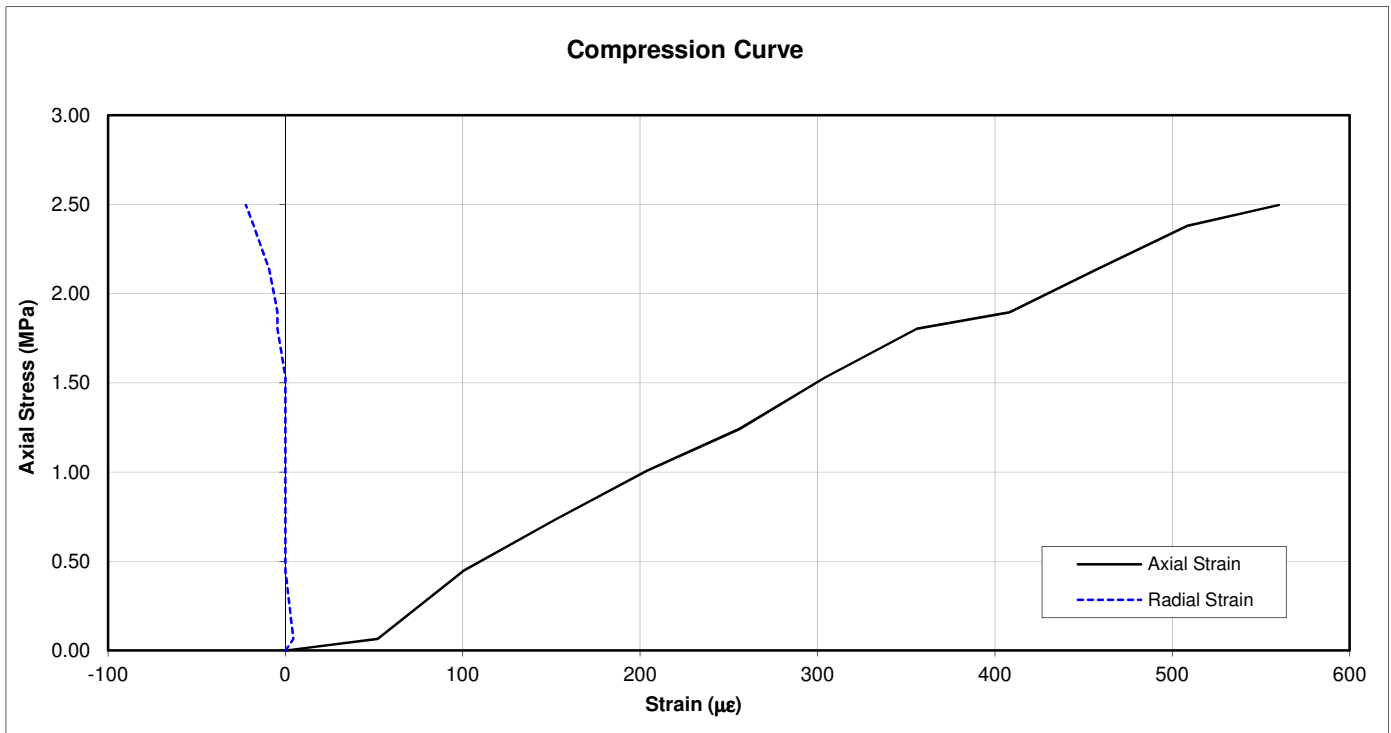
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No BHR613  
 Specimen Depth 31.45 - 31.75m  
 Specimen Type C

Cross section area 76.50 cm<sup>2</sup>  
 Height 214.21 mm  
 Max logged strength 2.50 MPa  
 Poisson at failure 0.040  
 Poisson (\*) \_\_\_\_\_

(\*) Calculated for axial  $\sigma =$  1.25 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*







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	Bristol BS3 4AG

Test Date 20/08/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

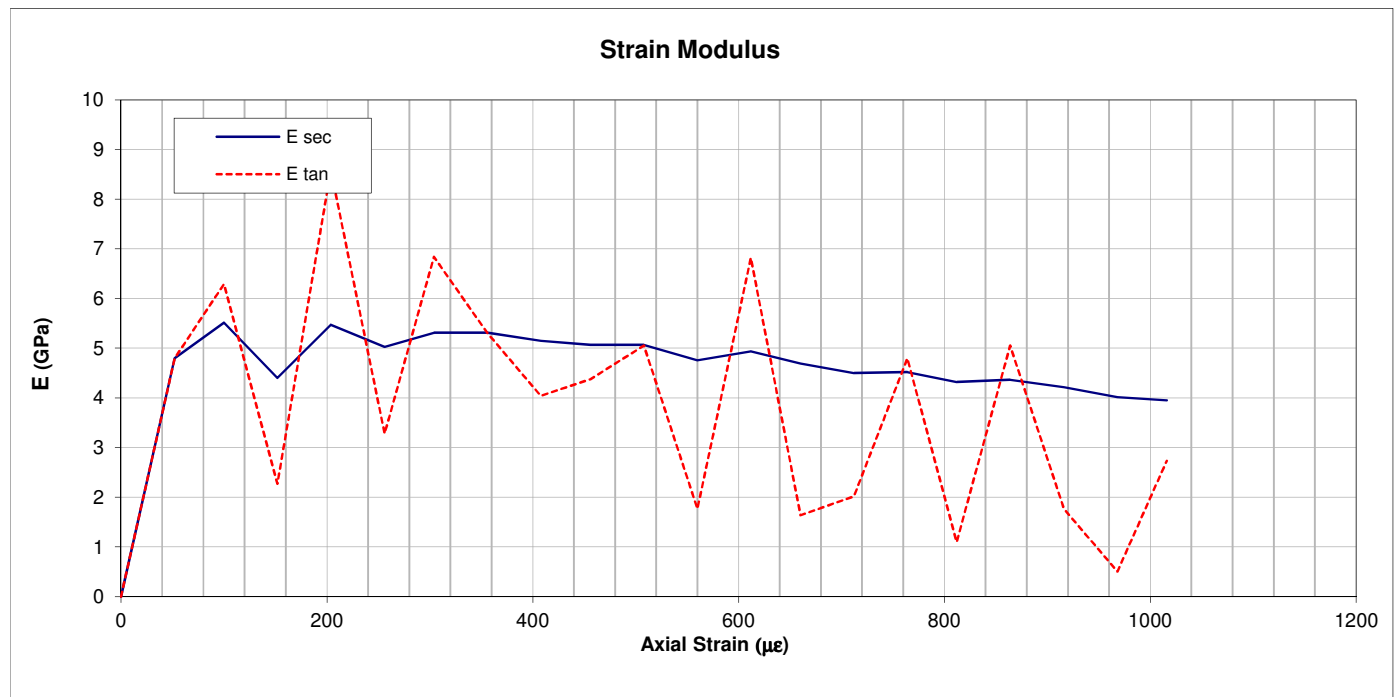
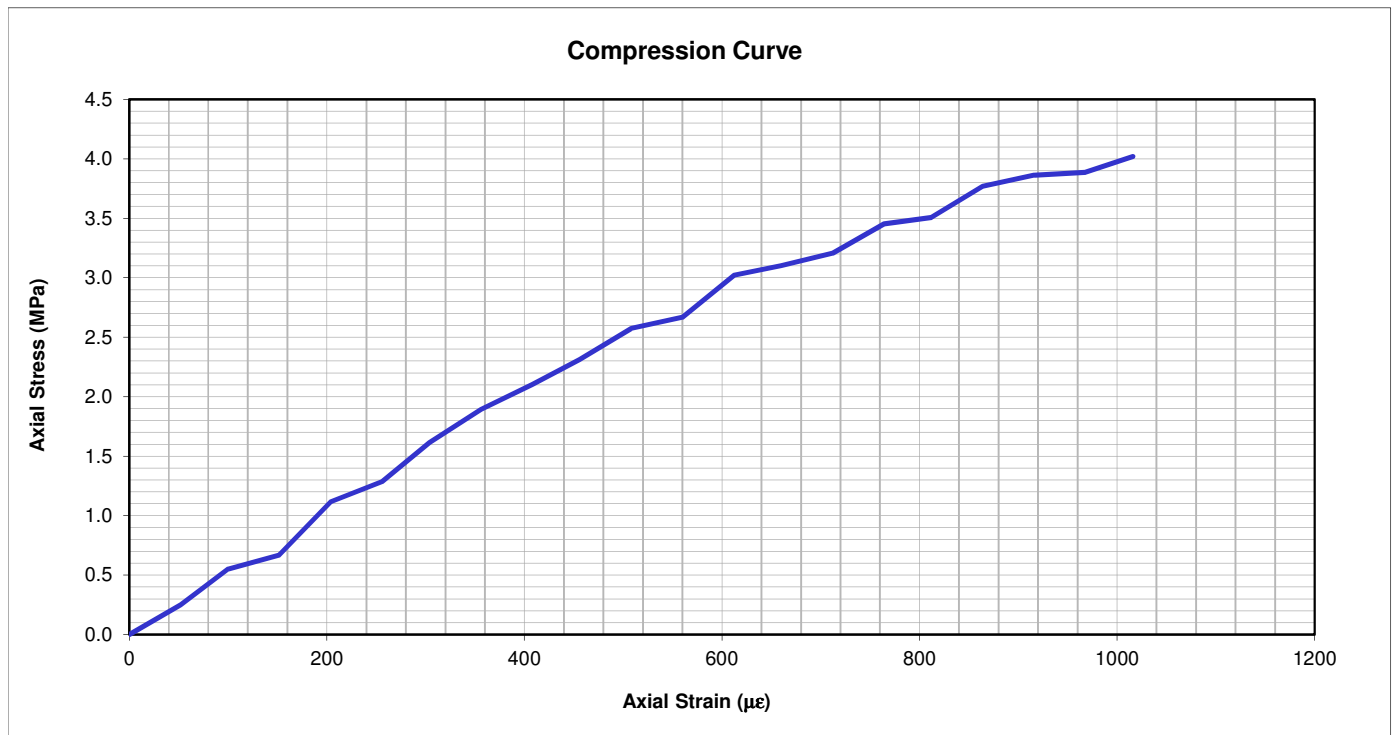
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>BHR614</u>
Specimen Depth	<u>30.15 - 30.55m</u>
Specimen Type	<u>C</u>

Cross section area	<u>76.14 cm<sup>2</sup></u>
Height	<u>211.87 mm</u>
Max logged strength	<u>4.02 MPa</u>
E <sub>tan</sub>	<u>(*) 5.30 GPa</u>
E <sub>sec</sub>	<u>(^) 5.31 GPa</u>

(\*) Calculated for axial  $\sigma =$  2.01 MPa  
 (^) Calculated for axial  $\sigma =$  2.01 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 20/08/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

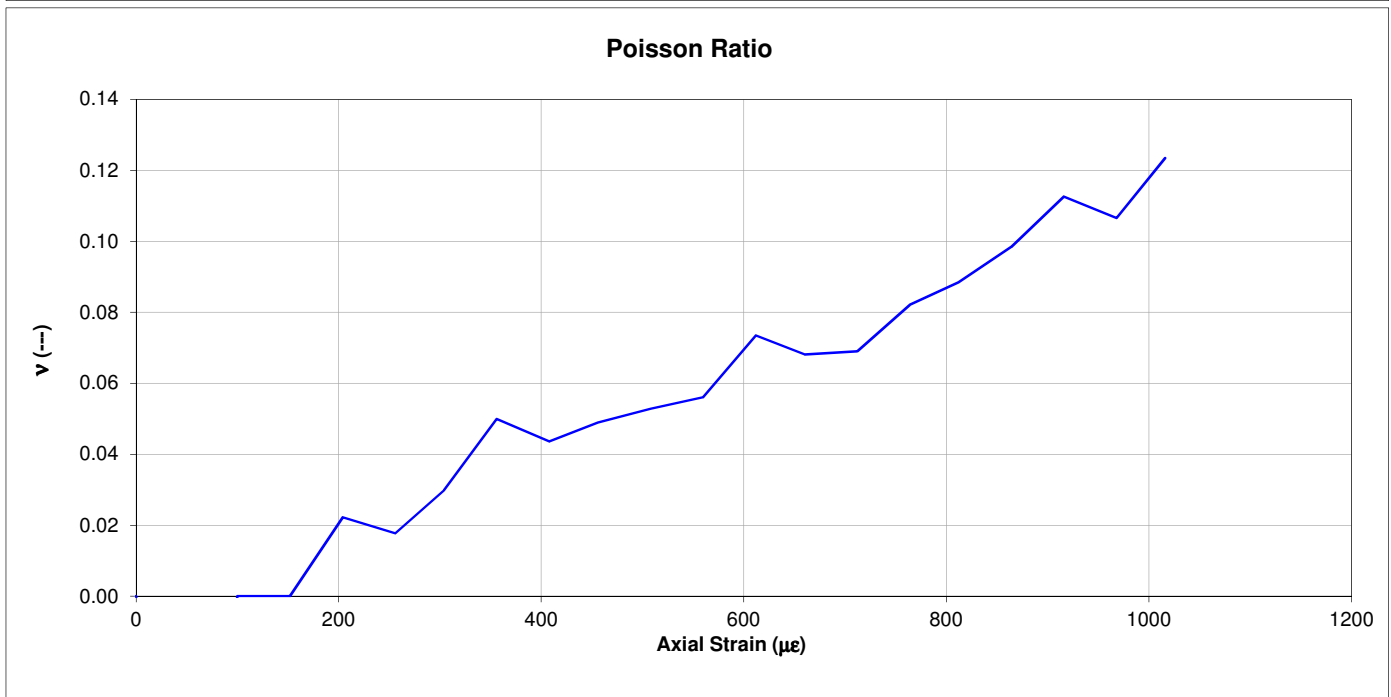
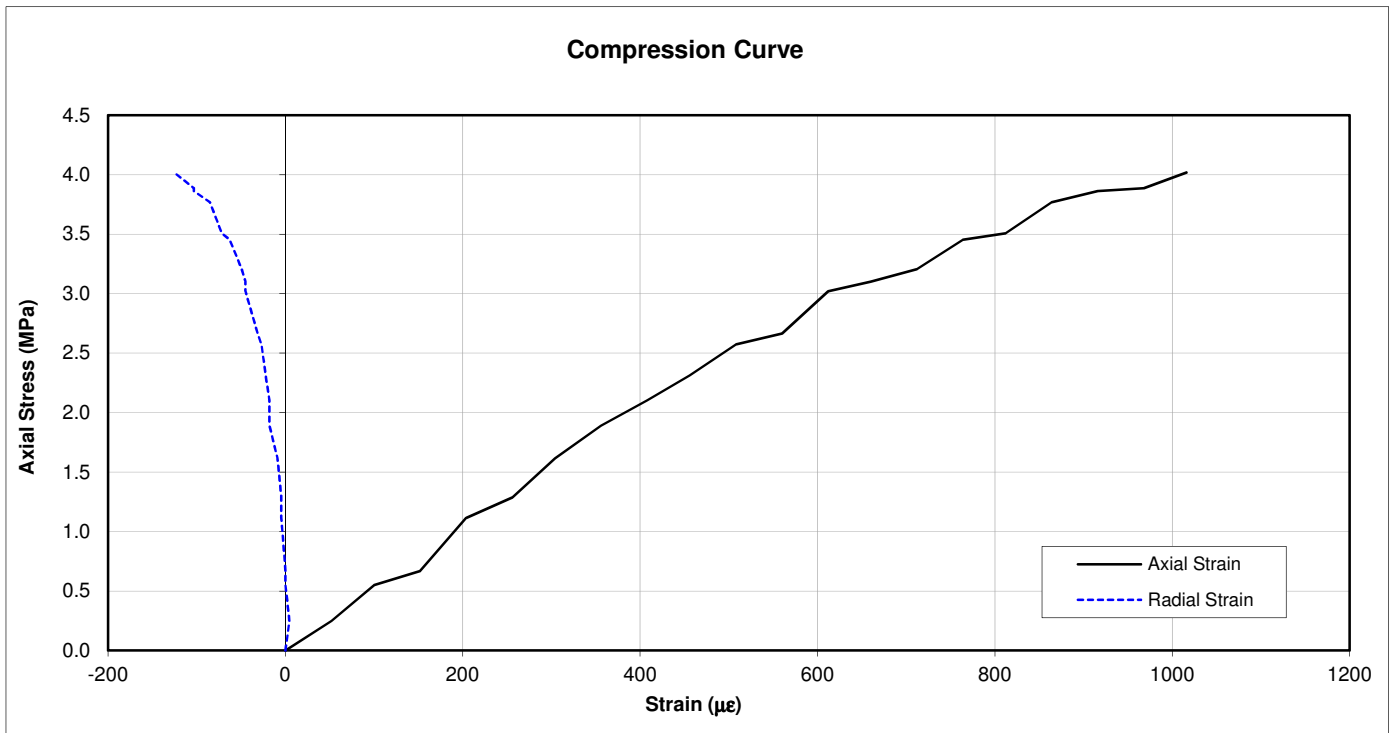
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No BHR614  
 Specimen Depth 30.15 - 30.55m  
 Specimen Type C

Cross section area 76.14 cm<sup>2</sup>  
 Height 211.87 mm  
 Max logged strength 4.02 MPa  
 Poisson at failure 0.123  
 Poisson (\*) 0.050

(\*) Calculated for axial  $\sigma =$  2.01 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





	STRUCTURAL SOILS
	1A Princess Street
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Test Date 20/08/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

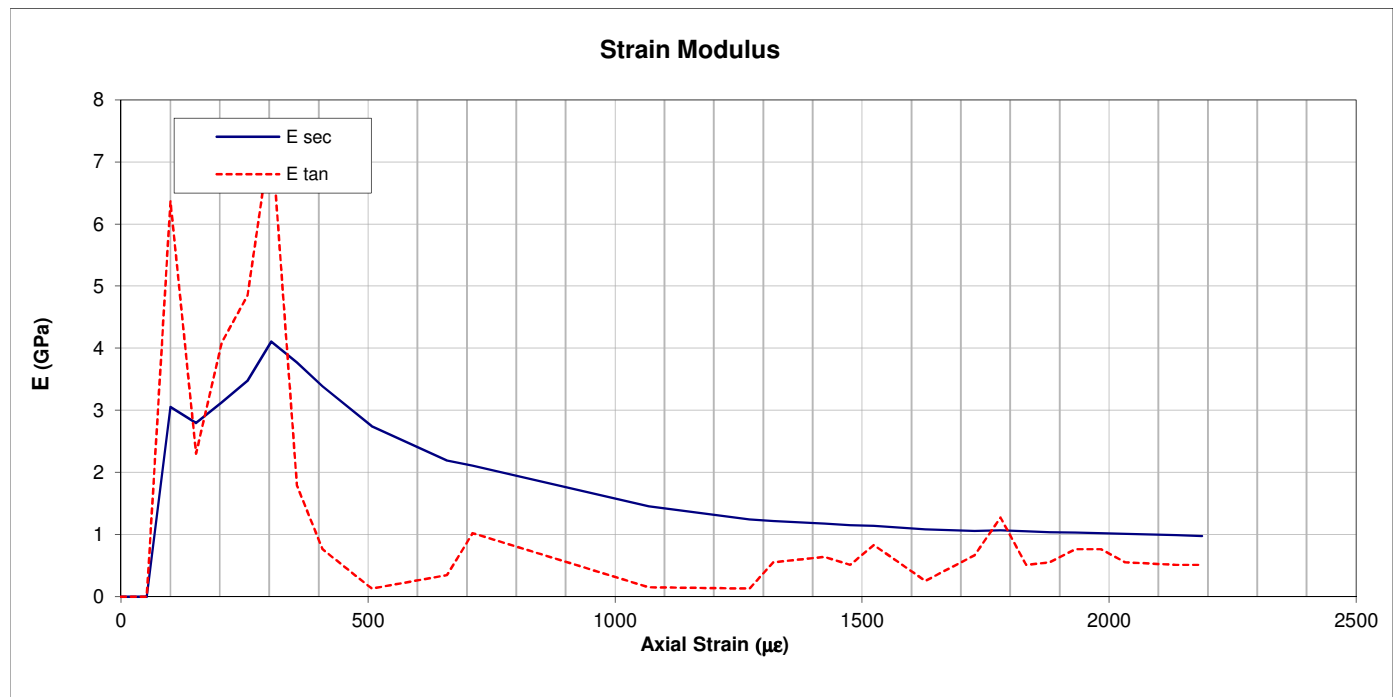
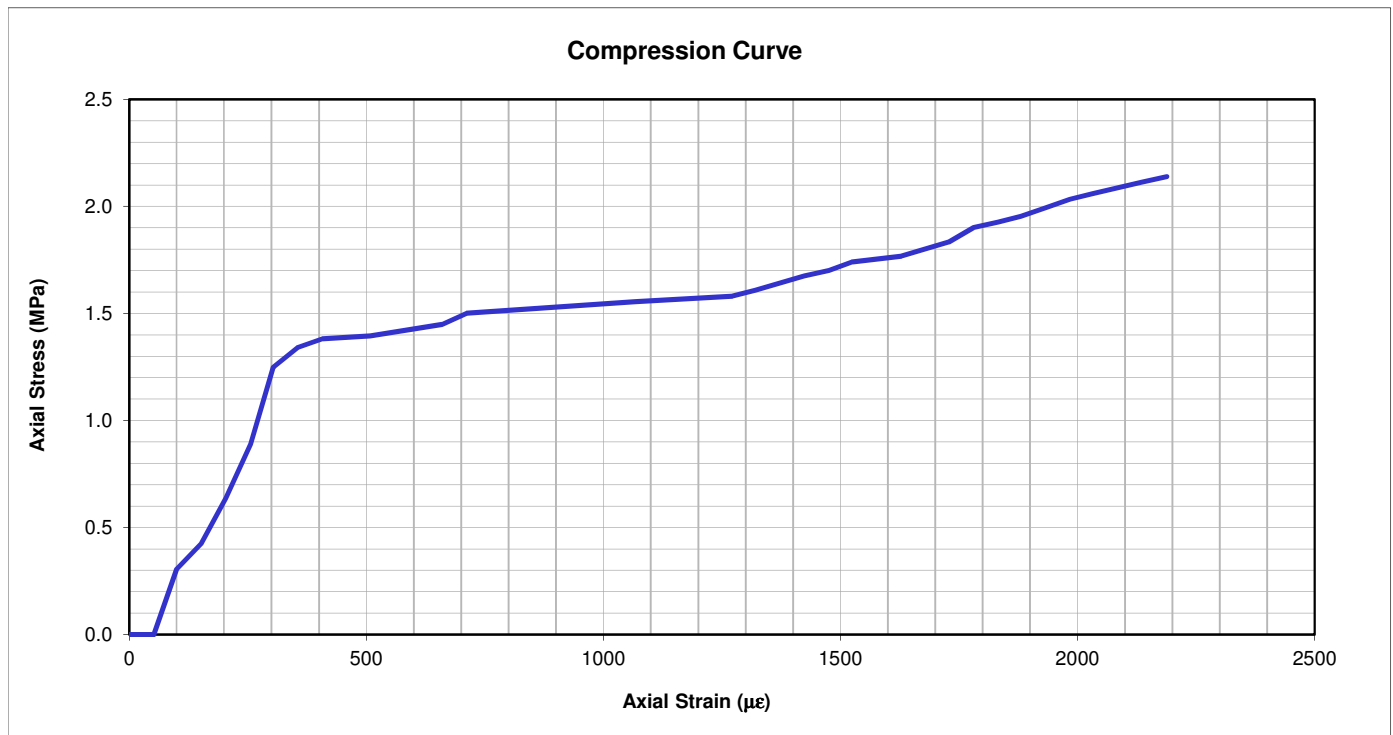
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>BHR614</u>
Specimen Depth	<u>40.10 - 40.50m</u>
Specimen Type	<u>C</u>

Cross section area	<u>75.26 cm<sup>2</sup></u>
Height	<u>214.09 mm</u>
Max logged strength	<u>2.14 MPa</u>
E <sub>tan</sub>	<u>(*) 4.85 GPa</u>
E <sub>sec</sub>	<u>(^) 3.48 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.07 MPa  
 (^) Calculated for axial  $\sigma =$  1.07 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 20/08/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

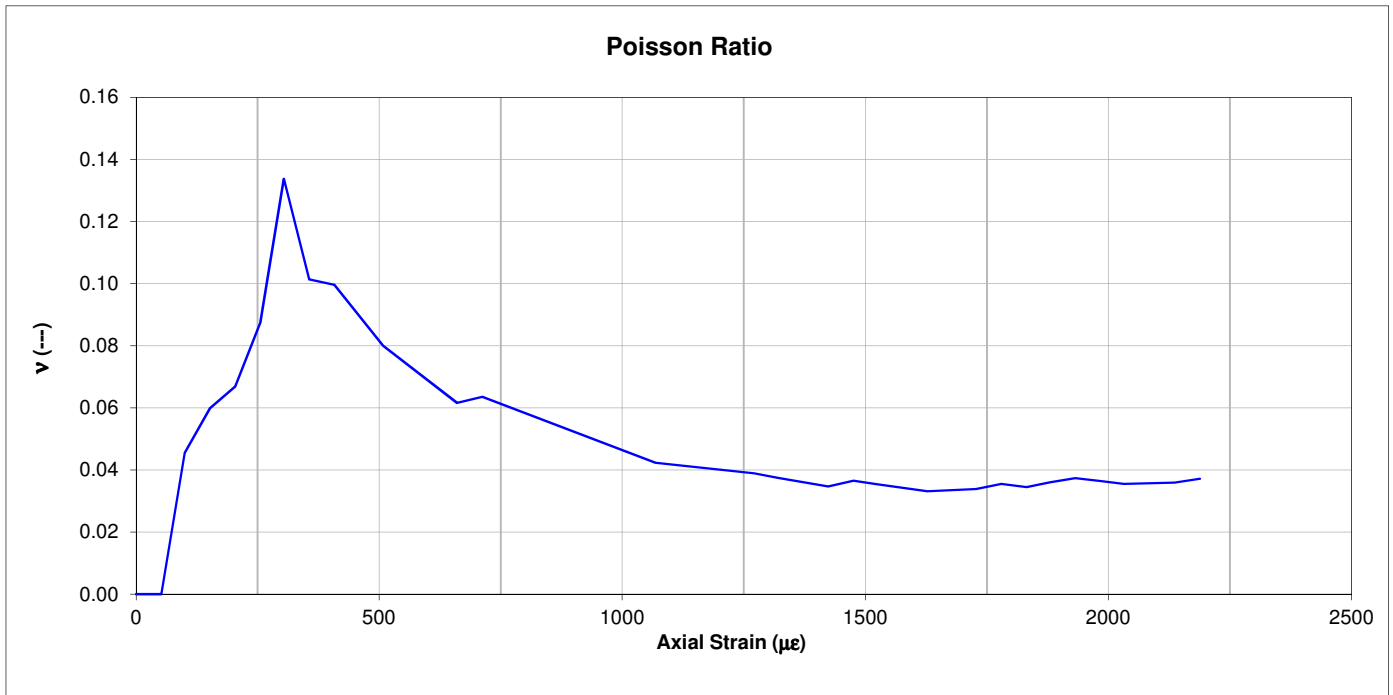
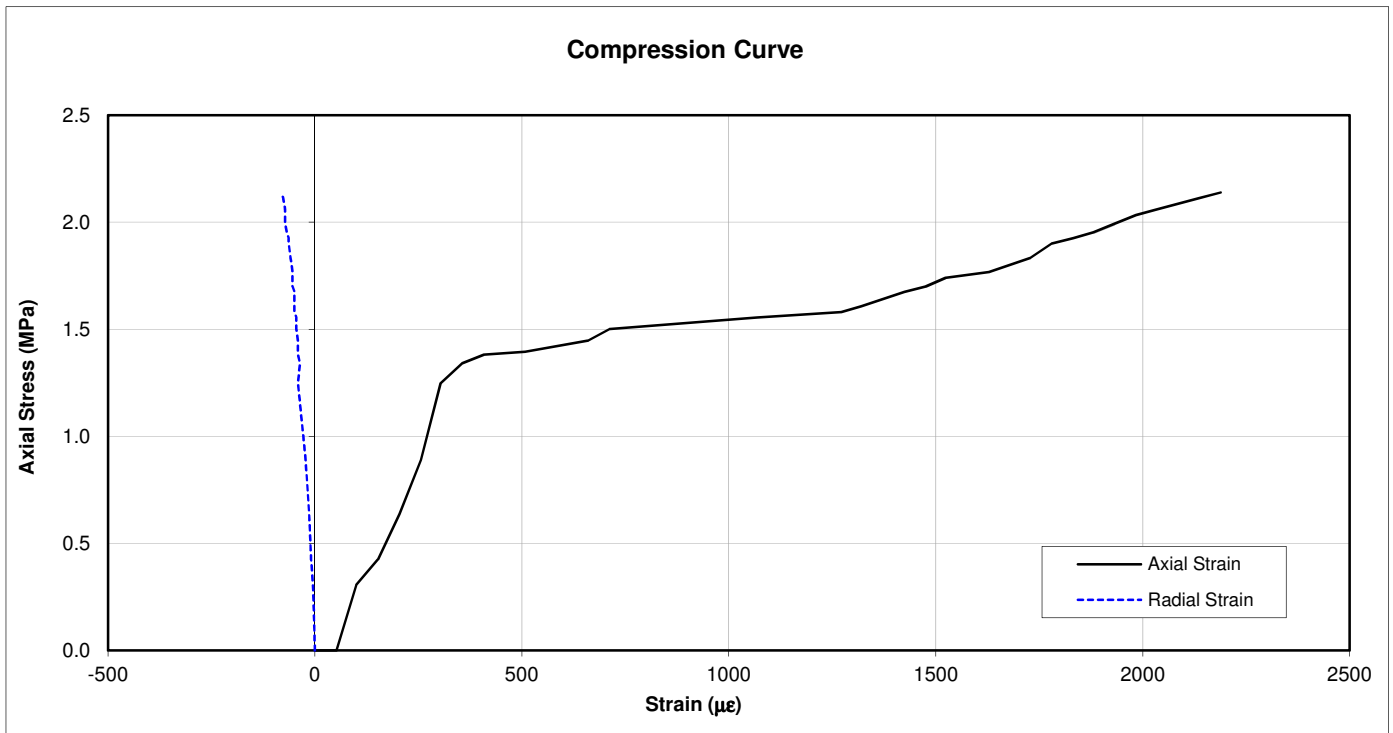
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No BHR614  
 Specimen Depth 40.10 - 40.50m  
 Specimen Type C

Cross section area 75.26 cm<sup>2</sup>  
 Height 214.09 mm  
 Max logged strength 2.14 MPa  
 Poisson at failure 0.037  
 Poisson (\*) 0.088

(\*) Calculated for axial  $\sigma =$  1.07 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 20/08/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

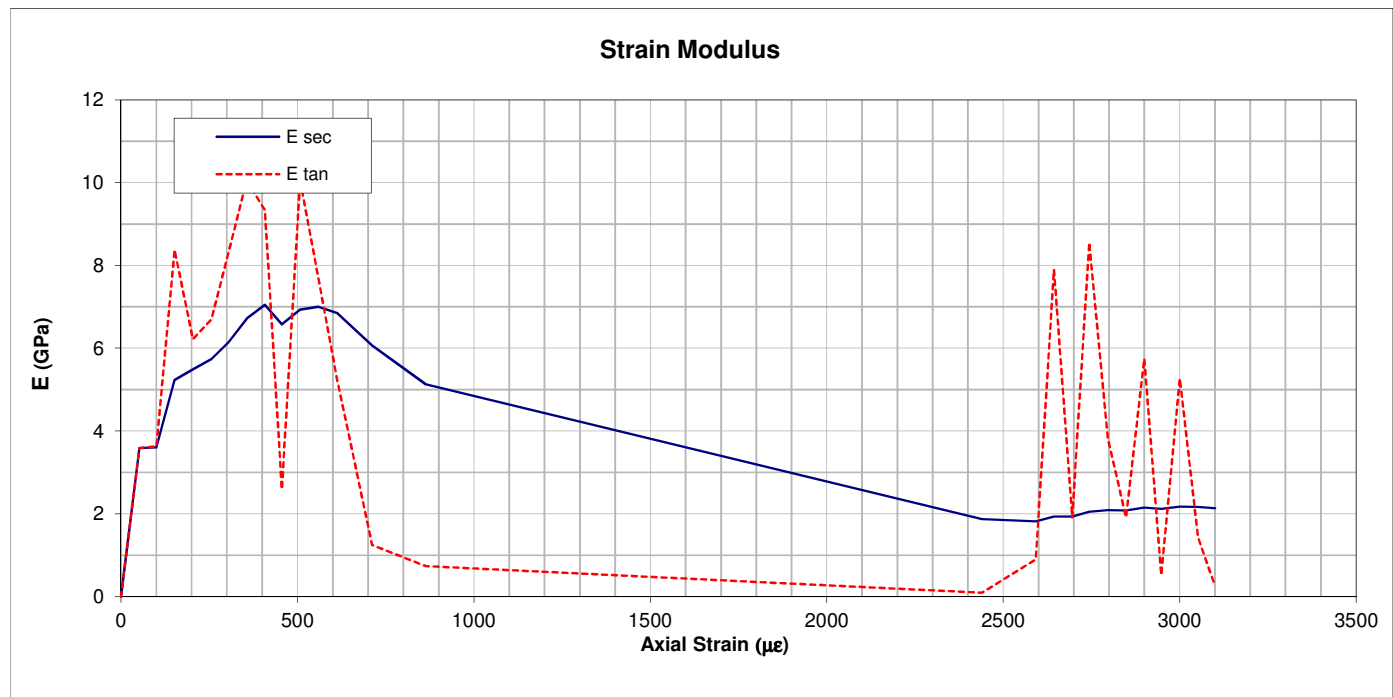
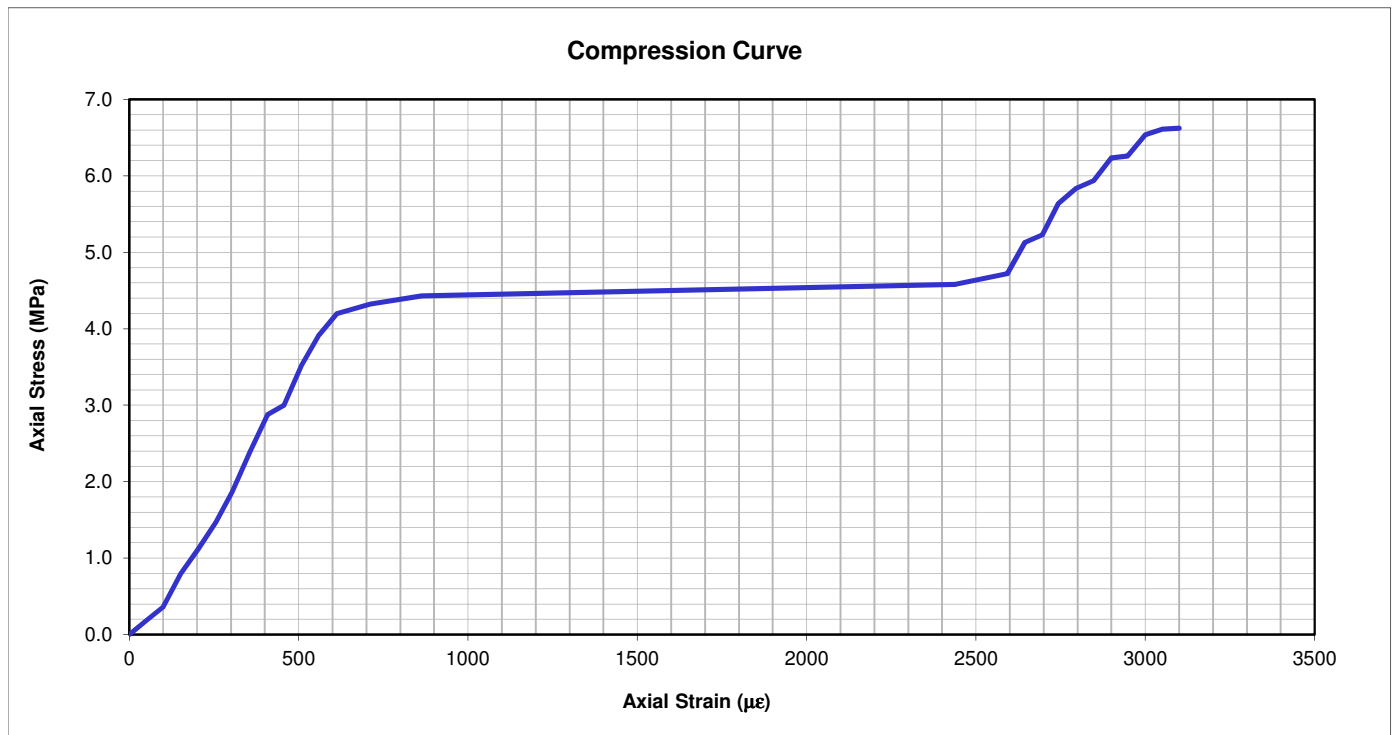
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>BHR615</u>
Specimen Depth	<u>9.82 - 10.22m</u>
Specimen Type	<u>C</u>

Cross section area	<u>80.34 cm<sup>2</sup></u>
Height	<u>210.59 mm</u>
Max logged strength	<u>6.62 MPa</u>
E <sub>tan</sub> (*)	<u>2.59 GPa</u>
E <sub>sec</sub> (^)	<u>6.58 GPa</u>

(\*) Calculated for axial  $\sigma =$  3.31 MPa  
 (^) Calculated for axial  $\sigma =$  3.31 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 20/08/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

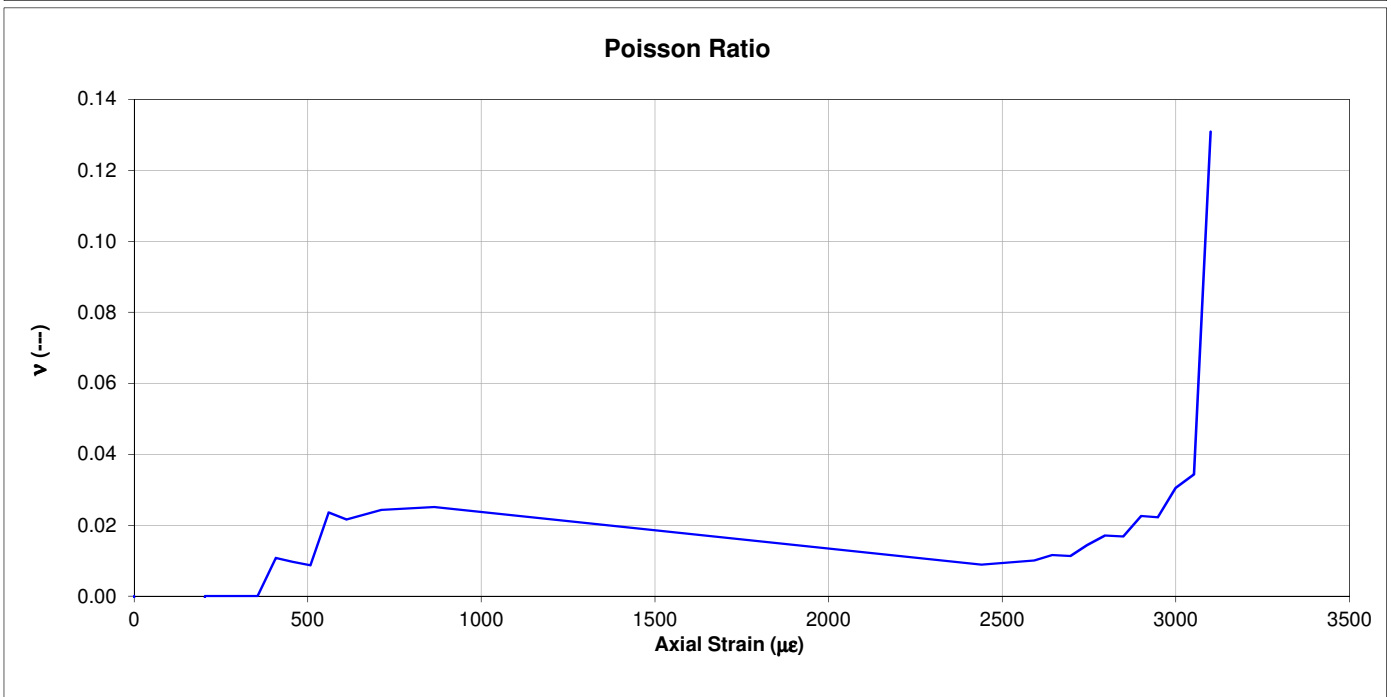
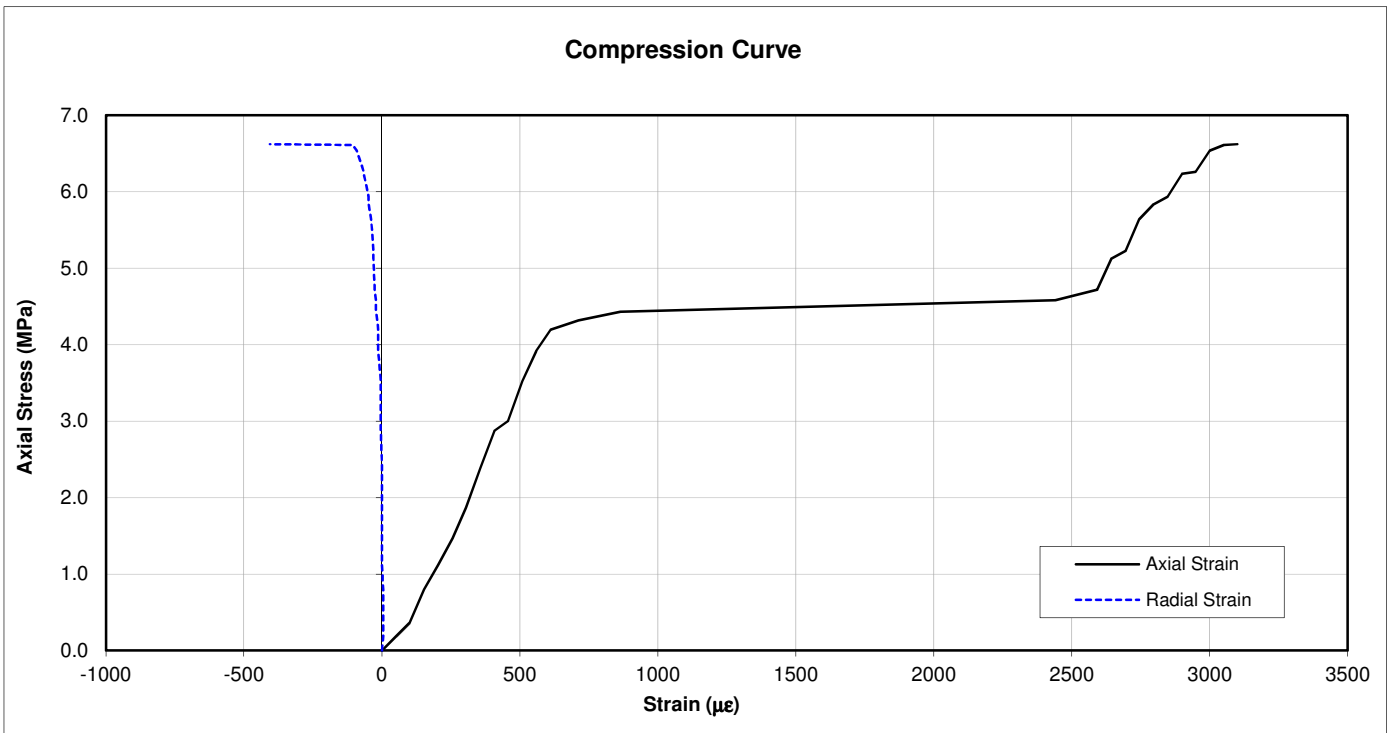
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>BHR615</u>
Specimen Depth	<u>9.82 - 10.22m</u>
Specimen Type	<u>C</u>

Cross section area	<u>80.34 cm<sup>2</sup></u>
Height	<u>210.59 mm</u>
Max logged strength	<u>6.62 MPa</u>
Poisson at failure	<u>0.131</u>
Poisson (*)	<u>0.010</u>

(\*) Calculated for axial  $\sigma =$  3.31 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

21/08/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

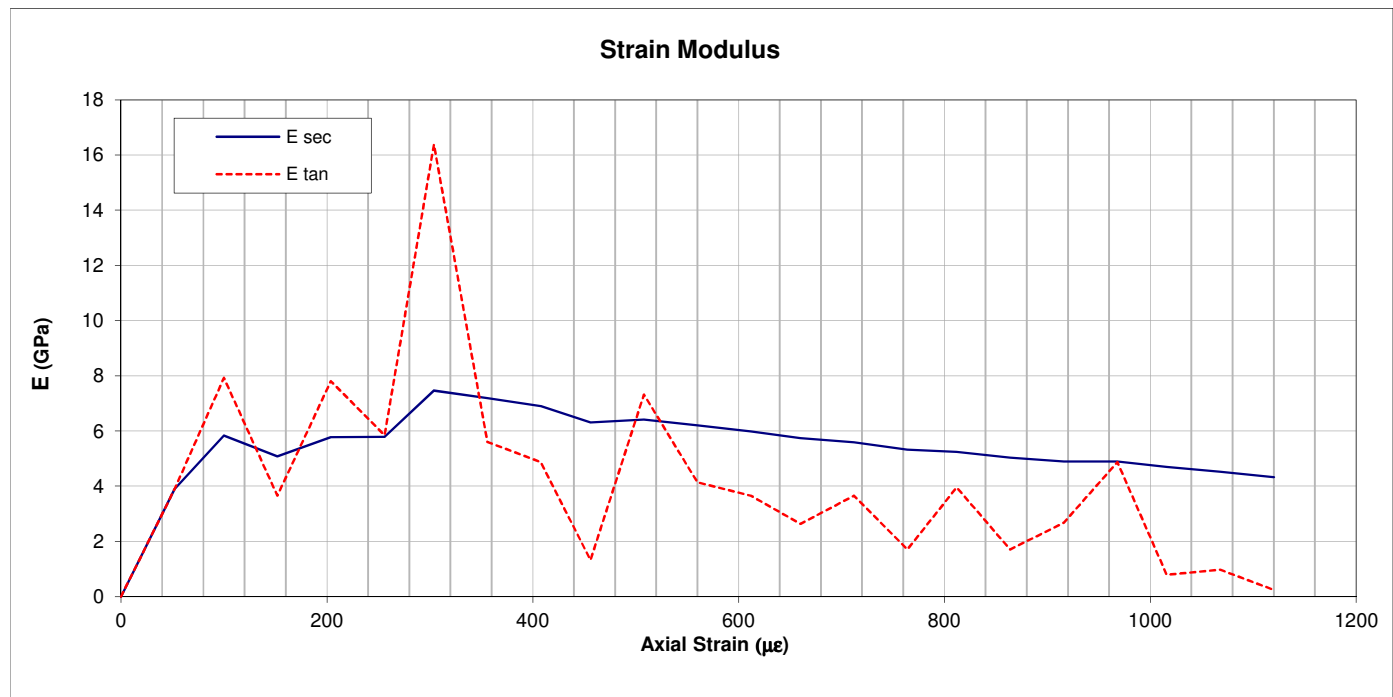
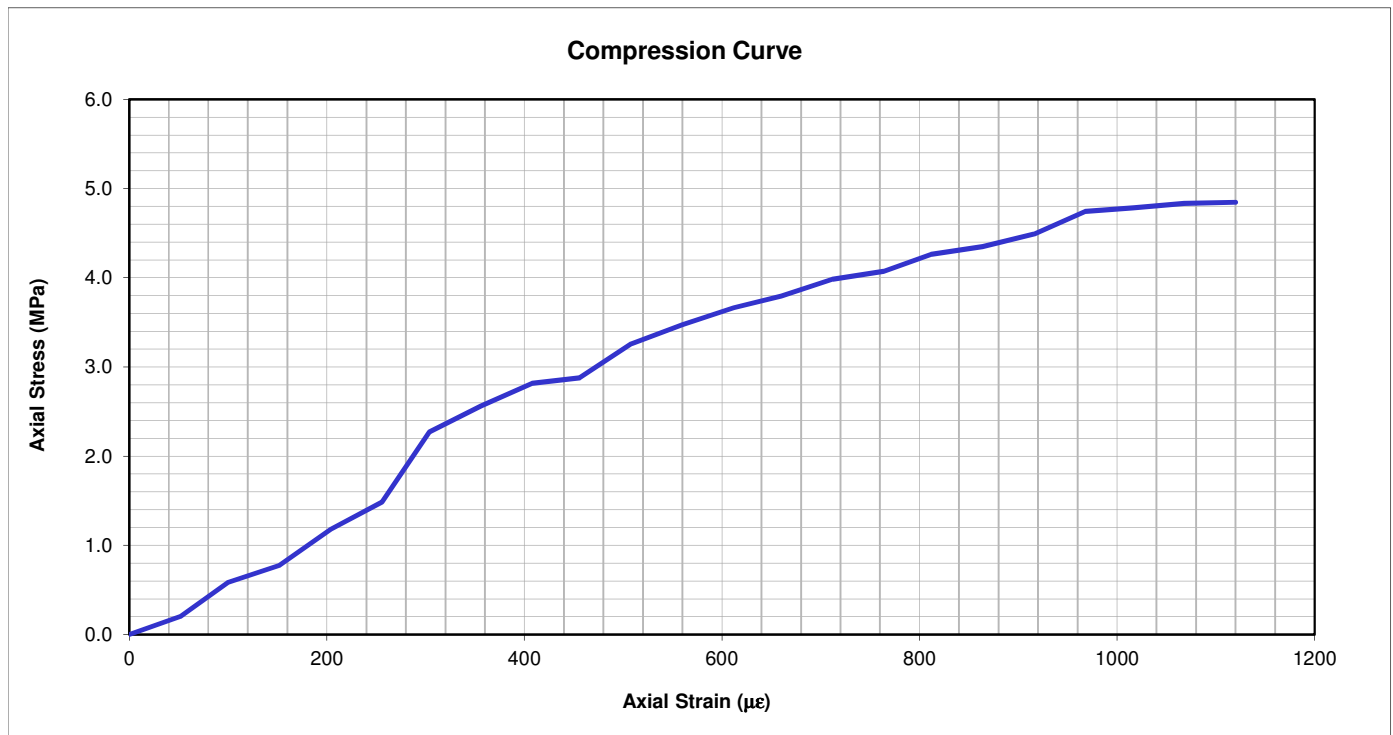
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>BHR616</u>
Specimen Depth	<u>41.55 - 41.95m</u>
Specimen Type	<u>C</u>

Cross section area	<u>78.84 cm<sup>2</sup></u>
Height	<u>215.01 mm</u>
Max logged strength	<u>4.85 MPa</u>
E <sub>tan</sub> (*)	<u>16.38 GPa</u>
E <sub>sec</sub> (^)	<u>7.47 GPa</u>

(\*) Calculated for axial  $\sigma =$  2.42 MPa  
 (^) Calculated for axial  $\sigma =$  2.42 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 21/08/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

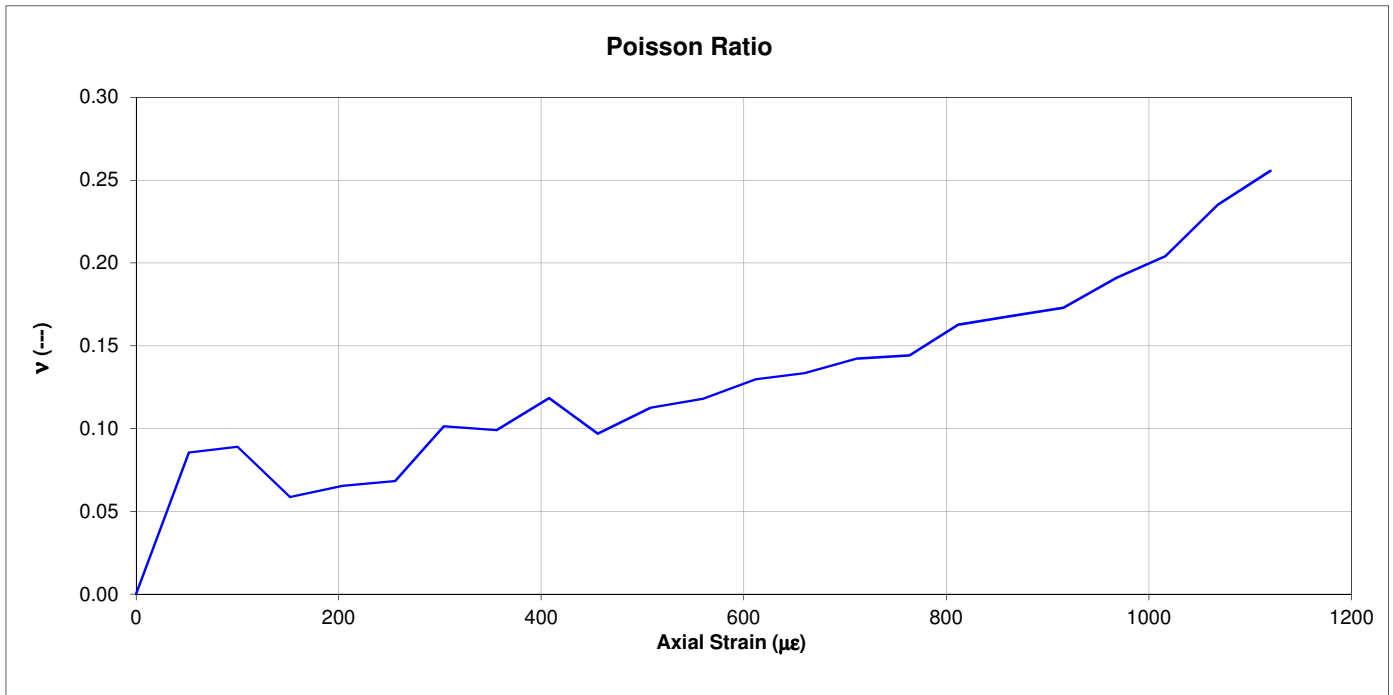
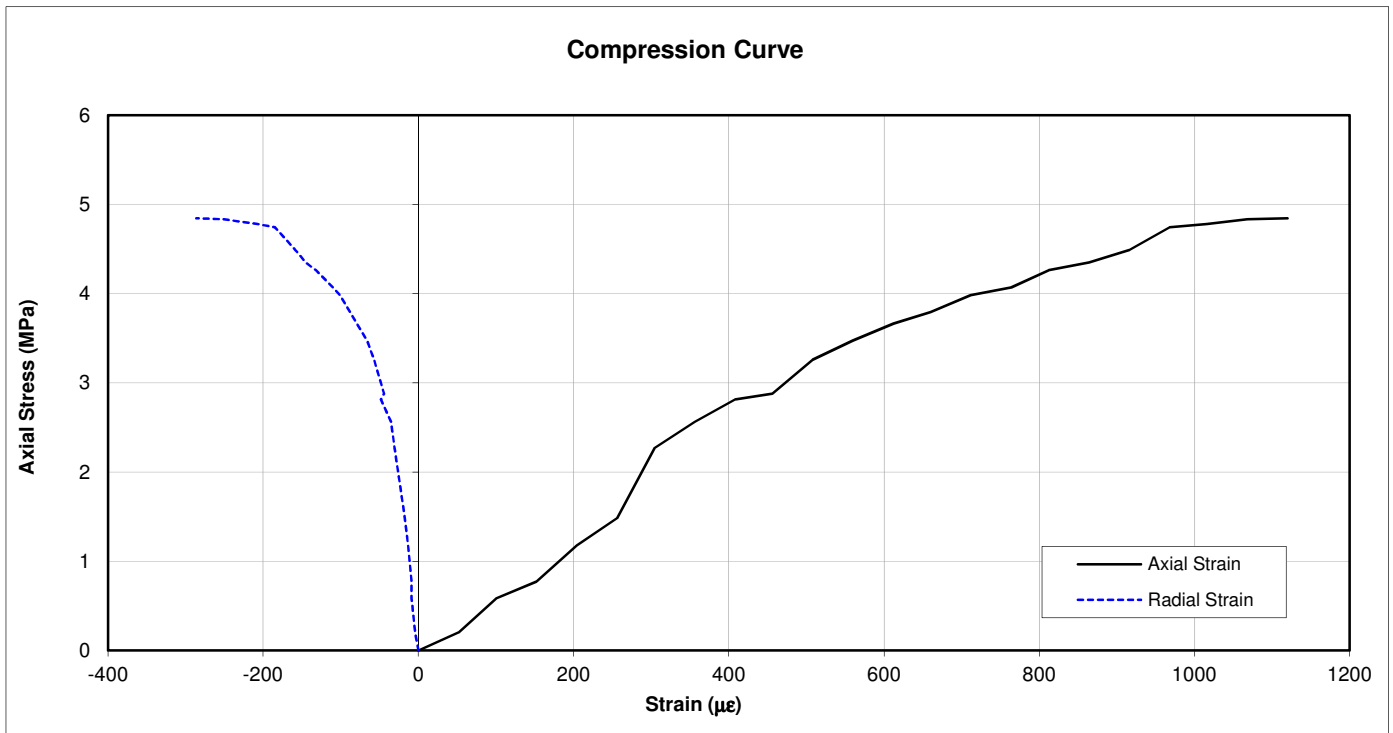
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No BHR616  
 Specimen Depth 41.55 - 41.95m  
 Specimen Type C

Cross section area 78.84 cm<sup>2</sup>  
 Height 215.01 mm  
 Max logged strength 4.85 MPa  
 Poisson at failure 0.256  
 Poisson (\*) 0.101

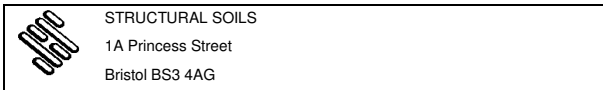
(\*) Calculated for axial  $\sigma =$  2.42 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





# Graph1



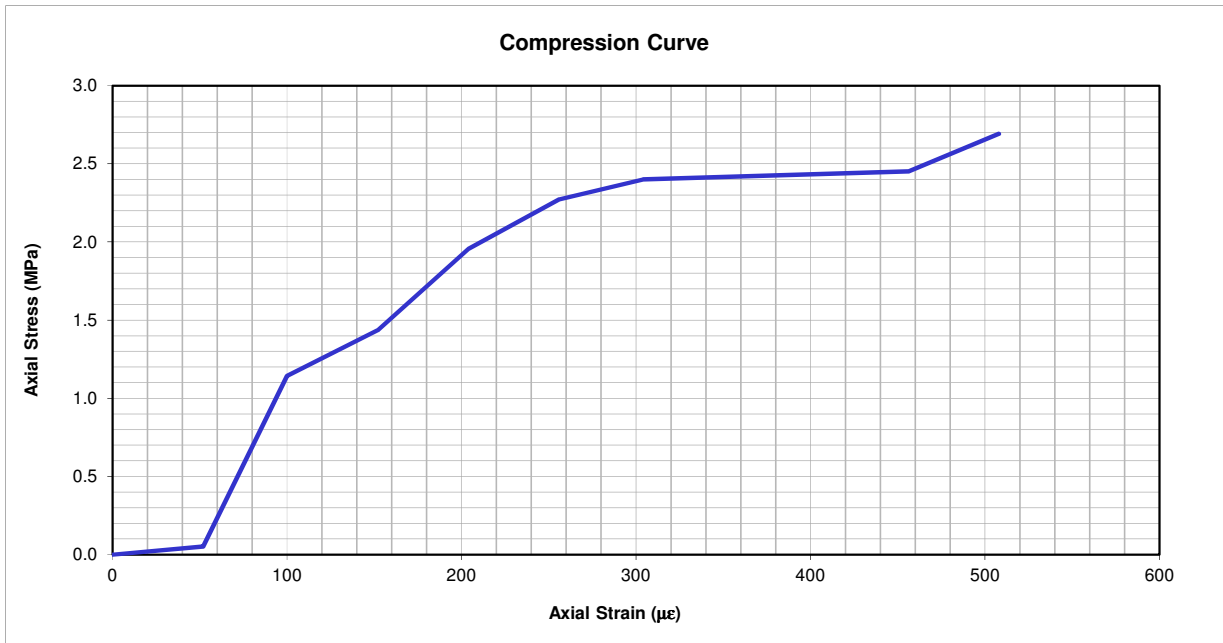
Test Date 04/06/2018

## UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>78.74 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>218.47 mm</u>
BH No	<u>BHR618</u>	Max. strength	<u>2.69 MPa</u>
Specimen Depth	<u>19.35 - 19.70m</u>	E <sub>tan</sub> (*)	<u>22.75 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>11.43 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.35 MPa NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test.  
 (^) Calculated for axial  $\sigma =$  1.35 MPa It is often less than the final strength of the specimen



## Graph 2

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 04/06/2018

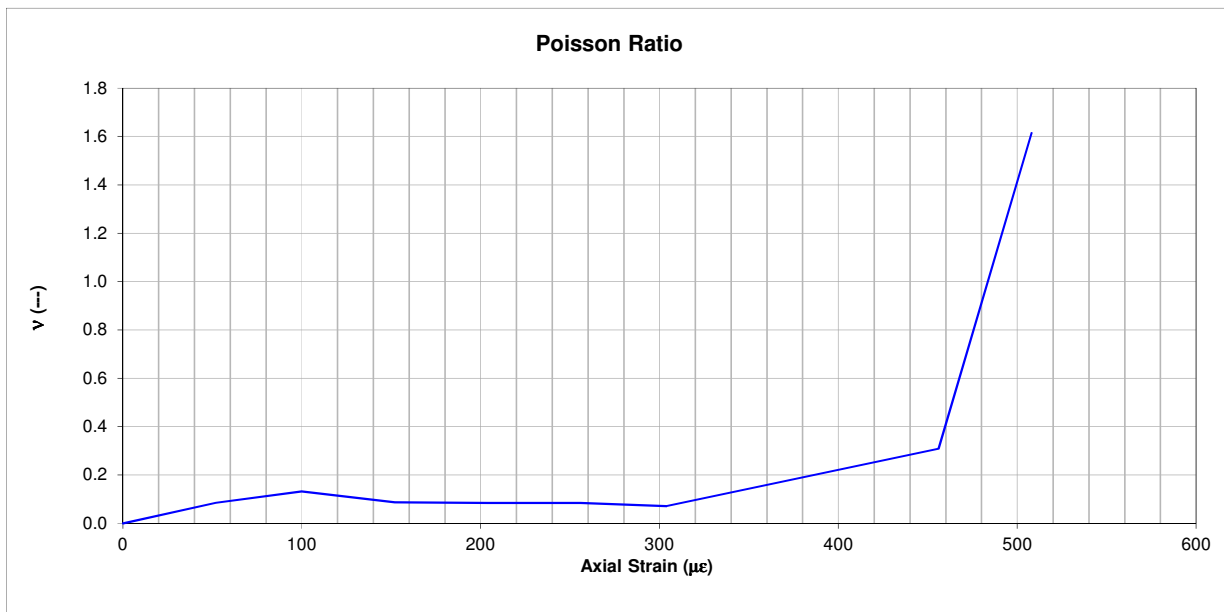
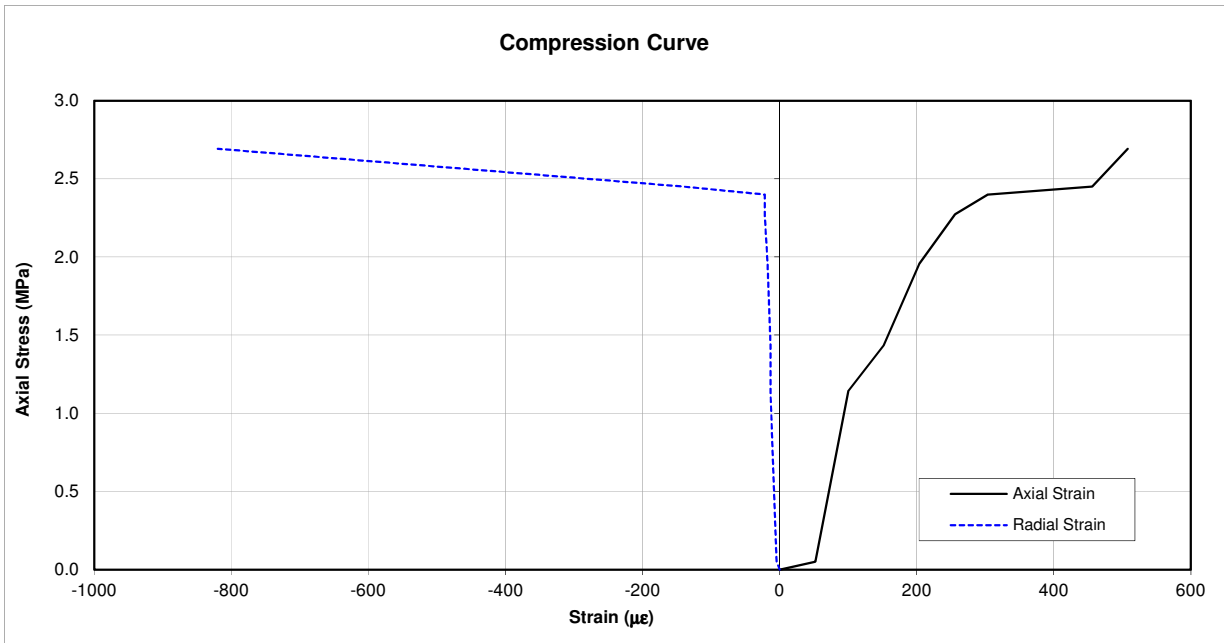
### UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	733442	Cross section	78.74 cm <sup>2</sup>
Site		Height	218.47 mm
BH No	BHR618	Max. strength	2.69 MPa
Specimen Depth	19.35 - 19.70m	Poisson at failure	1.614
Specimen Type	C	Poisson (*)	0.134

(\*) Calculated for axial  $\sigma =$  1.35 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R618**      Sample Ref: **44**      Sample Type: **U**      Depth (m): **34.20**

Bulk Density (Mg/m<sup>3</sup>): **2.08**      Dry Density (Mg/m<sup>3</sup>): **1.72**      Moisture Content (%): **21**  
 Length (mm): **217.75**      Diameter (mm): **100.61**      Length/Diameter Ratio: **2.16**  
 Test Duration (mins:secs): **8:25**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **48.7**  
 UCS (MPa): **6.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



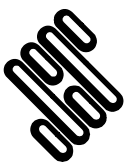
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS WITH DEFORMATION - A4P | 733442 - A303 STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 24/06/18 - 08:09 | AF3



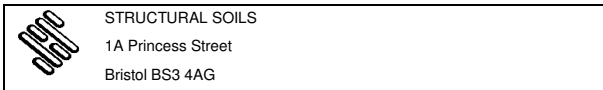
**STRUCTURAL SOILS**  
 1a Princess Street  
 Bedminster  
 Bristol  
 BS3 4AG

Compiled By		Date
[REDACTED]		24/06/18
Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>





# Graph1



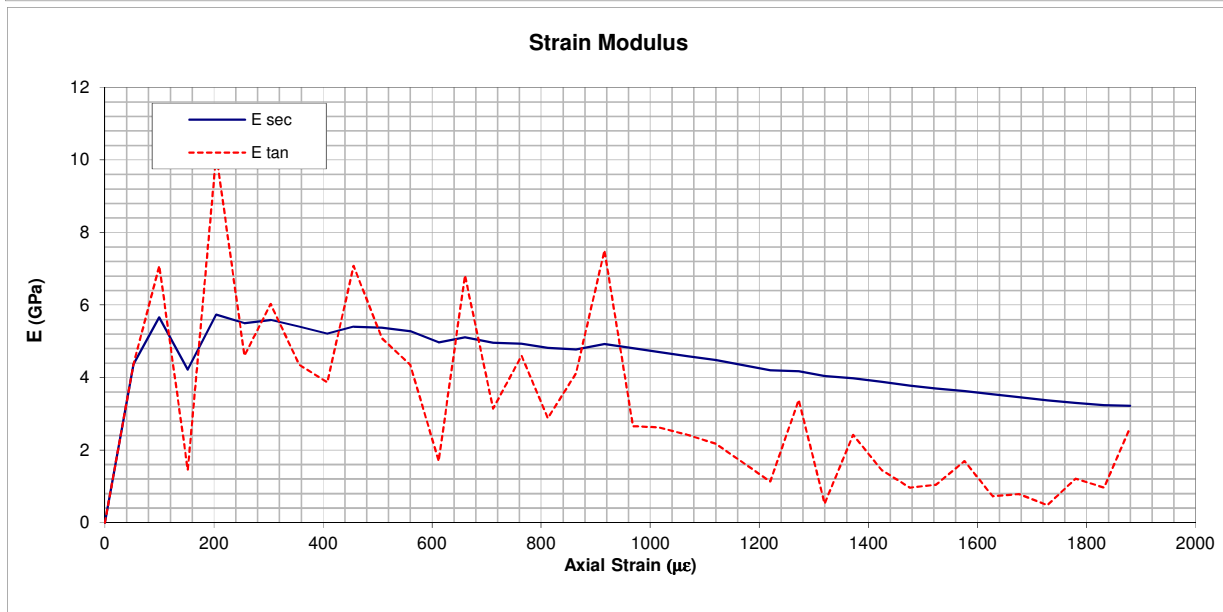
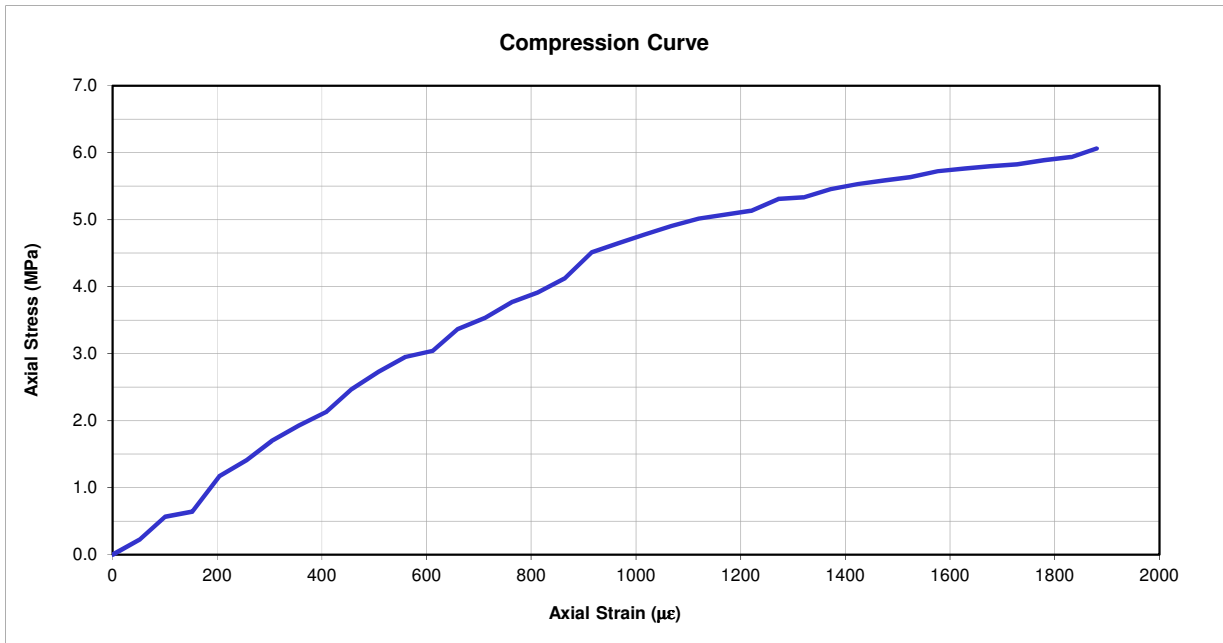
Test Date 04/06/2018

## UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>79.50 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>217.75 mm</u>
BH No	<u>BHR618</u>	Max. strength	<u>6.06 MPa</u>
Specimen Depth	<u>34.20 - 34.70m</u>	E <sub>tan</sub> (*)	<u>4.35 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>5.28 GPa</u>

(\*) Calculated for axial  $\sigma =$  3.03 MPa NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test.  
 (^) Calculated for axial  $\sigma =$  3.03 MPa It is often less than the final strength of the specimen



## Graph 2

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 04/06/2018

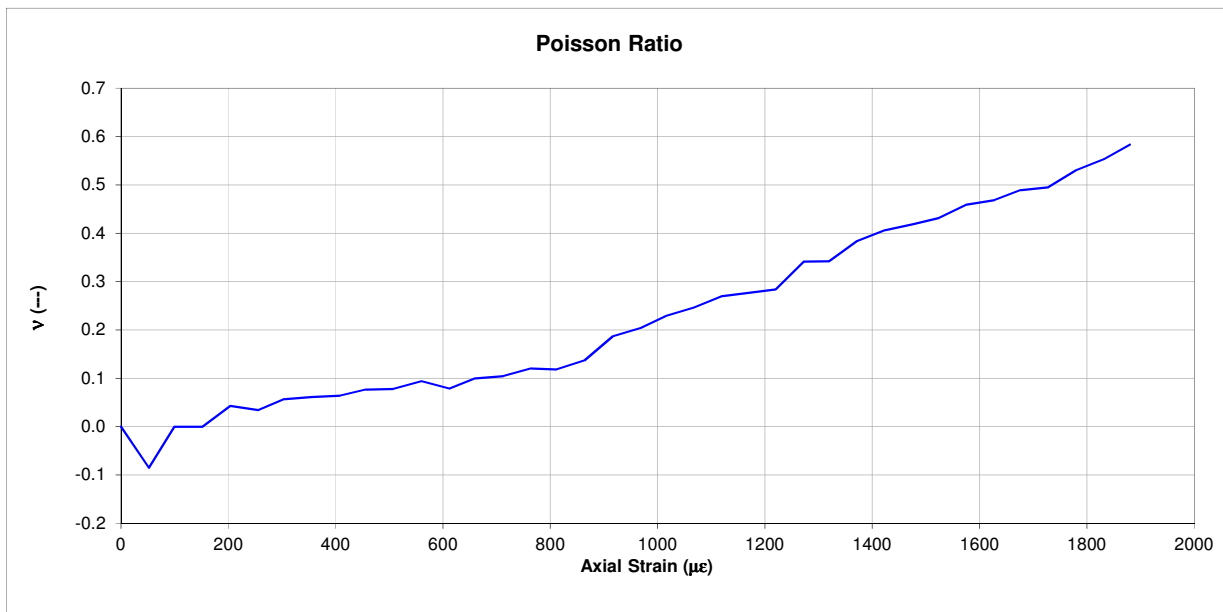
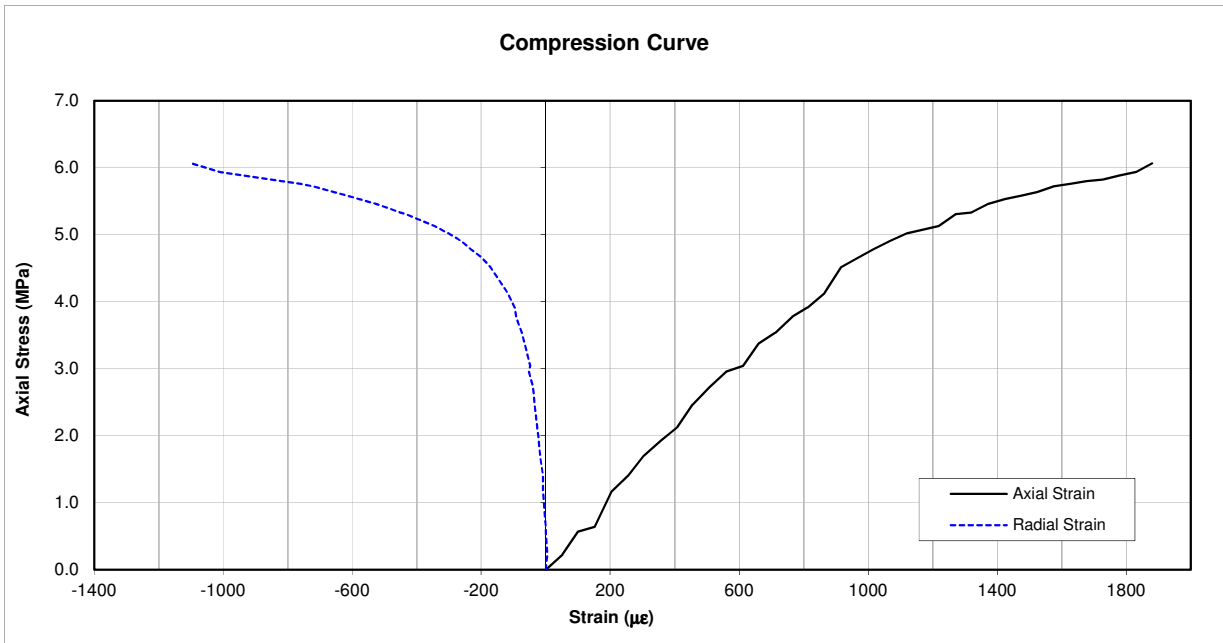
### UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	733442	Cross section	79.50 cm <sup>2</sup>
Site		Height	217.75 mm
BH No	BHR618	Max. strength	6.06 MPa
Specimen Depth	34.20 - 34.70m	Poisson at failure	0.583
Specimen Type	C	Poisson (*)	0.094

(\*) Calculated for axial  $\sigma =$  3.03 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





# Graph1



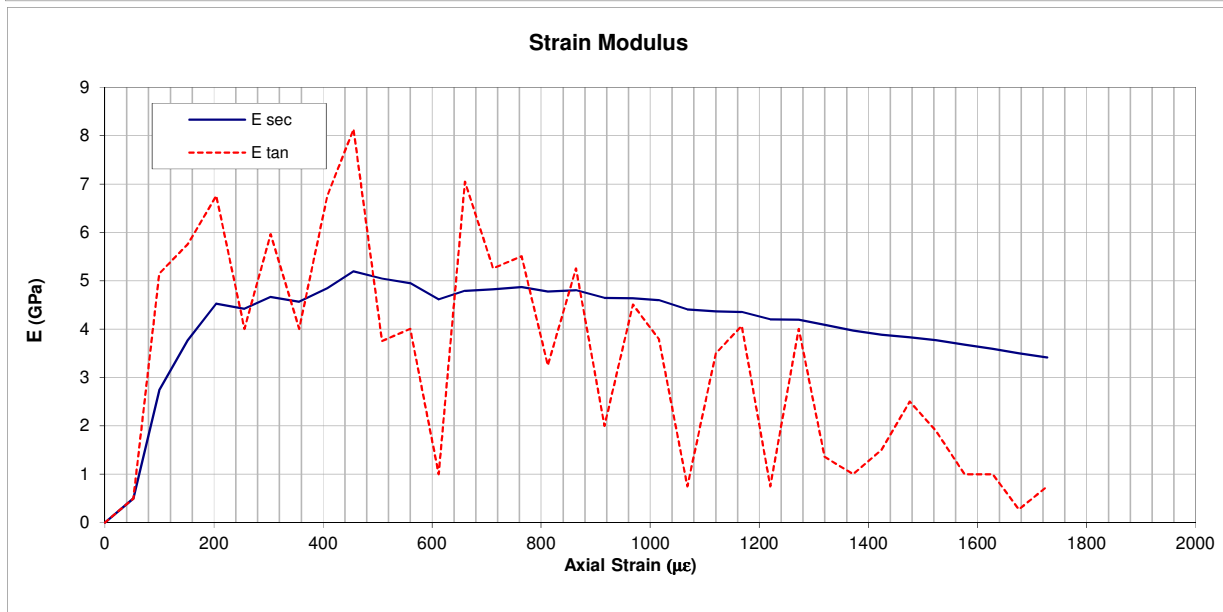
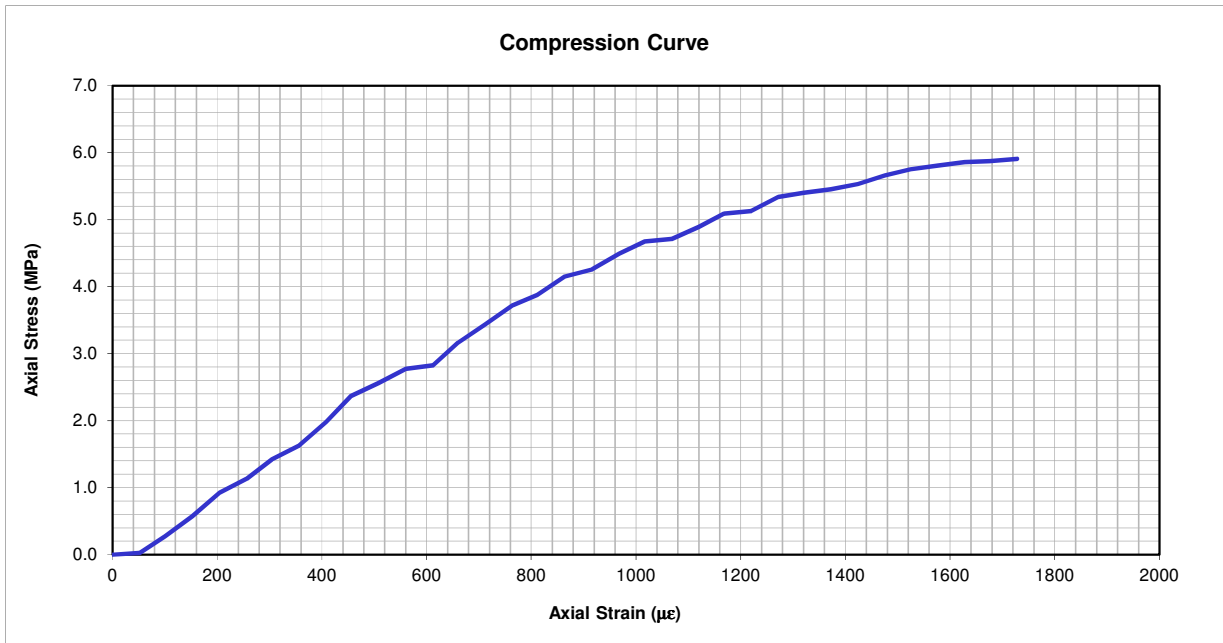
Test Date 04/06/2018

## UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>76.82 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>214.91 mm</u>
BH No	<u>R618</u>	Max. strength	<u>5.91 MPa</u>
Specimen Depth	<u>43.25 - 43.60m</u>	E <sub>tan</sub> (*)	<u>1.00 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>4.62 GPa</u>

(\*) Calculated for axial  $\sigma =$  2.95 MPa NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test.  
 (^) Calculated for axial  $\sigma =$  2.95 MPa It is often less than the final strength of the specimen



## Graph 2

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 04/06/2018

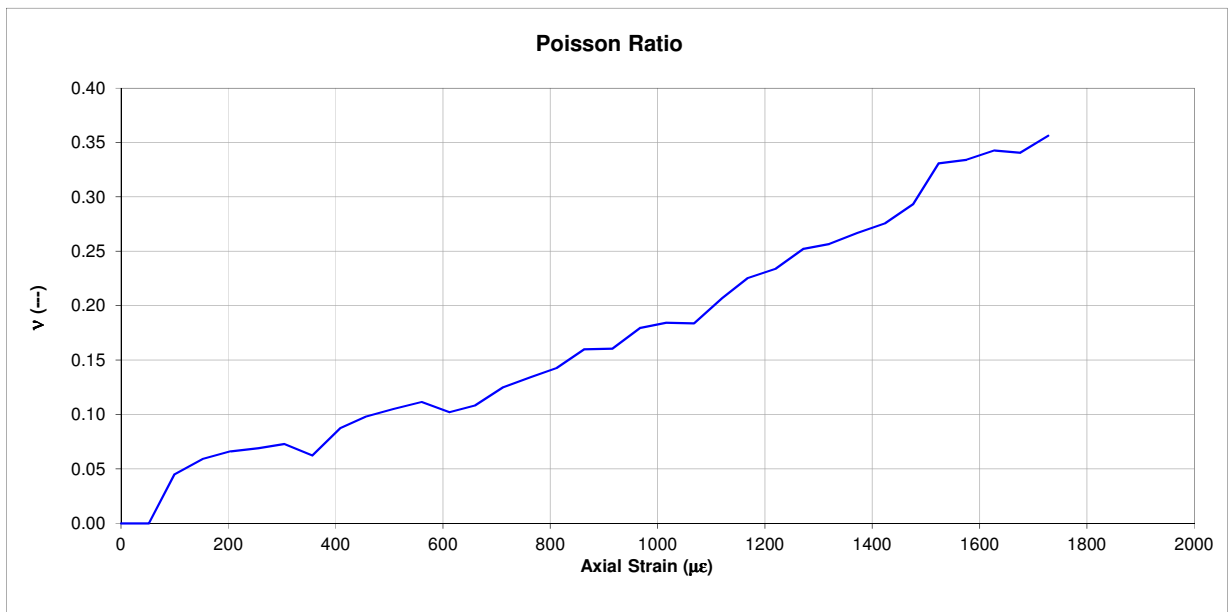
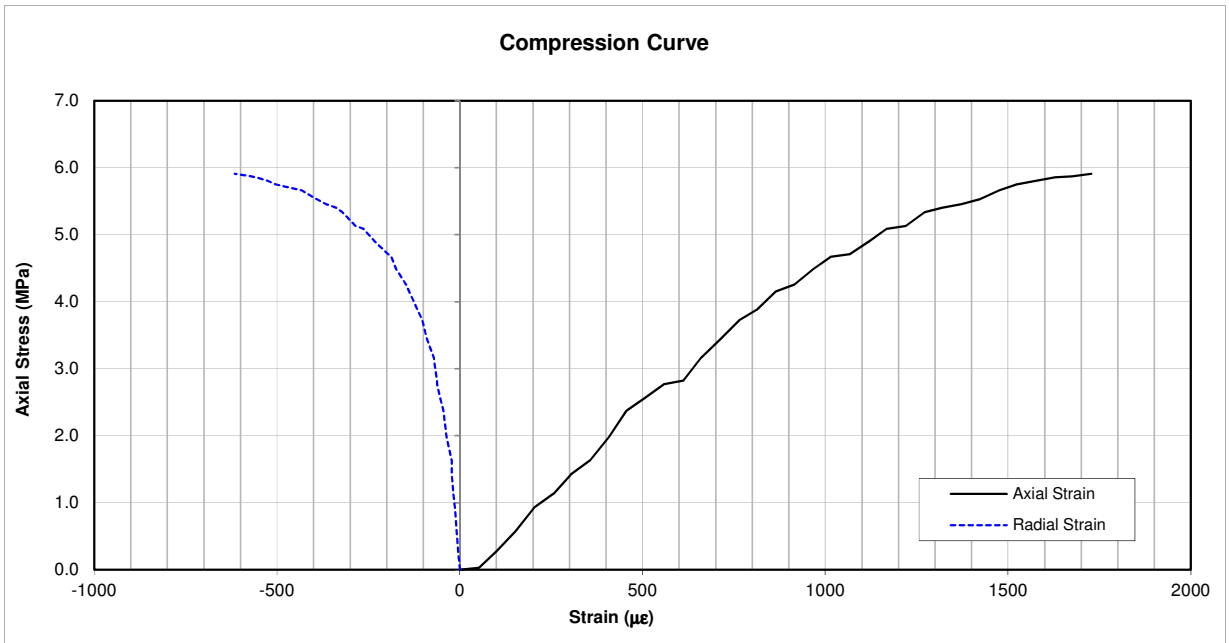
### UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

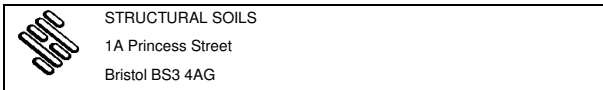
Job No	733442	Cross section	76.82 cm <sup>2</sup>
Site		Height	214.91 mm
BH No	R618	Max. strength	5.91 MPa
Specimen Depth	43.25 - 43.60m	Poisson at failure	0.356
Specimen Type	C	Poisson (*)	0.102

(\*) Calculated for axial  $\sigma =$  2.95 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*







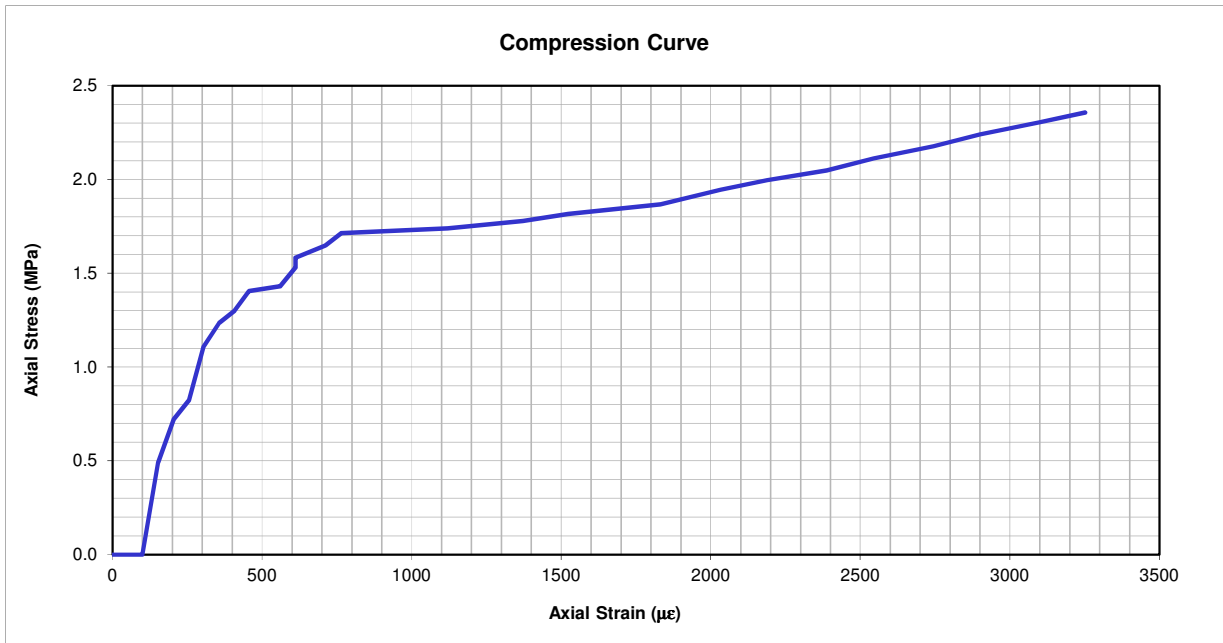
Test Date 21/05/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>77.63 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>215.15 mm</u>
BH No	<u>BHR619</u>	Max. strength	<u>2.36 MPa</u>
Specimen Depth	<u>23.90 - 24.20m</u>	E <sub>tan</sub> (*)	<u>5.90 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>3.64 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.18 MPa NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen  
 (^) Calculated for axial  $\sigma =$  1.18 MPa



## Graph 2

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

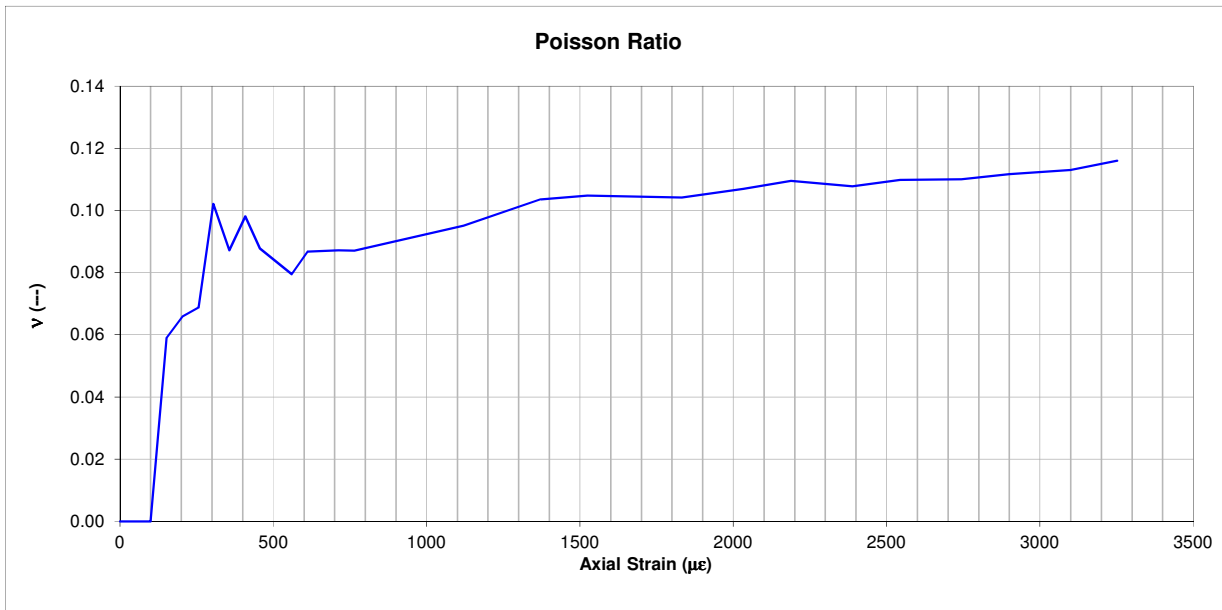
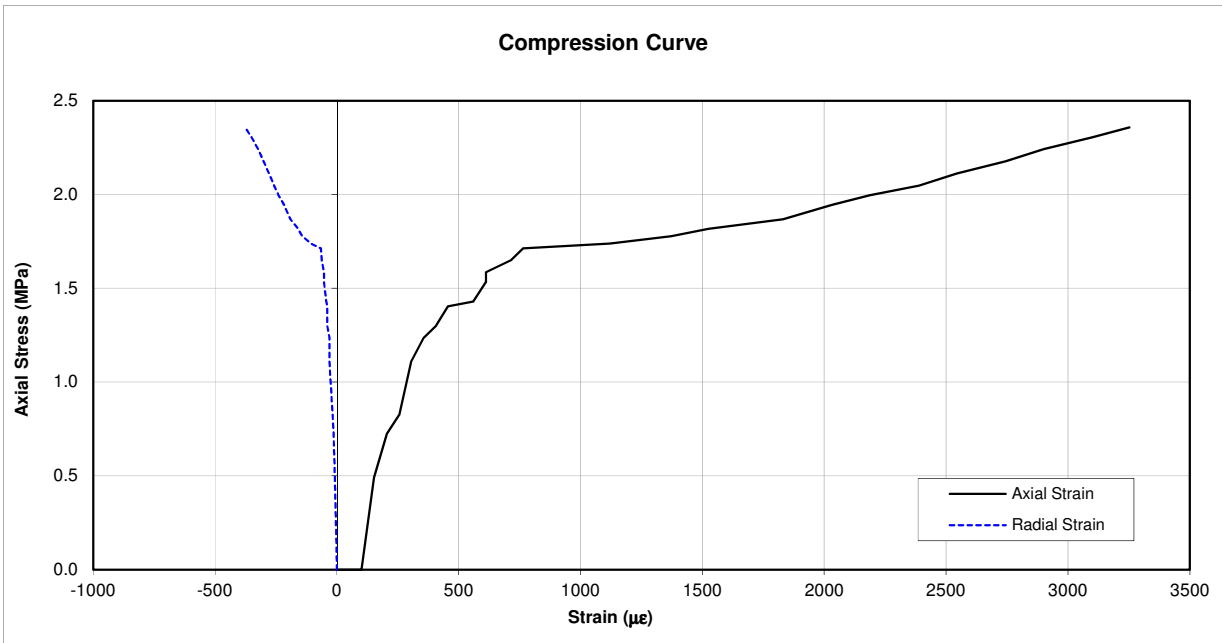
Test Date 21/05/2018

### UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	733442	Cross section	77.63 cm <sup>2</sup>
Site		Height	215.15 mm
BH No	BHR619	Max. strength	2.36 MPa
Specimen Depth	23.90 - 24.20m	Poisson at failure	0.116
Specimen Type	C	Poisson (*)	0.102

(\*) Calculated for axial  $\sigma =$  1.18 MPa NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen







# Graph1

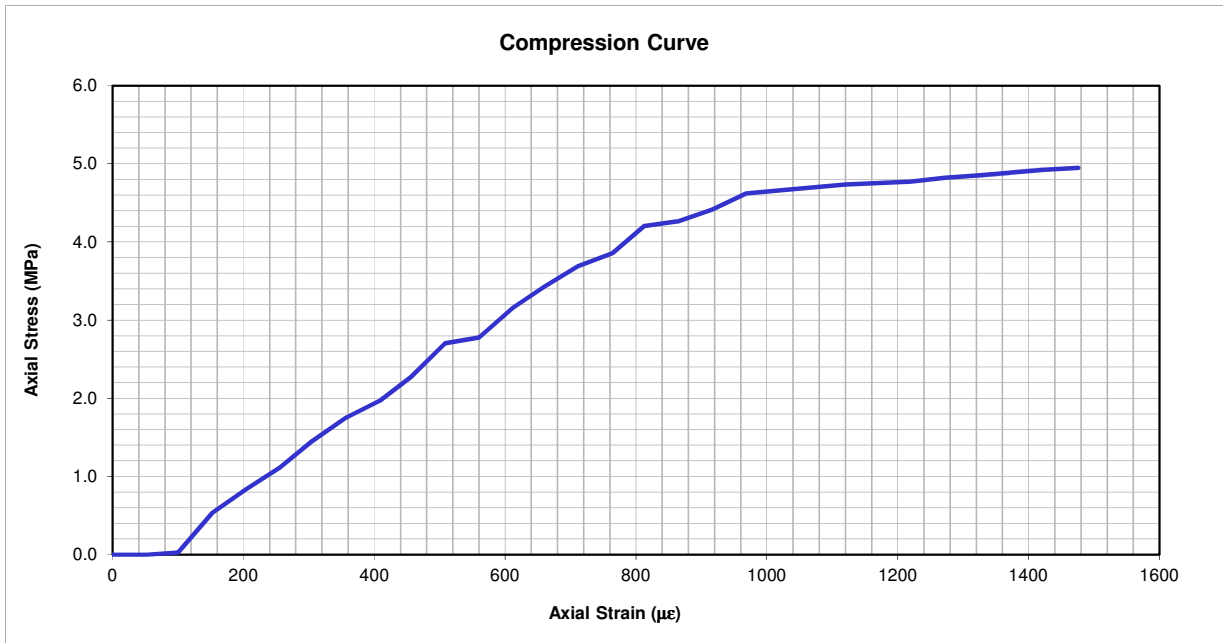


Test Date 21/05/2018

## UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>78.79 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>218.20 mm</u>
BH No	<u>BHR619</u>	Max. strength	<u>4.95 MPa</u>
Specimen Depth	<u>31.60 -31.95m</u>	E <sub>tan</sub> (*)	<u>6.35 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>4.98 GPa</u>
(*) Calculated for axial $\sigma =$ <u>2.47 MPa</u>		NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen	
(^) Calculated for axial $\sigma =$ <u>2.47 MPa</u>			



## Graph 2

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

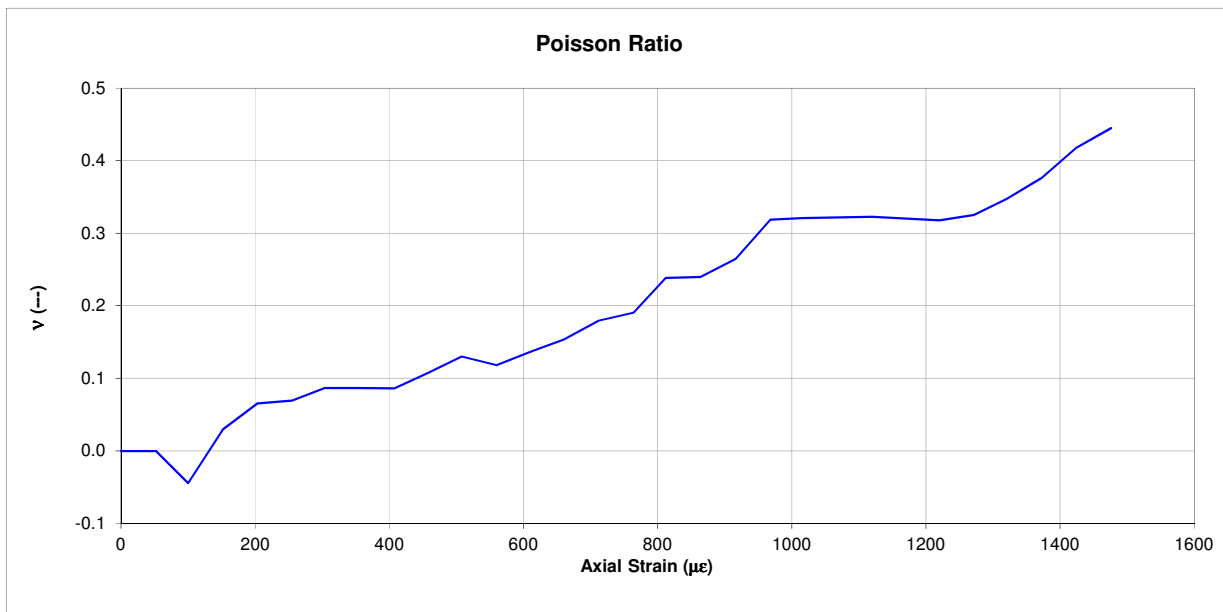
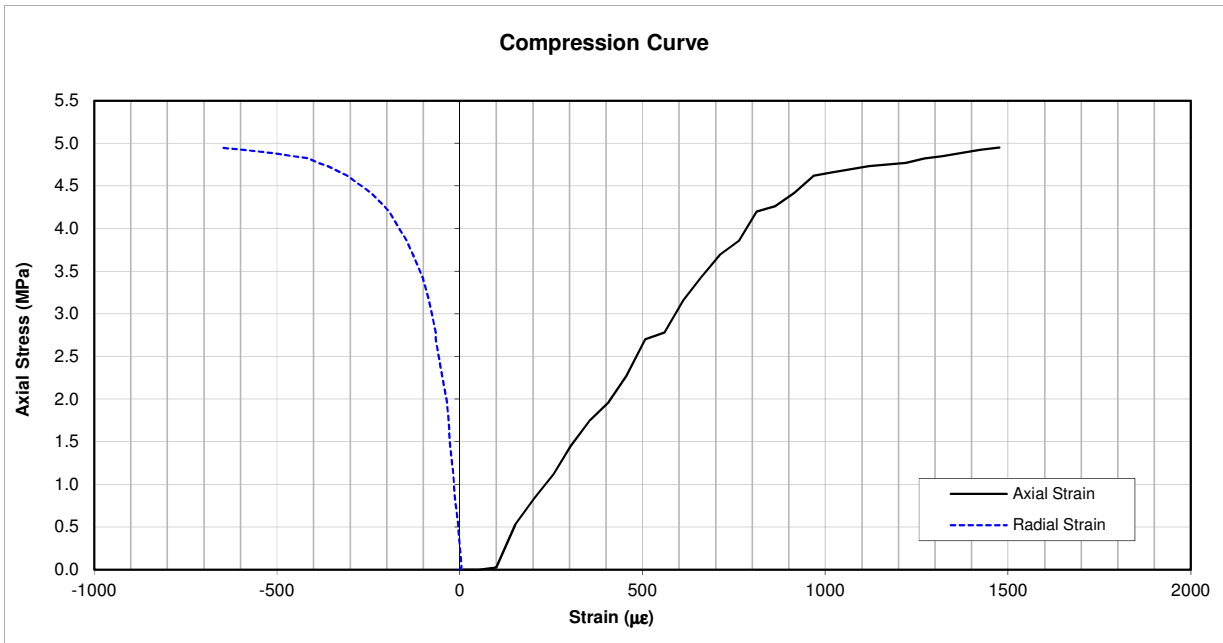
Test Date 21/05/2018

### UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	733442	Cross section	78.79 cm <sup>2</sup>
Site		Height	218.20 mm
BH No	BHR619	Max. strength	4.95 MPa
Specimen Depth	31.60 -31.95m	Poisson at failure	0.445
Specimen Type	C	Poisson (*)	0.107

(\*) Calculated for axial  $\sigma =$  2.47 MPa NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen





# Graph1

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 19/06/2018

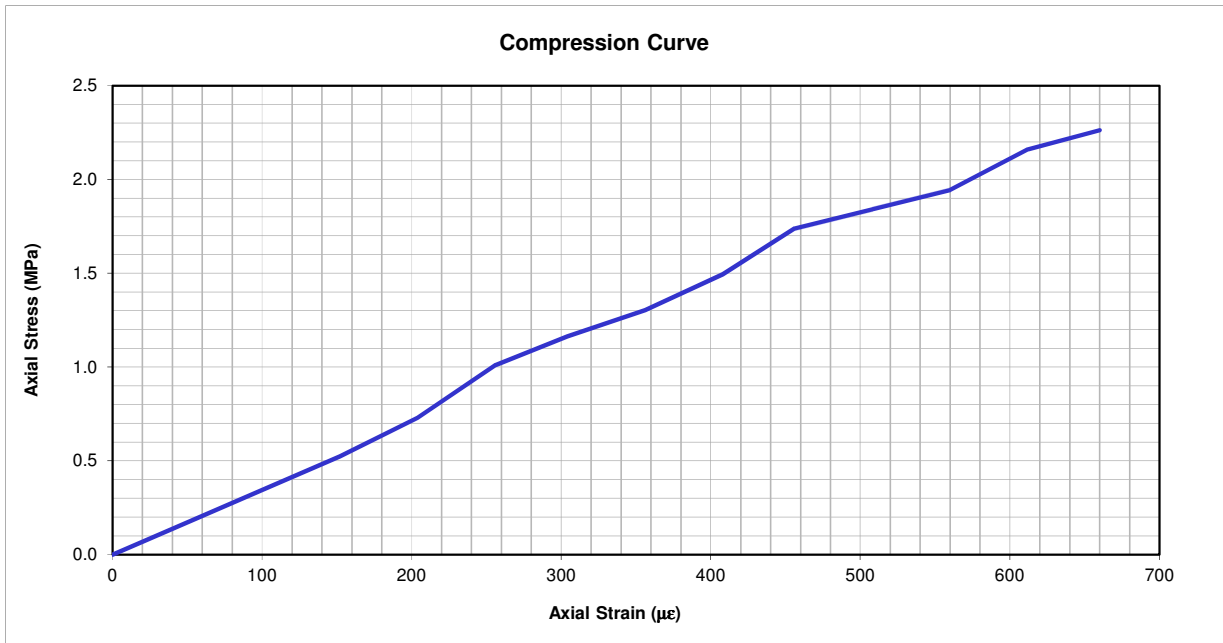
## UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>78.21 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>191.27 mm</u>
BH No	<u>BHR620</u>	Max. strength	<u>2.26 MPa</u>
Specimen Depth	<u>15.35 - 15.65m</u>	E <sub>tan</sub> (*)	<u>5.41 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>3.95 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.13 MPa NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen

(^) Calculated for axial  $\sigma =$  1.13 MPa



## Graph 2

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

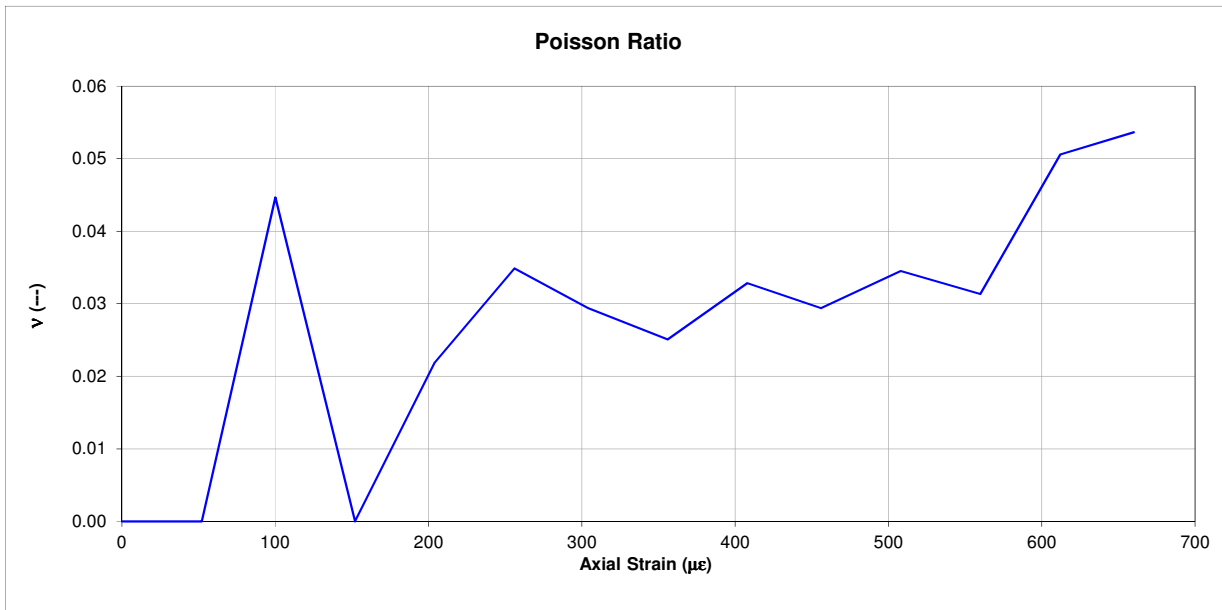
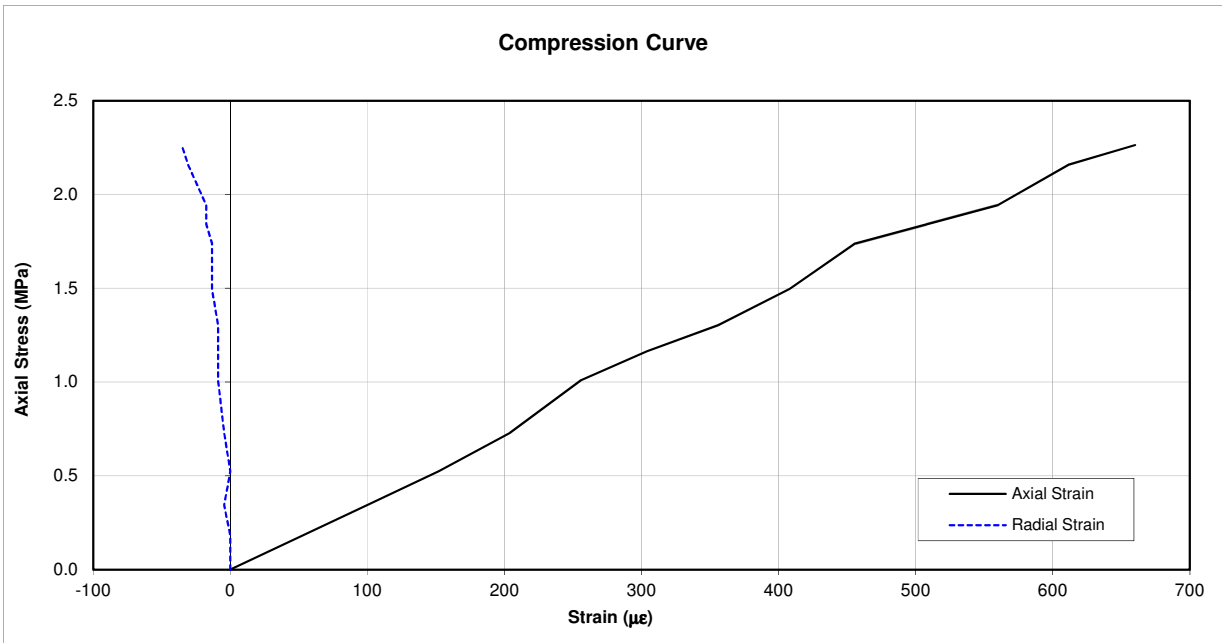
Test Date 19/06/2018

### UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1


Job No	733442	Cross section	78.21 cm <sup>2</sup>
Site		Height	191.27 mm
BH No	BHR620	Max. strength	2.26 MPa
Specimen Depth	15.35 - 15.65m	Poisson at failure	0.054
Specimen Type	C	Poisson (*)	0.035

(\*) Calculated for axial  $\sigma =$  1.13 MPa NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen





# Graph1

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 12/06/2018

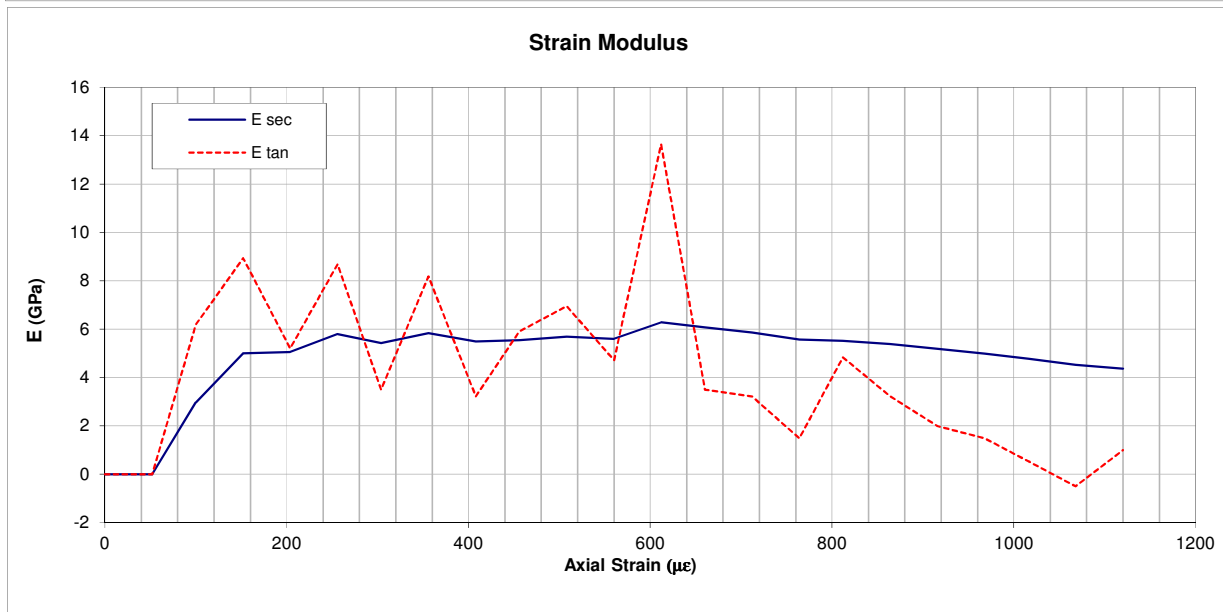
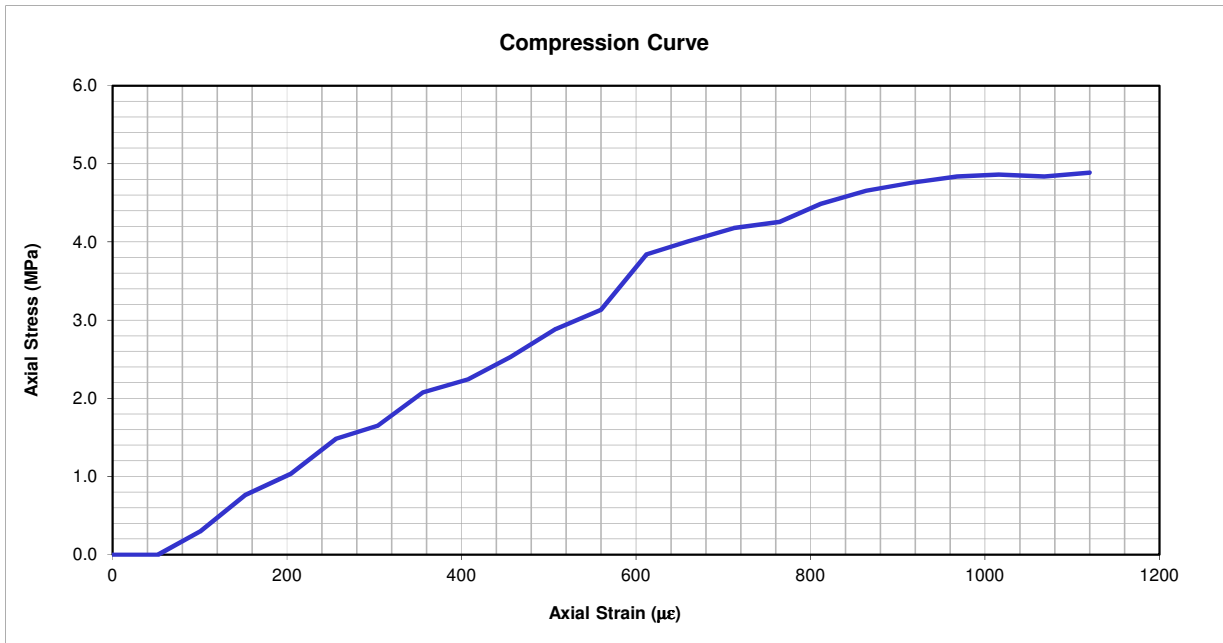
## UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>77.52 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>213.21 mm</u>
BH No	<u>BHR620</u>	Max. strength	<u>4.89 MPa</u>
Specimen Depth	<u>33.35 - 33.75m</u>	E <sub>tan</sub> (*)	<u>3.22 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>5.50 GPa</u>

(\*) Calculated for axial  $\sigma =$  2.44 MPa NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen

(^) Calculated for axial  $\sigma =$  2.44 MPa





## Graph 2

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

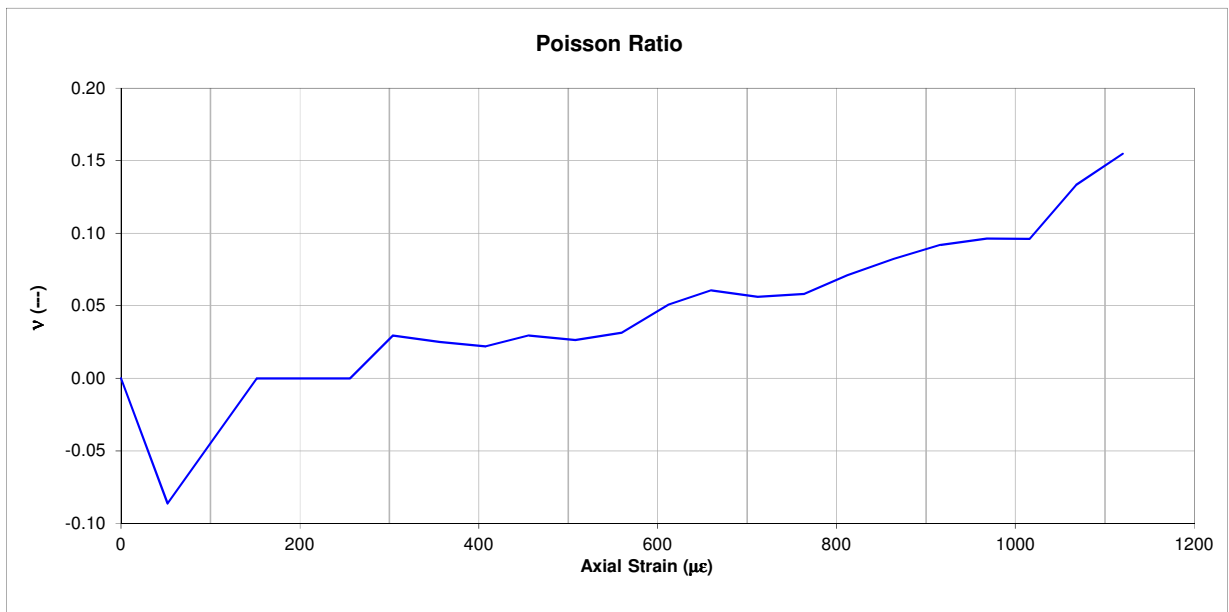
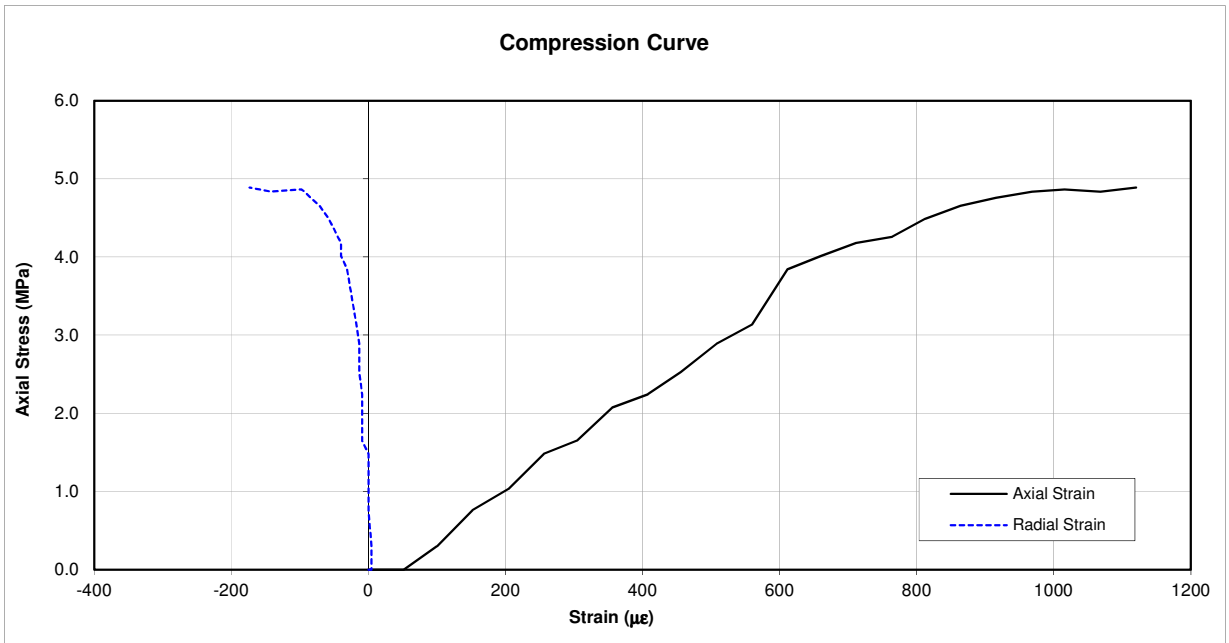
Test Date 12/06/2018

### UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

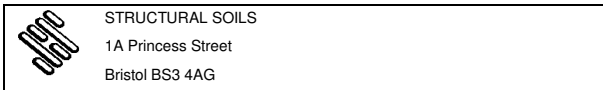
Job No	733442	Cross section	77.52 cm <sup>2</sup>
Site		Height	213.21 mm
BH No	BHR620	Max. strength	4.89 MPa
Specimen Depth	33.35 - 33.75m	Poisson at failure	0.155
Specimen Type	C	Poisson (*)	0.022

(\*) Calculated for axial  $\sigma =$  2.44 MPa NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen





# Graph1



Test Date 12/06/2018

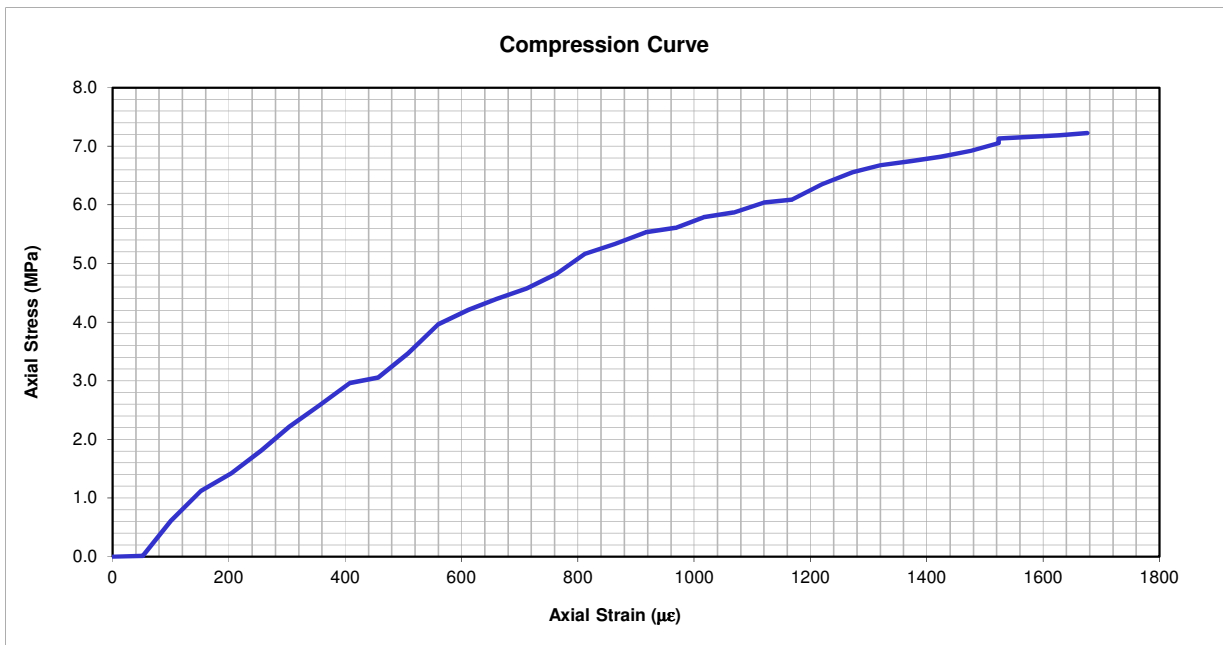
## UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>76.67 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>215.34 mm</u>
BH No	<u>BHR620</u>	Max. strength	<u>7.23 MPa</u>
Specimen Depth	<u>41.60 - 41.90m</u>	E <sub>tan</sub> (*)	<u>8.03 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>6.83 GPa</u>

(\*) Calculated for axial  $\sigma =$  3.61 MPa NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen

(^) Calculated for axial  $\sigma =$  3.61 MPa



## Graph 2

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

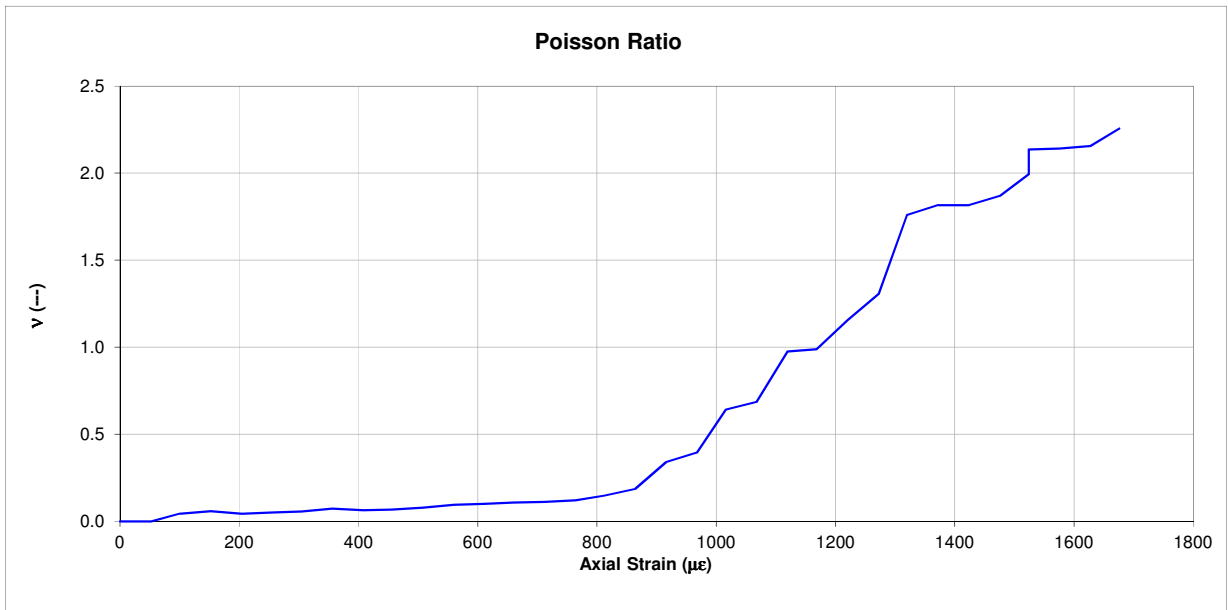
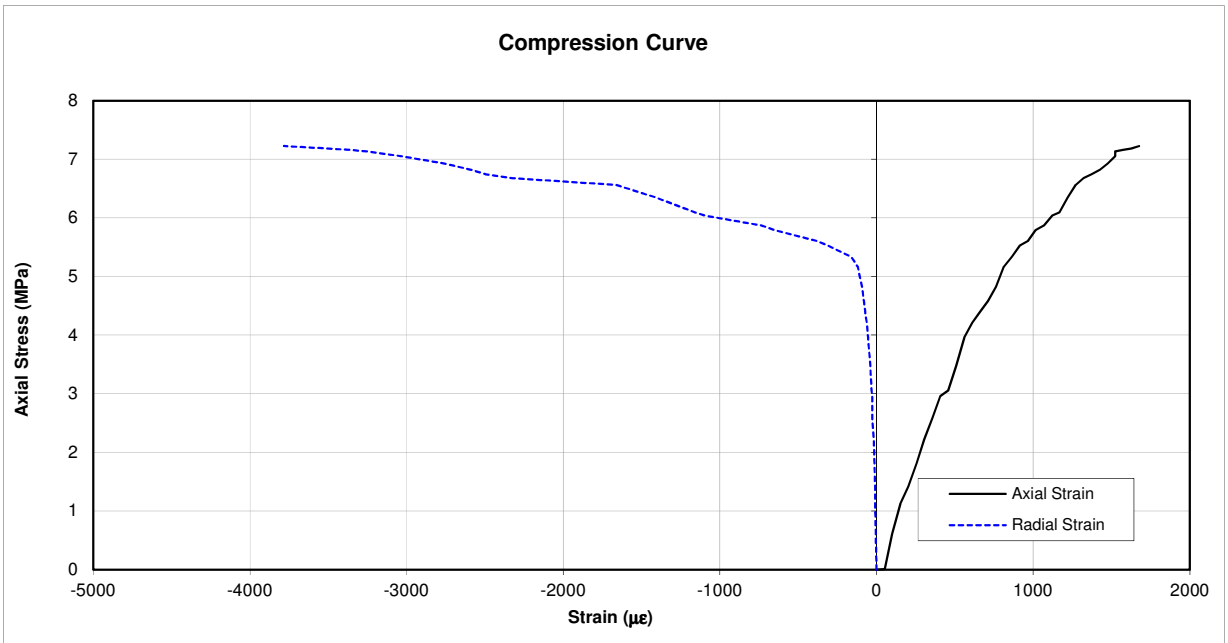
Test Date 12/06/2018

### UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	733442	Cross section	76.67 cm <sup>2</sup>
Site		Height	215.34 mm
BH No	BHR620	Max. strength	7.23 MPa
Specimen Depth	41.60 - 41.90m	Poisson at failure	2.257
Specimen Type	C	Poisson (*)	0.079

(\*) Calculated for axial  $\sigma =$  3.61 MPa NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **RZ603**                      Sample Ref: **30**                      Sample Type: **U**                      Depth (m): **23.96**

Bulk Density (Mg/m <sup>3</sup> ): <b>2.03</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.62</b>	Moisture Content (%): <b>25</b>
Length (mm): <b>200.93</b>	Diameter (mm): <b>98.39</b>	Length/Diameter Ratio: <b>2.04</b>
Test Duration (mins:secs): <b>3:10</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>13.5</b>
UCS (MPa): <b>1.8</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **Light brown CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

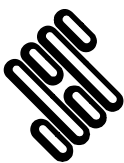


Front view (post-test)



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]	<b>EMY HOWARD</b>	<b>07/11/18</b>
Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>

# Graph1

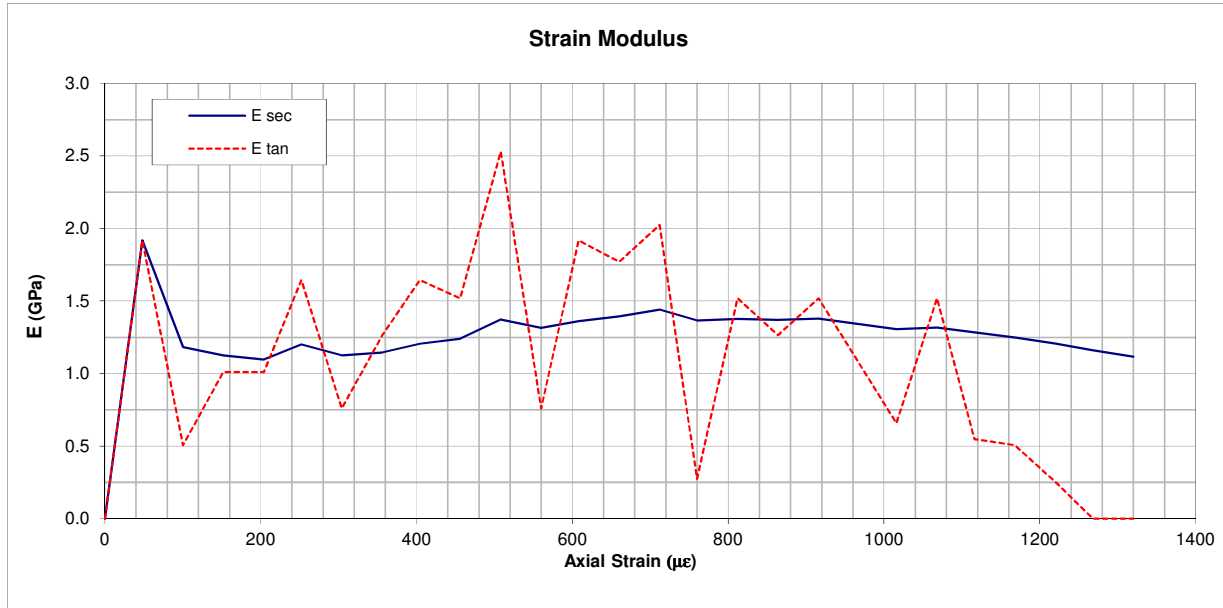
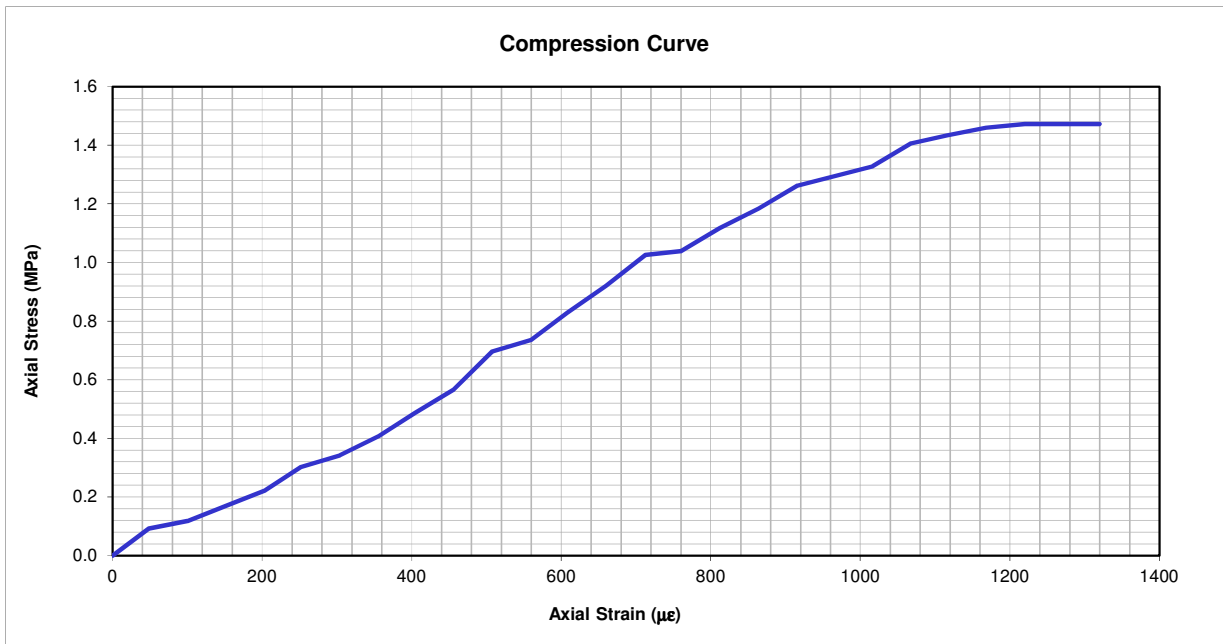
**STRUCTURAL SOILS**  
 1A Princess Street  
 Bristol BS3 4AG

Test Date 13/07/2018

## UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>76.03 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>200.93 mm</u>
BH No	<u>BHRZ603</u>	Max. strength	<u>1.47 MPa</u>
Specimen Depth	<u>23.96 - 24.40m</u>	E <sub>tan</sub> (*)	<u>0.76 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub> (^)	<u>1.32 GPa</u>
(*) Calculated for axial $\sigma =$	<u>0.74 MPa</u>	<i>NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen</i>	
(^) Calculated for axial $\sigma =$	<u>0.74 MPa</u>		



## Graph 2

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

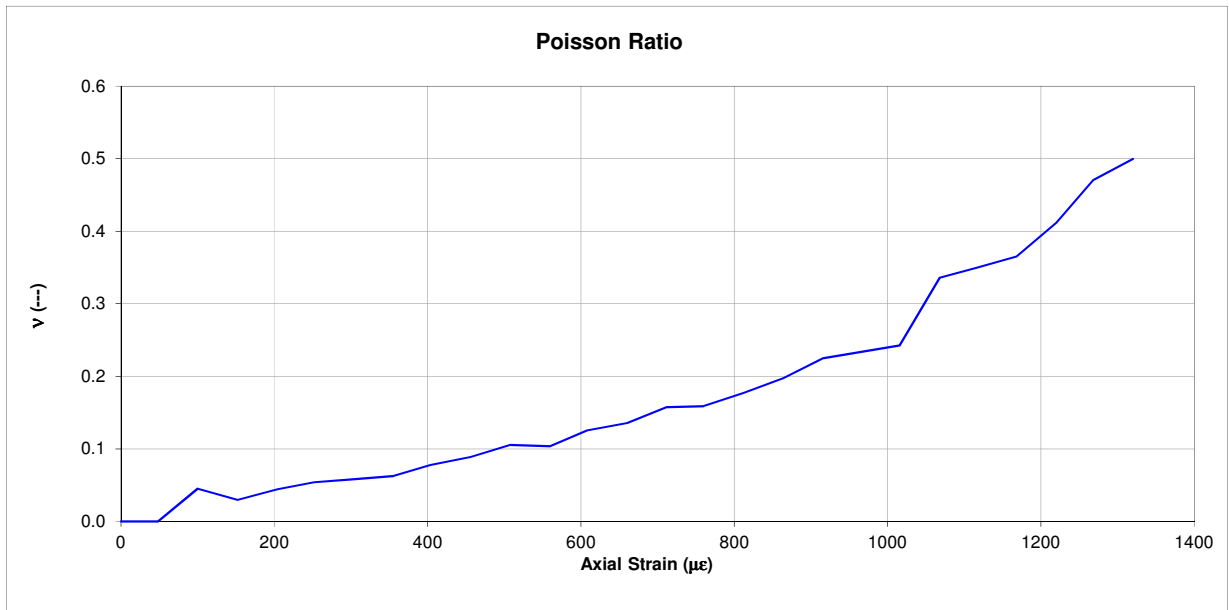
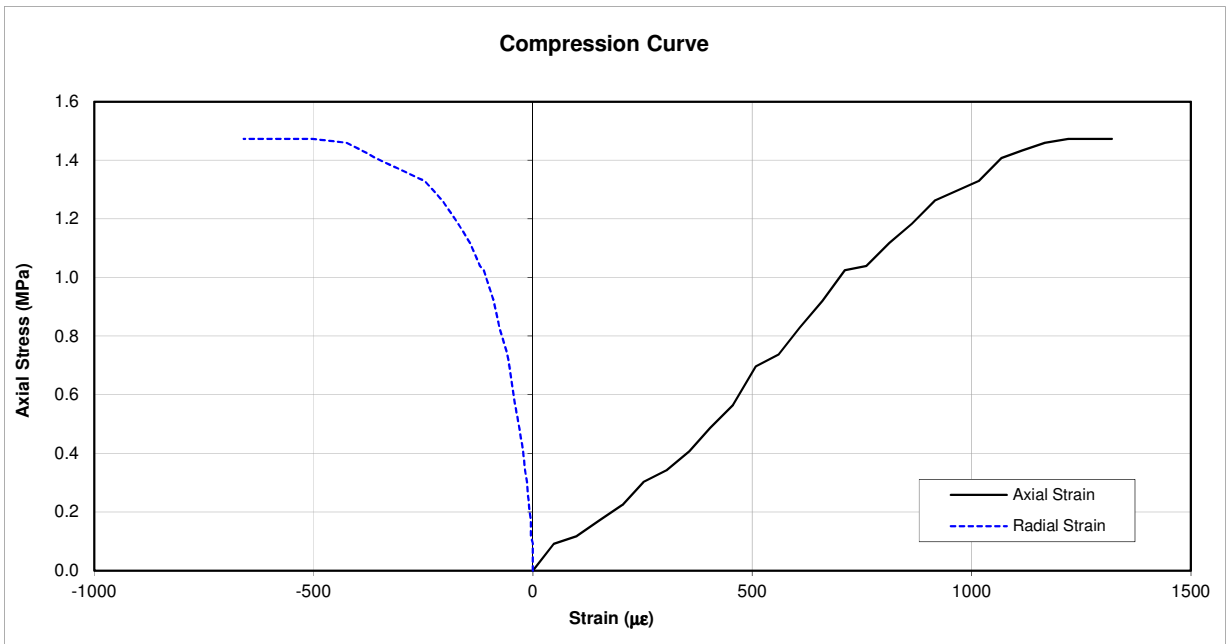
Test Date 13/07/2018

### UNIAXIAL COMPRESSION TEST with DEFORMATION

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	733442	Cross section	76.03 cm <sup>2</sup>
Site		Height	200.93 mm
BH No	BHRZ603	Max. strength	1.47 MPa
Specimen Depth	23.96 - 24.40m	Poisson at failure	0.499
Specimen Type	C	Poisson (*)	0.104
(*) Calculated for axial $\sigma =$ <u>0.74 MPa</u>			

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# UNIAXIAL COMPRESSIVE STRENGTH

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT06 UCS of Rock (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **RZ603**                      Sample Ref: **42**                      Sample Type: **U**                      Depth (m): **32.53**

Bulk Density (Mg/m <sup>3</sup> ): <b>1.99</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.58</b>	Moisture Content (%): <b>26</b>
Length (mm): <b>215.50</b>	Diameter (mm): <b>99.79</b>	Length/Diameter Ratio: <b>2.16</b>
Test Duration (mins:secs): <b>4:29</b>	Stress Rate (kN/min): <b>6.0</b>	Load at Failure (kN): <b>25.0</b>
UCS (MPa): <b>3.2</b>	Failure Type: <b>Axial cleavage</b>	

**Note: Axis of loading parallel to core axis**  
 Description: **White CHALK**  
 Specimen Preparation: **Specimen was not recored.**  
 Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.  
 Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

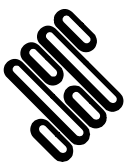


Front view (post-test)



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]		EMY HOWARD 07/11/18
Contract		Job No
<b>A303 Stonehenge Phase 6 Ground Investigation</b>		<b>733442</b>





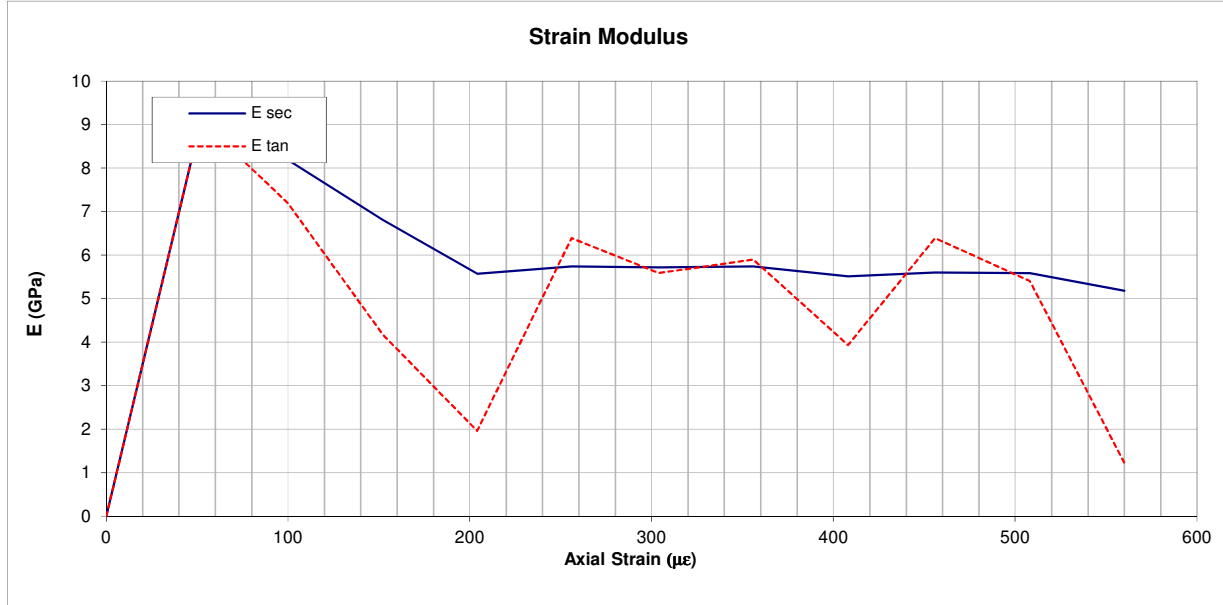
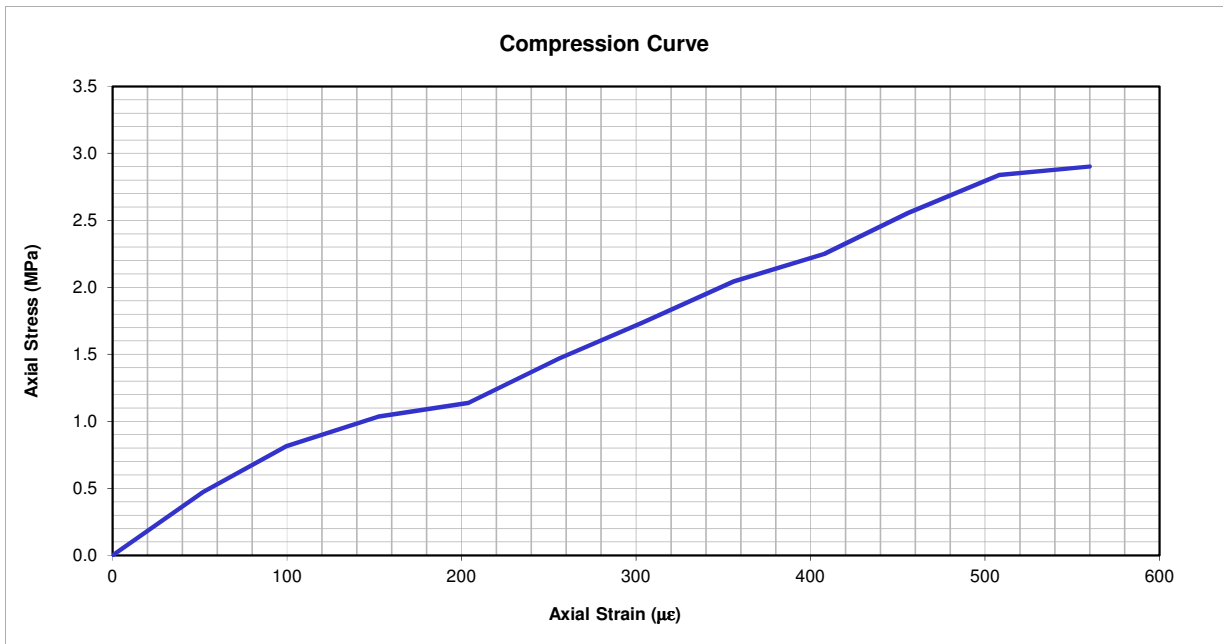
Test Date 10/07/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>78.21 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>215.50 mm</u>
BH No	<u>BHRZ603</u>	Max. strength	<u>2.90 MPa</u>
Specimen Depth	<u>32.53 - 32.95m</u>	E <sub>tan</sub>	<u>(*) 1.97 GPa</u>
Specimen Type	<u>C</u>	E <sub>sec</sub>	<u>(^) 5.58 GPa</u>

(\*) Calculated for axial  $\sigma = 1.45$  MPa  
 (^) Calculated for axial  $\sigma = 1.45$  MPa  
*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



Graph 2

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

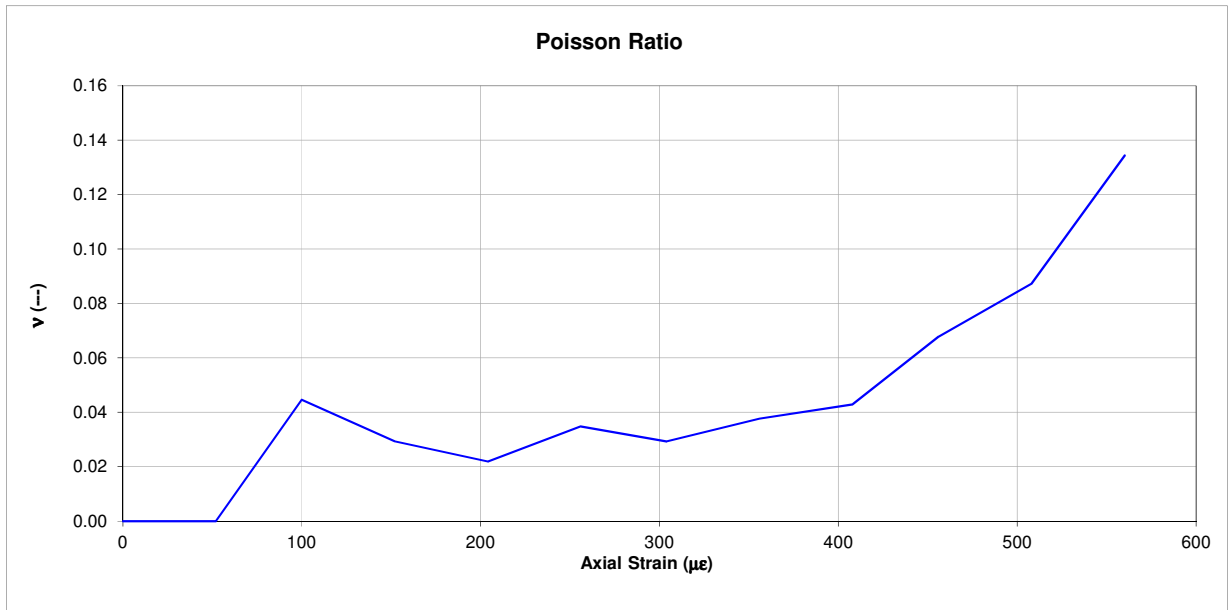
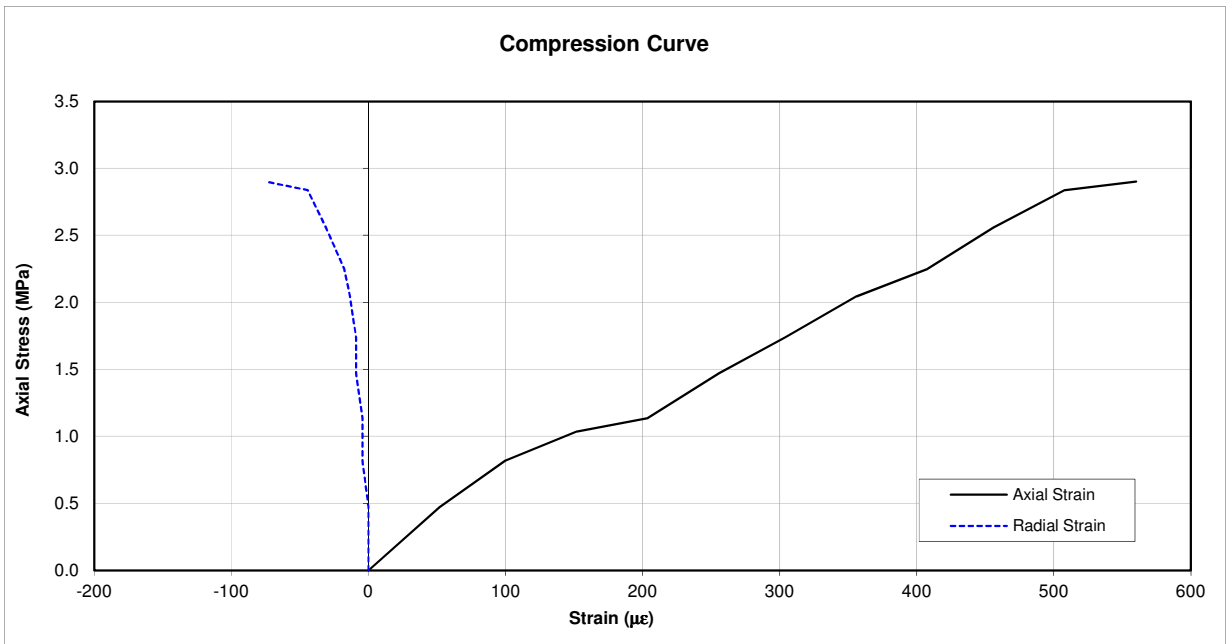
Test Date 10/07/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

Inhouse method based on: ISRM, ASTM and Eurocode 7 Part 2 W.1.1

Job No	<u>733442</u>	Cross section	<u>78.21 cm<sup>2</sup></u>
Site	<u></u>	Height	<u>215.50 mm</u>
BH No	<u>BHRZ603</u>	Max. strength	<u>2.90 MPa</u>
Specimen Depth	<u>32.53 - 32.95m</u>	Poisson at failure	<u>0.134</u>
Specimen Type	<u>C</u>	Poisson (*)	<u>0.022</u>
(*) Calculated for axial $\sigma =$ <u>1.45 MPa</u>			

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **15**      Sample Type: **U**      Depth (m): **13.25**

Bulk Density (Mg/m<sup>3</sup>): **2.00**      Dry Density (Mg/m<sup>3</sup>): **1.60**      Moisture Content (%): **25**  
 Length (mm): **214.75**      Diameter (mm): **99.58**      Length/Diameter Ratio: **2.16**  
 Test Duration (mins:secs): **4:47**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **8.6**  
 UCS (MPa): **1.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 01/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

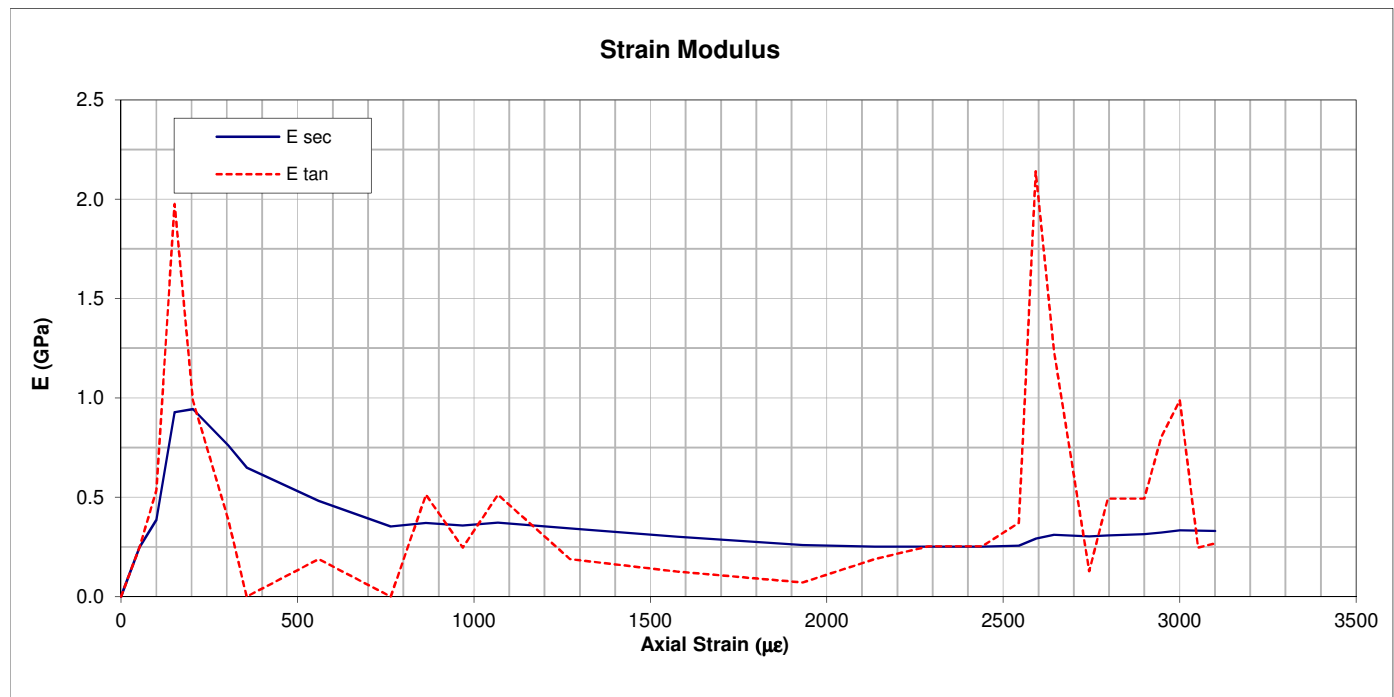
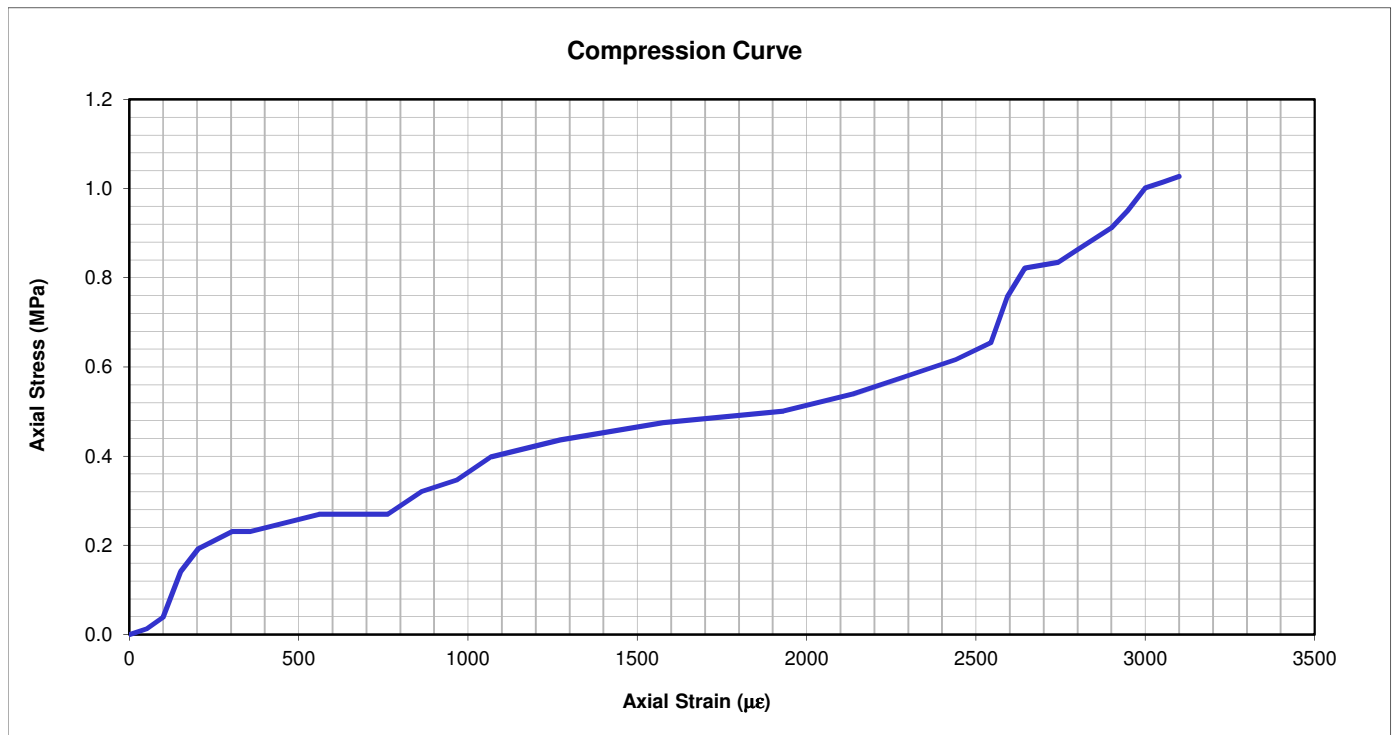
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71805  
 Specimen Depth 13.25 - 13.55m  
 Specimen Type C

Cross section area 77.88 cm<sup>2</sup>  
 Height 214.75 mm  
 Max logged strength 1.03 MPa  
 E<sub>tan</sub> (\*) 0.07 GPa  
 E<sub>sec</sub> (^) 0.26 GPa

(\*) Calculated for axial  $\sigma =$  0.51 MPa  
 (^) Calculated for axial  $\sigma =$  0.51 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 01/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

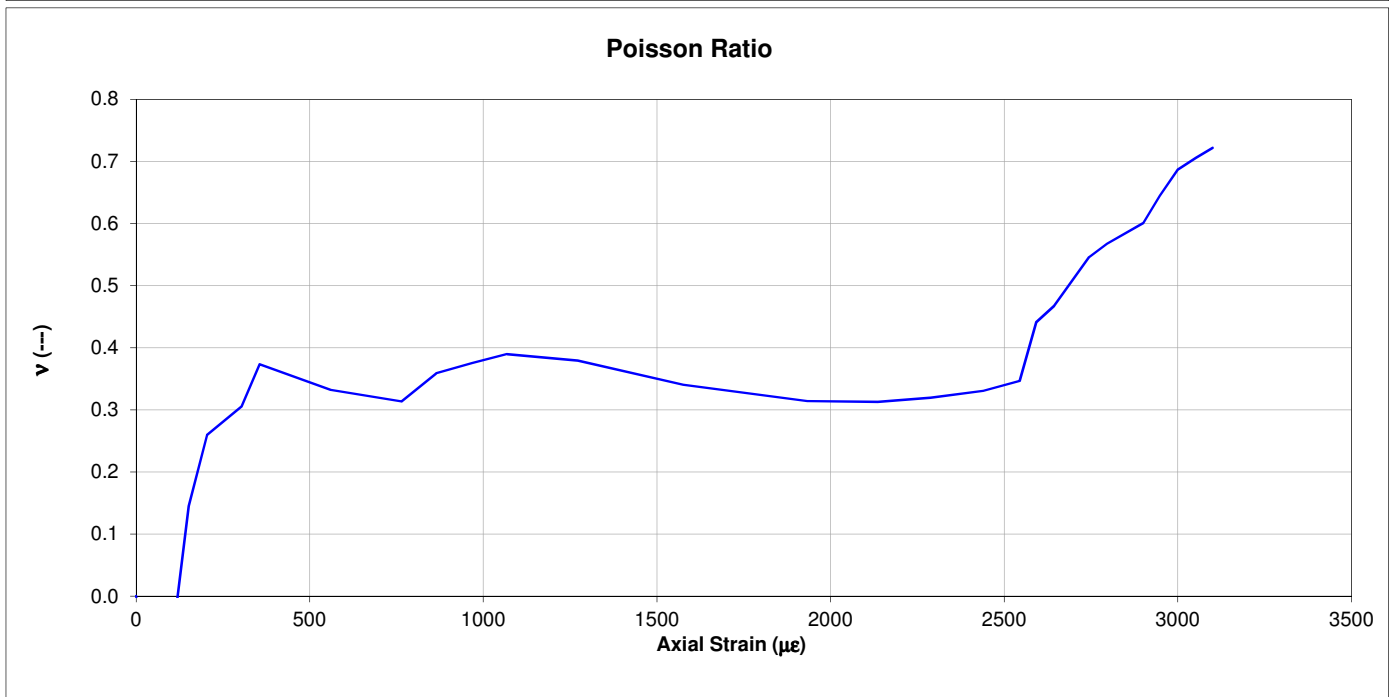
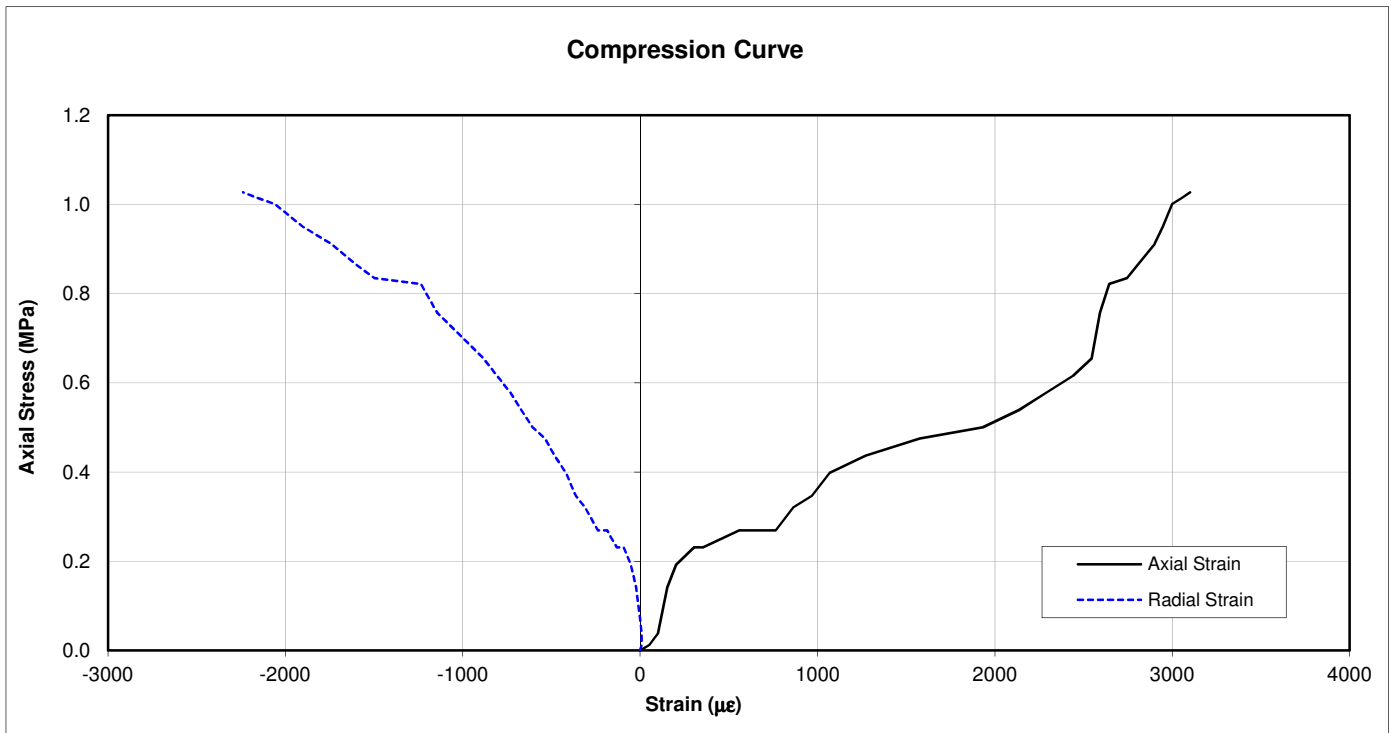
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71805  
 Specimen Depth 13.25 - 13.55m  
 Specimen Type C

Cross section area 77.88 cm<sup>2</sup>  
 Height 214.75 mm  
 Max logged strength 1.03 MPa  
 Poisson at failure 0.722  
 Poisson (\*) 0.314

(\*) Calculated for axial  $\sigma =$  0.51 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **26**      Sample Type: **U**      Depth (m): **22.17**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.54**      Moisture Content (%): **28**  
 Length (mm): **215.11**      Diameter (mm): **100.58**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **5:29**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **18.0**  
 UCS (MPa): **2.3**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

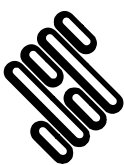


**Front view (post-test)**



**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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

01/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

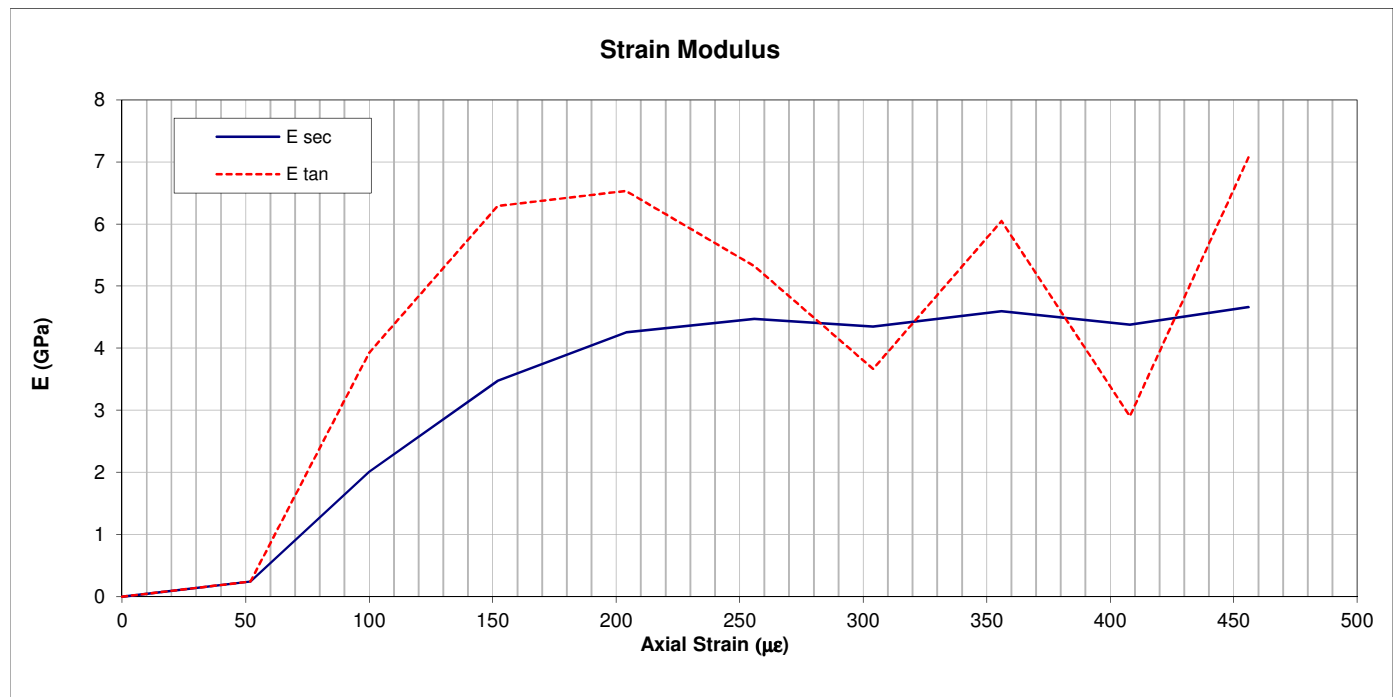
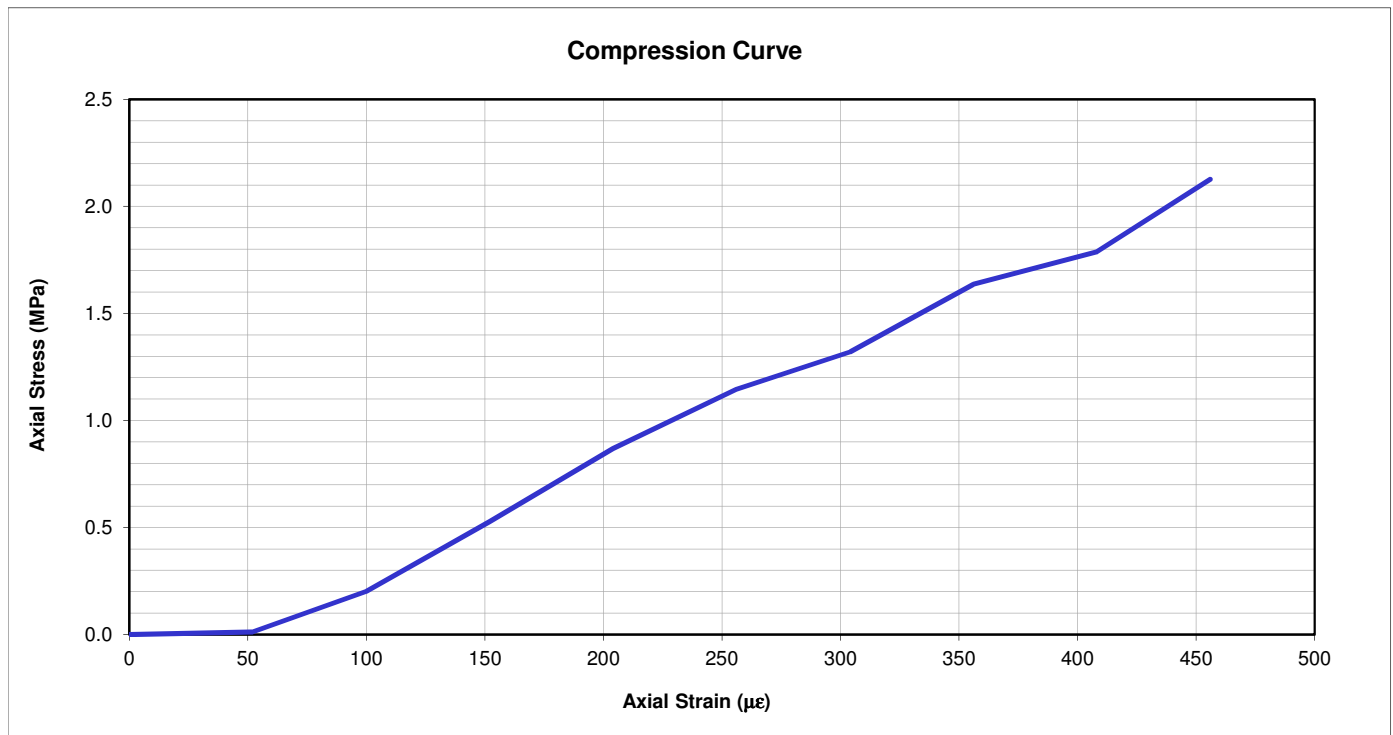
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71805</u>
Specimen Depth	<u>22.17 - 22.45m</u>
Specimen Type	<u>C</u>

Cross section area	<u>79.49 cm<sup>2</sup></u>
Height	<u>215.13 mm</u>
Max logged strength	<u>2.13 MPa</u>
E <sub>tan</sub>	<u>(*) 6.53 GPa</u>
E <sub>sec</sub>	<u>(^) 4.26 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.06 MPa  
 (^) Calculated for axial  $\sigma =$  1.06 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 01/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

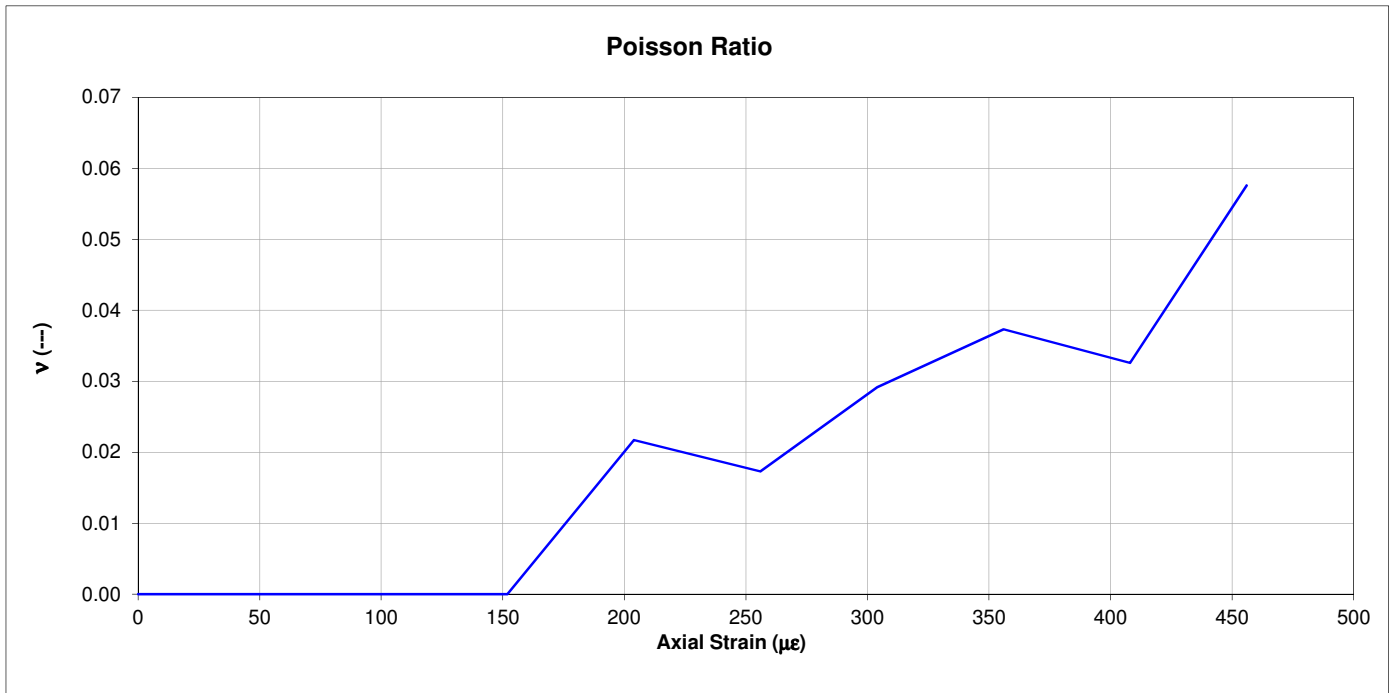
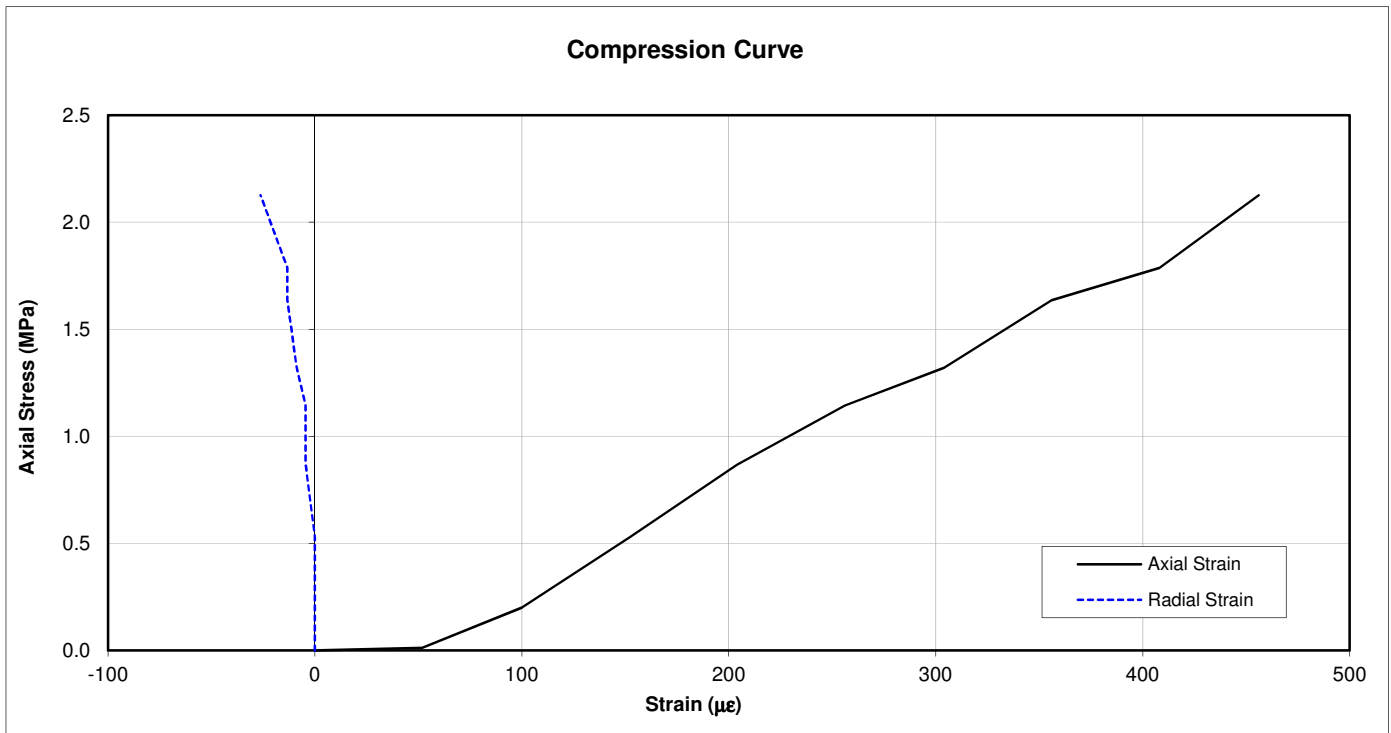
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71805  
 Specimen Depth 22.17 - 22.45m  
 Specimen Type C

Cross section area 79.49 cm<sup>2</sup>  
 Height 215.13 mm  
 Max logged strength 2.13 MPa  
 Poisson at failure 0.058  
 Poisson (\*) 0.022

(\*) Calculated for axial  $\sigma =$  1.06 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **44**      Sample Type: **U**      Depth (m): **37.62**

Bulk Density (Mg/m<sup>3</sup>): **2.05**      Dry Density (Mg/m<sup>3</sup>): **1.66**      Moisture Content (%): **23**  
 Length (mm): **213.76**      Diameter (mm): **100.01**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **3:51**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **19.8**  
 UCS (MPa): **2.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

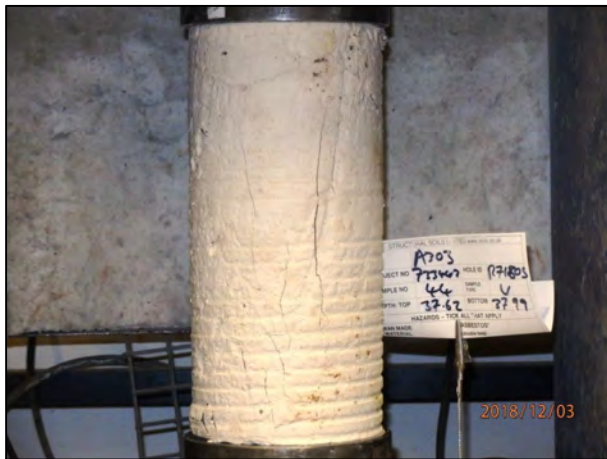
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

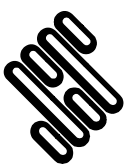


Front view (post-test)



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
ALAN FROST		19/12/18
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

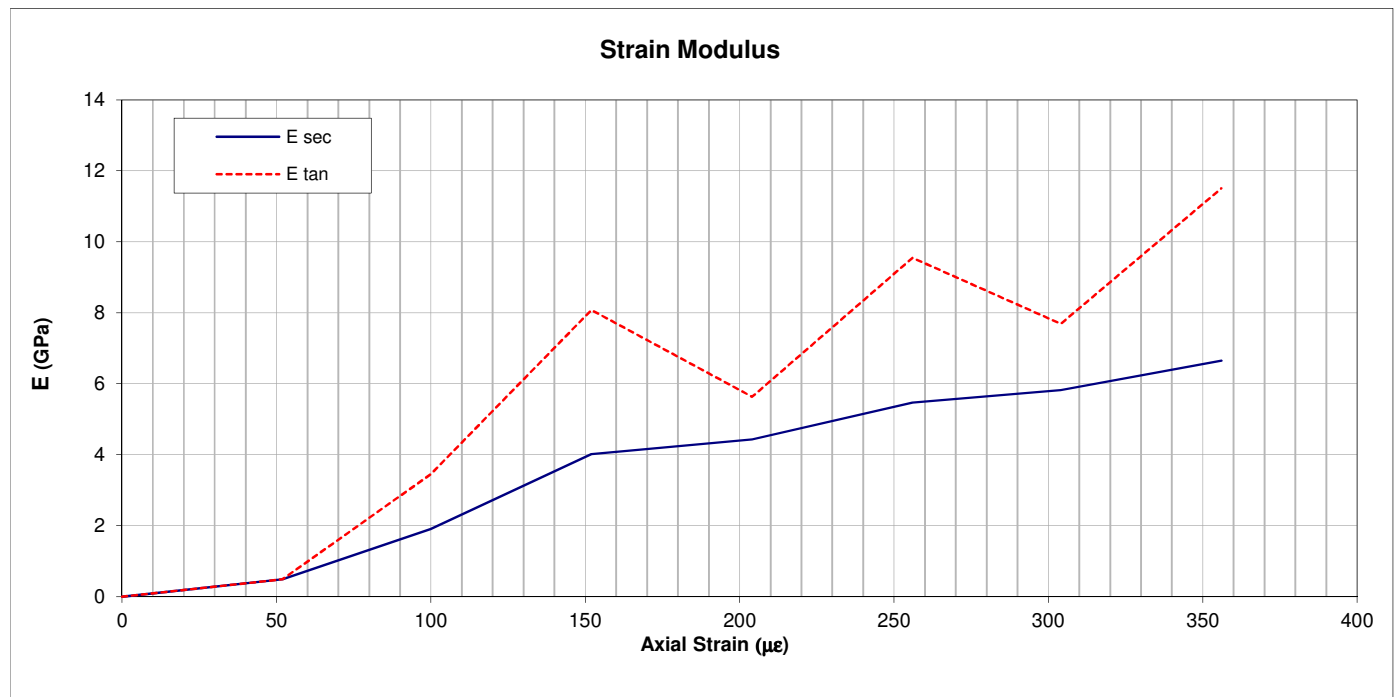
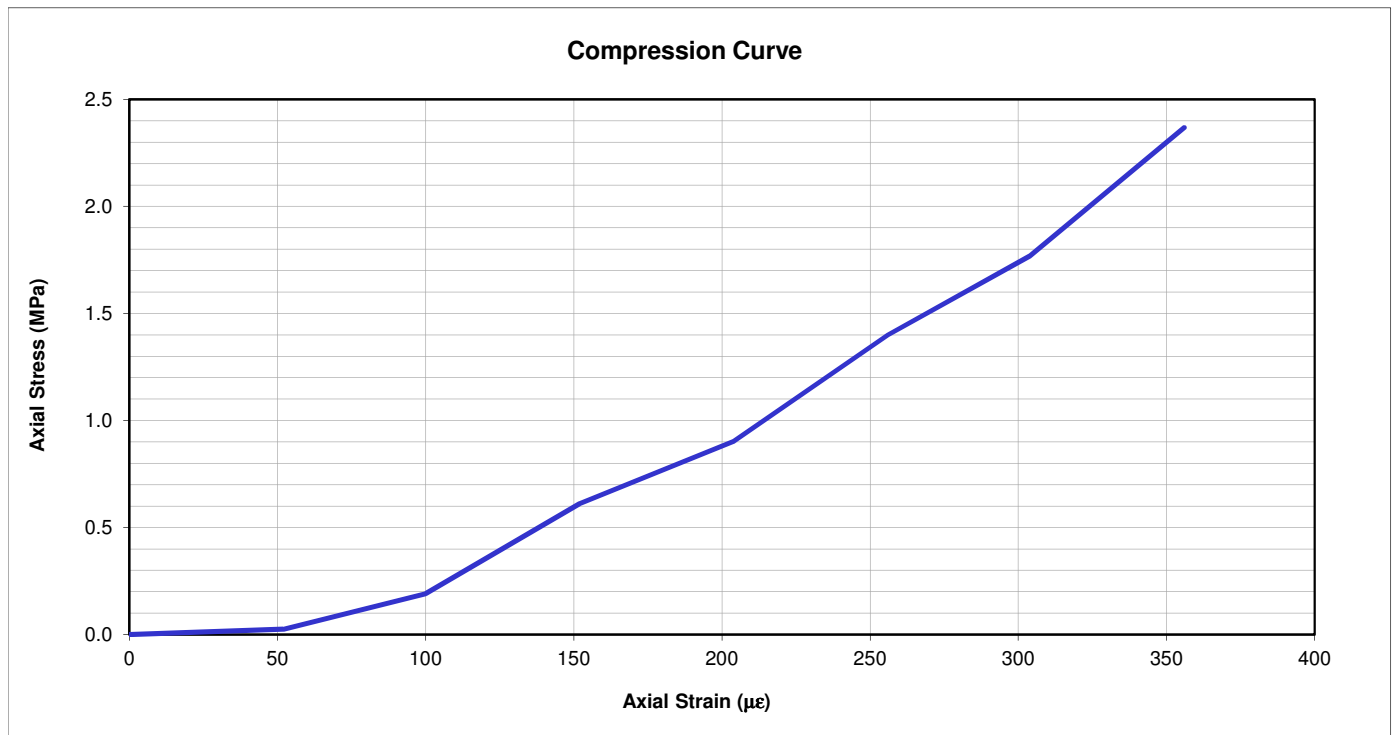
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71805</u>
Specimen Depth	<u>37.62 - 37.99m</u>
Specimen Type	<u>C</u>

Cross section area	<u>78.56 cm<sup>2</sup></u>
Height	<u>213.76 mm</u>
Max logged strength	<u>2.37 MPa</u>
E <sub>tan</sub> (*)	<u>5.63 GPa</u>
E <sub>sec</sub> (^)	<u>4.43 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.18 MPa  
 (^) Calculated for axial  $\sigma =$  1.18 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

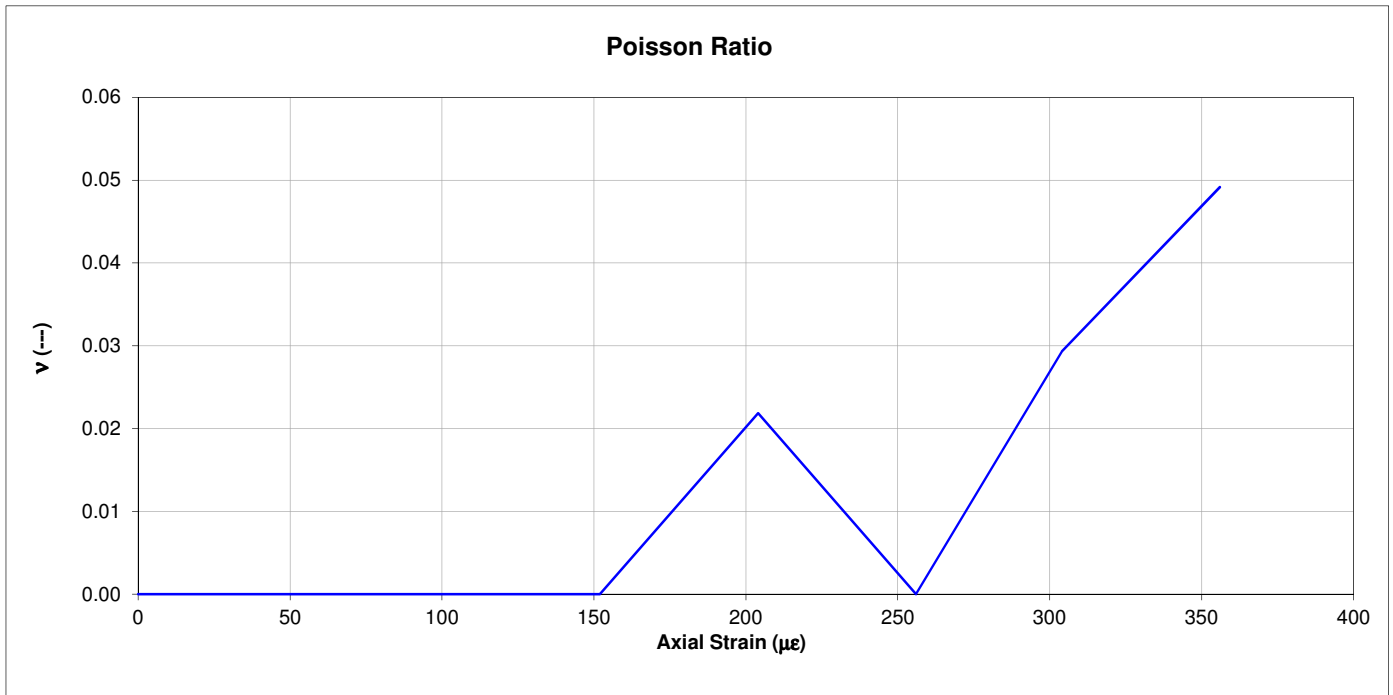
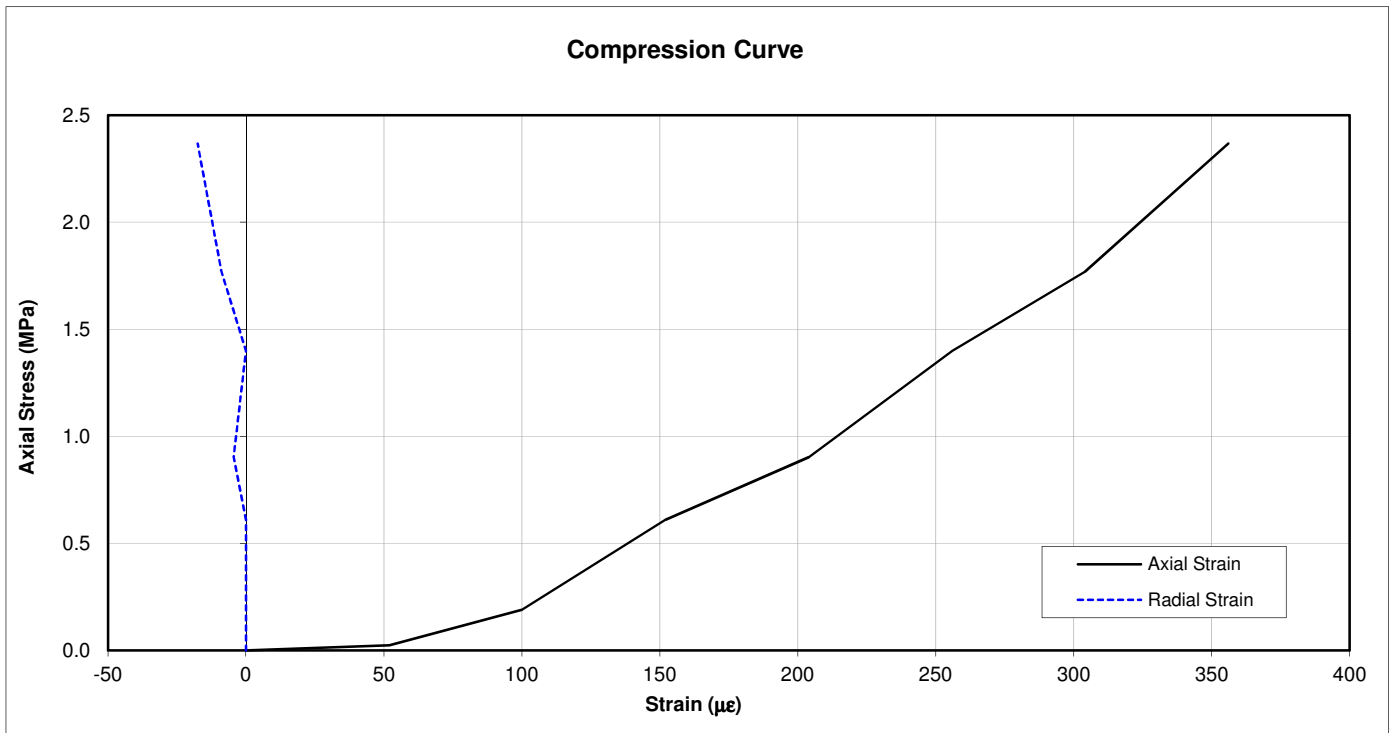
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71805  
 Specimen Depth 37.62 - 37.99m  
 Specimen Type C

Cross section area 78.56 cm<sup>2</sup>  
 Height 213.76 mm  
 Max logged strength 2.37 MPa  
 Poisson at failure 0.049  
 Poisson (\*) 0.022

(\*) Calculated for axial  $\sigma =$  1.18 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71809**      Sample Ref: **30**      Sample Type: **U**      Depth (m): **31.05**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **26**  
 Length (mm): **214.24**      Diameter (mm): **99.38**      Length/Diameter Ratio: **2.16**  
 Test Duration (mins:secs): **3:06**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **24.4**  
 UCS (MPa): **3.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

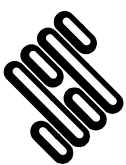


Front view (post-test)



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

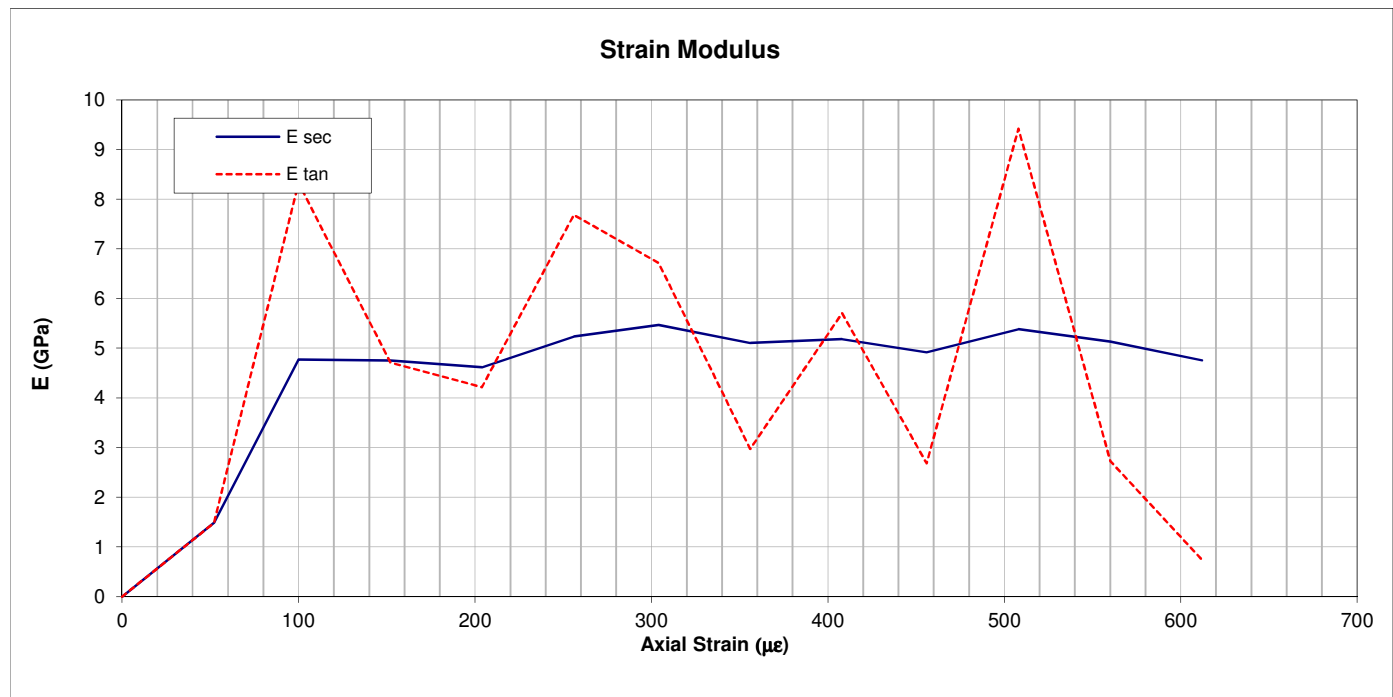
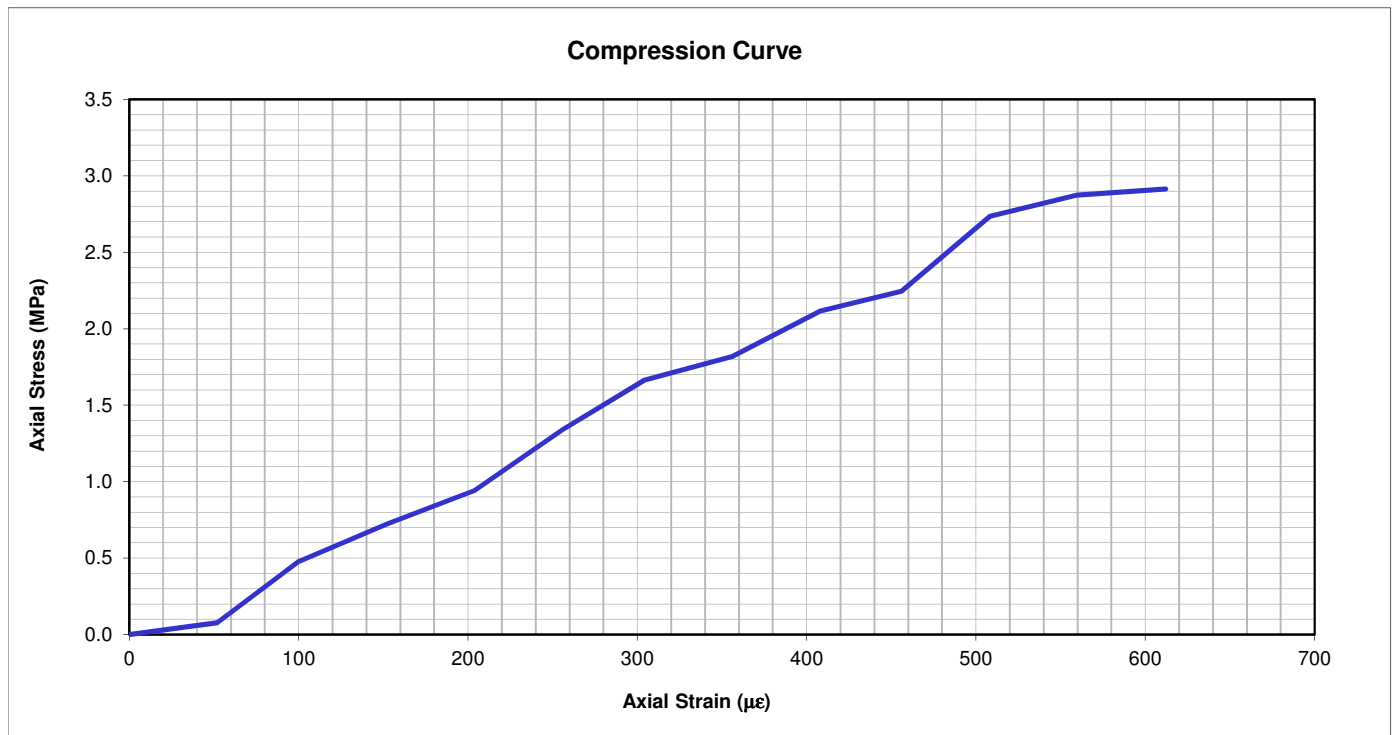
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71809</u>
Specimen Depth	<u>31.05 - 31.35m</u>
Specimen Type	<u>C</u>

Cross section area	<u>77.57 cm<sup>2</sup></u>
Height	<u>214.24 mm</u>
Max logged strength	<u>2.91 MPa</u>
E <sub>tan</sub>	<u>(*) 7.69 GPa</u>
E <sub>sec</sub>	<u>(^) 5.24 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.46 MPa  
 (^) Calculated for axial  $\sigma =$  1.46 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

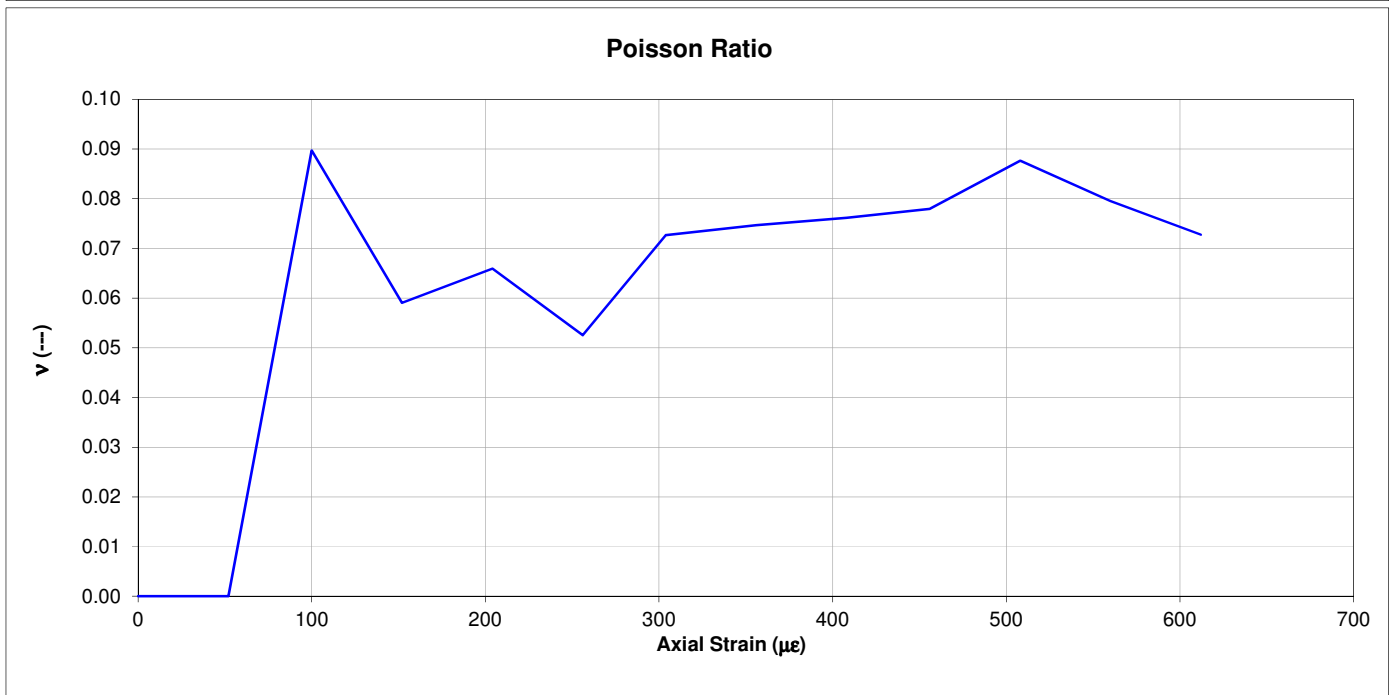
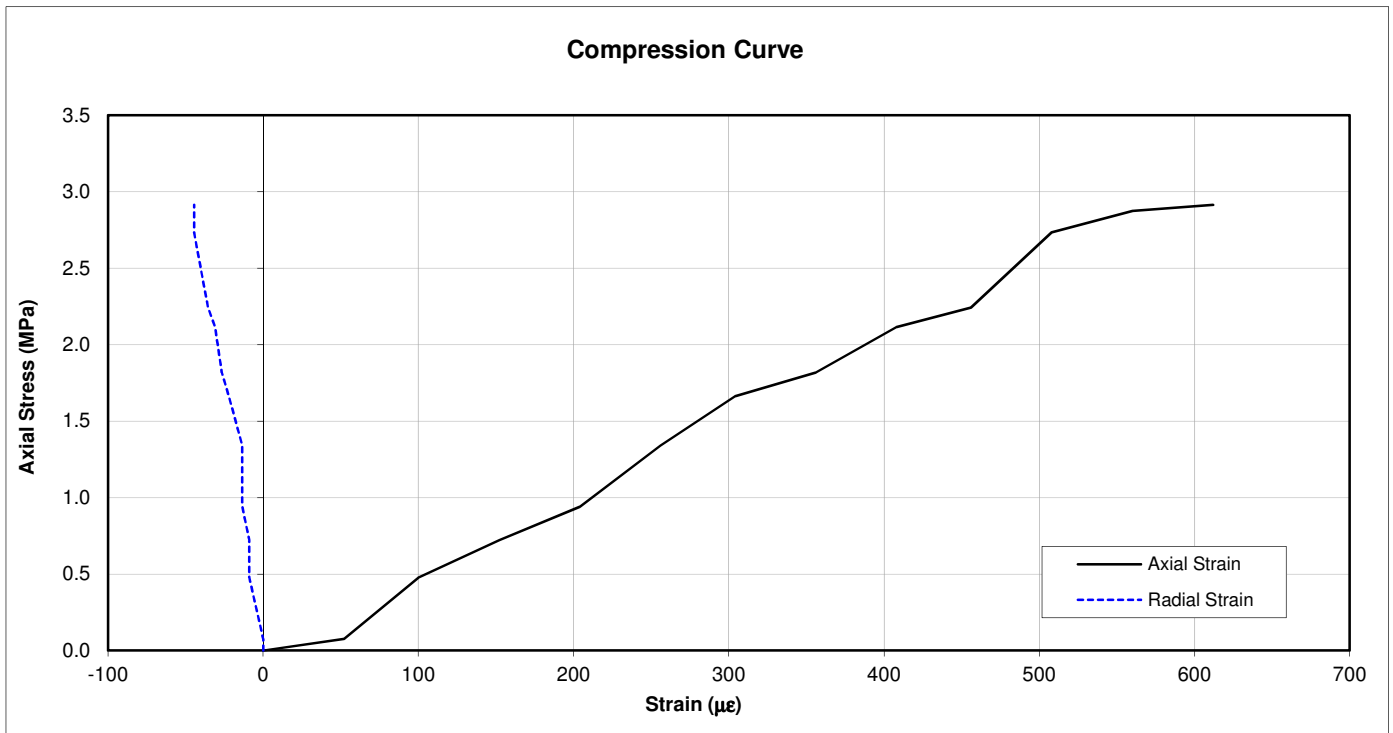
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71809  
 Specimen Depth 31.05 - 31.35m  
 Specimen Type C

Cross section area 77.57 cm<sup>2</sup>  
 Height 214.24 mm  
 Max logged strength 2.91 MPa  
 Poisson at failure 0.073  
 Poisson (\*) 0.053

(\*) Calculated for axial  $\sigma =$  1.46 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71809**      Sample Ref: **38**      Sample Type: **U**      Depth (m): **37.45**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.64**      Moisture Content (%): **24**  
 Length (mm): **215.01**      Diameter (mm): **100.87**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **4:36**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **31.2**  
 UCS (MPa): **3.9**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

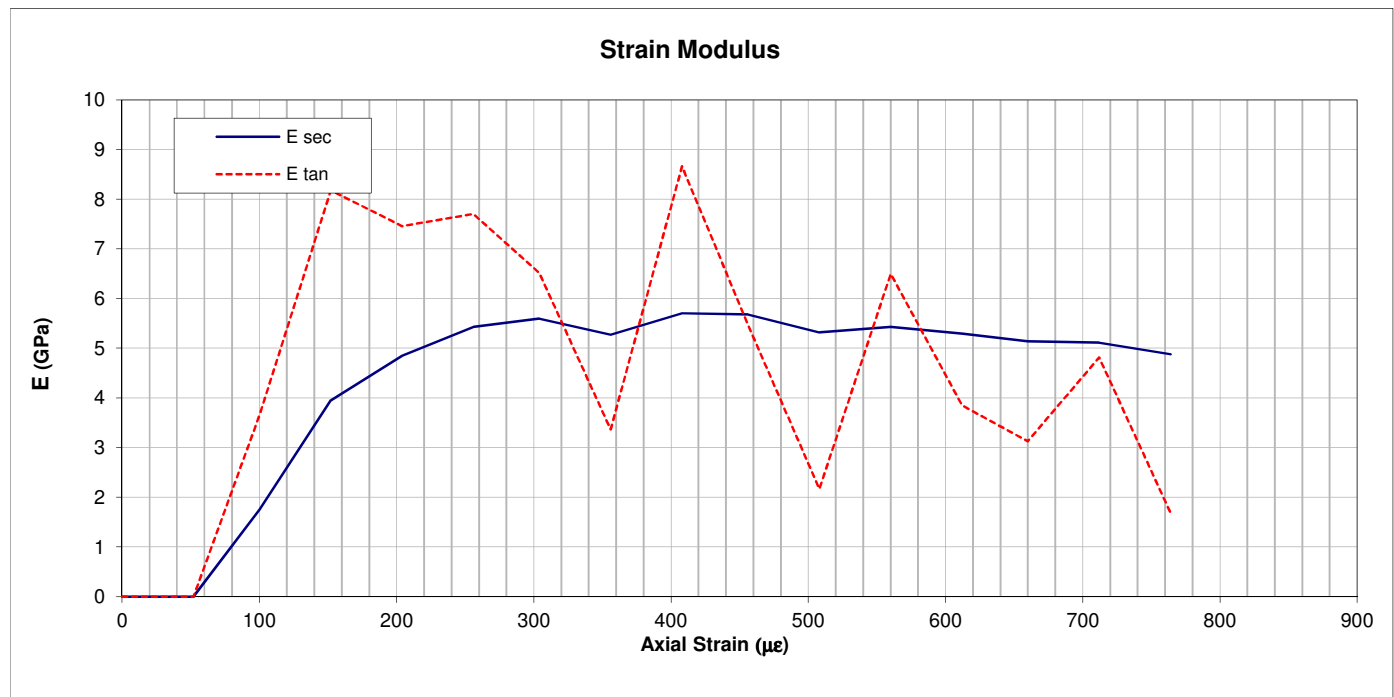
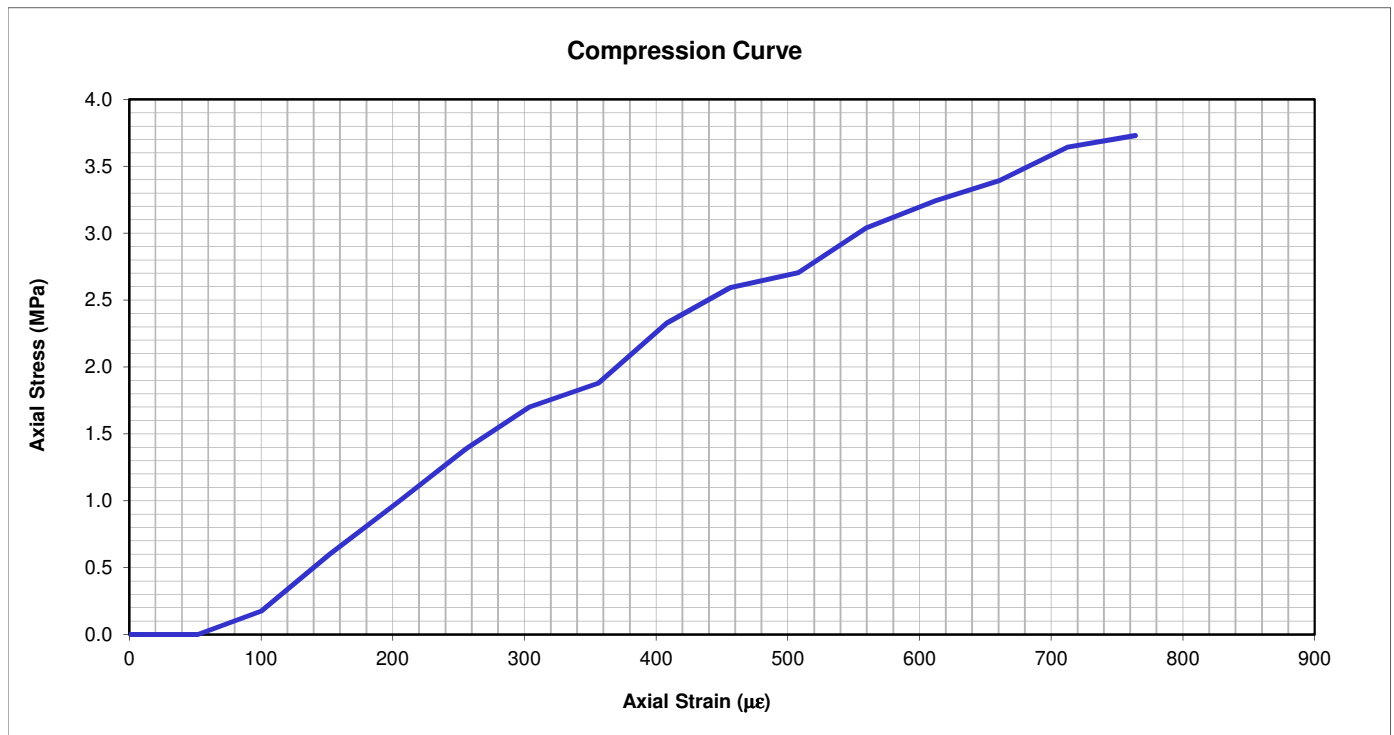
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71809</u>
Specimen Depth	<u>37.45 - 37.80m</u>
Specimen Type	<u>C</u>

Cross section area	<u>79.91 cm<sup>2</sup></u>
Height	<u>215.01 mm</u>
Max logged strength	<u>3.73 MPa</u>
E <sub>tan</sub>	<u>(*) 6.52 GPa</u>
E <sub>sec</sub>	<u>(^) 5.60 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.86 MPa  
 (^) Calculated for axial  $\sigma =$  1.86 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

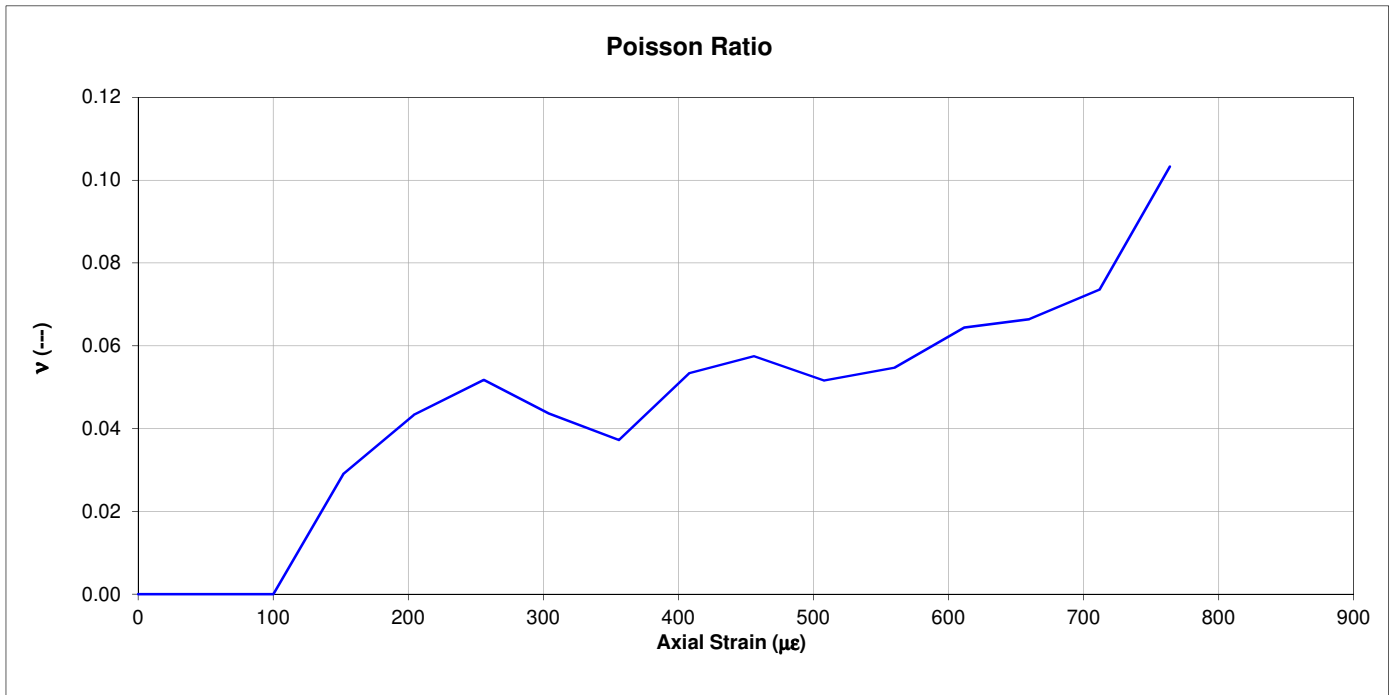
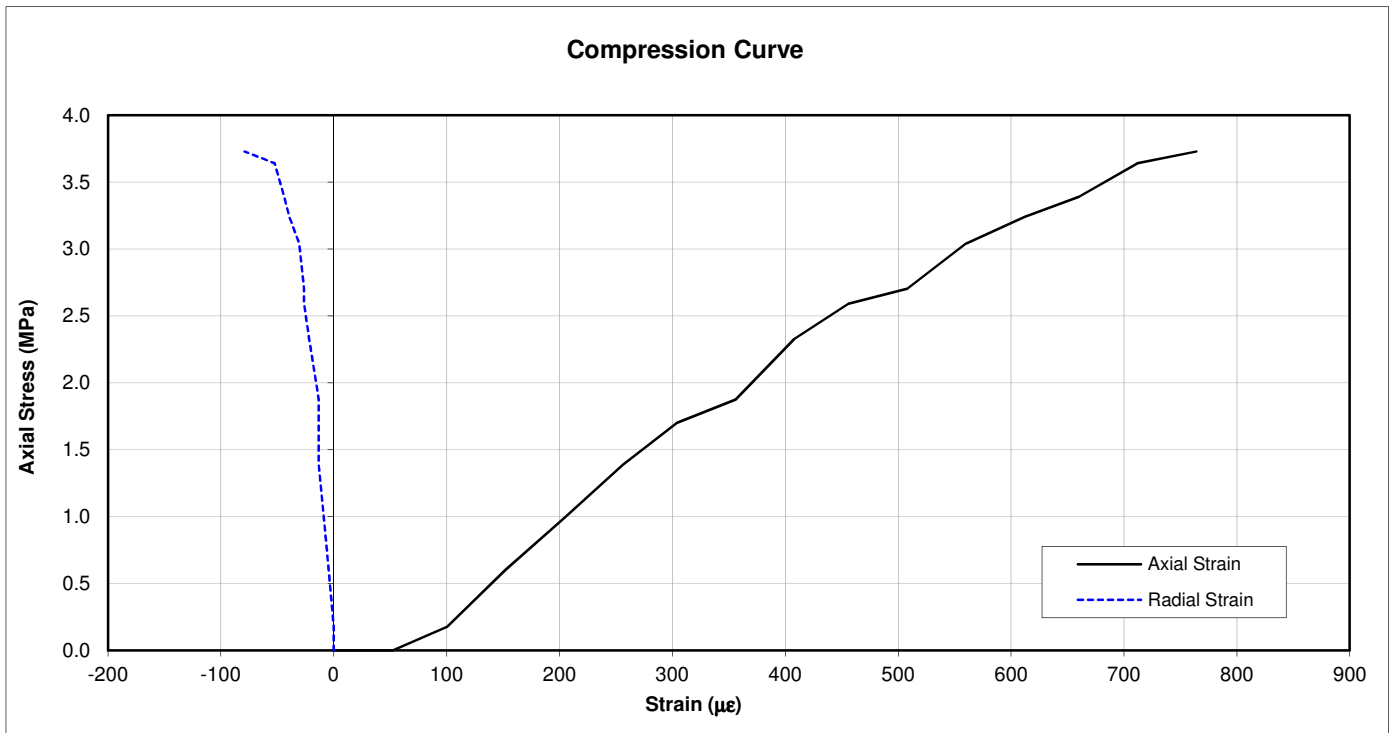
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71809  
 Specimen Depth 37.45 - 37.80m  
 Specimen Type C

Cross section area 79.91 cm<sup>2</sup>  
 Height 215.01 mm  
 Max logged strength 3.73 MPa  
 Poisson at failure 0.103  
 Poisson (\*) 0.044

(\*) Calculated for axial  $\sigma =$  1.86 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71809**      Sample Ref: **44**      Sample Type: **U**      Depth (m): **42.13**

Bulk Density (Mg/m<sup>3</sup>): **2.05**      Dry Density (Mg/m<sup>3</sup>): **1.68**      Moisture Content (%): **22**  
 Length (mm): **214.45**      Diameter (mm): **99.72**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **6:41**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **26.8**  
 UCS (MPa): **3.4**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol SI - 012 | GfctText L - UCS WITH DEFORMATION - A4P | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_06  
 Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/12/18 - 09:51 | AF3

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
	[REDACTED]		19/12/18
	Contract		Job No
<p><b>A303 Stonehenge Phase 7 Ground Investigation</b></p>		<p><b>733442</b></p>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

01/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

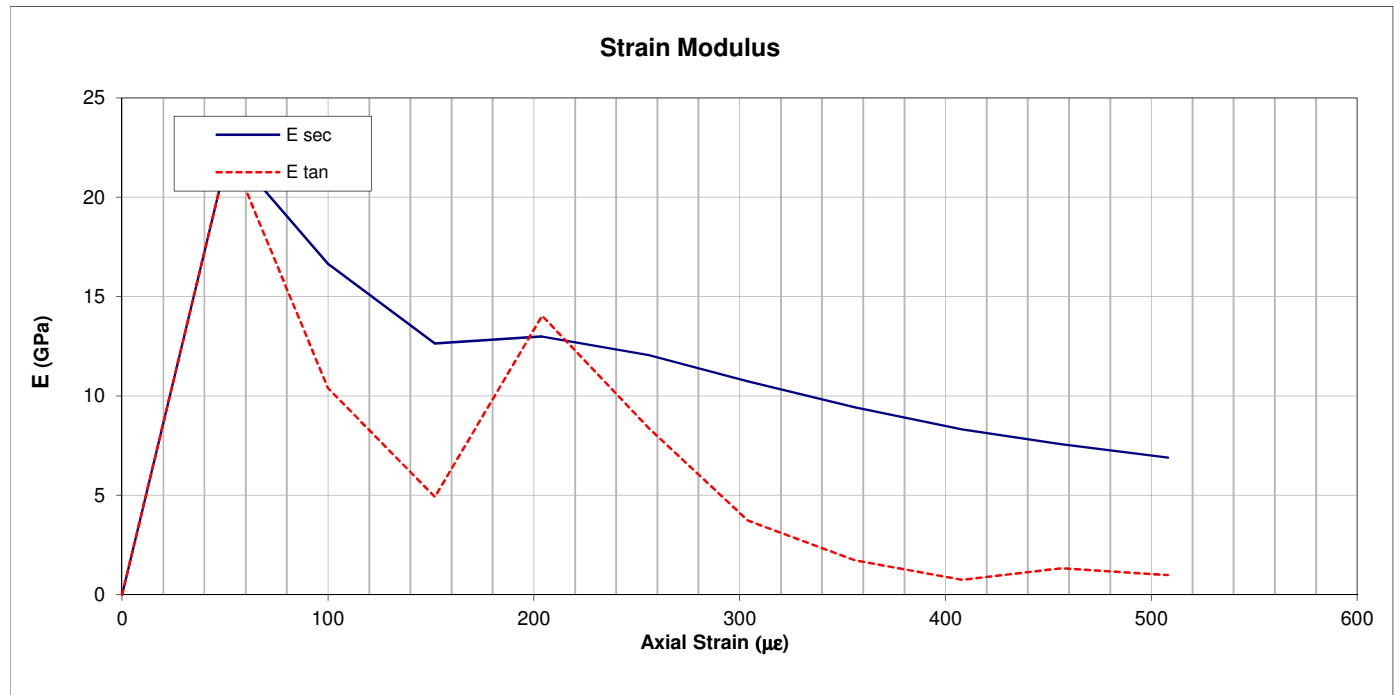
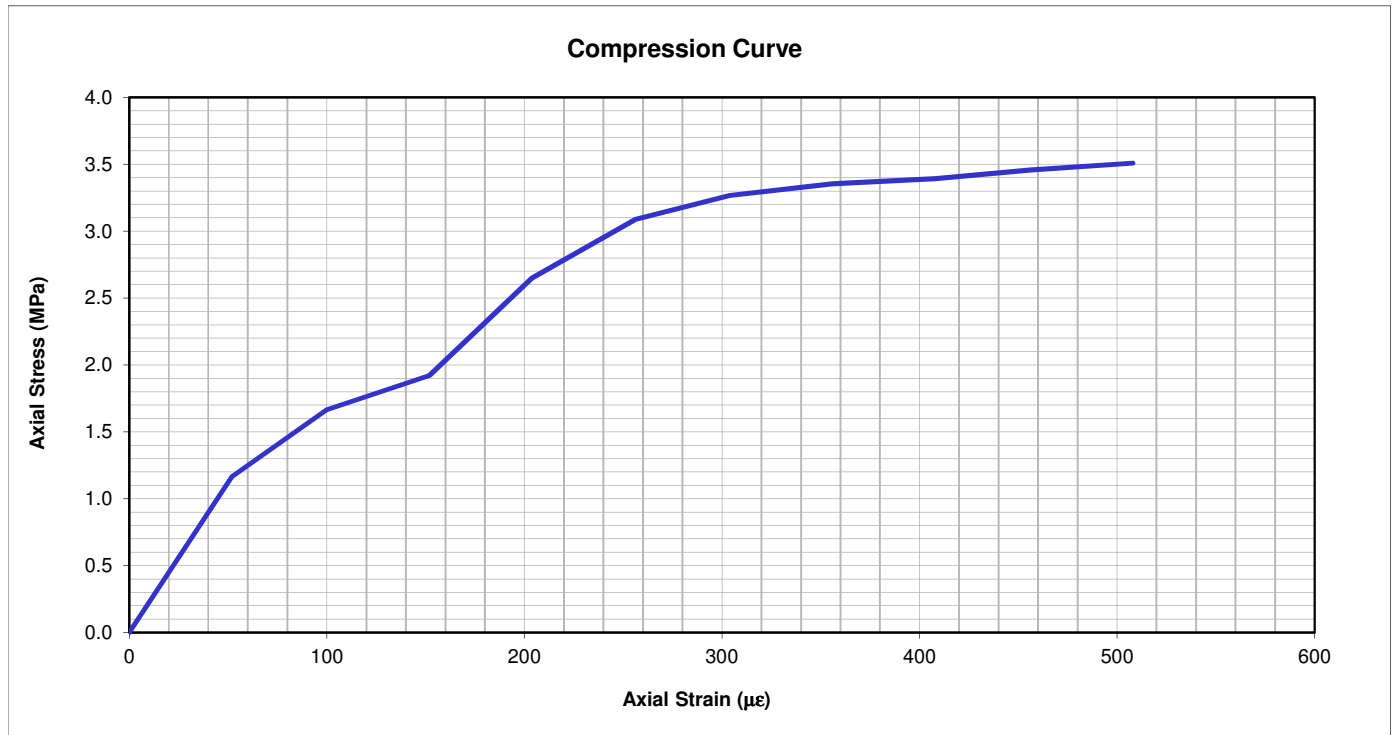
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71809</u>
Specimen Depth	<u>42.13 - 42.40m</u>
Specimen Type	<u>C</u>

Cross section area	<u>78.10 cm<sup>2</sup></u>
Height	<u>214.45 mm</u>
Max logged strength	<u>3.51 MPa</u>
E <sub>tan</sub>	<u>(*) 10.40 GPa</u>
E <sub>sec</sub>	<u>(^) 16.65 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.75 MPa  
 (^) Calculated for axial  $\sigma =$  1.75 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 01/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

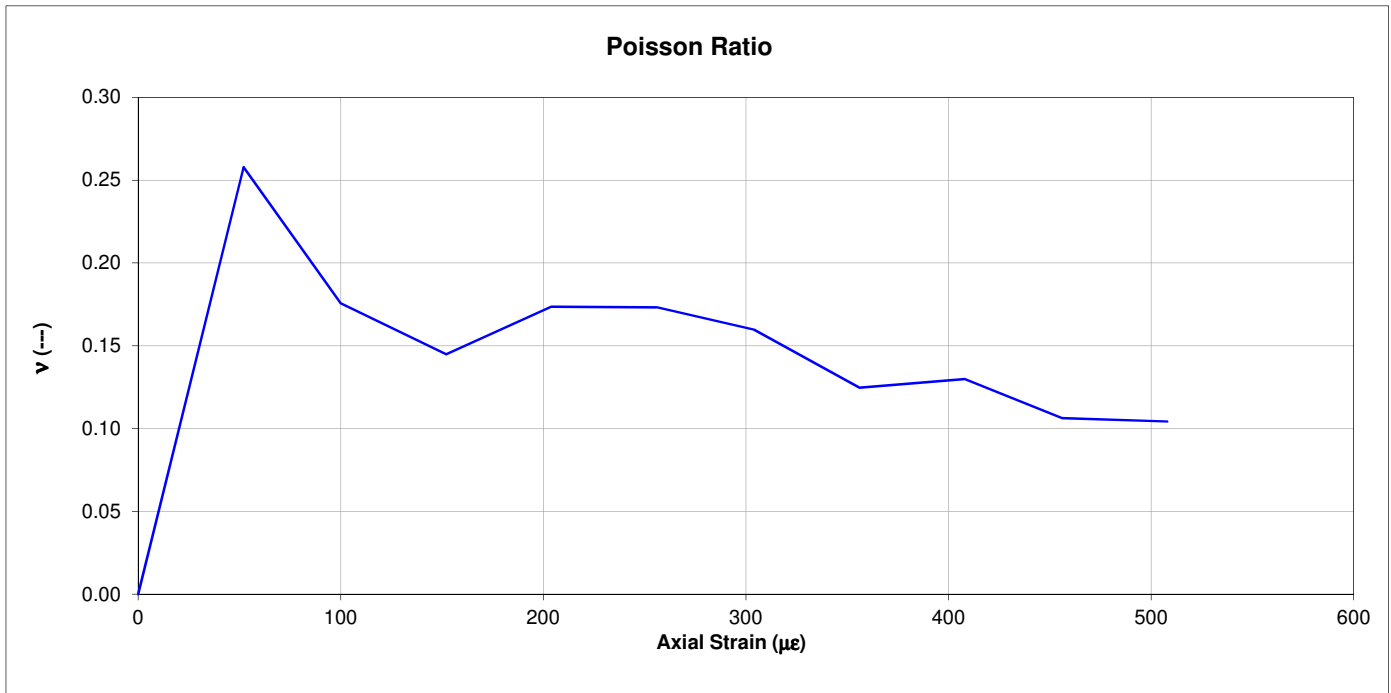
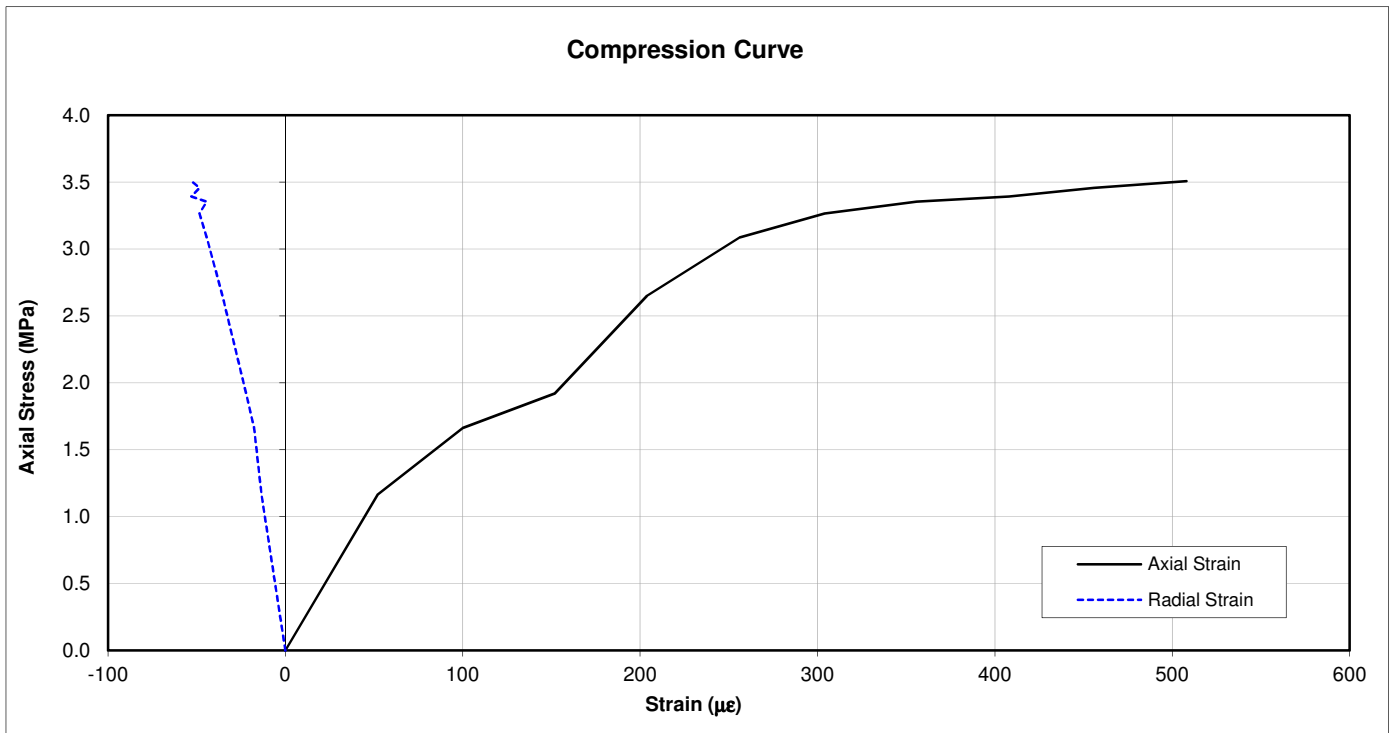
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71809  
 Specimen Depth 42.13 - 42.40m  
 Specimen Type C

Cross section area 78.10 cm<sup>2</sup>  
 Height 214.45 mm  
 Max logged strength 3.51 MPa  
 Poisson at failure 0.104  
 Poisson (\*) 0.176

(\*) Calculated for axial  $\sigma =$  1.75 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71906**      Sample Ref: **34**      Sample Type: **U**      Depth (m): **27.92**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.56**      Moisture Content (%): **27**  
 Length (mm): **214.09**      Diameter (mm): **98.67**      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **2.09**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **15.6**  
 UCS (MPa): **2.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

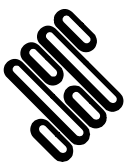


Front view (post-test)



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  
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Compiled By		Date
[REDACTED]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

17/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

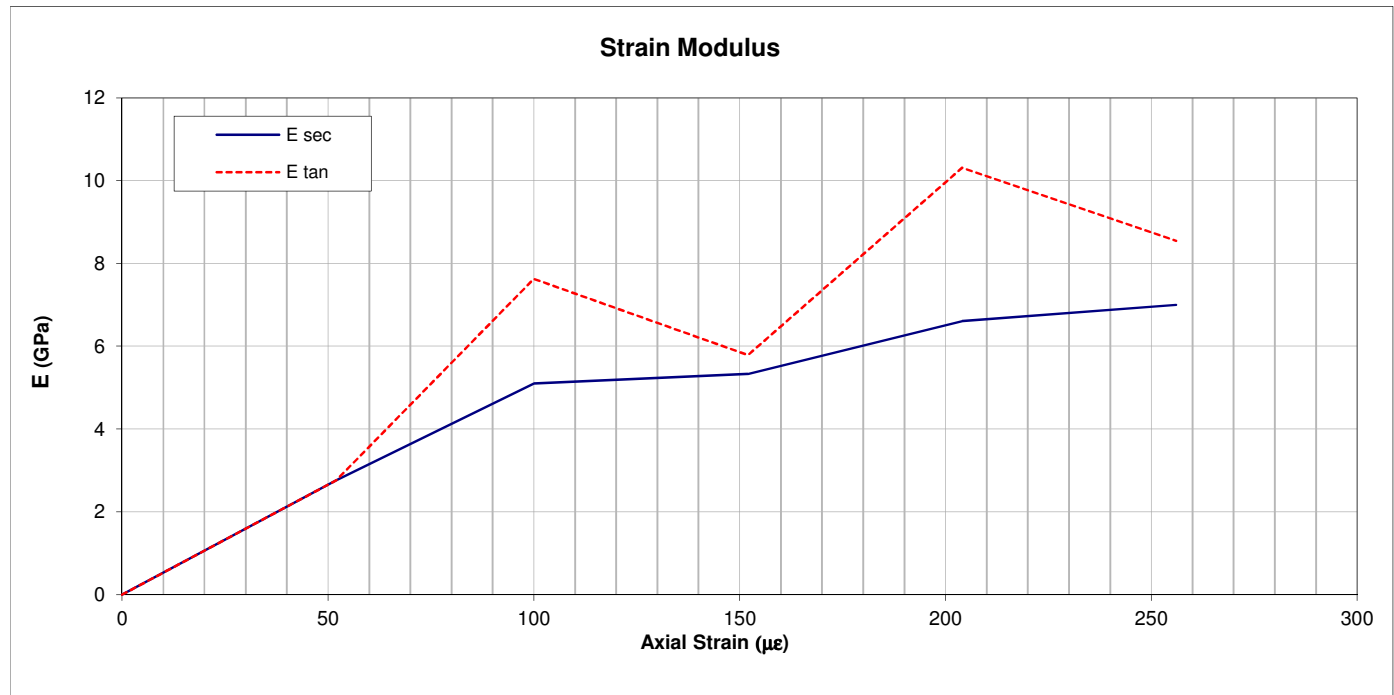
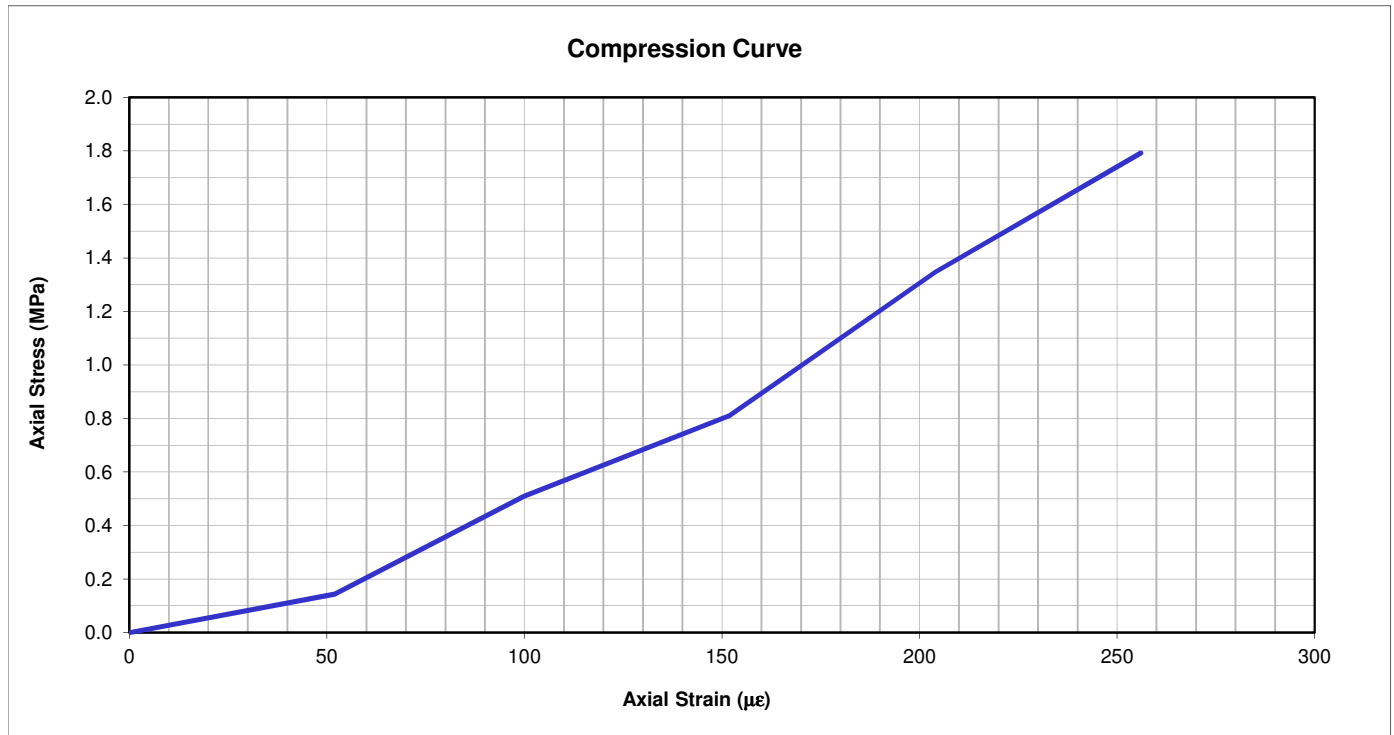
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71906</u>
Specimen Depth	<u>27.92 - 28.25m</u>
Specimen Type	<u>C</u>

Cross section area	<u>76.46 cm<sup>2</sup></u>
Height	<u>214.09 mm</u>
Max logged strength	<u>1.79 MPa</u>
E <sub>tan</sub> (*)	<u>5.78 GPa</u>
E <sub>sec</sub> (^)	<u>5.33 GPa</u>

(\*) Calculated for axial  $\sigma =$  0.90 MPa  
 (^) Calculated for axial  $\sigma =$  0.90 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 17/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

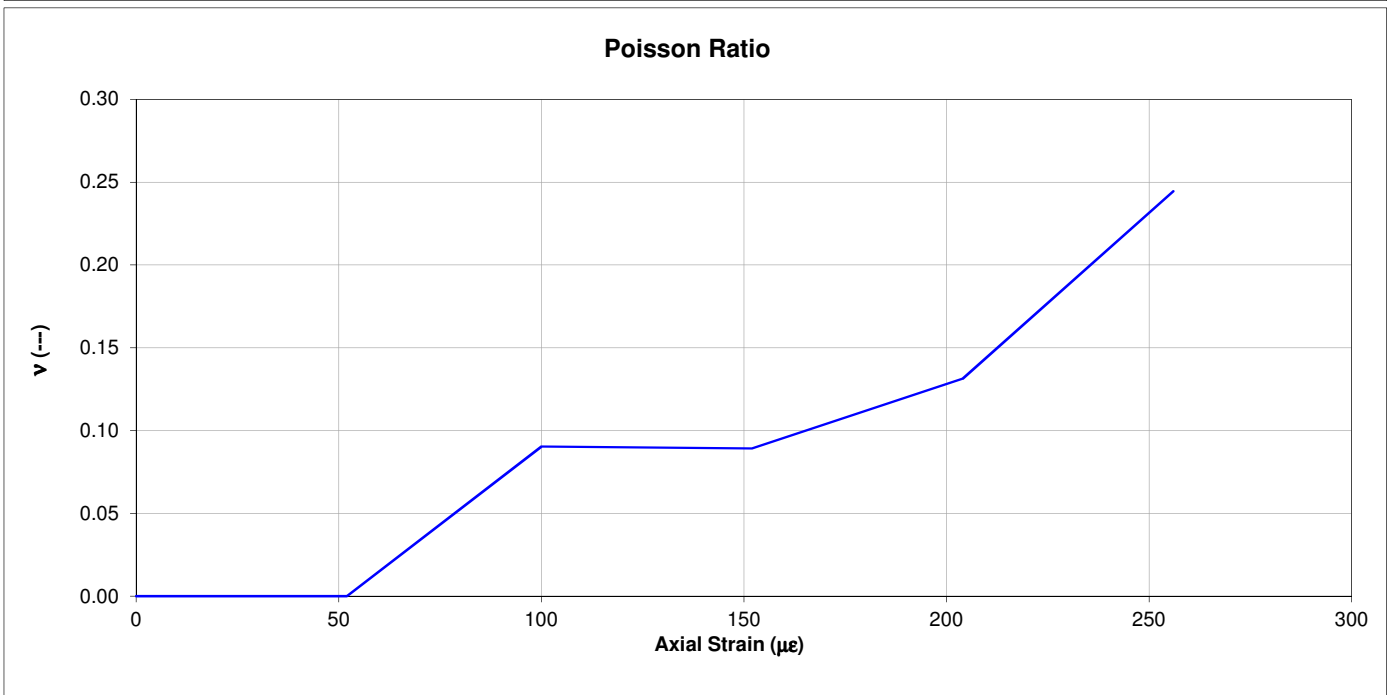
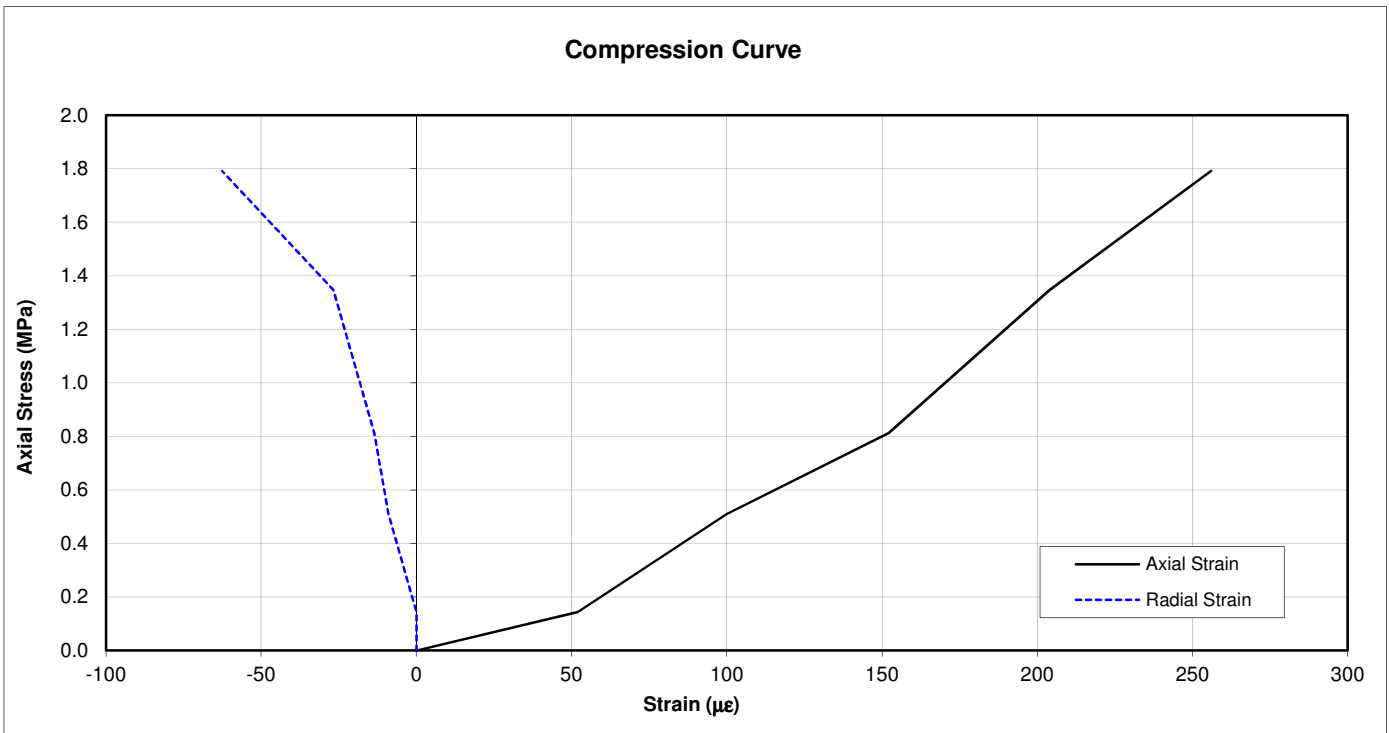
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71906  
 Specimen Depth 27.92 - 28.25m  
 Specimen Type C

Cross section area 76.46 cm<sup>2</sup>  
 Height 214.09 mm  
 Max logged strength 1.79 MPa  
 Poisson at failure 0.244  
 Poisson (\*) 0.089

(\*) Calculated for axial  $\sigma =$  0.90 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71906**      Sample Ref: **48**      Sample Type: **U**      Depth (m): **37.45**

Bulk Density (Mg/m<sup>3</sup>): **2.12**      Dry Density (Mg/m<sup>3</sup>): **1.78**      Moisture Content (%): **19**  
 Length (mm): **214.65**      Diameter (mm): **99.91**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **7:39**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **56.8**  
 UCS (MPa): **7.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



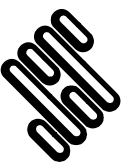
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol SI - 012 | GfctText L - UCS WITH DEFORMATION - A4P | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:52 | AF3

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
	[Redacted]		19/12/18
	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

17/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

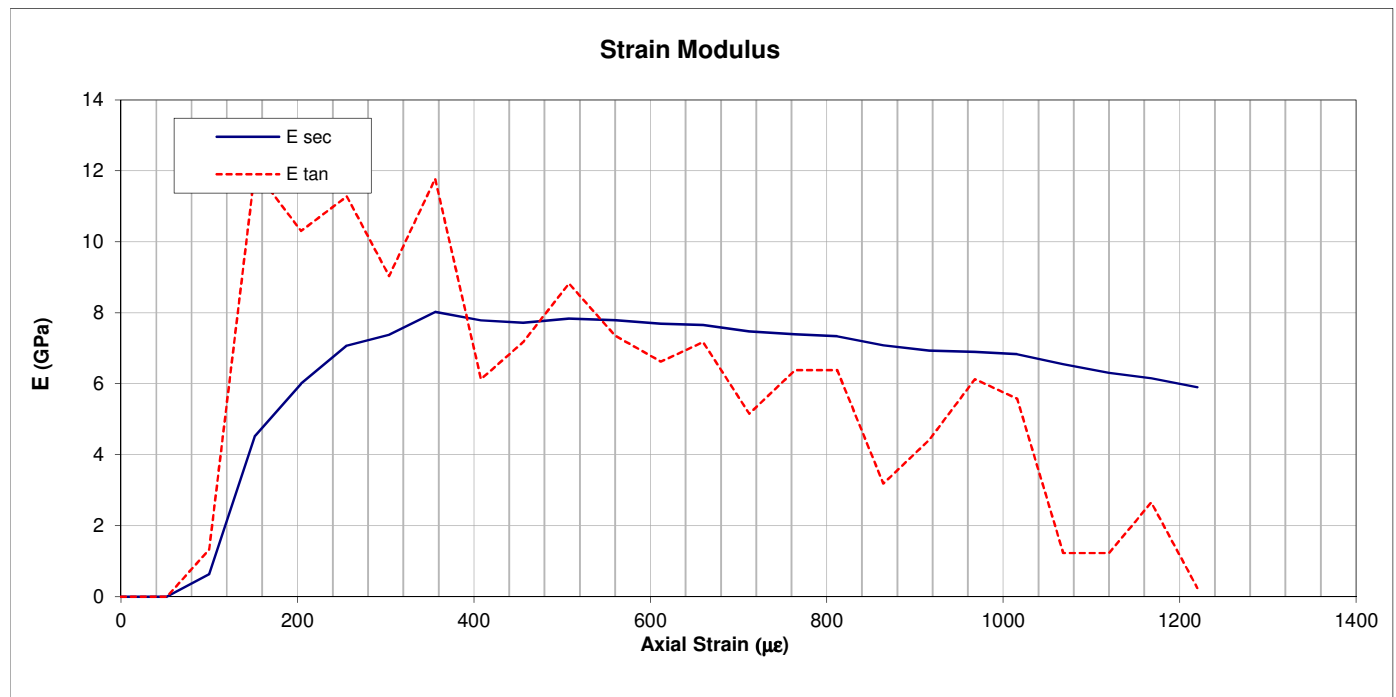
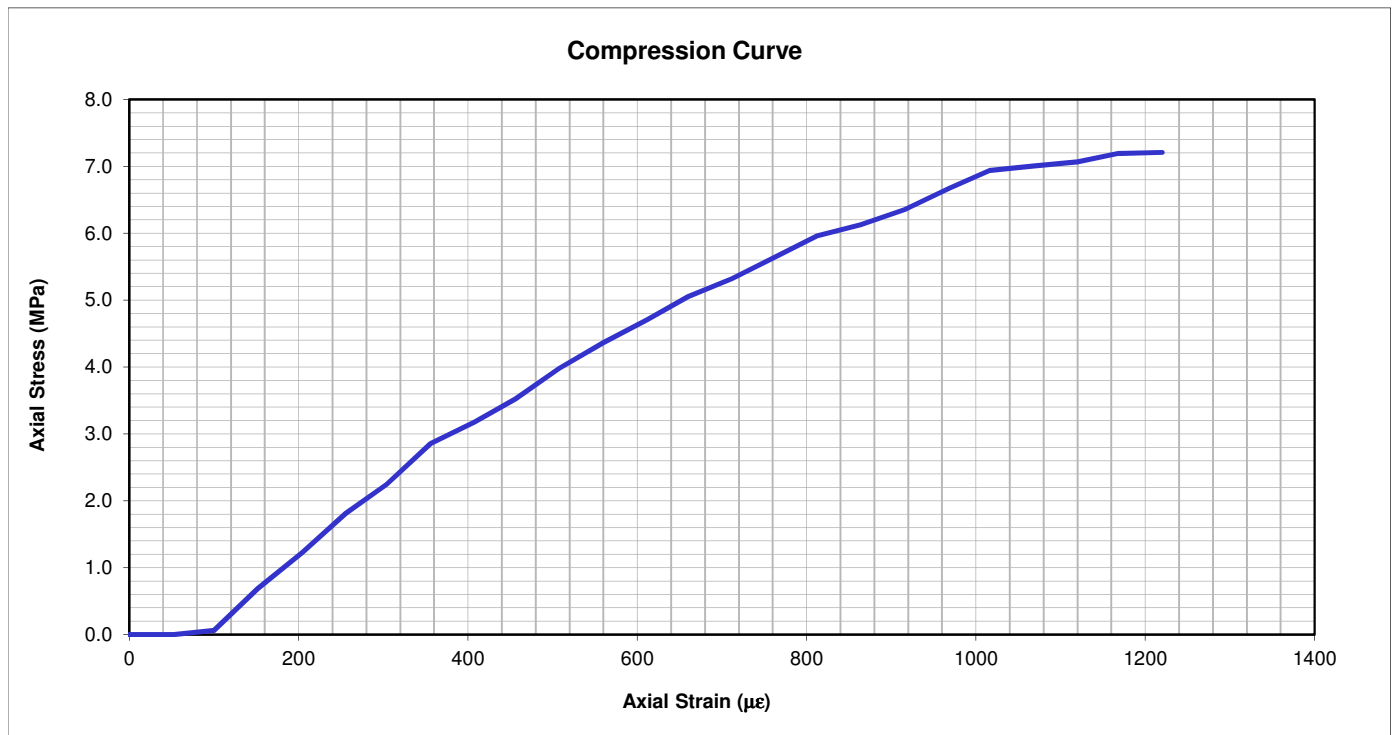
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71906</u>
Specimen Depth	<u>37.45 - 37.78m</u>
Specimen Type	<u>C</u>

Cross section area	<u>78.40 cm<sup>2</sup></u>
Height	<u>214.65 mm</u>
Max logged strength	<u>7.21 MPa</u>
E <sub>tan</sub>	<u>(*) 7.17 GPa</u>
E <sub>sec</sub>	<u>(^) 7.72 GPa</u>

(\*) Calculated for axial  $\sigma =$  3.60 MPa  
 (^) Calculated for axial  $\sigma =$  3.60 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 17/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

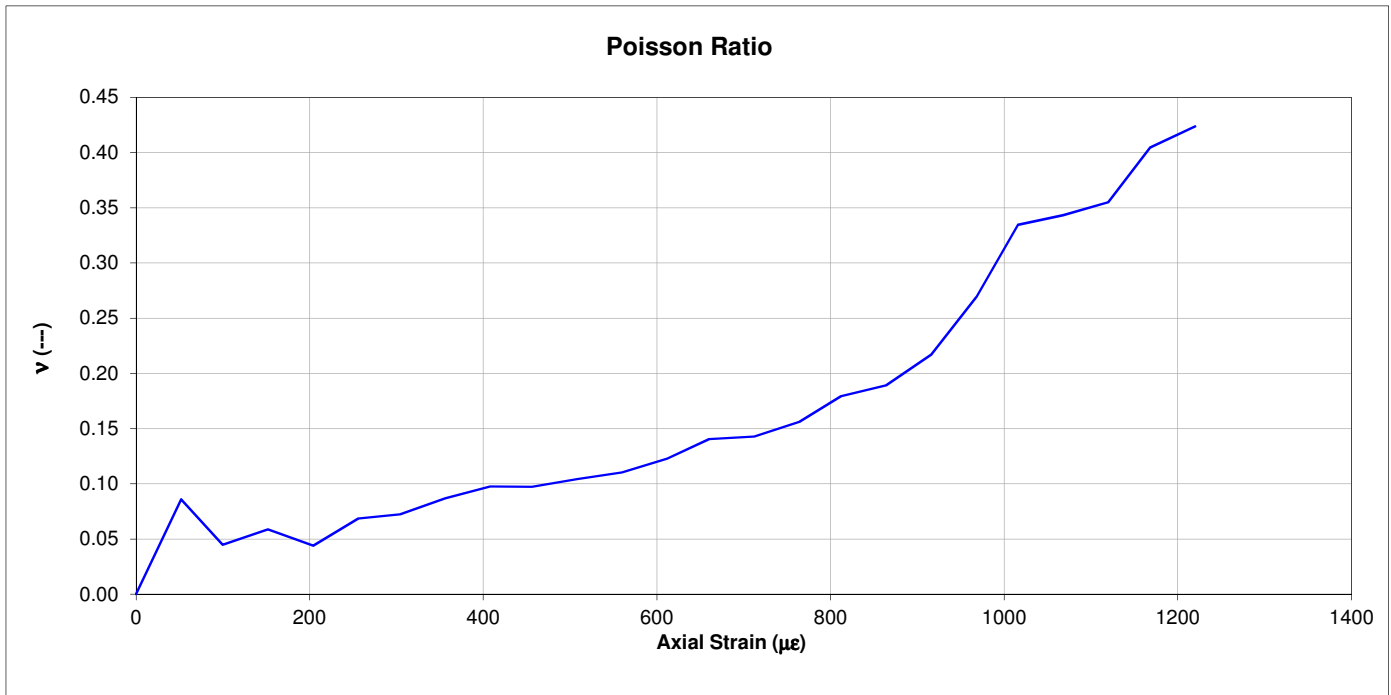
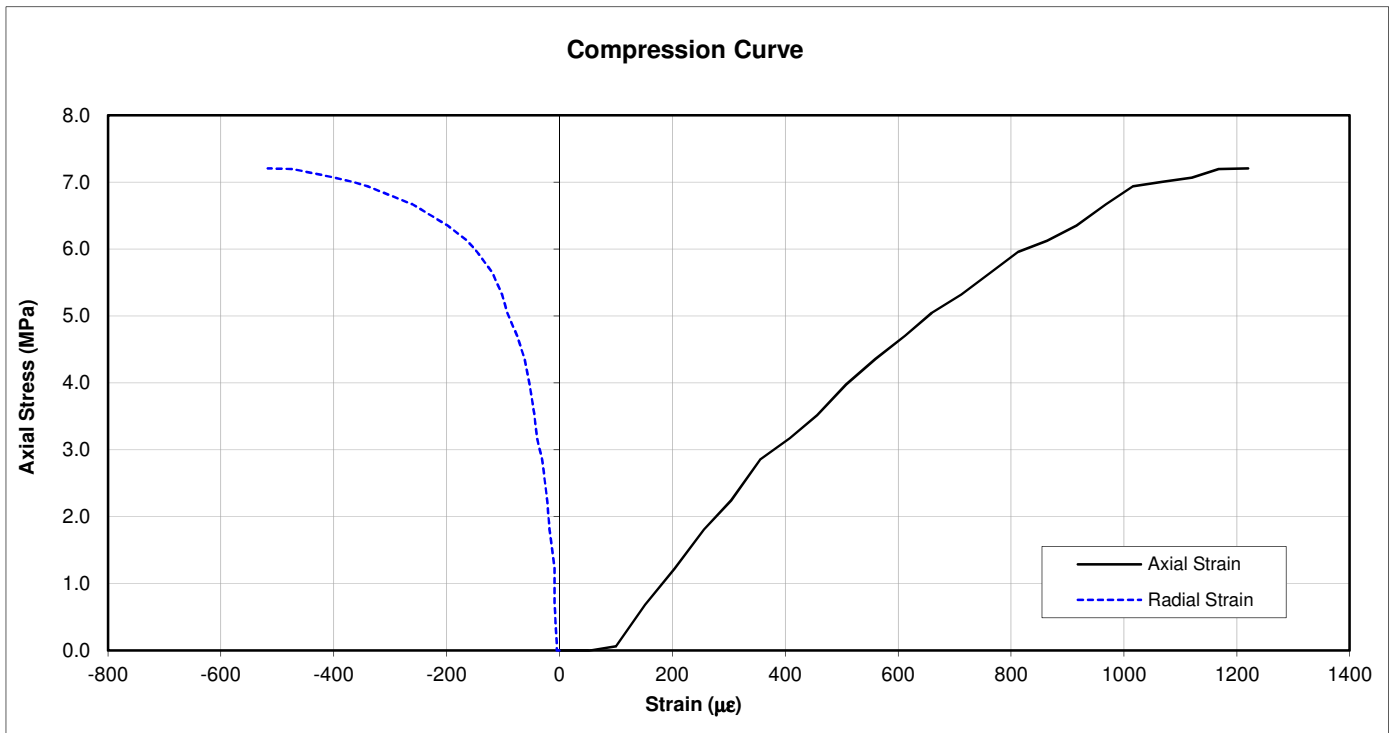
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71906  
 Specimen Depth 37.45 - 37.78m  
 Specimen Type C

Cross section area 78.40 cm<sup>2</sup>  
 Height 214.65 mm  
 Max logged strength 7.21 MPa  
 Poisson at failure 0.424  
 Poisson (\*) 0.097

(\*) Calculated for axial  $\sigma =$  3.60 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **33**      Sample Type: **U**      Depth (m): **28.20**

Bulk Density (Mg/m<sup>3</sup>): **2.02**      Dry Density (Mg/m<sup>3</sup>): **1.61**      Moisture Content (%): **25**  
 Length (mm): **208.95**      Diameter (mm): **98.36**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **2:55**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **18.2**  
 UCS (MPa): **2.4**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

18/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

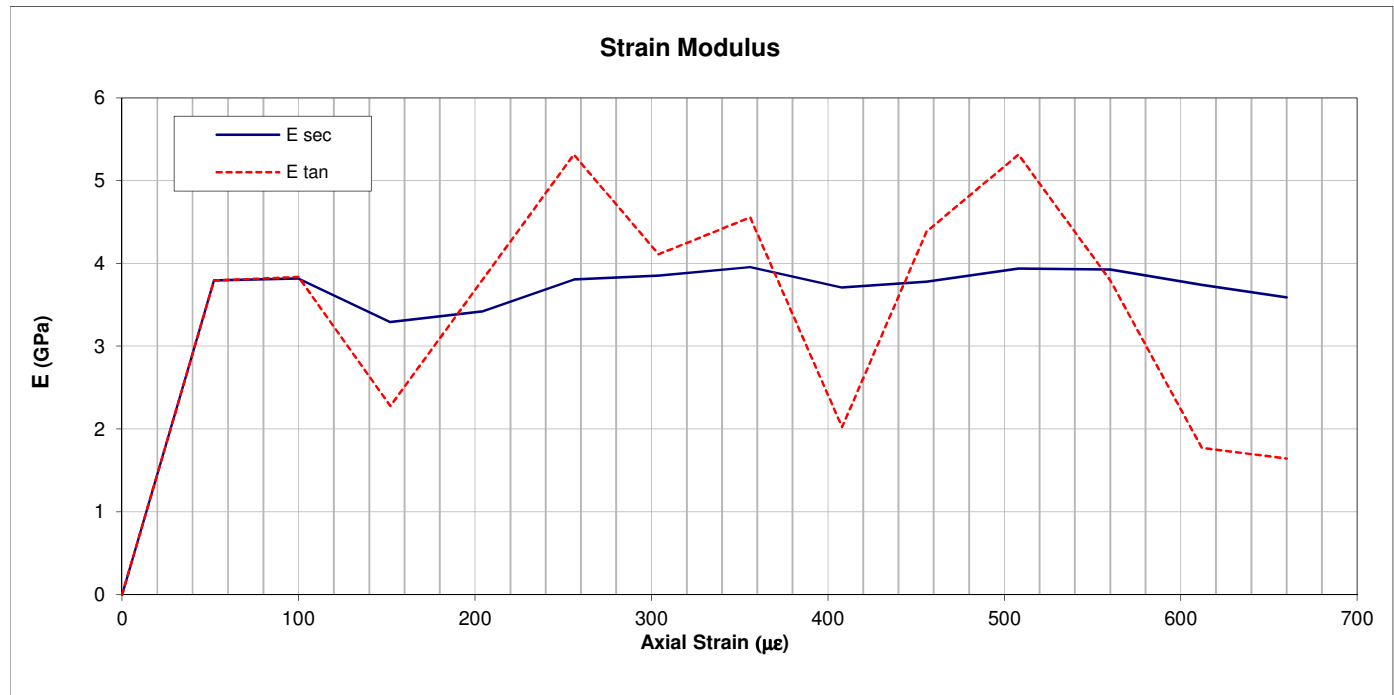
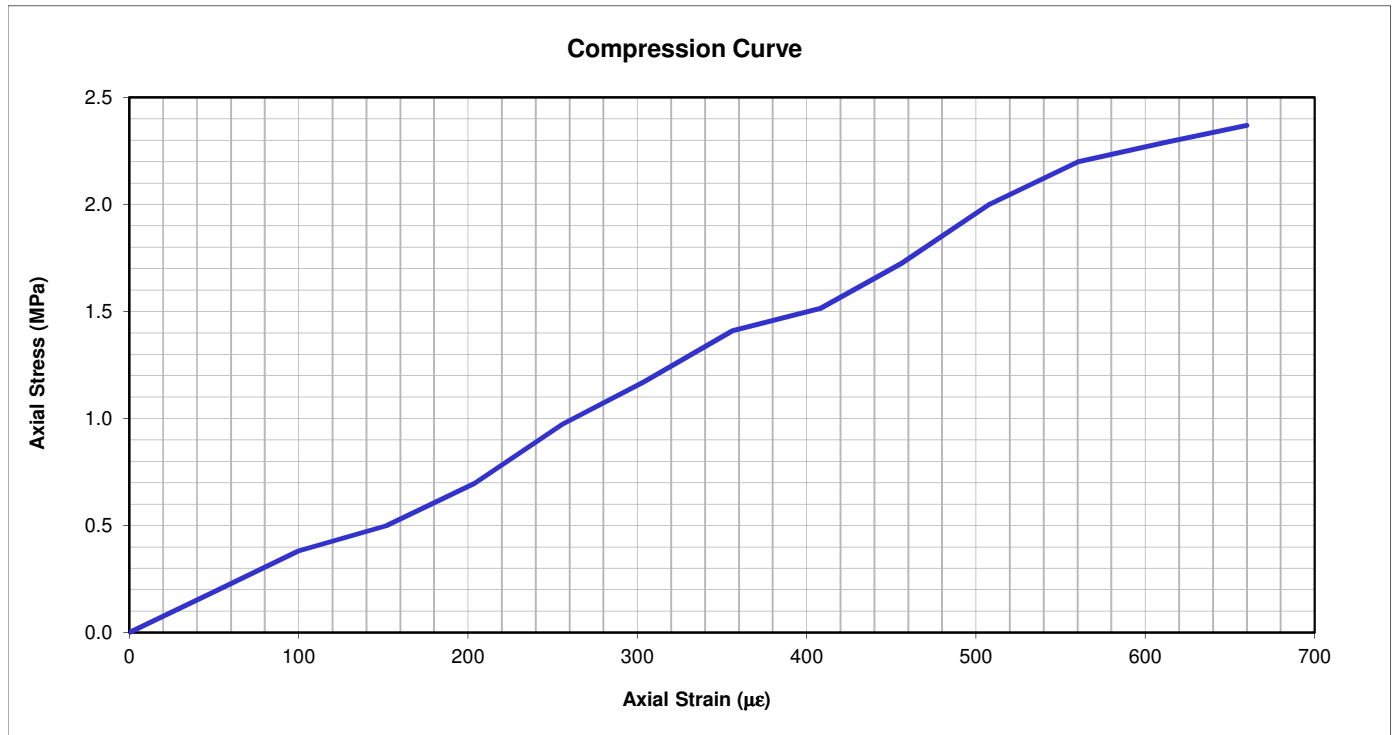
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71907</u>
Specimen Depth	<u>28.20 - 28.46m</u>
Specimen Type	<u>C</u>

Cross section area	<u>75.98 cm<sup>2</sup></u>
Height	<u>208.95 mm</u>
Max logged strength	<u>2.37 MPa</u>
E <sub>tan</sub> (*)	<u>4.11 GPa</u>
E <sub>sec</sub> (^)	<u>3.85 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.18 MPa  
 (^) Calculated for axial  $\sigma =$  1.18 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 18/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

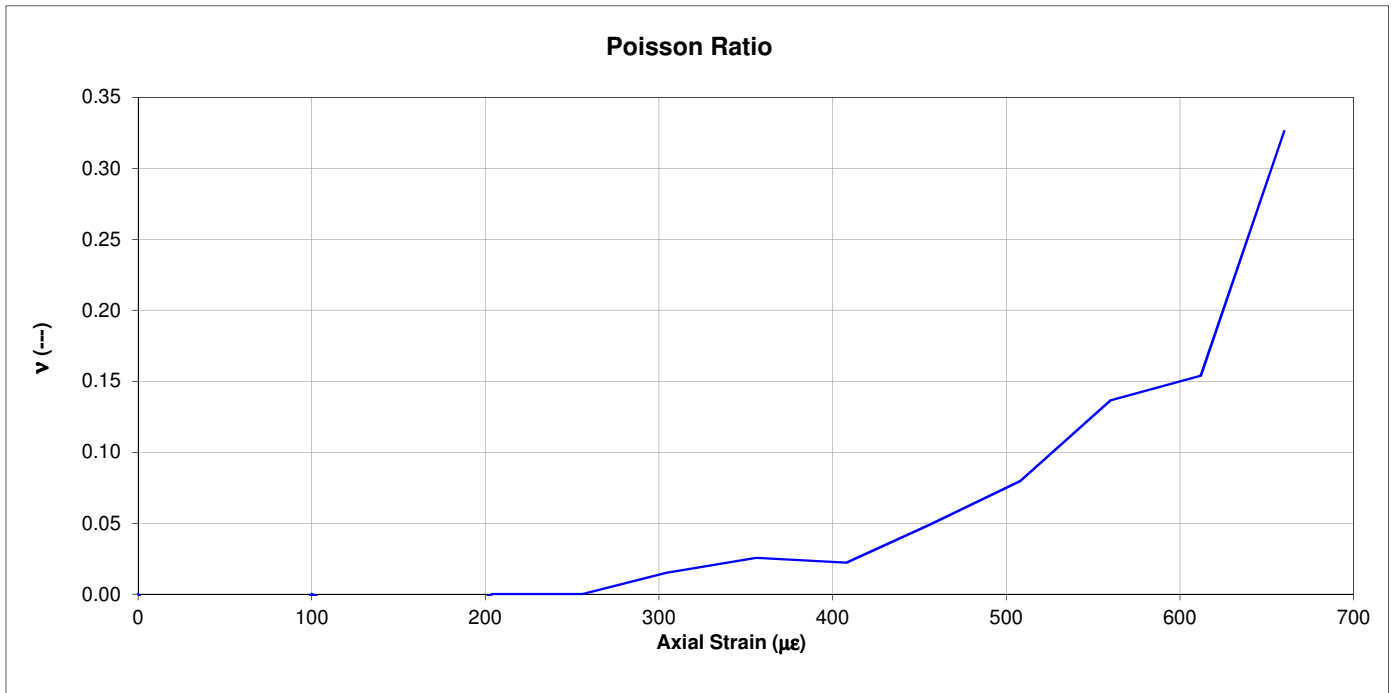
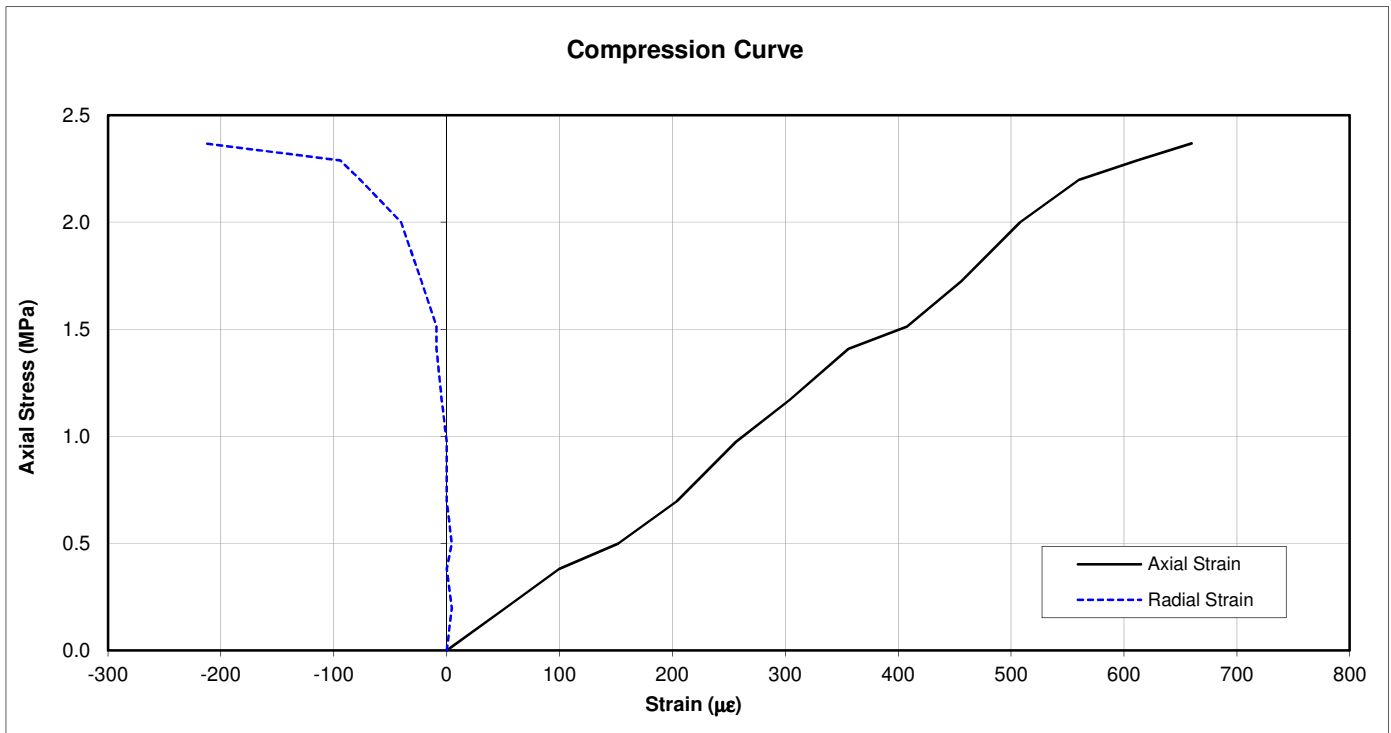
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71907  
 Specimen Depth 28.20 - 28.46m  
 Specimen Type C

Cross section area 75.98 cm<sup>2</sup>  
 Height 208.95 mm  
 Max logged strength 2.37 MPa  
 Poisson at failure 0.326  
 Poisson (\*) 0.015

(\*) Calculated for axial  $\sigma =$  1.18 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **57B**      Sample Type: **U**      Depth (m): **45.45**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.58**      Moisture Content (%): **26**  
 Length (mm): **212.92**      Diameter (mm): **96.41**      Length/Diameter Ratio: **2.21**  
 Test Duration (mins:secs): **3:28**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **21.9**  
 UCS (MPa): **3.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

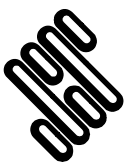


Front view (post-test)



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

18/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

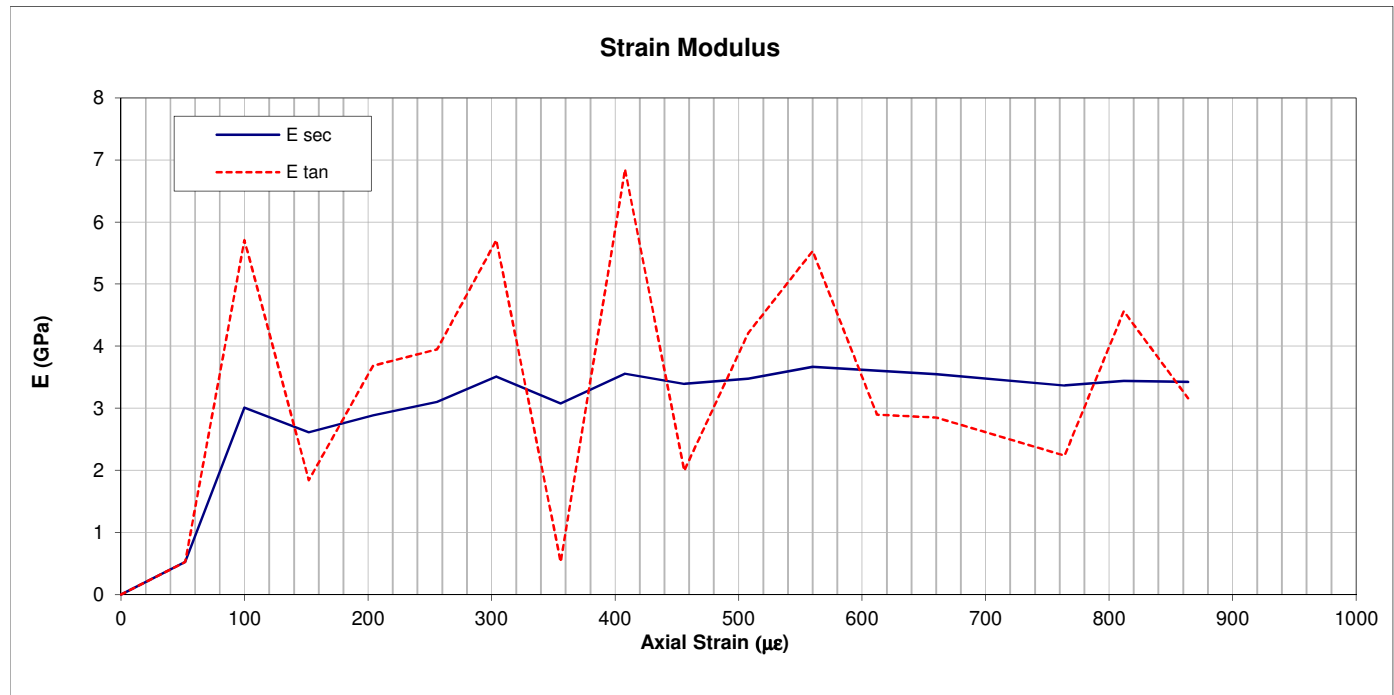
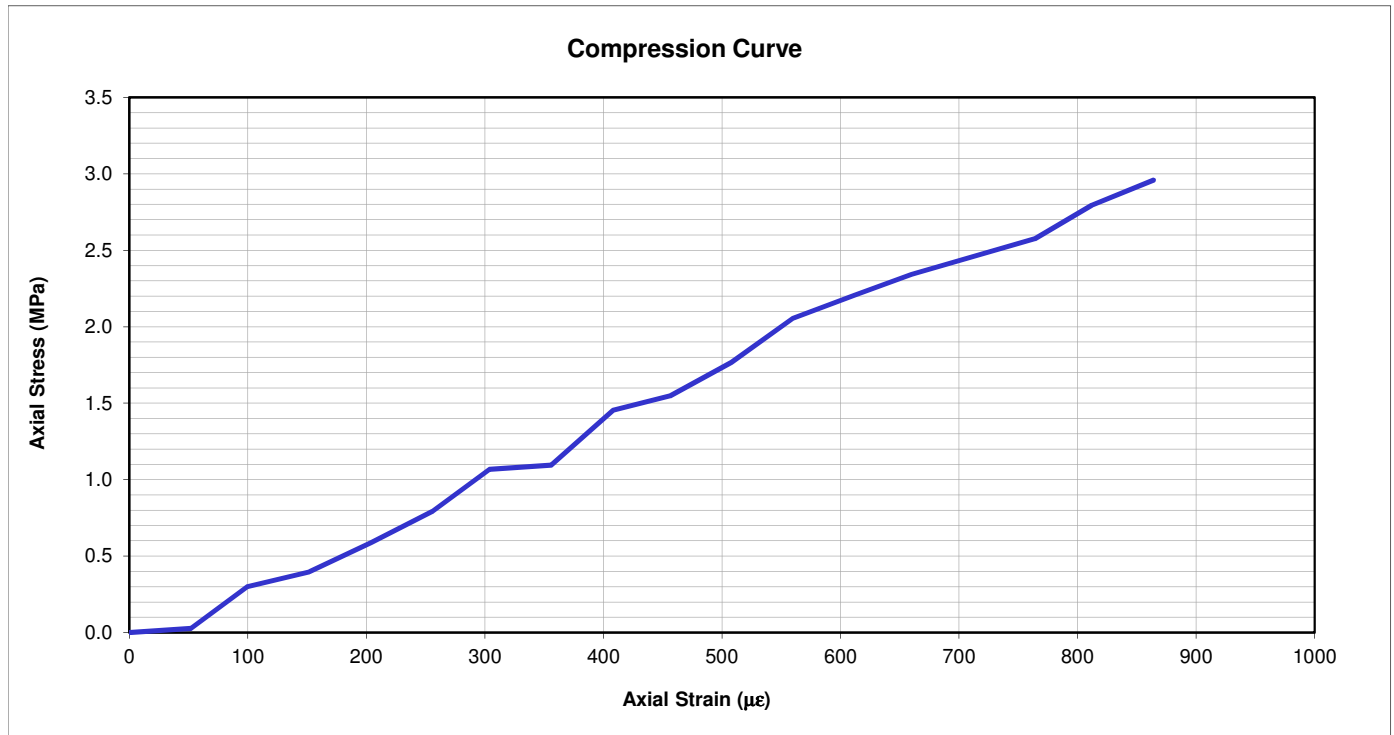
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71907</u>
Specimen Depth	<u>45.45 - 45.80m</u>
Specimen Type	<u>C</u>

Cross section area	<u>73.00 cm<sup>2</sup></u>
Height	<u>212.92 mm</u>
Max logged strength	<u>2.96 MPa</u>
E <sub>tan</sub>	<u>(*) 6.85 GPa</u>
E <sub>sec</sub>	<u>(^) 3.56 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.48 MPa  
 (^) Calculated for axial  $\sigma =$  1.48 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 18/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

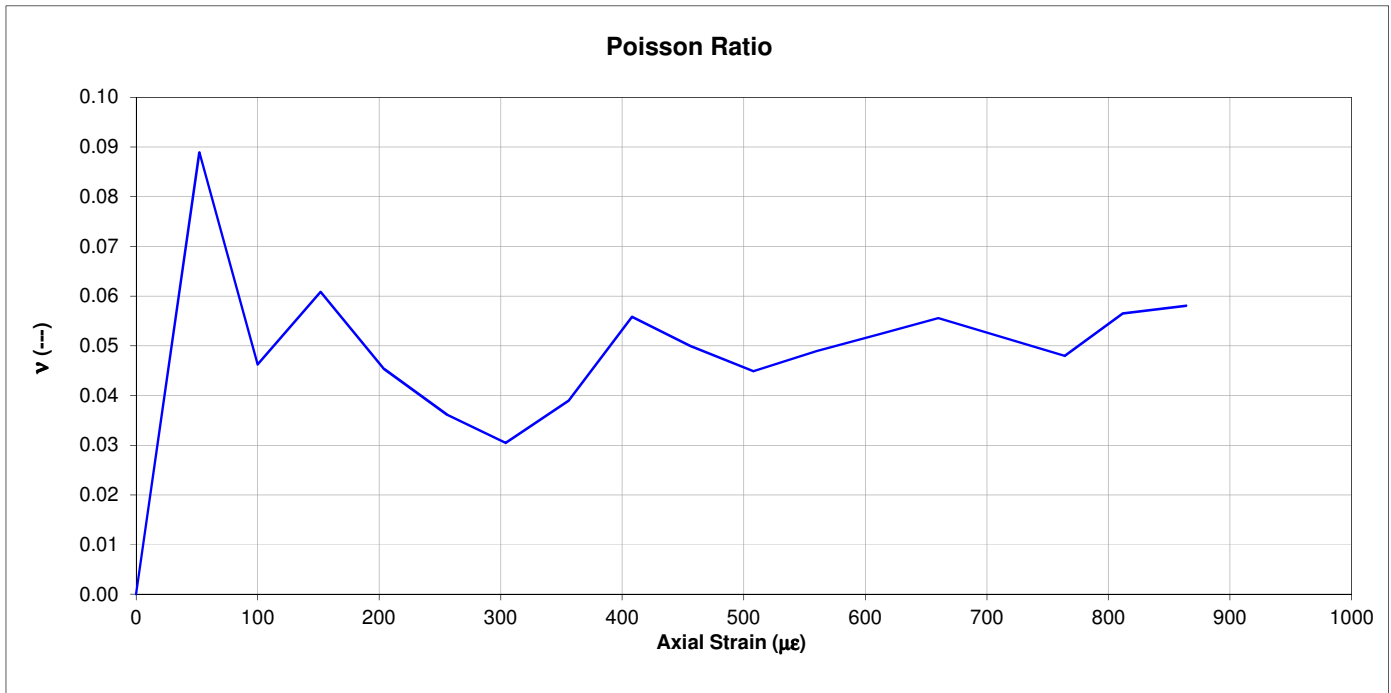
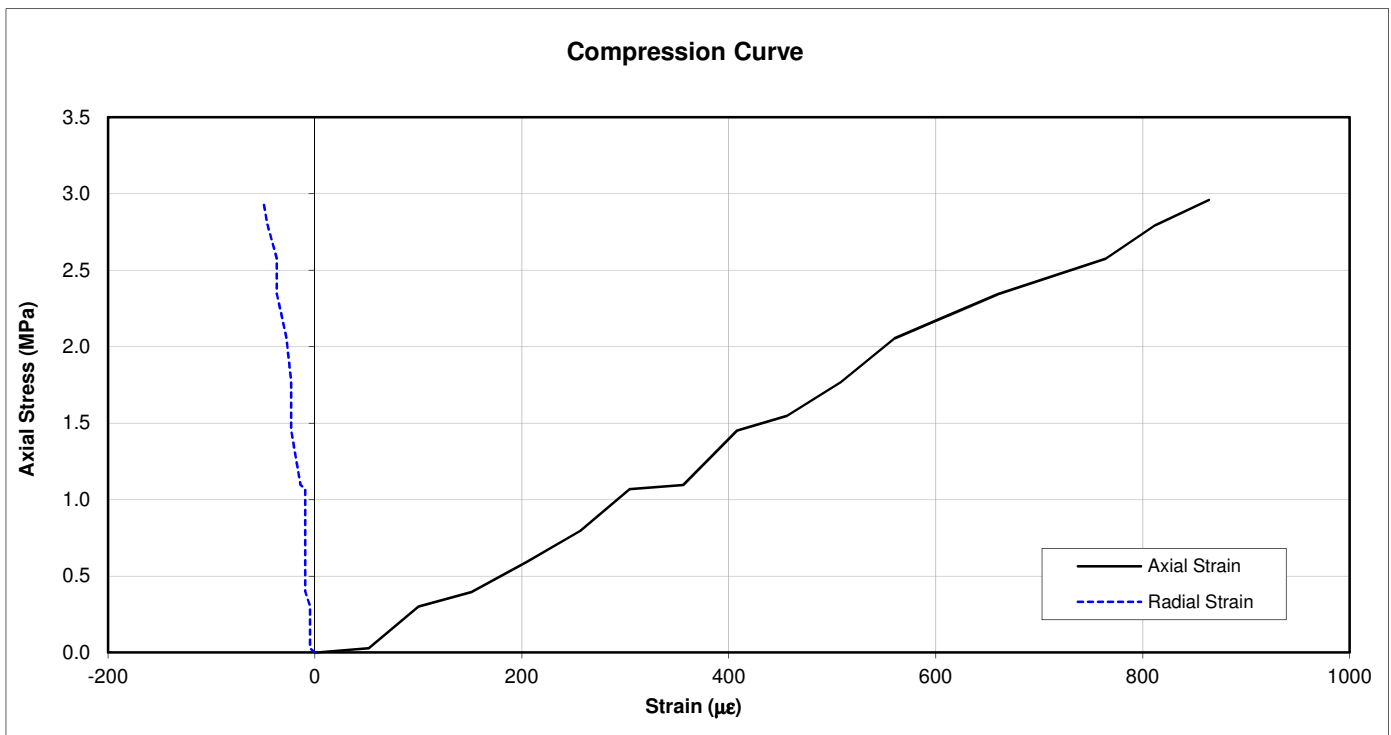
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71907  
 Specimen Depth 45.45 - 45.80m  
 Specimen Type C

Cross section area 73.00 cm<sup>2</sup>  
 Height 212.92 mm  
 Max logged strength 2.96 MPa  
 Poisson at failure 0.058  
 Poisson (\*) 0.056

(\*) Calculated for axial  $\sigma =$  1.48 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **57**      Sample Type: **U**      Depth (m): **45.55**

Bulk Density (Mg/m<sup>3</sup>): **2.01**      Dry Density (Mg/m<sup>3</sup>): **1.61**      Moisture Content (%): **25**  
 Length (mm): **214.48**      Diameter (mm): **100.42**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **4:35**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **25.8**  
 UCS (MPa): **3.3**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

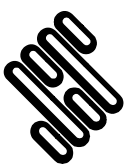


Front view (post-test)



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]		19/12/18
Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 13/11/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

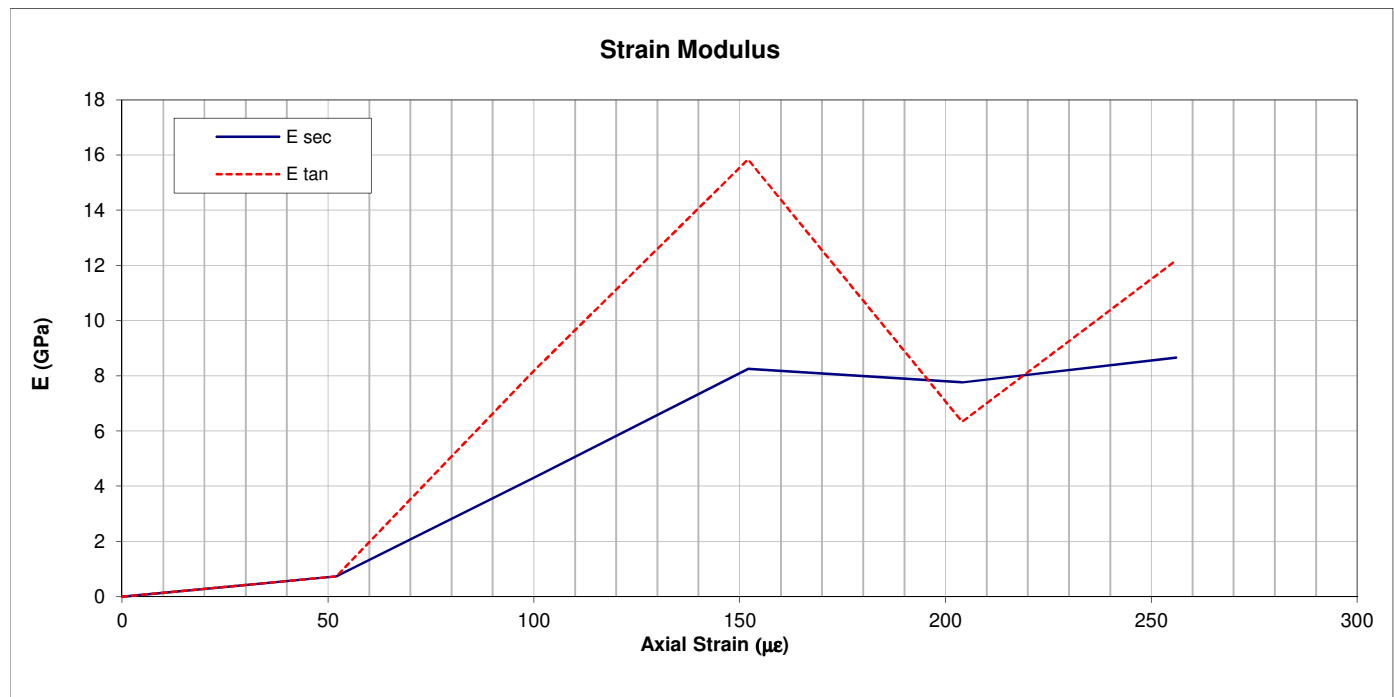
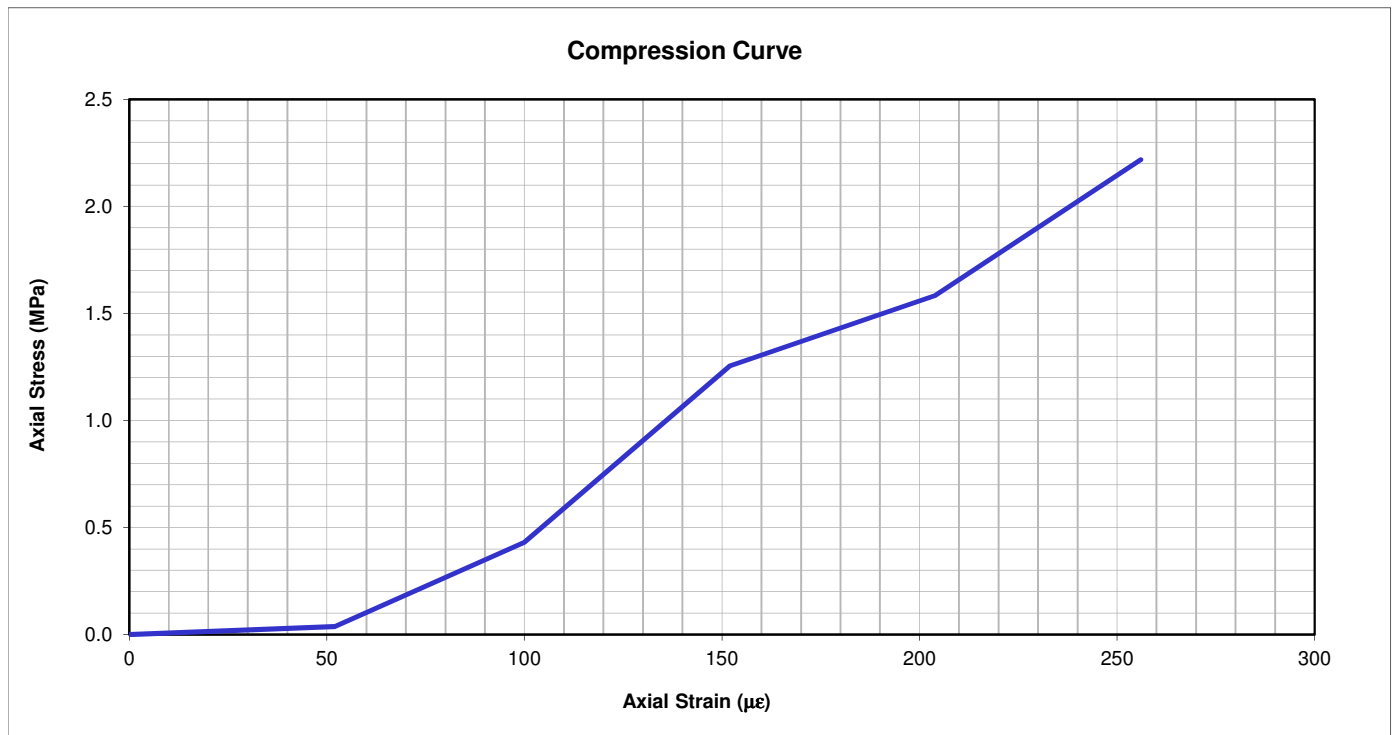
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71909</u>
Specimen Depth	<u>45.55 - 45.85m</u>
Specimen Type	<u>C</u>

Cross section area	<u>78.90 cm<sup>2</sup></u>
Height	<u>214.48 mm</u>
Max logged strength	<u>2.22 MPa</u>
E <sub>tan</sub> (*)	<u>8.19 GPa</u>
E <sub>sec</sub> (^)	<u>4.31 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.11 MPa  
 (^) Calculated for axial  $\sigma =$  1.11 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 13/11/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

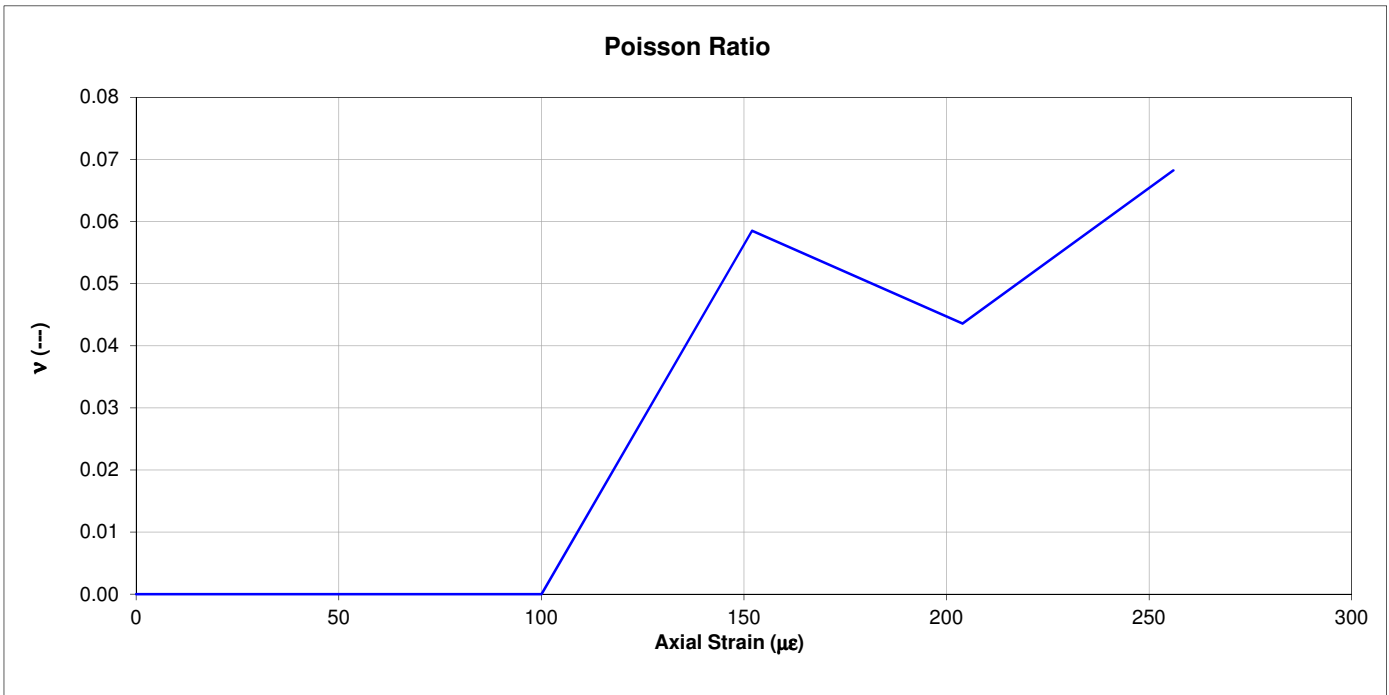
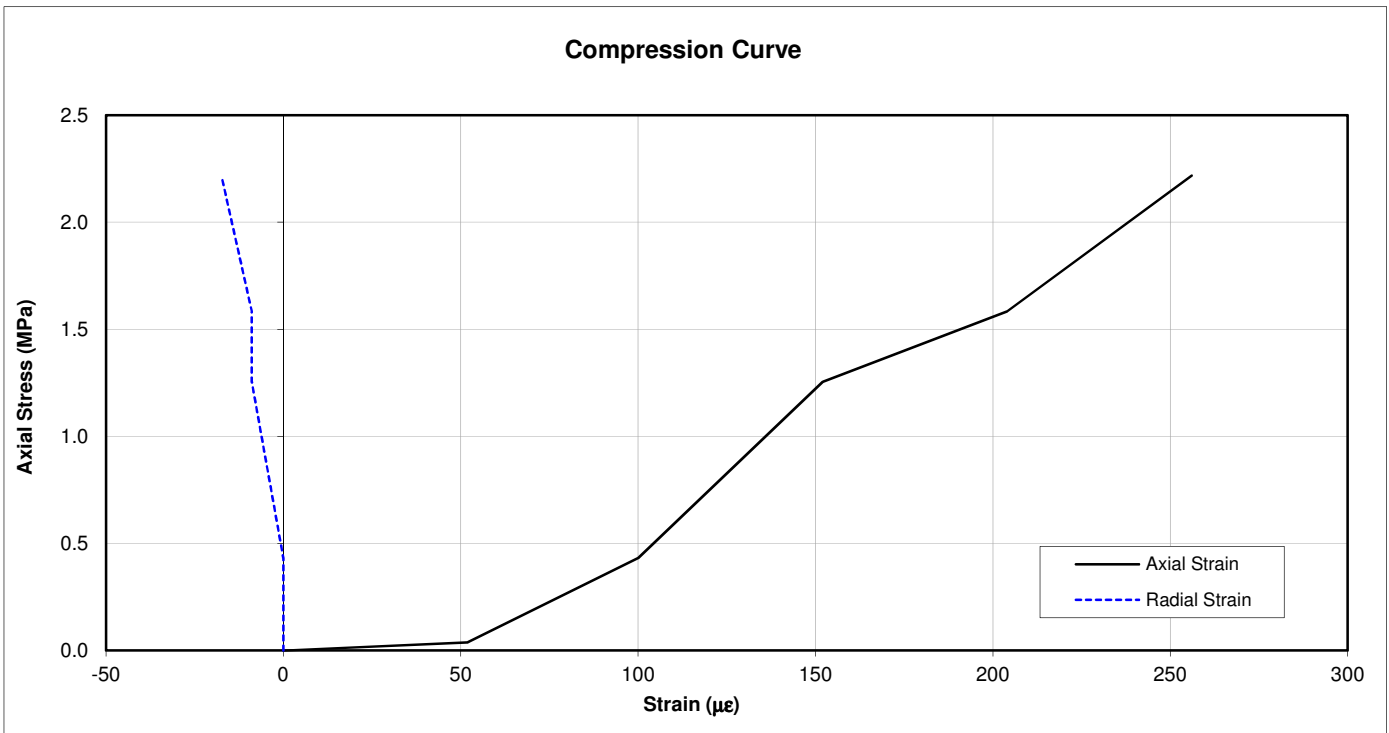
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71909  
 Specimen Depth 45.55 - 45.85m  
 Specimen Type C

Cross section area 78.90 cm<sup>2</sup>  
 Height 214.48 mm  
 Max logged strength 2.22 MPa  
 Poisson at failure 0.068  
 Poisson (\*) \_\_\_\_\_

(\*) Calculated for axial  $\sigma =$  1.11 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **68**      Sample Type: **U**      Depth (m): **53.50**

Bulk Density (Mg/m<sup>3</sup>): **2.02**      Dry Density (Mg/m<sup>3</sup>): **1.61**      Moisture Content (%): **26**  
 Length (mm): **213.68**      Diameter (mm): **99.70**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **5:17**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **16.8**  
 UCS (MPa): **2.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



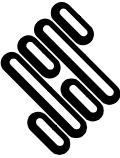
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS WITH DEFORMATION - A4P | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:52 | AF3

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
	[Redacted]		19/12/18
	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

13/11/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

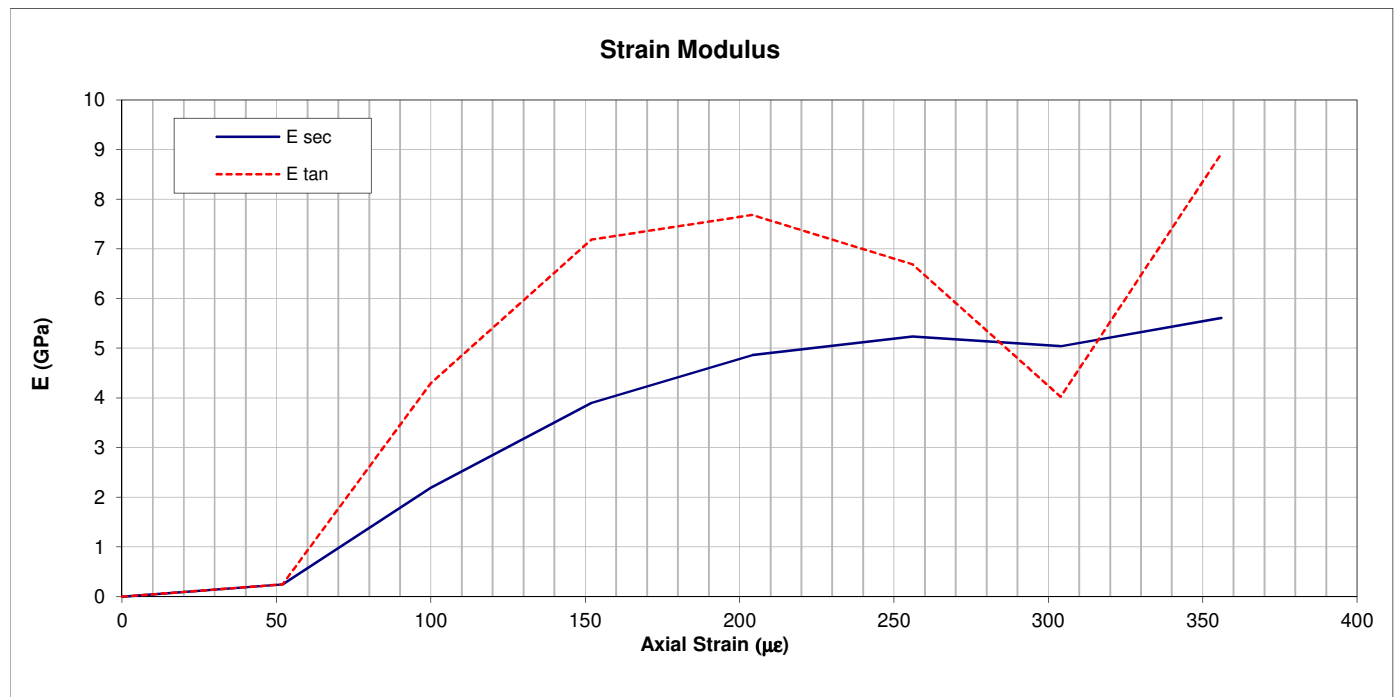
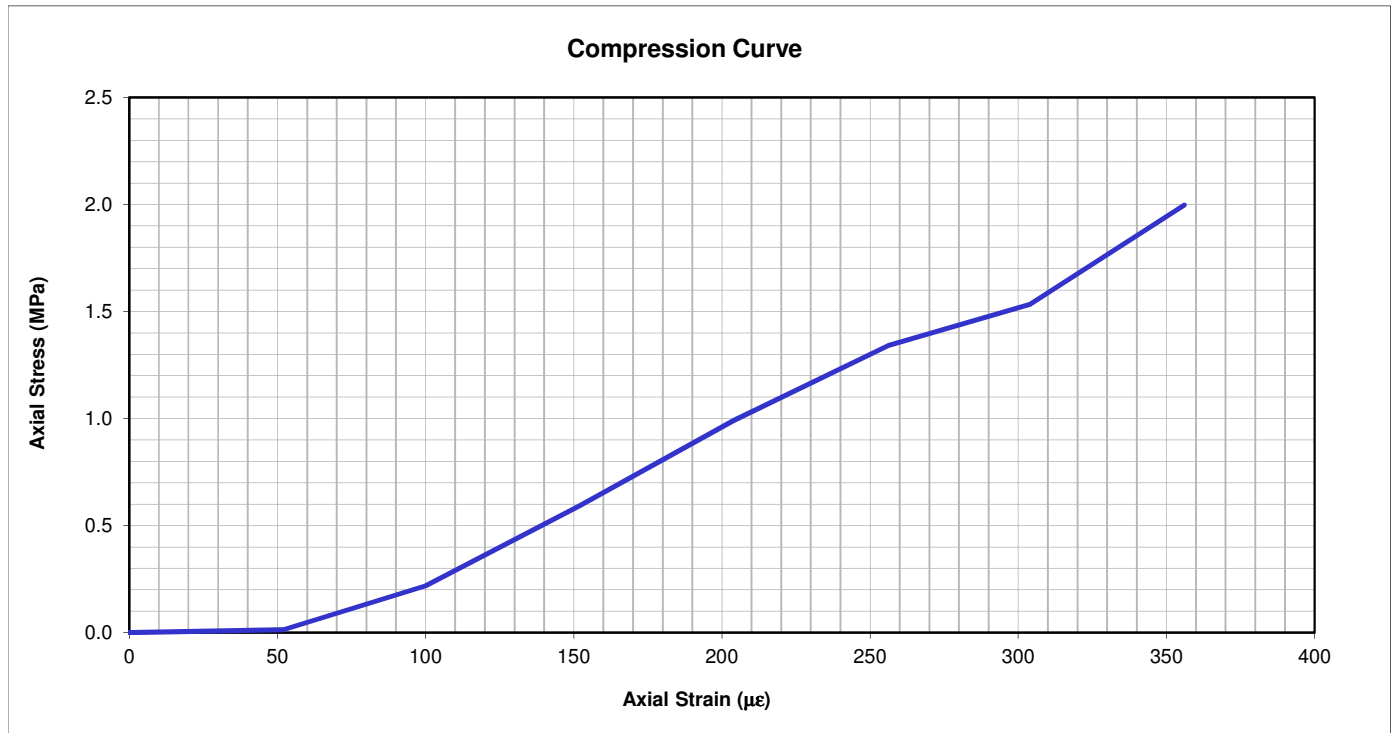
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	733442
Site	
BH No	R71909
Specimen Depth	53.50 - 53.80m
Specimen Type	C

Cross section area	77.62 cm <sup>2</sup>
Height	213.68 mm
Max logged strength	2.00 MPa
E <sub>tan</sub>	(*) 7.68 GPa
E <sub>sec</sub>	(^) 4.86 GPa

(\*) Calculated for axial  $\sigma = 1.00$  MPa  
 (^) Calculated for axial  $\sigma = 1.00$  MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 13/11/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

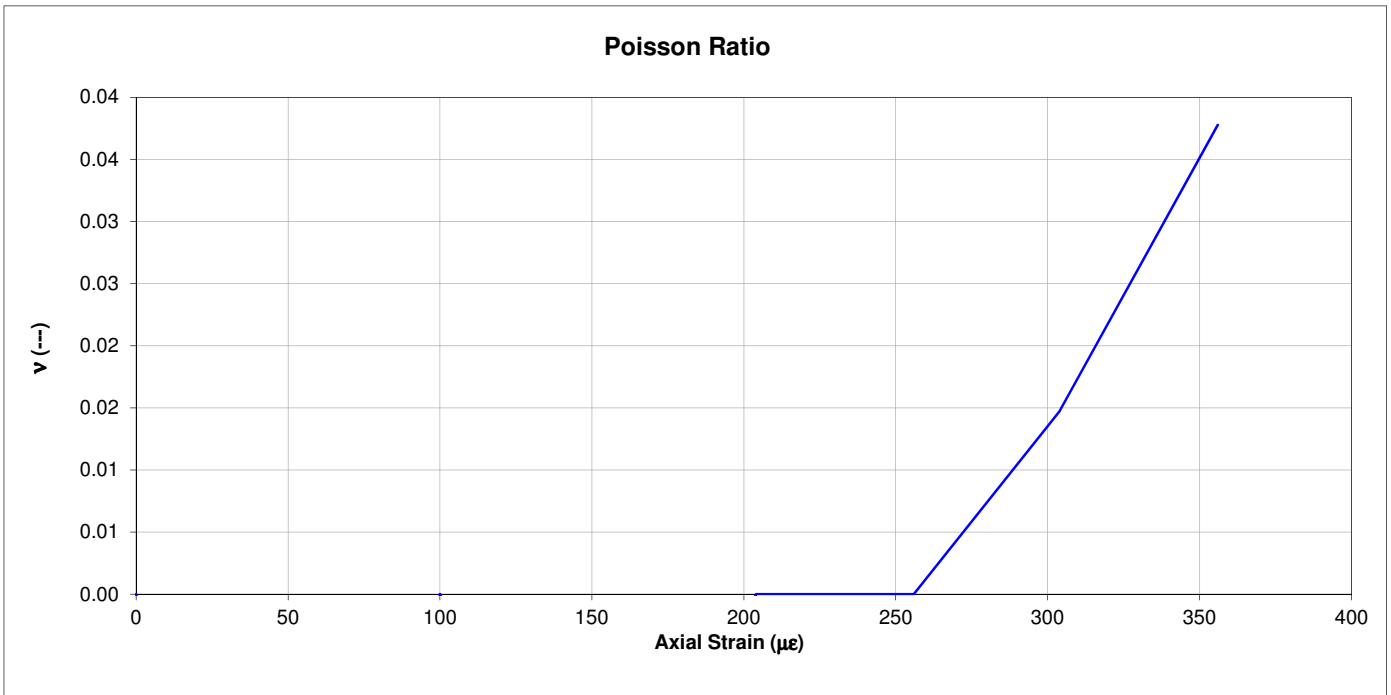
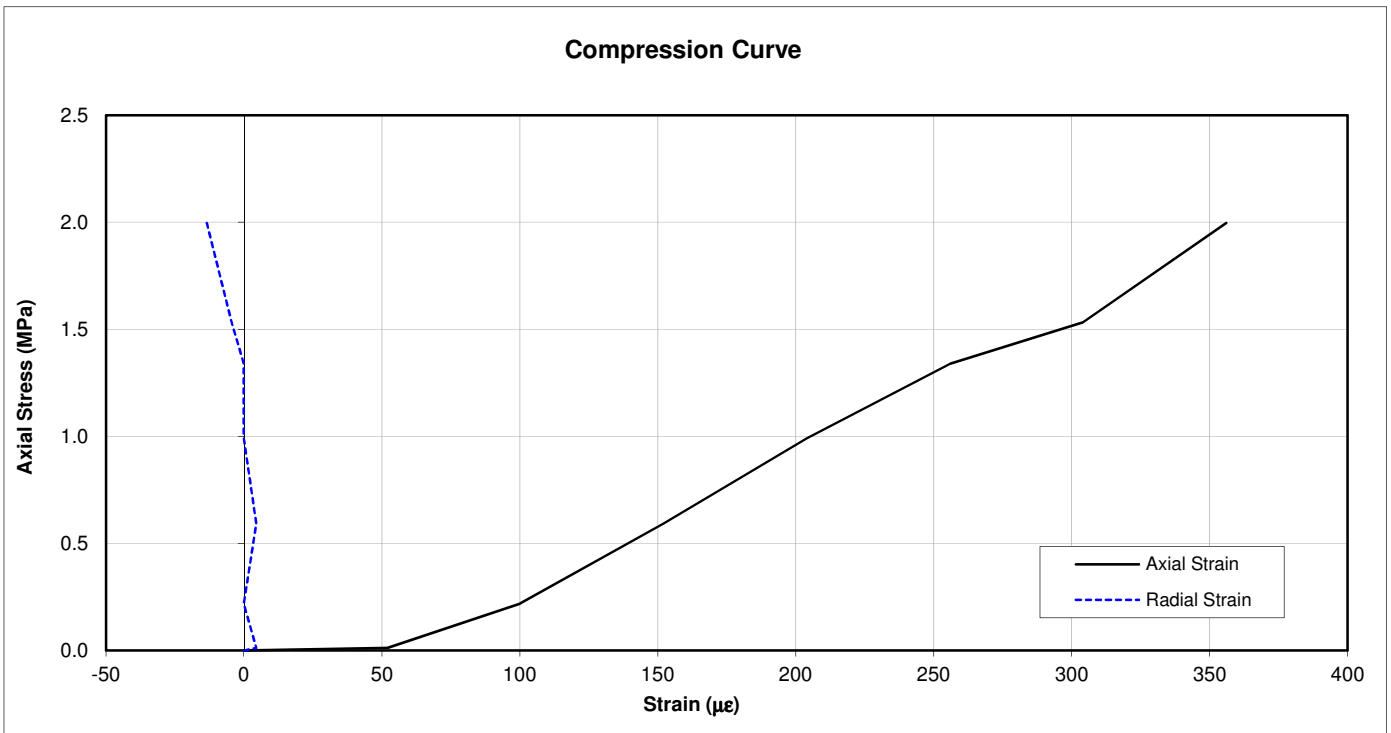
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71909  
 Specimen Depth 53.50 - 53.80m  
 Specimen Type C

Cross section area 77.62 cm<sup>2</sup>  
 Height 213.68 mm  
 Max logged strength 2.00 MPa  
 Poisson at failure 0.038  
 Poisson (\*) \_\_\_\_\_

(\*) Calculated for axial  $\sigma =$  1.00 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **60**      Sample Type: **U**      Depth (m): **38.50**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **27**  
 Length (mm): **215.30**      Diameter (mm): **100.06**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **3:00**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **22.9**  
 UCS (MPa): **2.9**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

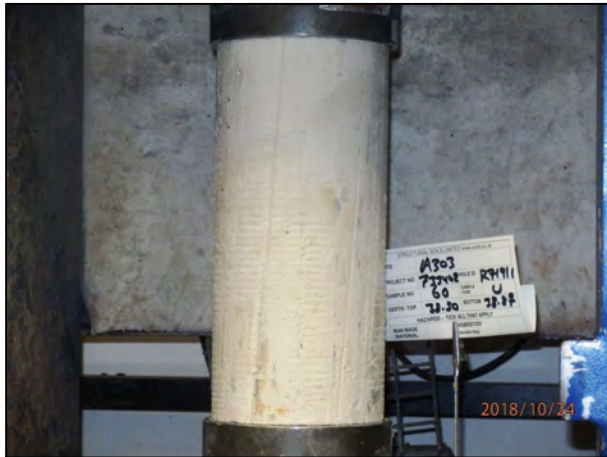
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

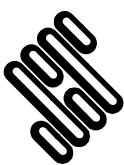


Front view (post-test)



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]		19/12/18
Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 24/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

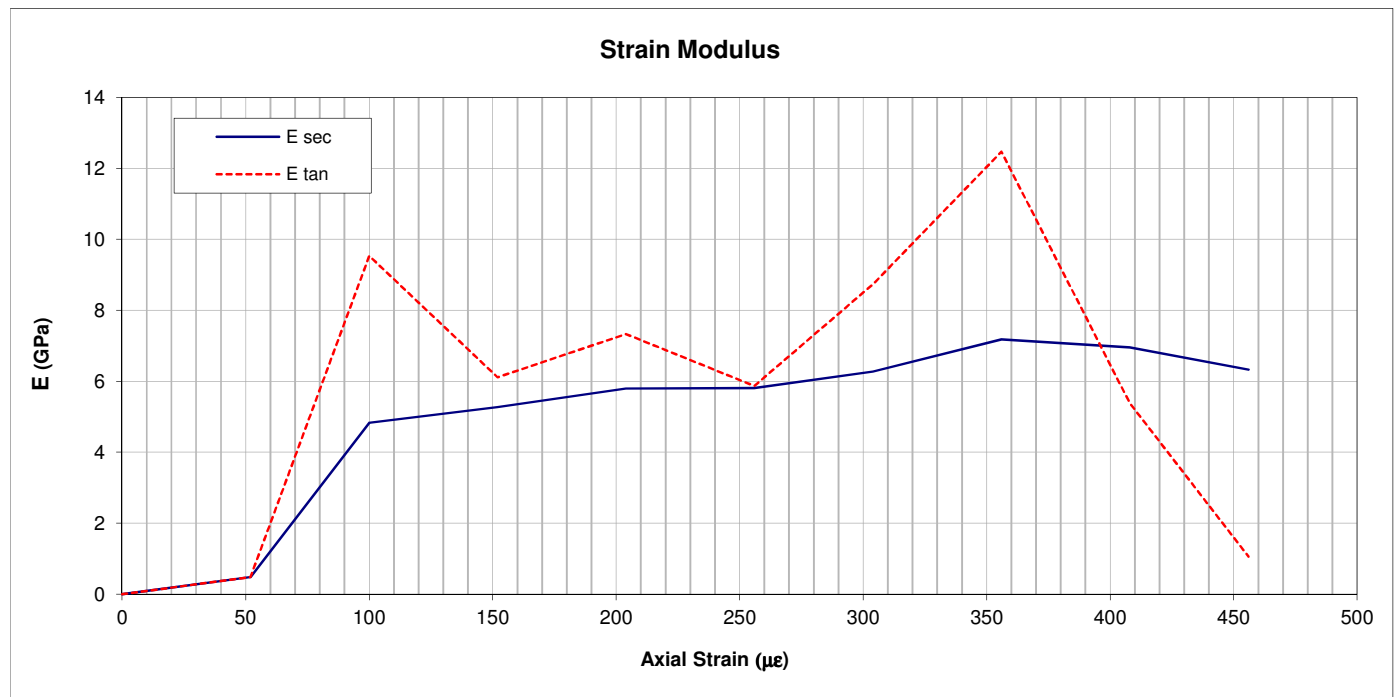
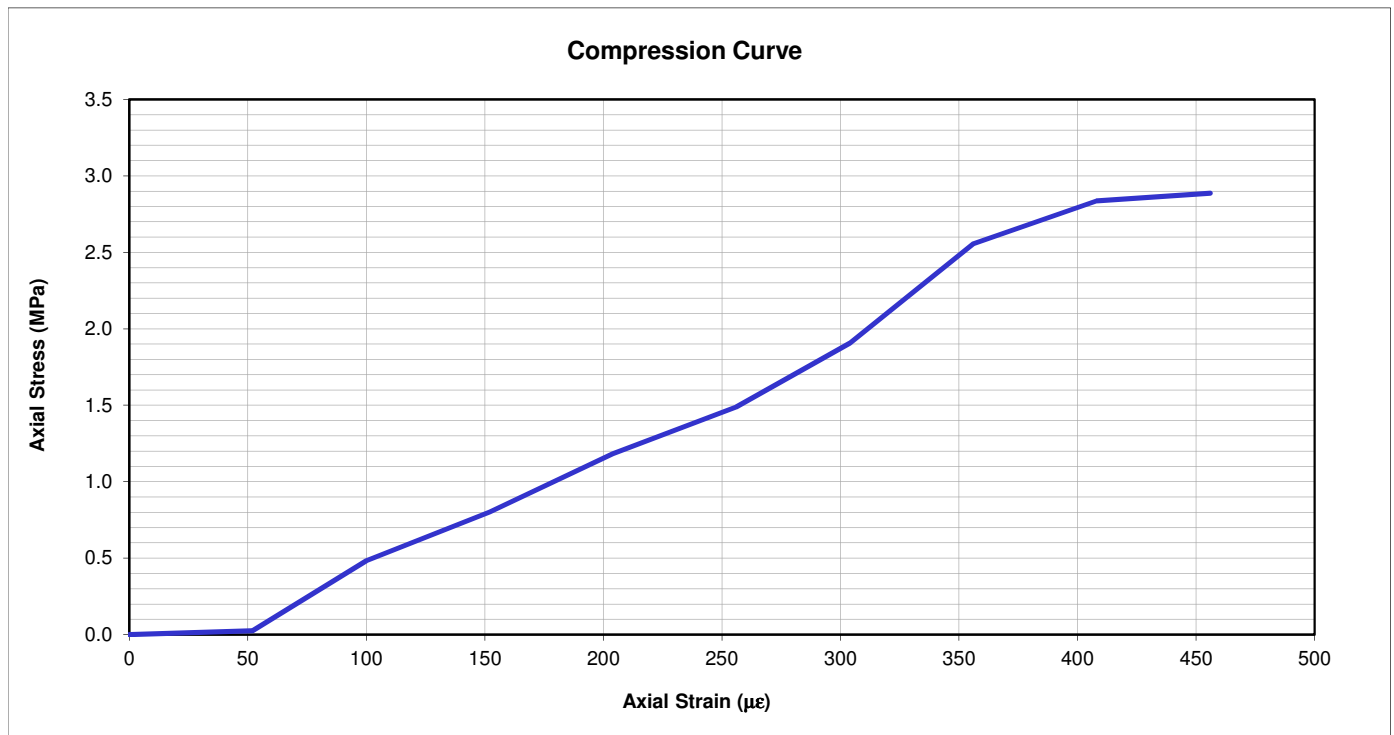
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71911  
 Specimen Depth 38.50 - 38.87m  
 Specimen Type C

Cross section area 78.63 cm<sup>2</sup>  
 Height 215.30 mm  
 Max logged strength 2.89 MPa  
 E<sub>tan</sub> (\*) 7.34 GPa  
 E<sub>sec</sub> (^) 5.80 GPa

(\*) Calculated for axial  $\sigma =$  1.44 MPa  
 (^) Calculated for axial  $\sigma =$  1.44 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





	STRUCTURAL SOILS
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Test Date 24/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

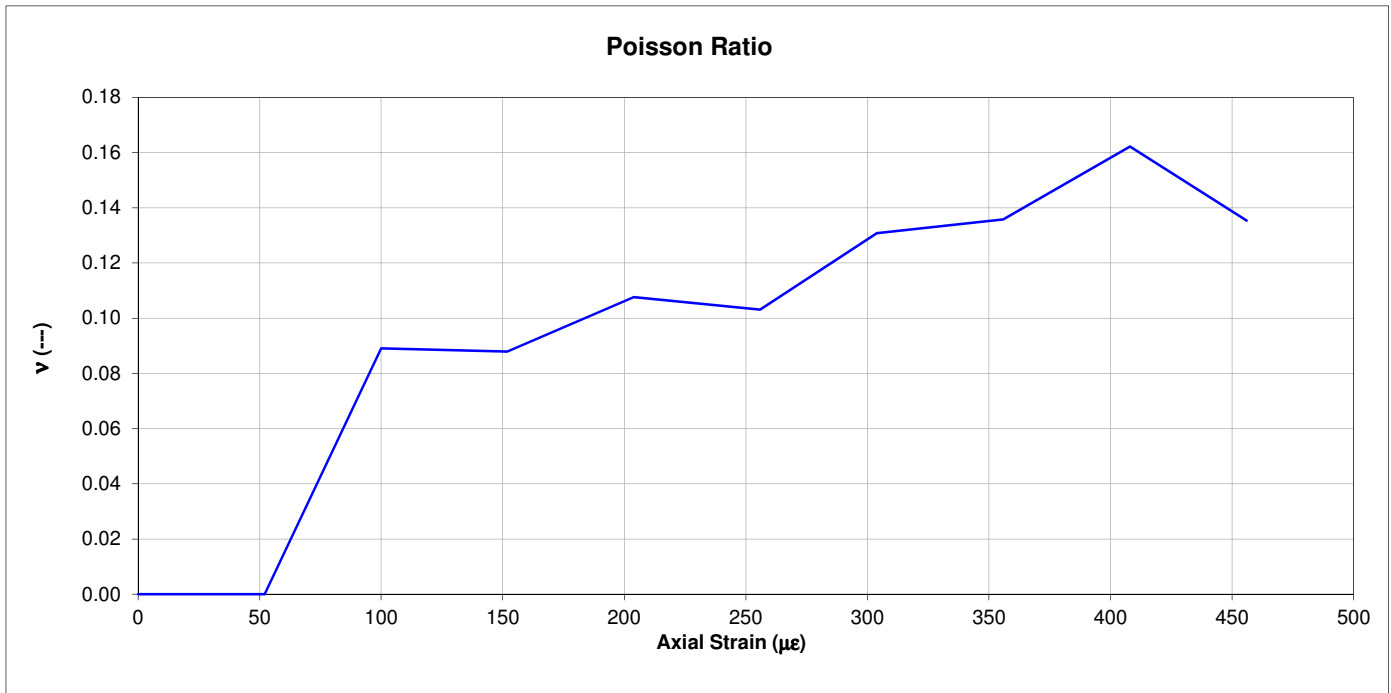
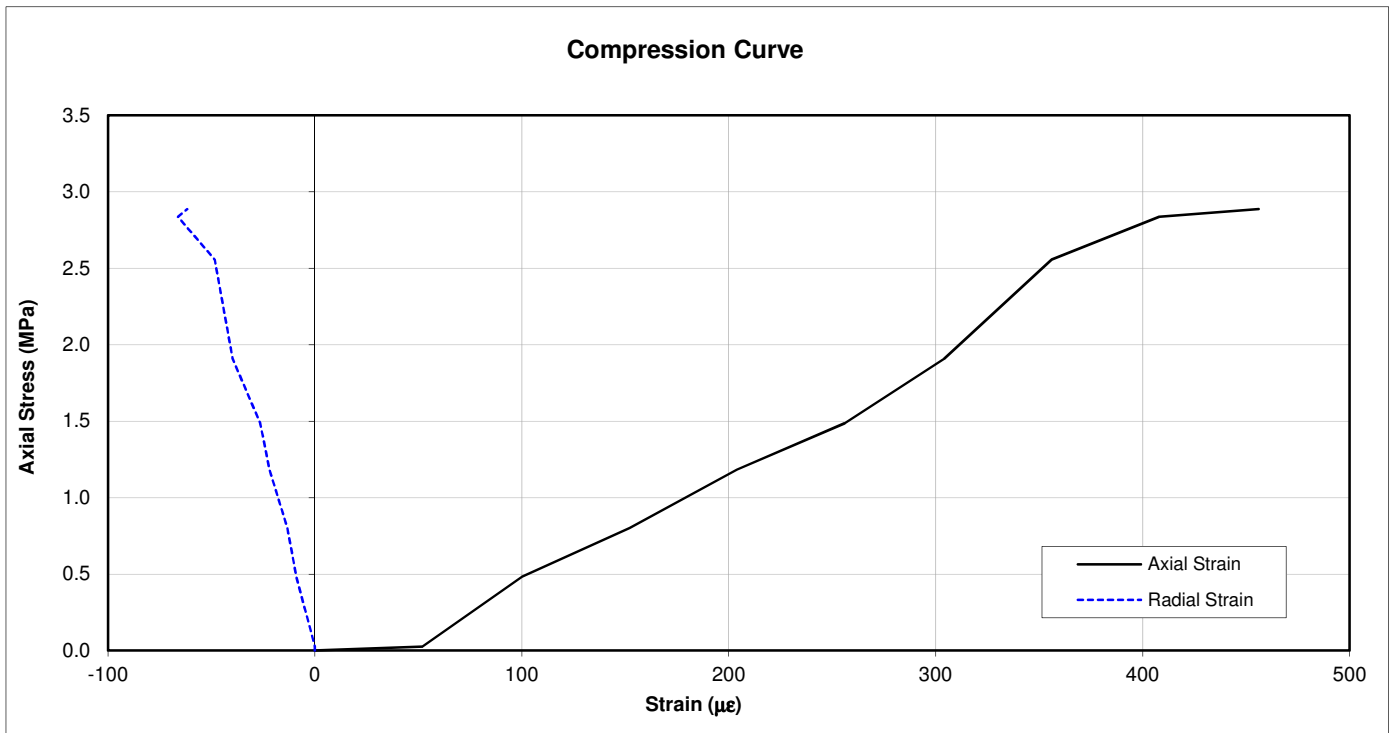
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71911  
 Specimen Depth 38.50 - 38.87m  
 Specimen Type C

Cross section area 78.63 cm<sup>2</sup>  
 Height 215.30 mm  
 Max logged strength 2.89 MPa  
 Poisson at failure 0.135  
 Poisson (\*) 0.108

(\*) Calculated for axial  $\sigma =$  1.44 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **75**      Sample Type: **U**      Depth (m): **47.00**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **27**  
 Length (mm): **214.48**      Diameter (mm): **99.86**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **3:50**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **27.8**  
 UCS (MPa): **3.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

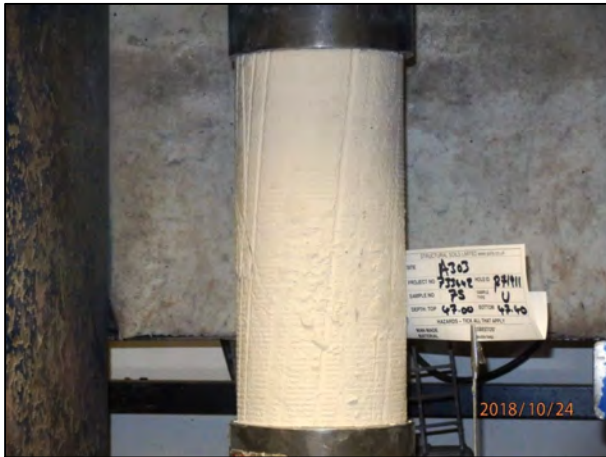
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

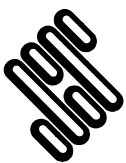


Front view (post-test)



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  
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 BS3 4AG

Compiled By		Date
[REDACTED]		19/12/18
Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 24/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

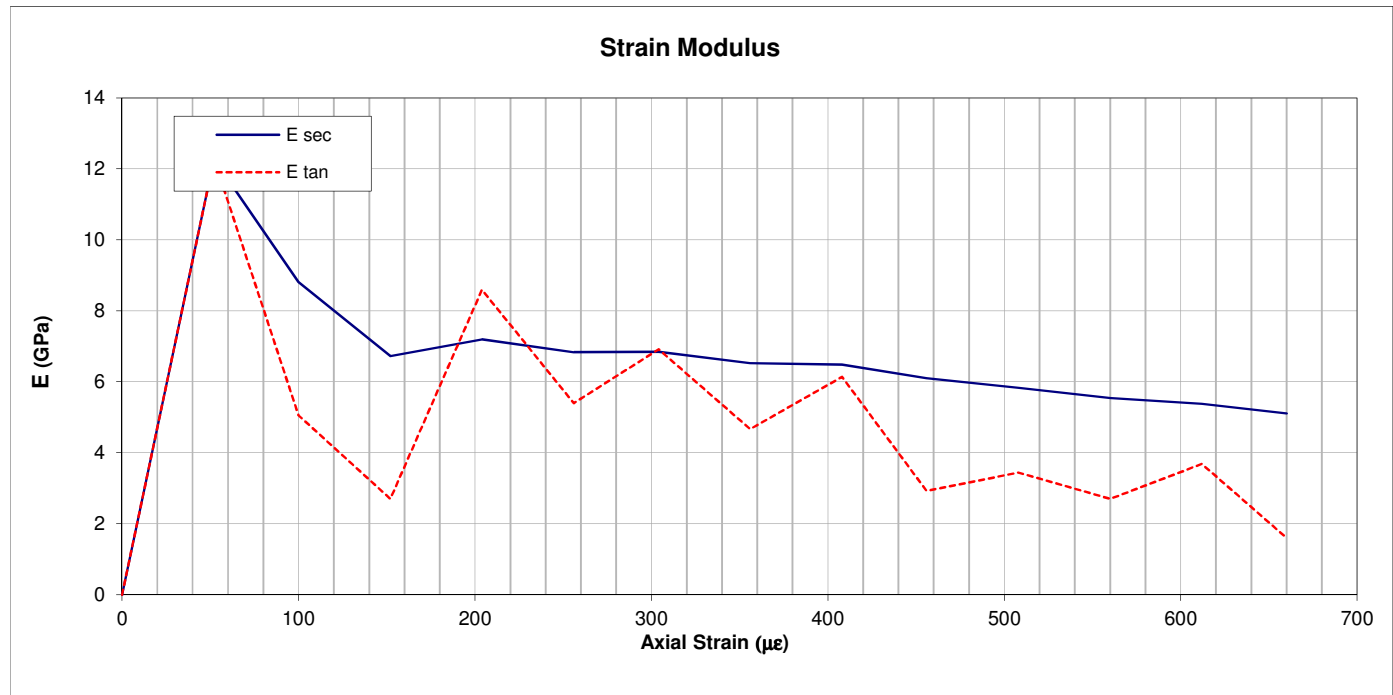
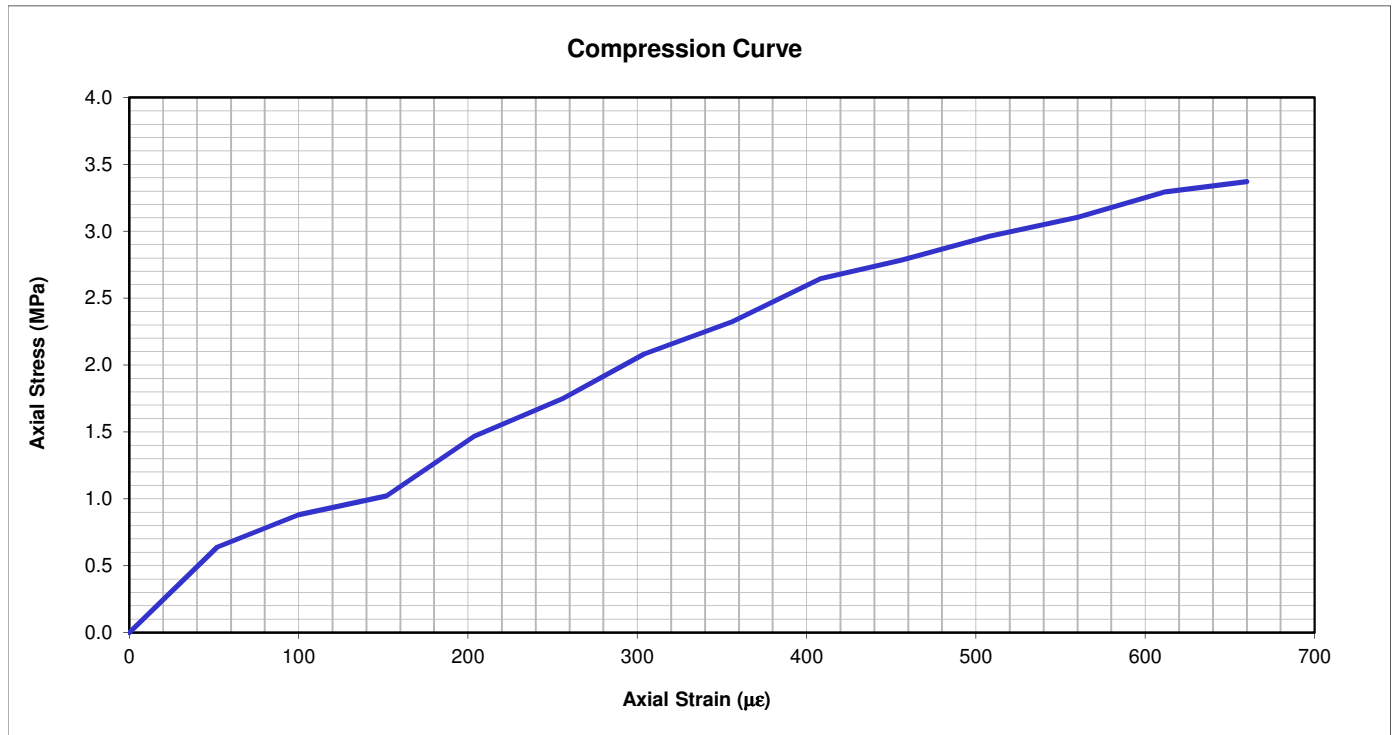
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71911  
 Specimen Depth 47.00 - 47.40m  
 Specimen Type C

Cross section area 78.32 cm<sup>2</sup>  
 Height 214.48 mm  
 Max logged strength 3.37 MPa  
 E<sub>tan</sub> (\*) 8.59 GPa  
 E<sub>sec</sub> (^) 7.20 GPa

(\*) Calculated for axial  $\sigma =$  1.69 MPa  
 (^) Calculated for axial  $\sigma =$  1.69 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
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	Bristol BS3 4AG

Test Date 24/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

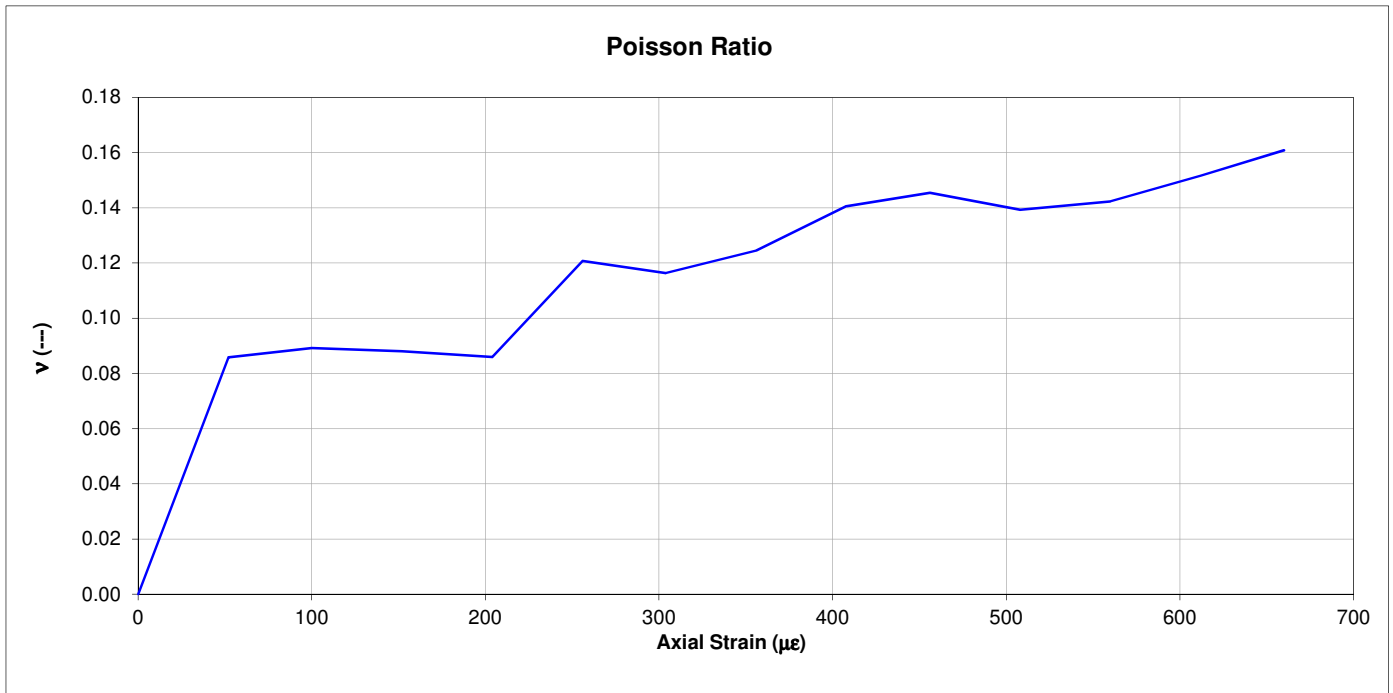
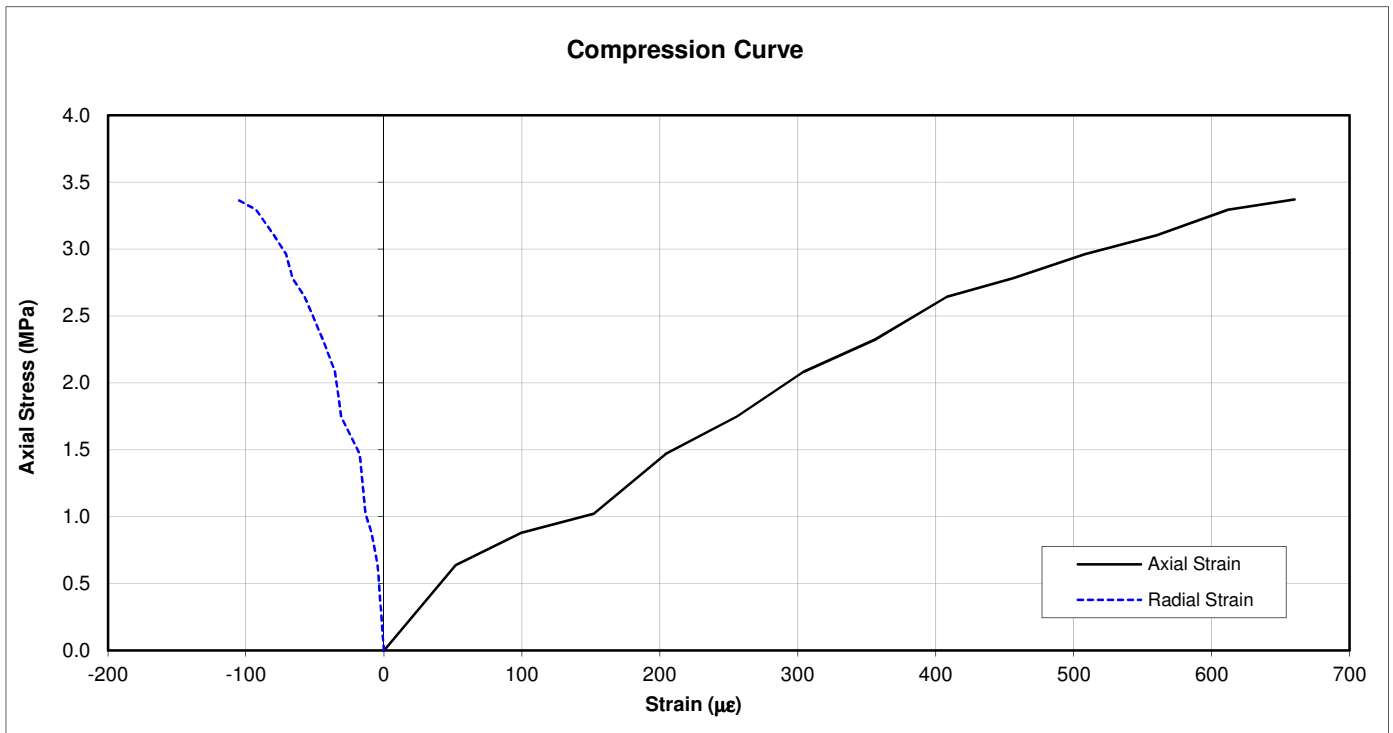
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71911  
 Specimen Depth 47.00 - 47.40m  
 Specimen Type C

Cross section area 78.32 cm<sup>2</sup>  
 Height 214.48 mm  
 Max logged strength 3.37 MPa  
 Poisson at failure 0.161  
 Poisson (\*) 0.086

(\*) Calculated for axial  $\sigma =$  1.69 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71913**      Sample Ref: **31**      Sample Type: **U**      Depth (m): **19.80**

Bulk Density (Mg/m<sup>3</sup>): **1.91**      Dry Density (Mg/m<sup>3</sup>): **1.48**      Moisture Content (%): **29**  
 Length (mm): **214.90**      Diameter (mm): **98.61**      Length/Diameter Ratio: **2.18**  
 Test Duration (mins:secs): **5:02**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.5**  
 UCS (MPa): **2.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

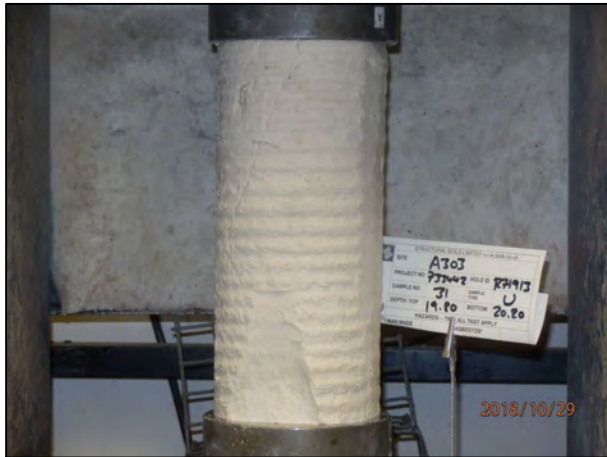
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



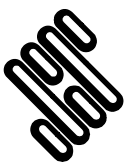
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core=Full Bristol.SI - 012 | GfctText L - UCS WITH DEFORMATION - A4P | 733442 - A303 STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_018 | Email: ask@soils.co.uk | 19/12/18 - 09:52 | AF3



**STRUCTURAL SOILS**  
 1a Princess Street  
 Bedminster  
 Bristol  
 BS3 4AG

Compiled By		Date
[REDACTED]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 29/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

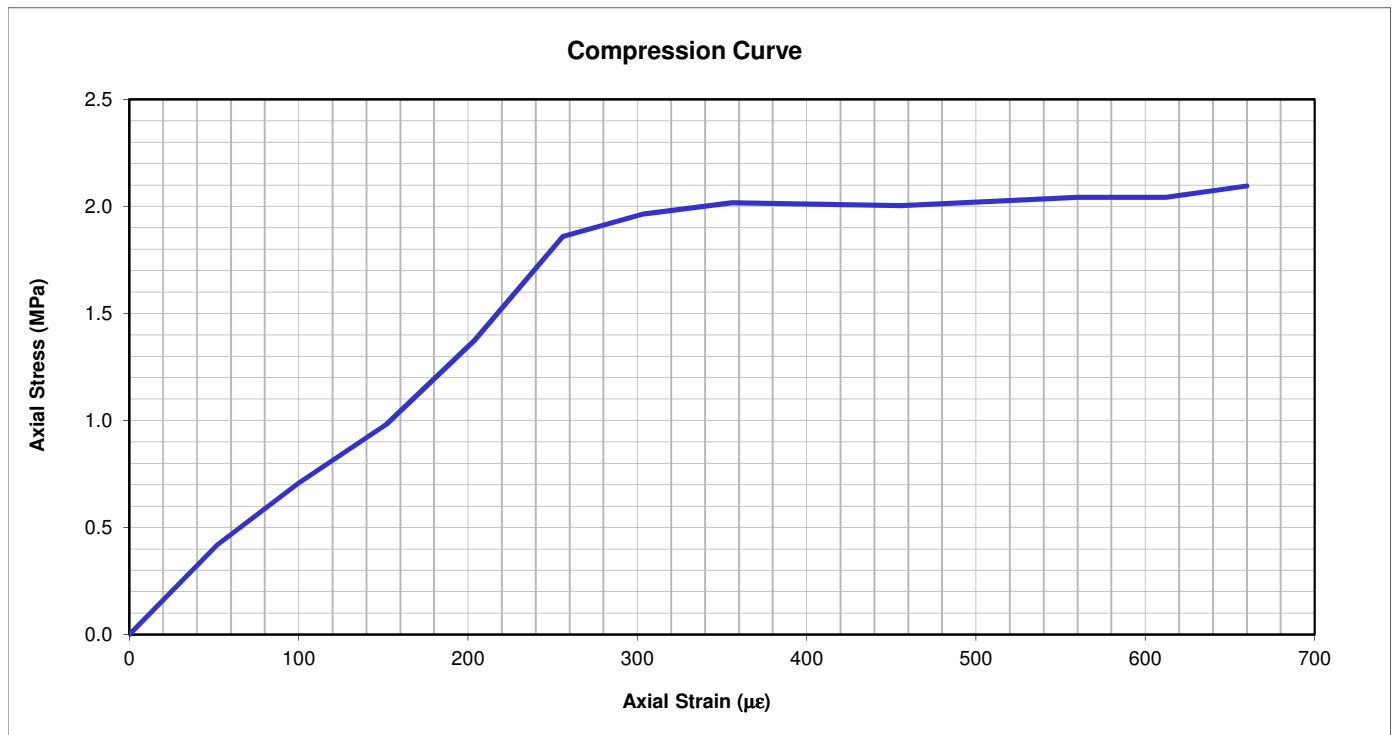
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71913  
 Specimen Depth 19.80 - 20.20m  
 Specimen Type C

Cross section area 76.37 cm<sup>2</sup>  
 Height 214.90 mm  
 Max logged strength 2.10 MPa  
 E<sub>tan</sub> (\*) 5.29 GPa  
 E<sub>sec</sub> (^) 6.46 GPa

(\*) Calculated for axial  $\sigma =$  1.05 MPa  
 (^) Calculated for axial  $\sigma =$  1.05 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 29/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

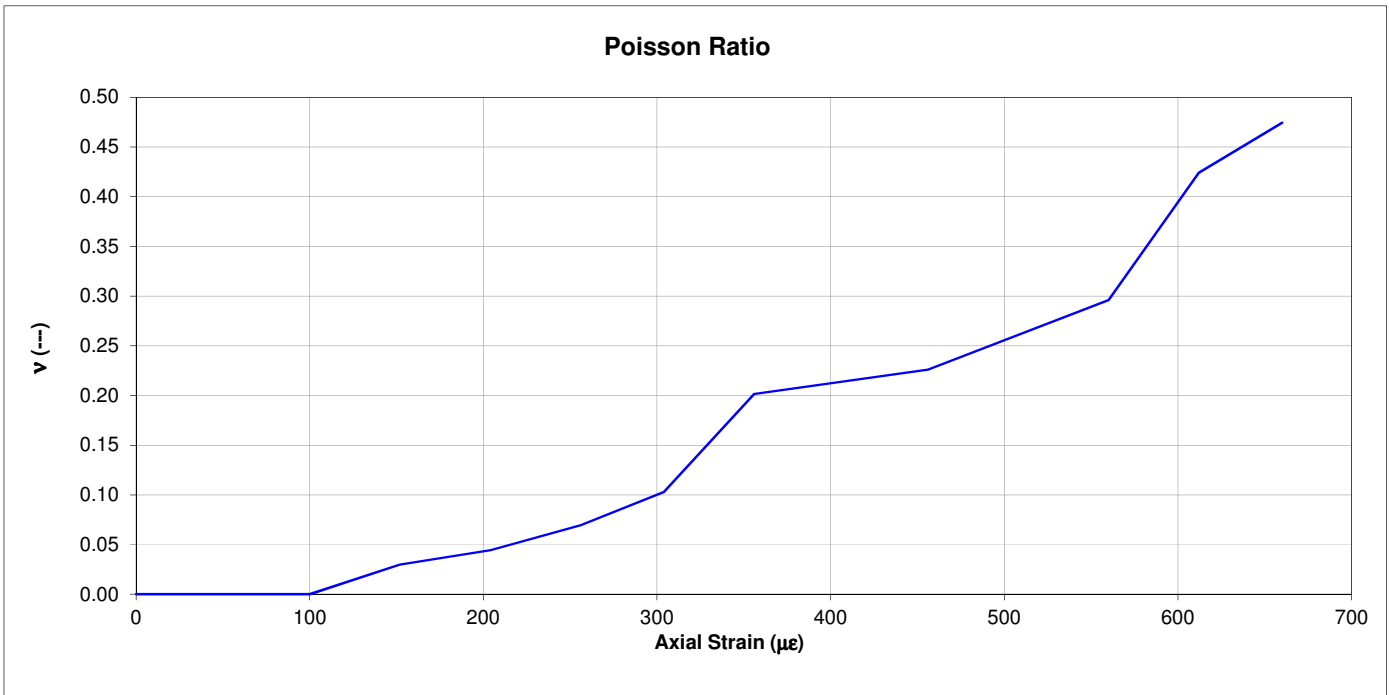
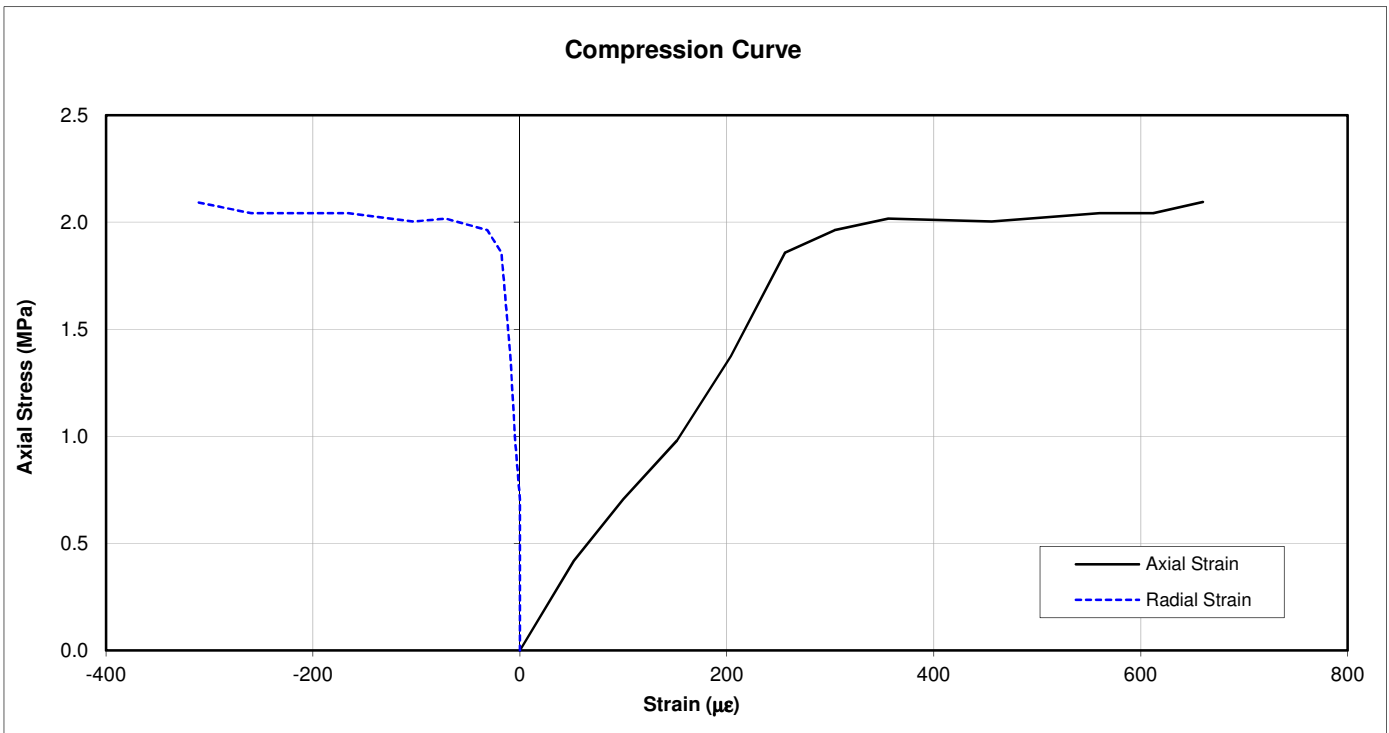
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71913  
 Specimen Depth 19.80 - 20.20m  
 Specimen Type C

Cross section area 76.37 cm<sup>2</sup>  
 Height 214.90 mm  
 Max logged strength 2.10 MPa  
 Poisson at failure 0.474  
 Poisson (\*) 0.030

(\*) Calculated for axial  $\sigma =$  1.05 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71913**      Sample Ref: **39**      Sample Type: **U**      Depth (m): **23.80**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.58**      Moisture Content (%): **26**  
 Length (mm): **215.73**      Diameter (mm): **99.48**      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **3:19**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **16.5**  
 UCS (MPa): **2.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

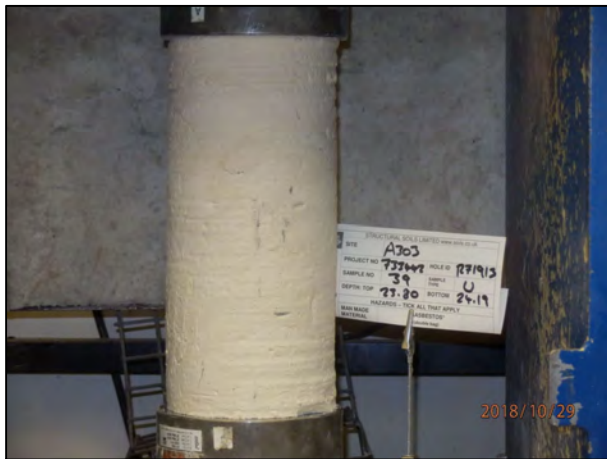
Remarks: **Non-standard test**



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  
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 Bristol  
 BS3 4AG

Compiled By		Date
[REDACTED]		19/12/18
Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 29/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

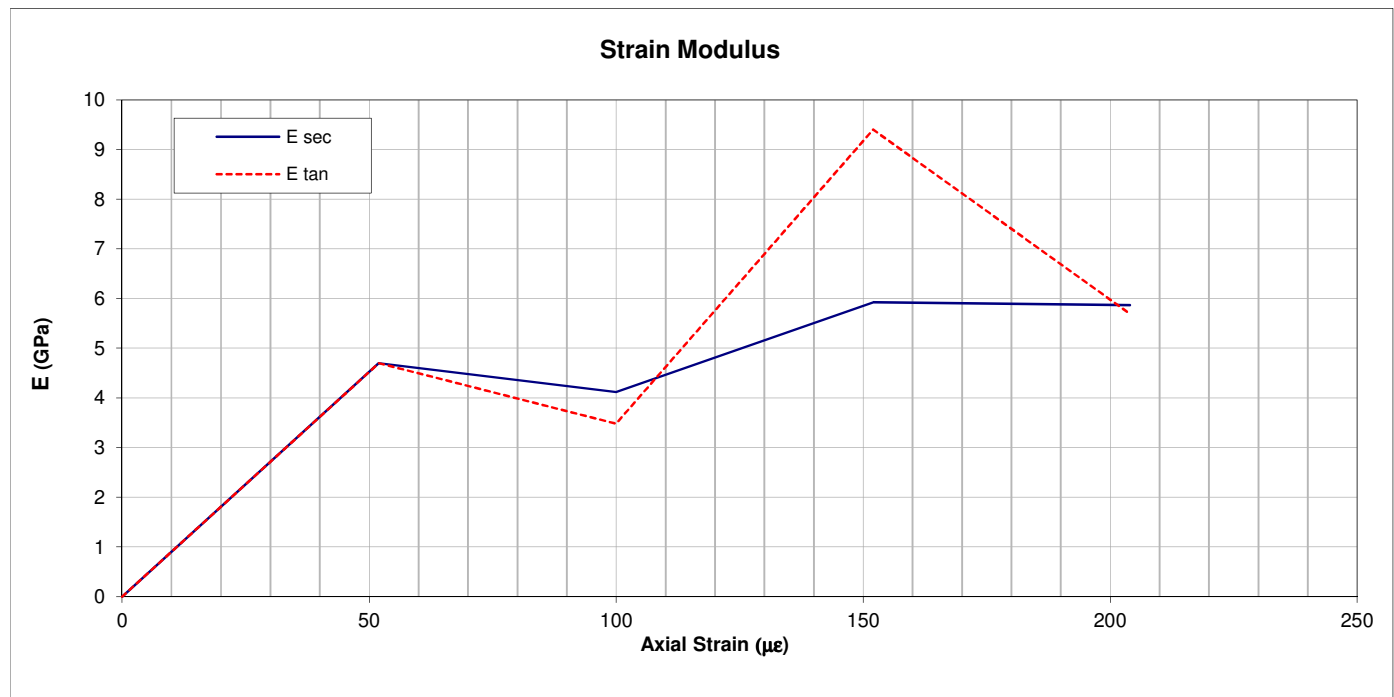
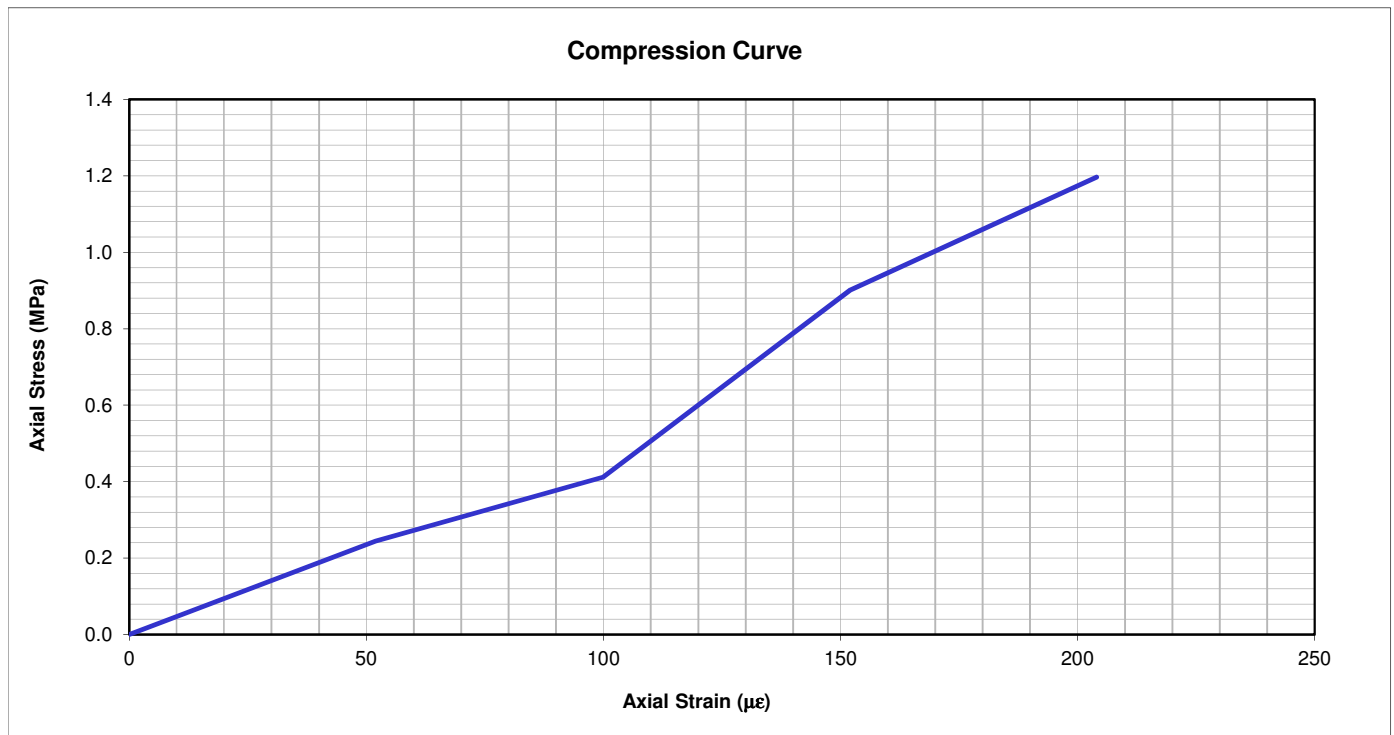
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71913  
 Specimen Depth 23.80 - 24.19m  
 Specimen Type C

Cross section area 77.73 cm<sup>2</sup>  
 Height 215.73 mm  
 Max logged strength 1.20 MPa  
 E<sub>tan</sub> (\*) 3.48 GPa  
 E<sub>sec</sub> (^) 4.12 GPa

(\*) Calculated for axial  $\sigma =$  0.60 MPa  
 (^) Calculated for axial  $\sigma =$  0.60 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 29/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

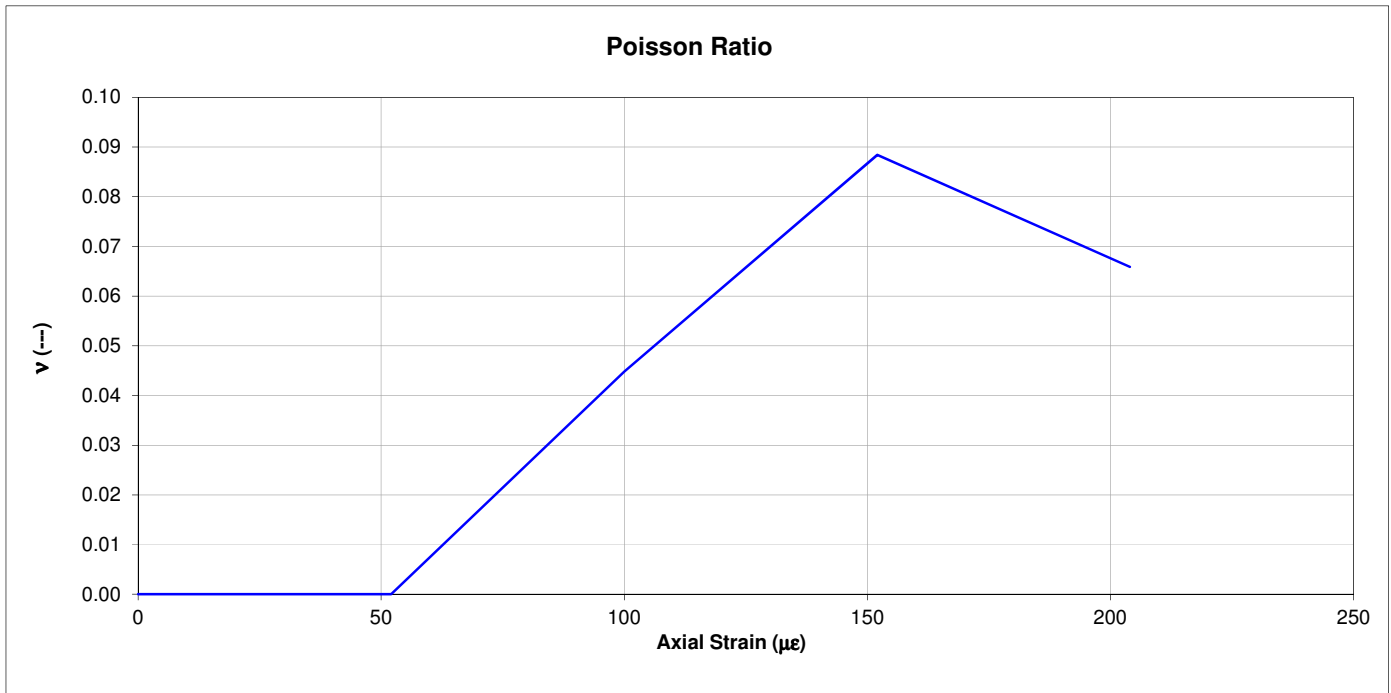
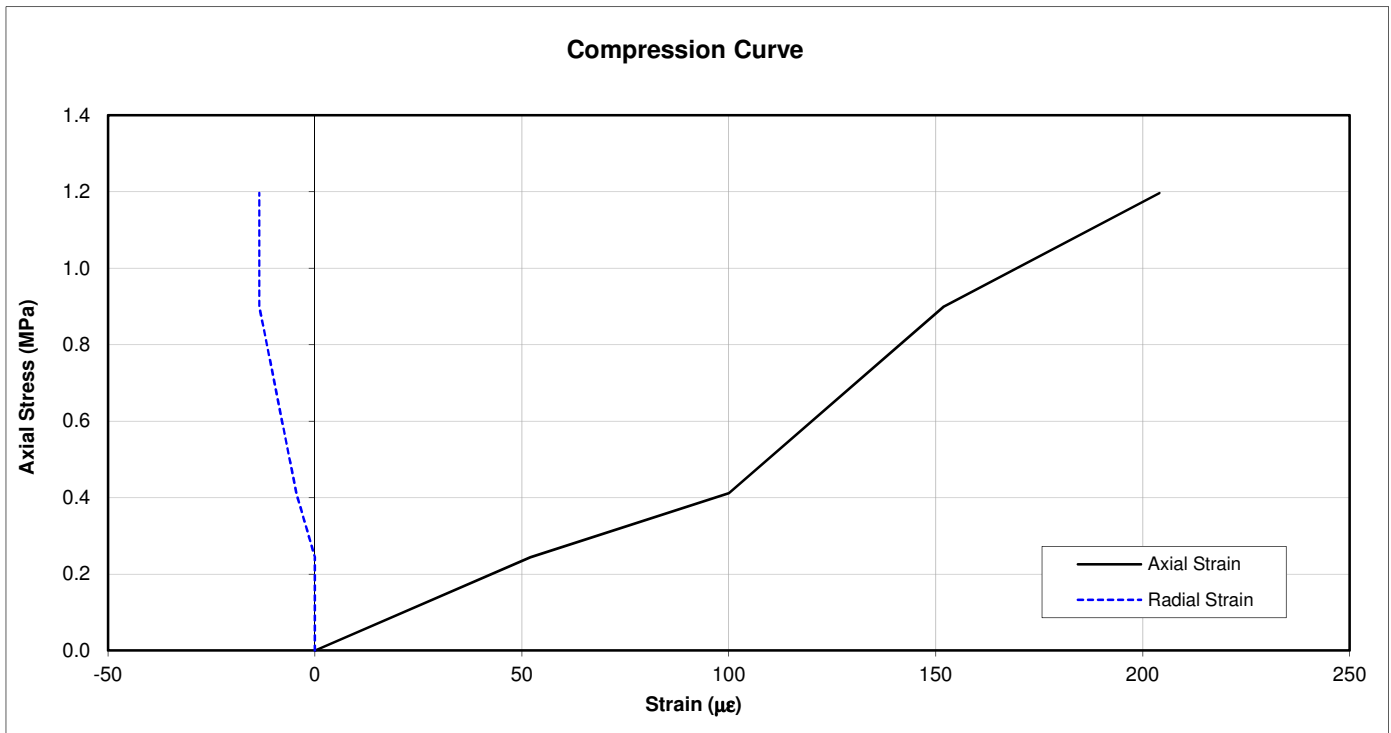
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71913  
 Specimen Depth 23.80 - 24.19m  
 Specimen Type C

Cross section area 77.73 cm<sup>2</sup>  
 Height 215.73 mm  
 Max logged strength 1.20 MPa  
 Poisson at failure 0.066  
 Poisson (\*) 0.045

(\*) Calculated for axial  $\sigma =$  0.60 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72002**      Sample Ref: **20**      Sample Type: **U**      Depth (m): **14.50**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.56**      Moisture Content (%): **27**  
 Length (mm): **209.23**      Diameter (mm): **100.50**      Length/Diameter Ratio: **2.08**  
 Test Duration (mins:secs): **3:11**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **11.0**  
 UCS (MPa): **1.4**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

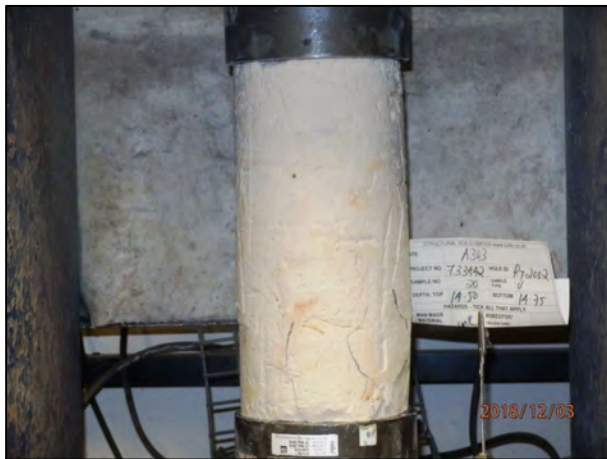
Remarks: **Non-standard test**



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

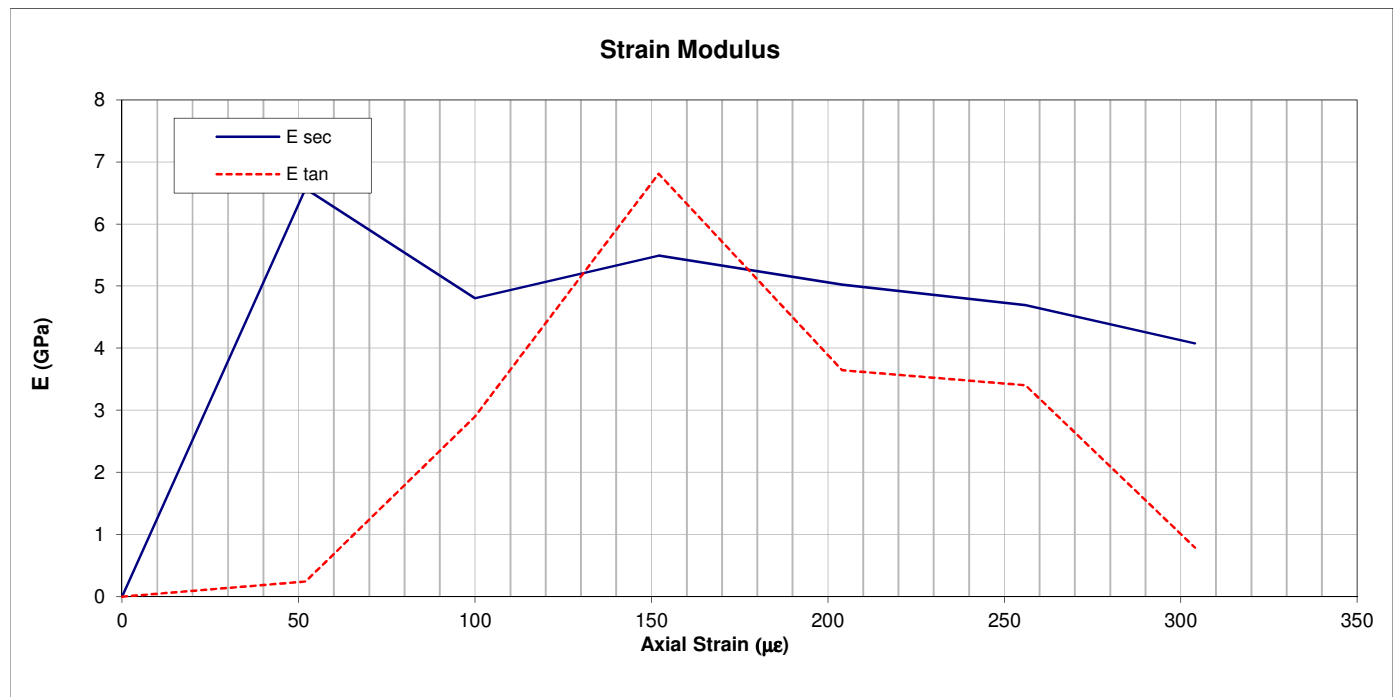
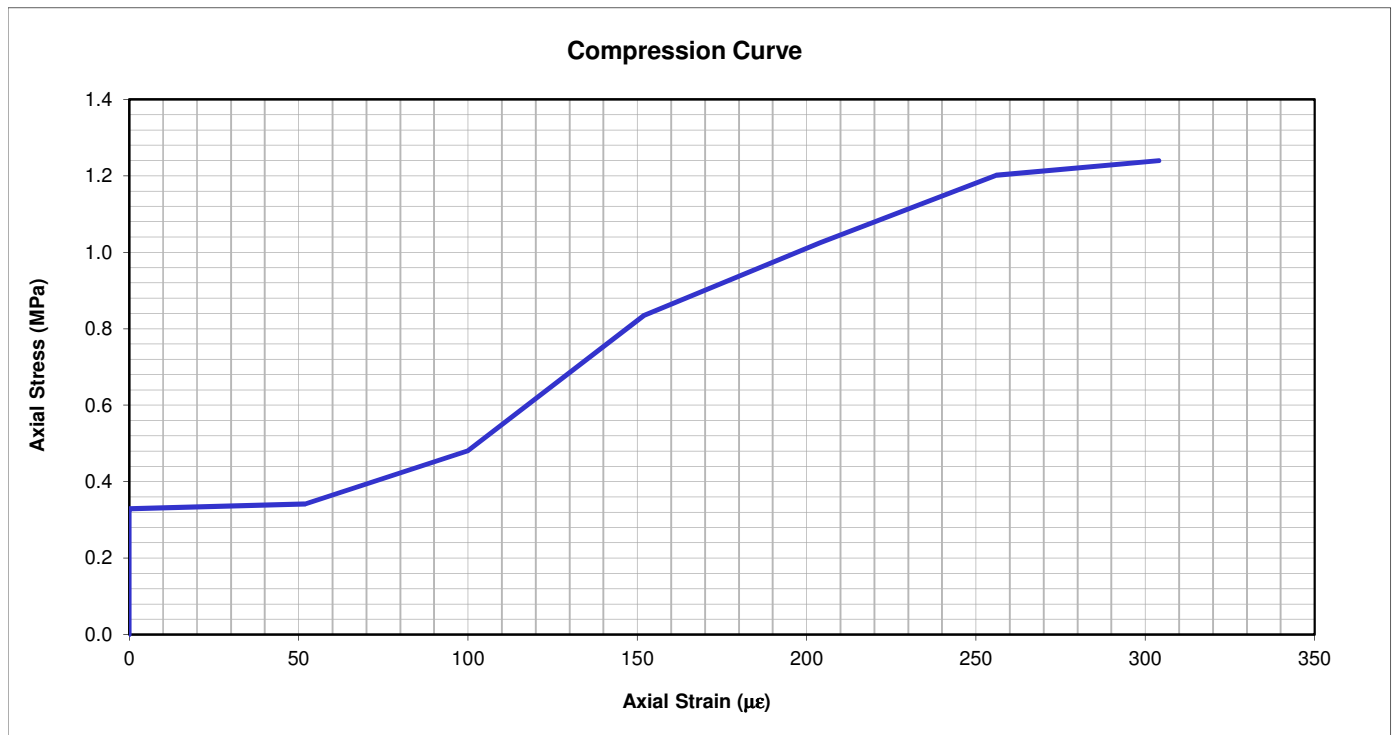
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R72002</u>
Specimen Depth	<u>14.50 - 14.75m</u>
Specimen Type	<u>C</u>

Cross section area	<u>79.06 cm<sup>2</sup></u>
Height	<u>209.23 mm</u>
Max logged strength	<u>1.24 MPa</u>
E <sub>tan</sub>	<u>(*) 2.90 GPa</u>
E <sub>sec</sub>	<u>(^) 4.81 GPa</u>

(\*) Calculated for axial  $\sigma =$  0.62 MPa  
 (^) Calculated for axial  $\sigma =$  0.62 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

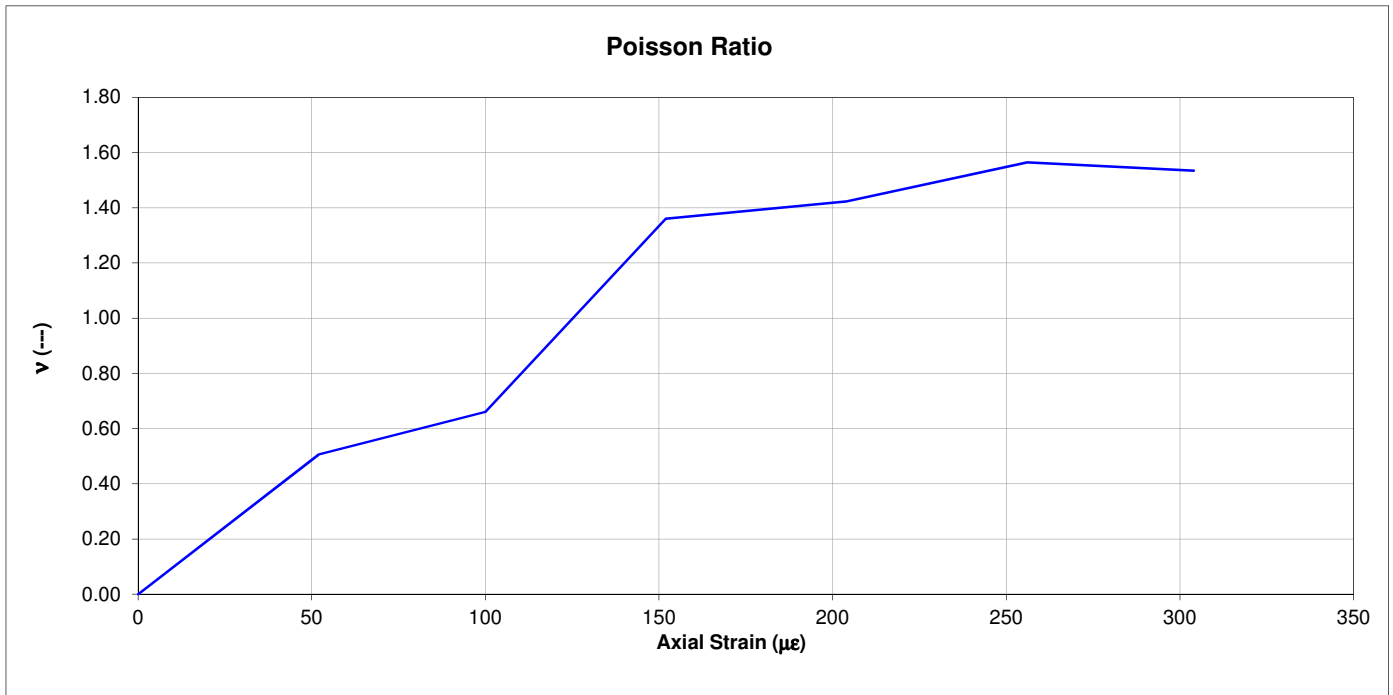
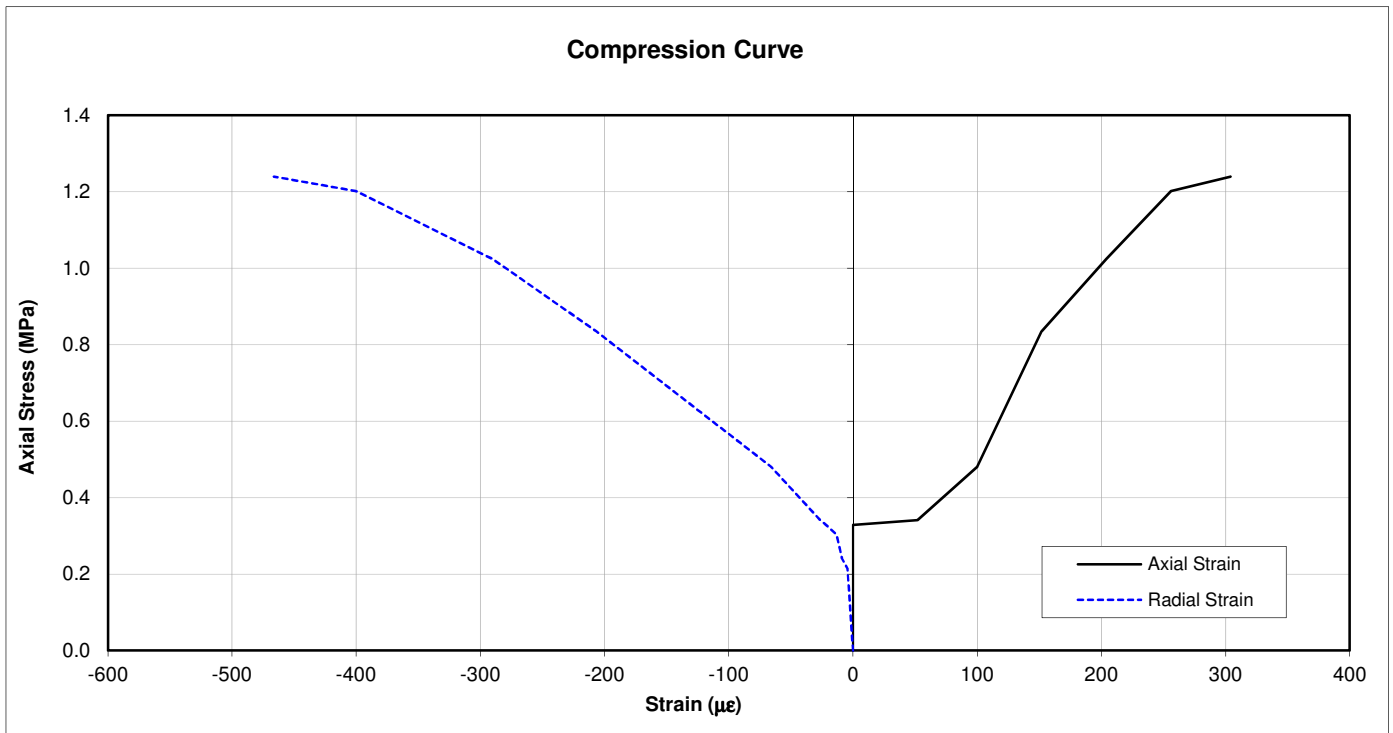
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R72002  
 Specimen Depth 14.50 - 14.75m  
 Specimen Type C

Cross section area 79.06 cm<sup>2</sup>  
 Height 209.23 mm  
 Max logged strength 1.24 MPa  
 Poisson at failure 1.534  
 Poisson (\*) 0.660

(\*) Calculated for axial  $\sigma =$  0.62 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72002**      Sample Ref: **38**      Sample Type: **U**      Depth (m): **28.90**

Bulk Density (Mg/m<sup>3</sup>): **1.93**      Dry Density (Mg/m<sup>3</sup>): **1.49**      Moisture Content (%): **30**  
 Length (mm): **214.87**      Diameter (mm): **100.61**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **5:23**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **21.6**  
 UCS (MPa): **2.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS WITH DEFORMATION - A4P | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/12/18 - 09:53 | AF3

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
			ALAN FROST
	Contract		Job No
<p><b>A303 Stonehenge Phase 7 Ground Investigation</b></p>		<p><b>733442</b></p>	
			19/12/18

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

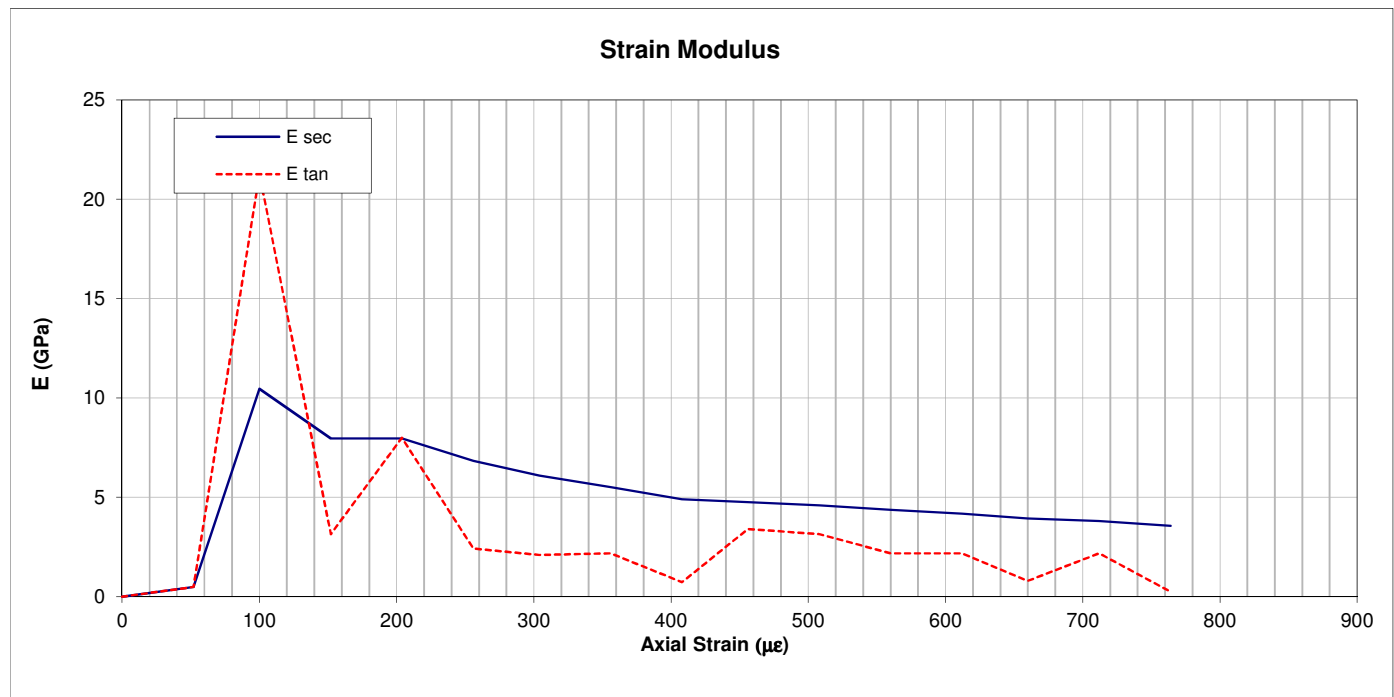
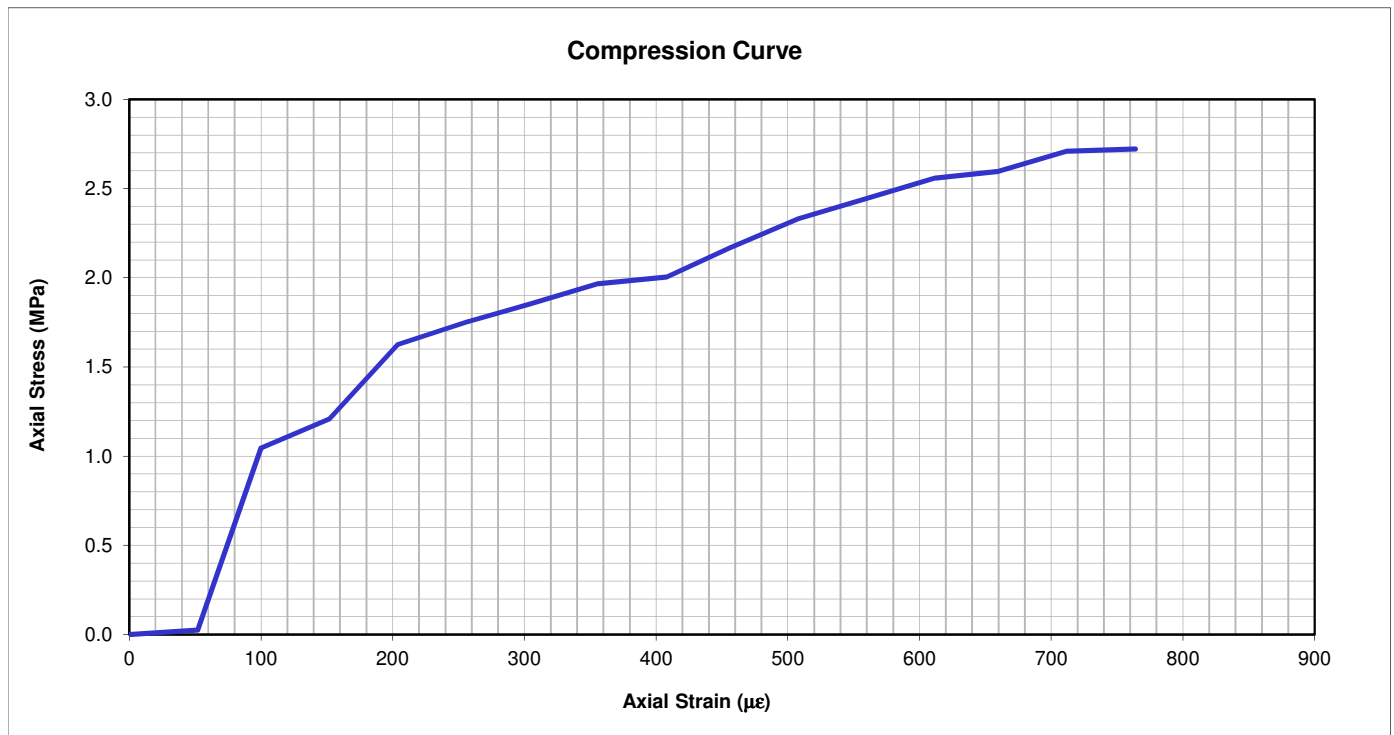
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R72002</u>
Specimen Depth	<u>28.90 - 29.30m</u>
Specimen Type	<u>C</u>

Cross section area	<u>79.36 cm<sup>2</sup></u>
Height	<u>214.87 mm</u>
Max logged strength	<u>2.72 MPa</u>
E <sub>tan</sub>	<u>(*) 3.15 GPa</u>
E <sub>sec</sub>	<u>(^) 7.96 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.36 MPa  
 (^) Calculated for axial  $\sigma =$  1.36 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

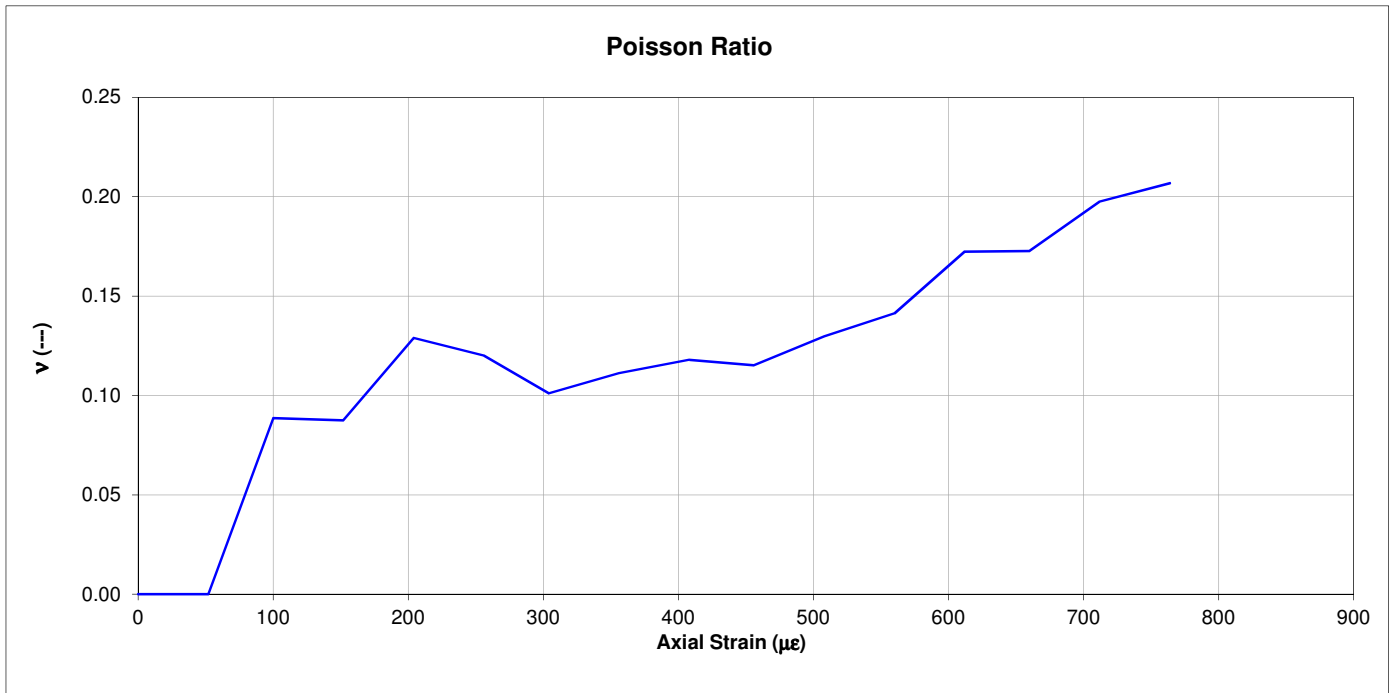
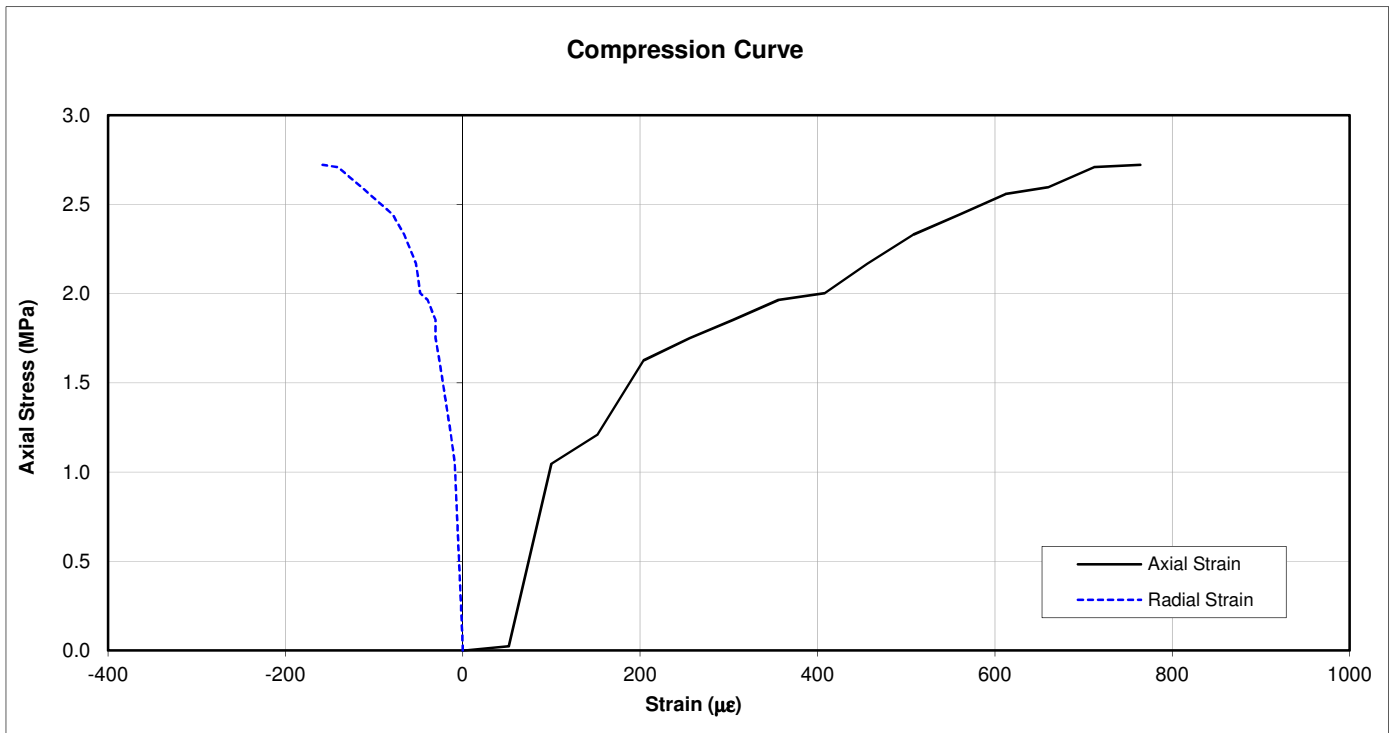
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R72002  
 Specimen Depth 28.90 - 29.30m  
 Specimen Type C

Cross section area 79.36 cm<sup>2</sup>  
 Height 214.87 mm  
 Max logged strength 2.72 MPa  
 Poisson at failure 0.207  
 Poisson (\*) 0.087

(\*) Calculated for axial  $\sigma =$  1.36 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72003**      Sample Ref: **23**      Sample Type: **U**      Depth (m): **17.37**

Bulk Density (Mg/m<sup>3</sup>): **1.96**      Dry Density (Mg/m<sup>3</sup>): **1.53**      Moisture Content (%): **28**  
 Length (mm): **213.67**      Diameter (mm): **99.75**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **4:11**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **24.1**  
 UCS (MPa): **3.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

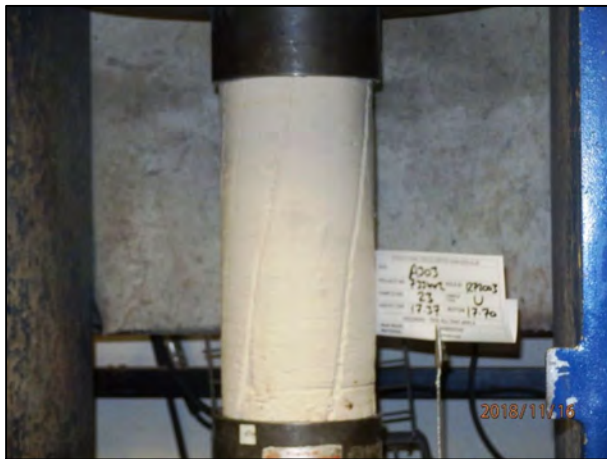
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

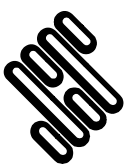


Front view (post-test)



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

16/11/2018.

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

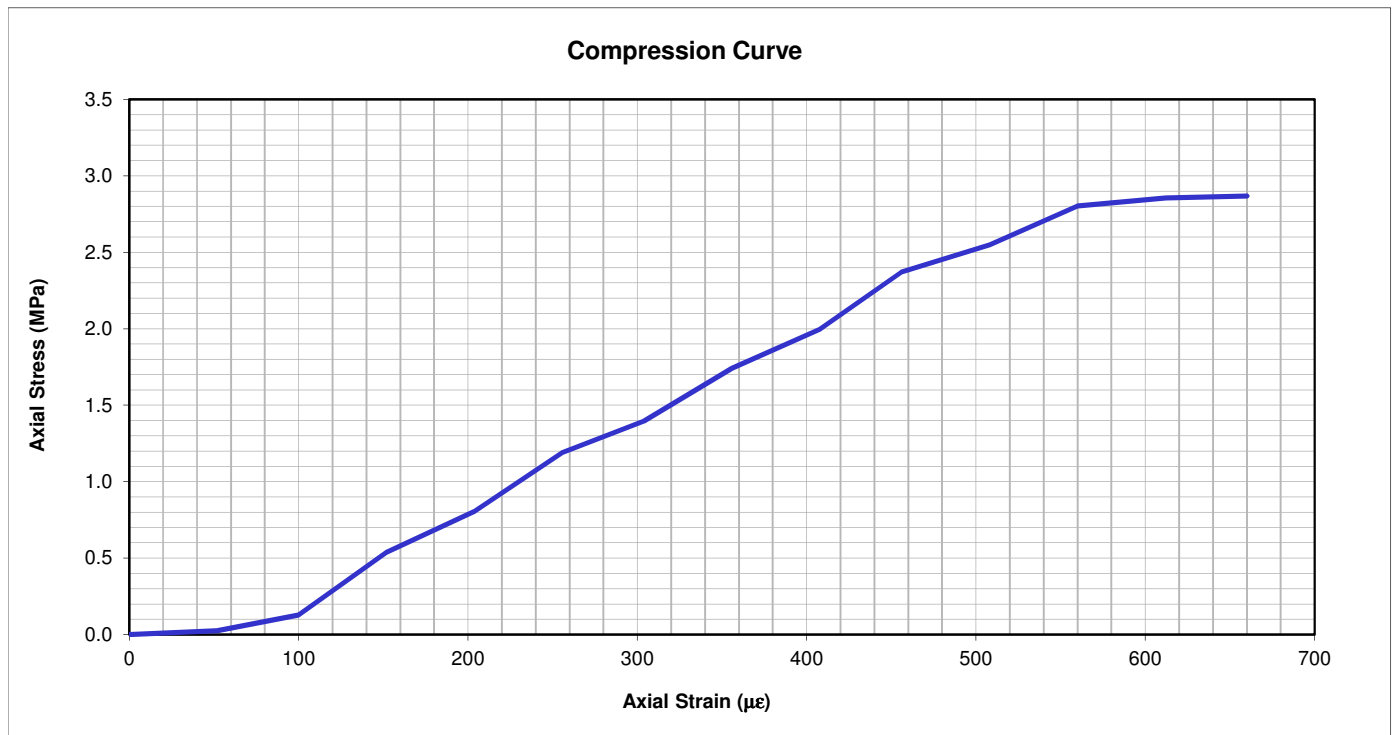
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R72003</u>
Specimen Depth	<u>17.37 - 17.70m</u>
Specimen Type	<u>C</u>

Cross section area	<u>78.10 cm<sup>2</sup></u>
Height	<u>213.67 mm</u>
Max logged strength	<u>2.87 MPa</u>
E <sub>tan</sub>	<u>(*) 4.27 GPa</u>
E <sub>sec</sub>	<u>(^) 4.59 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.43 MPa  
 (^) Calculated for axial  $\sigma =$  1.43 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 16/11/2018.

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

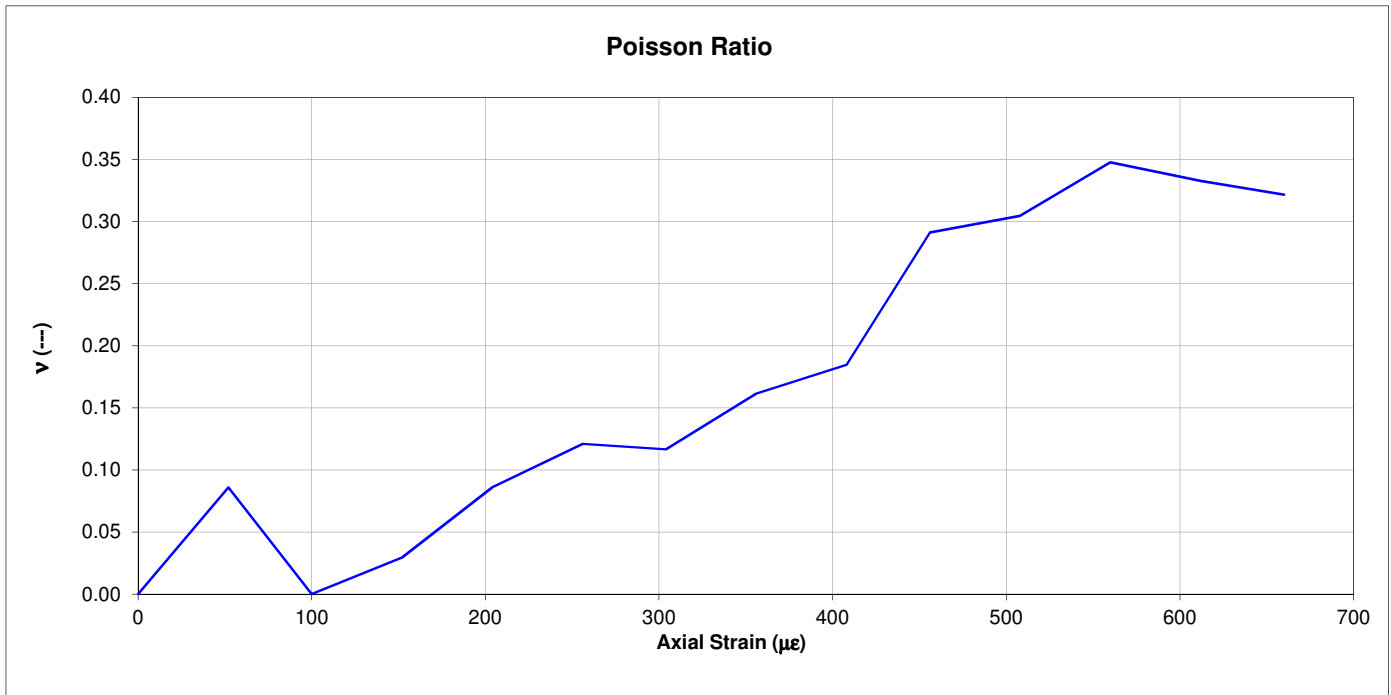
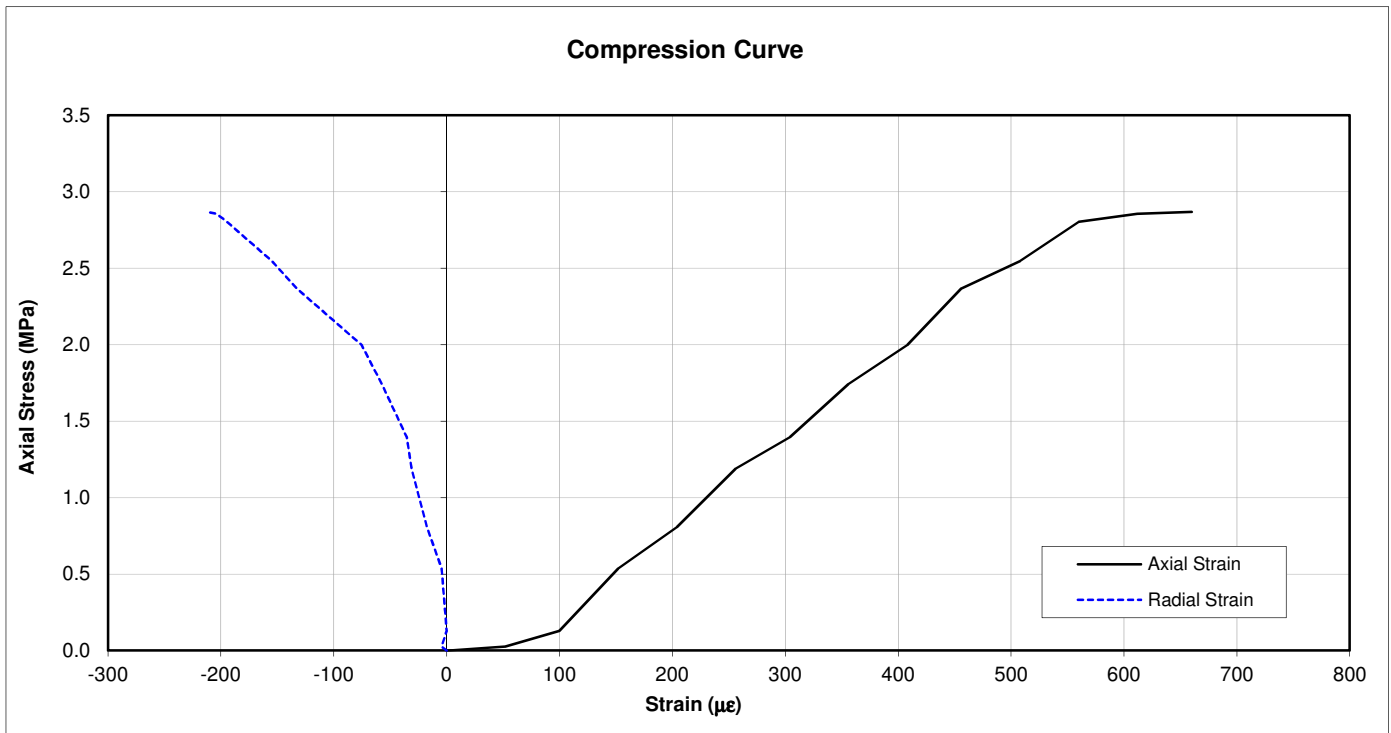
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R72003  
 Specimen Depth 17.37 - 17.70m  
 Specimen Type C

Cross section area 78.10 cm<sup>2</sup>  
 Height 213.67 mm  
 Max logged strength 2.87 MPa  
 Poisson at failure 0.322  
 Poisson (\*) 0.117

(\*) Calculated for axial  $\sigma =$  1.43 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72003**      Sample Ref: **29**      Sample Type: **U**      Depth (m): **22.06**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **26**  
 Length (mm): **212.76**      Diameter (mm): **98.09**      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **4:15**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **21.0**  
 UCS (MPa): **2.8**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

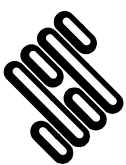


Front view (post-test)



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

19/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

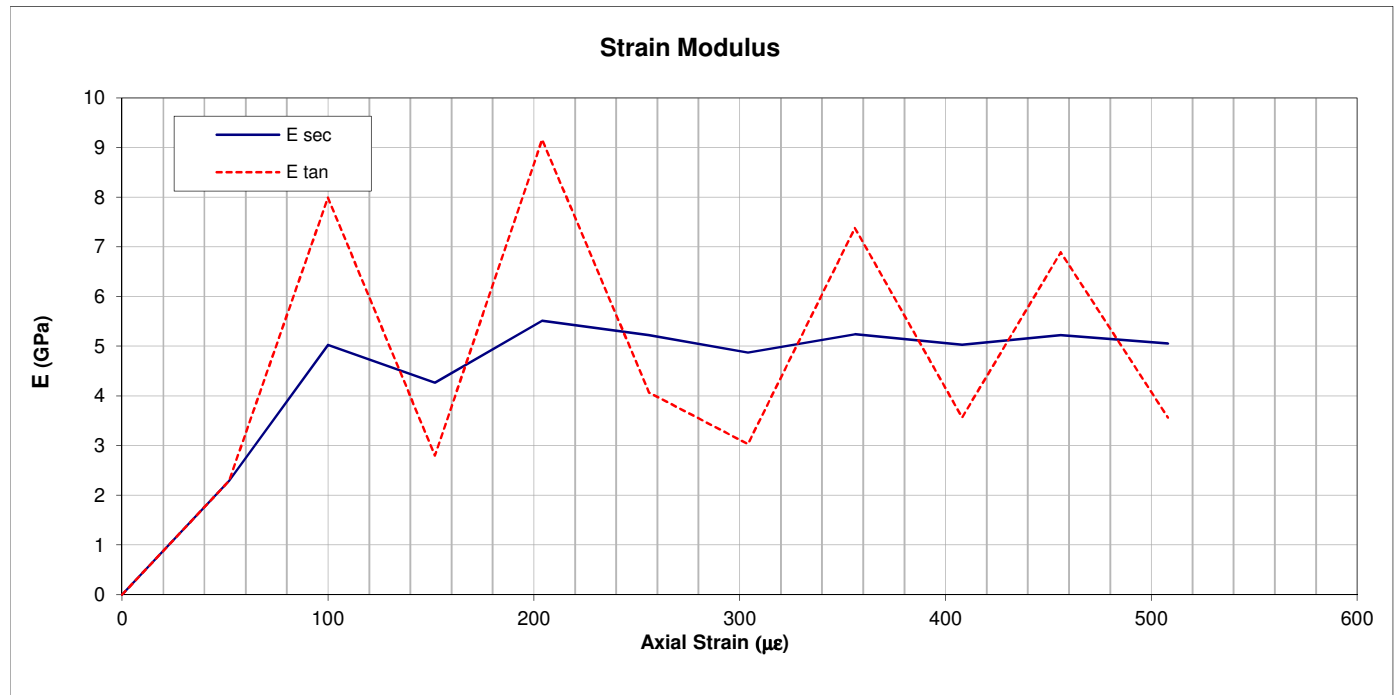
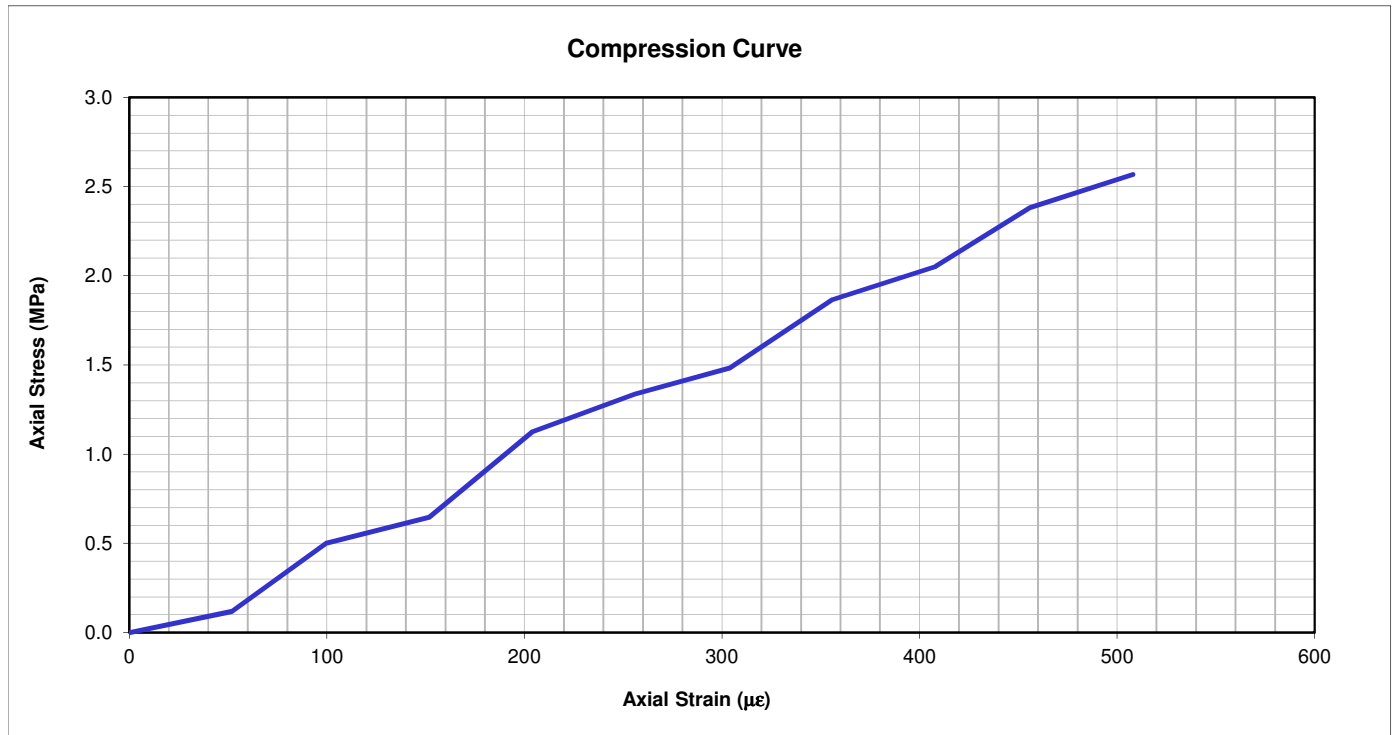
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R72003</u>
Specimen Depth	<u>22.06 - 22.36m</u>
Specimen Type	<u>C</u>

Cross section area	<u>75.57 cm<sup>2</sup></u>
Height	<u>212.76 mm</u>
Max logged strength	<u>2.57 MPa</u>
E <sub>tan</sub>	<u>(*) 9.16 GPa</u>
E <sub>sec</sub>	<u>(^)</u> 5.51 GPa

(\*) Calculated for axial  $\sigma =$  1.28 MPa  
 (^) Calculated for axial  $\sigma =$  1.28 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 19/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

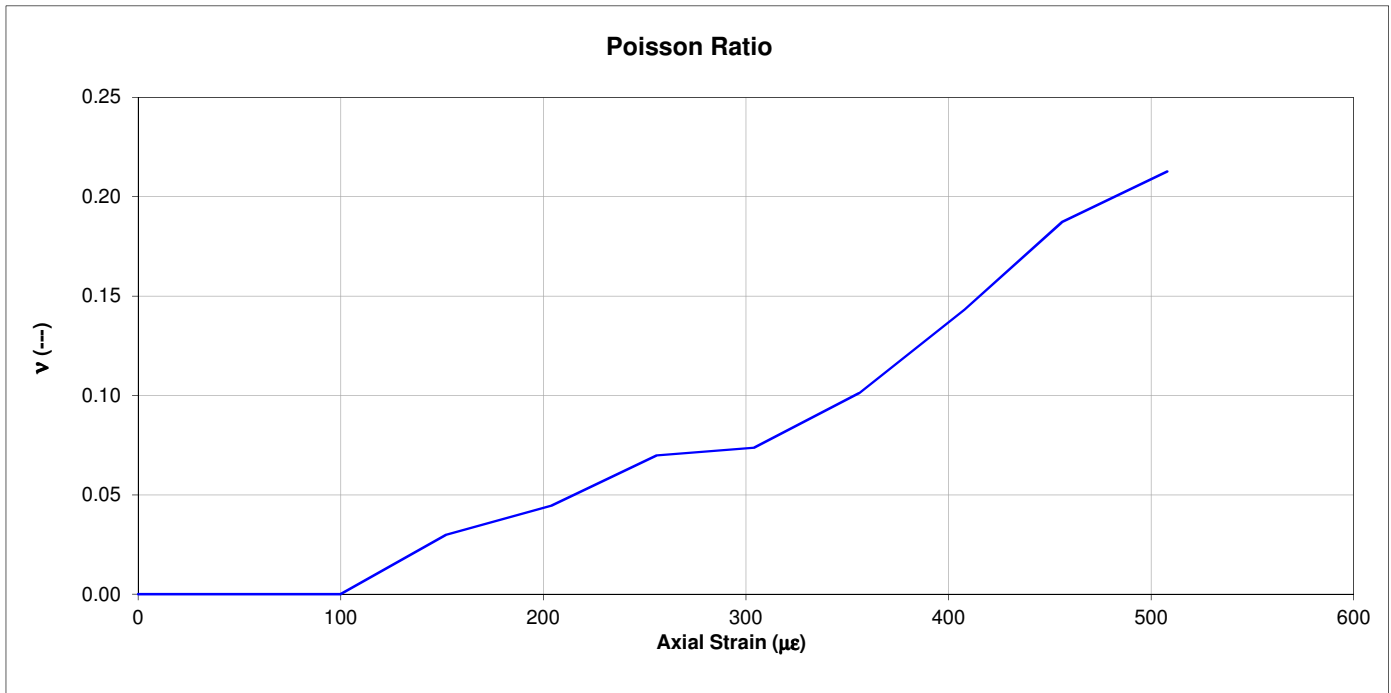
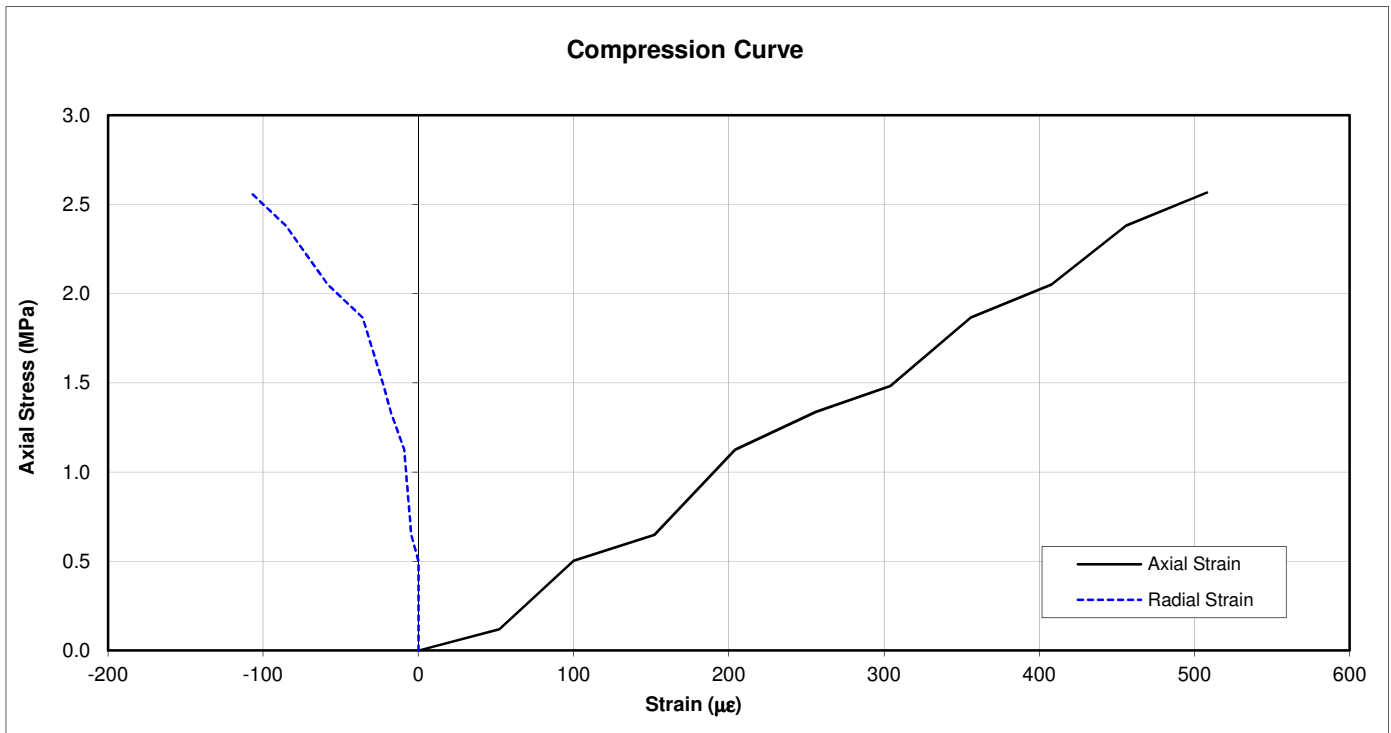
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R72003  
 Specimen Depth 22.06 - 22.36m  
 Specimen Type C

Cross section area 75.57 cm<sup>2</sup>  
 Height 212.76 mm  
 Max logged strength 2.57 MPa  
 Poisson at failure 0.213  
 Poisson (\*) 0.045

(\*) Calculated for axial  $\sigma =$  1.28 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71801**      Sample Ref: **15**      Sample Type: **U**      Depth (m): **12.24**

Bulk Density (Mg/m<sup>3</sup>): **2.00**      Dry Density (Mg/m<sup>3</sup>): **1.62**      Moisture Content (%): **24**  
 Length (mm): **159.73**      Diameter (mm): **99.32**      Length/Diameter Ratio: **1.61**  
 Test Duration (mins:secs): **4:21**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **23.6**  
 UCS (MPa): **3.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

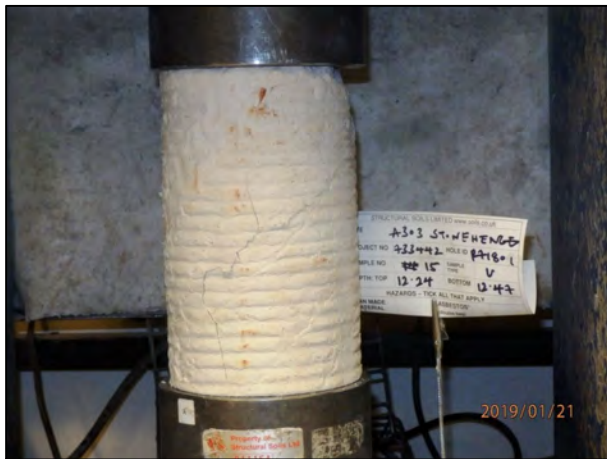
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



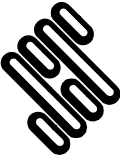


Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS WITH DEFORMATION - A4P | 733442 - A303 STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/02/19 - 07:32 | AF3

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
			ABBY MITCHELL 19/02/19
	Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b> 	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

21/01/2019

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

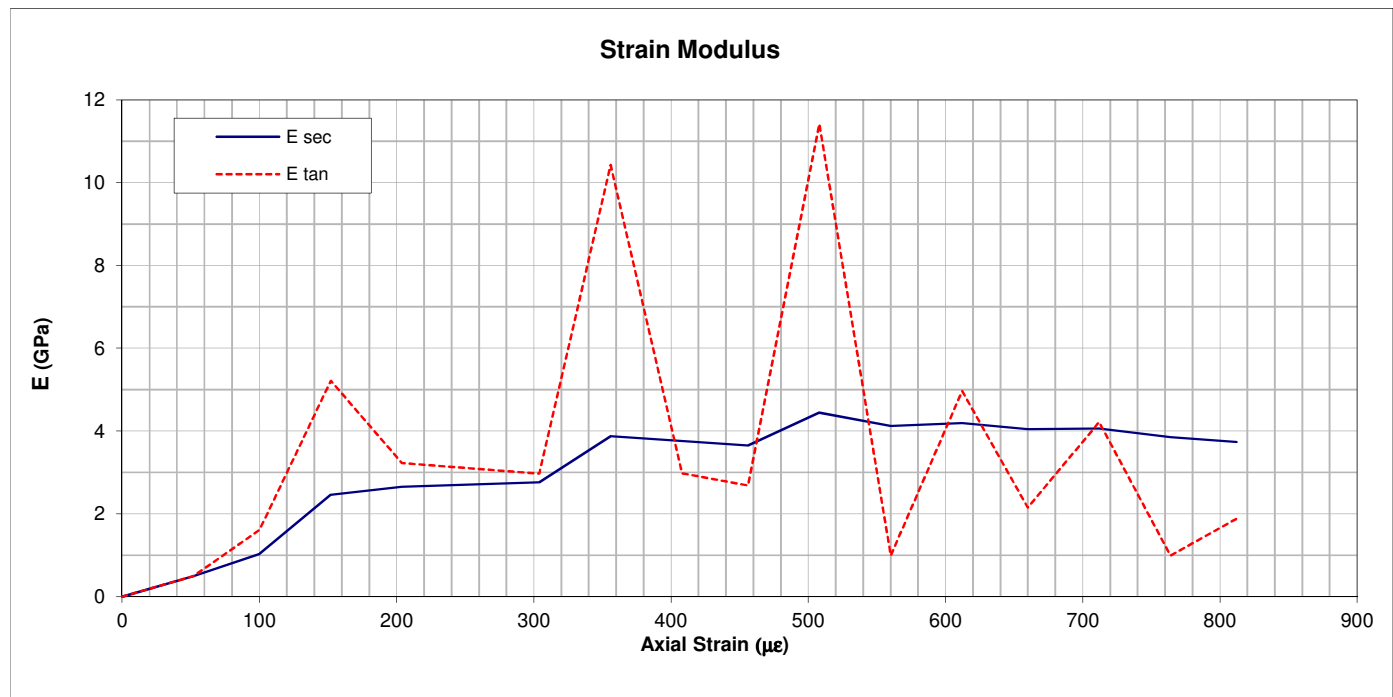
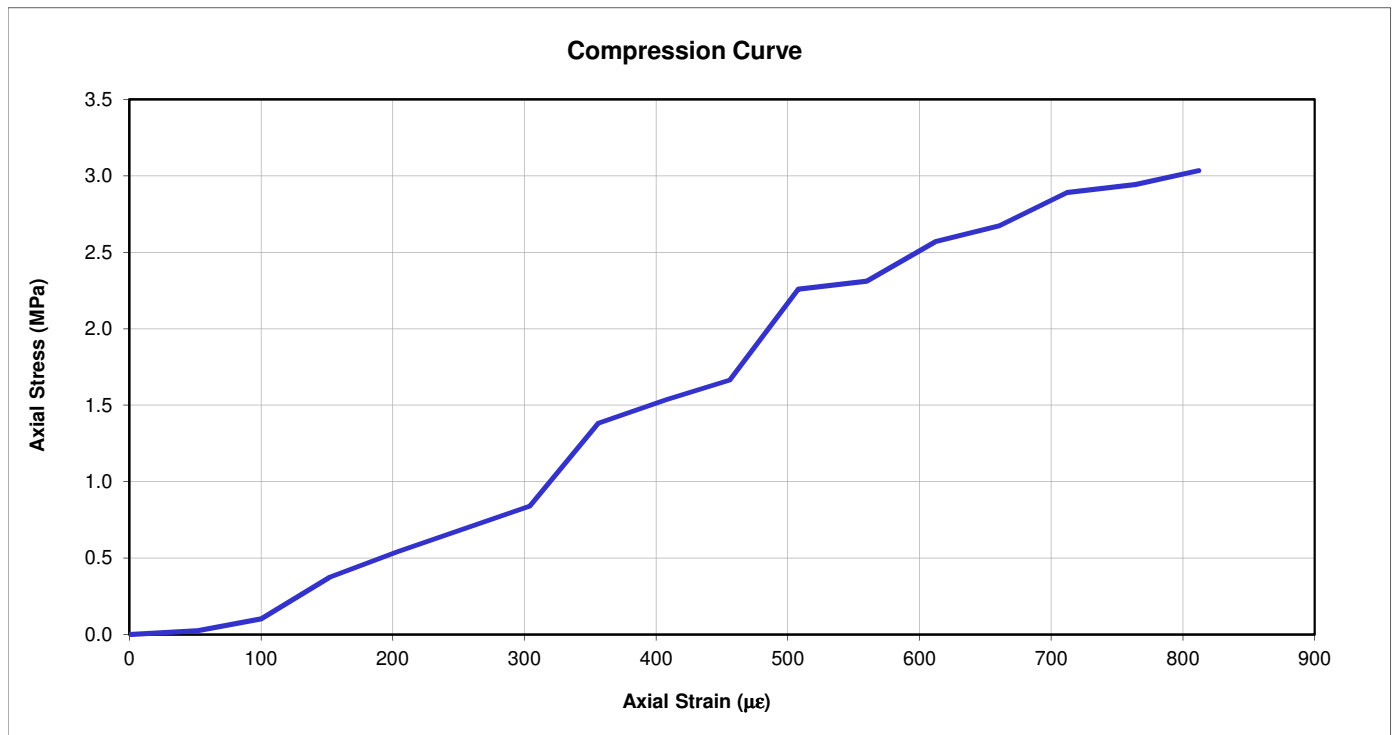
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71801</u>
Specimen Depth	<u>12.24 - 12.47m</u>
Specimen Type	<u>C</u>

Cross section area	<u>77.48 cm<sup>2</sup></u>
Height	<u>159.73 mm</u>
Max logged strength	<u>3.03 MPa</u>
E <sub>tan</sub> (*)	<u>10.43 GPa</u>
E <sub>sec</sub> (^)	<u>3.88 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.52 MPa  
 (^) Calculated for axial  $\sigma =$  1.52 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 21/01/2019

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

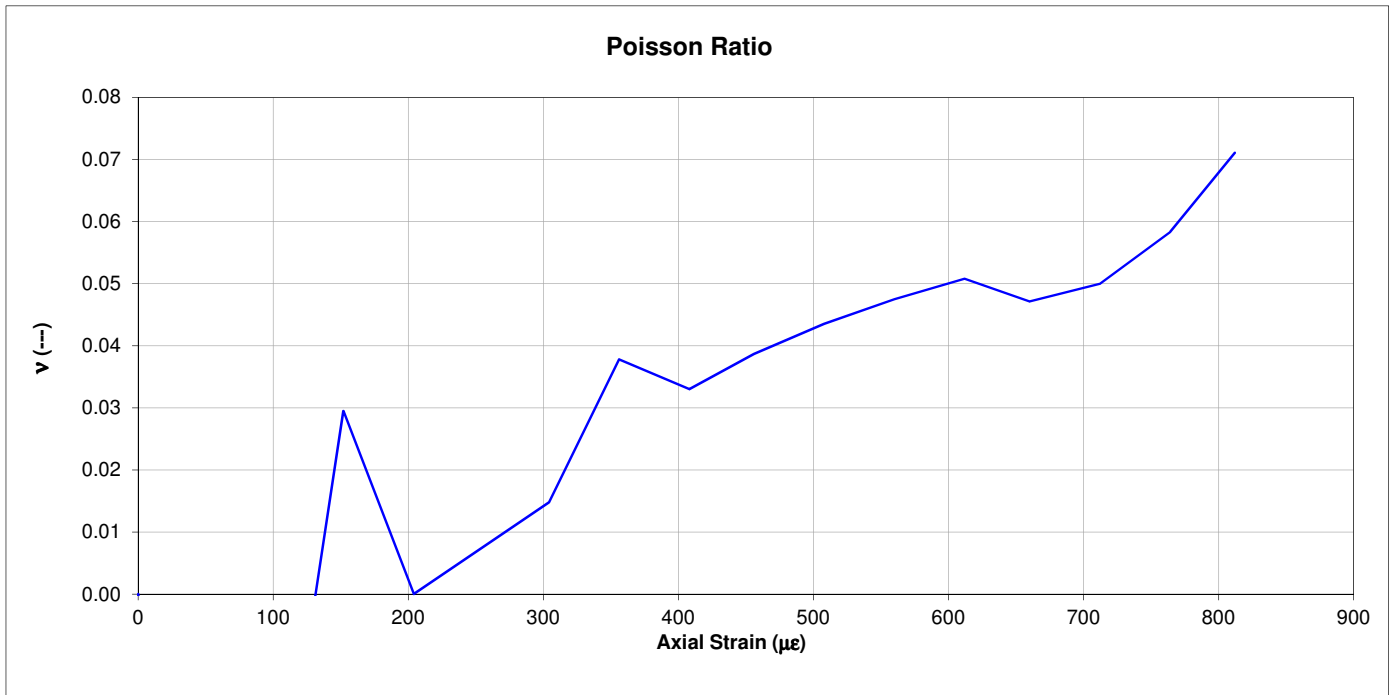
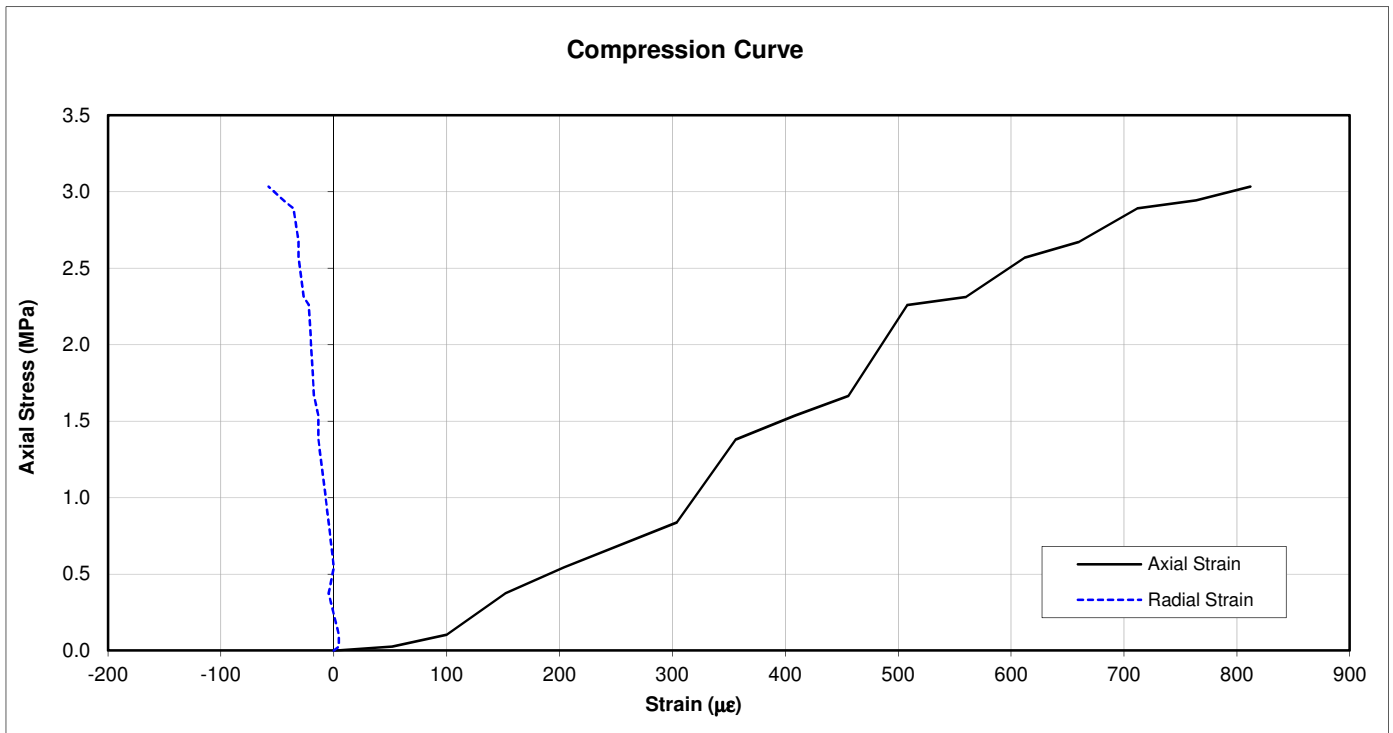
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71801  
 Specimen Depth 12.24 - 12.47m  
 Specimen Type C

Cross section area 77.48 cm<sup>2</sup>  
 Height 159.73 mm  
 Max logged strength 3.03 MPa  
 Poisson at failure 0.071  
 Poisson (\*) 0.038

(\*) Calculated for axial  $\sigma =$  1.52 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71801**      Sample Ref: **34**      Sample Type: **U**      Depth (m): **25.00**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.58**      Moisture Content (%): **26**  
 Length (mm): **213.72**      Diameter (mm): **100.76**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **3:01**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **5.2**  
 UCS (MPa): **0.7**      Failure Type: **Shear**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

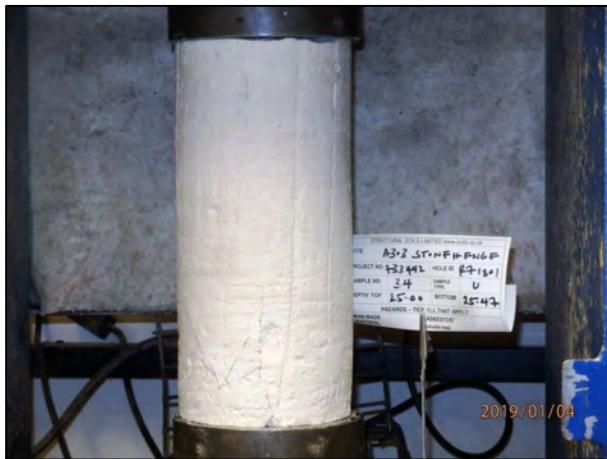
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



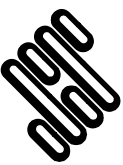


Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol SI - 012 | GfctText L - UCS WITH DEFORMATION - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/02/19 - 07:33 | AF3

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
			<b>ABBY MITCHELL</b> 19/02/19
	Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 04/01/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

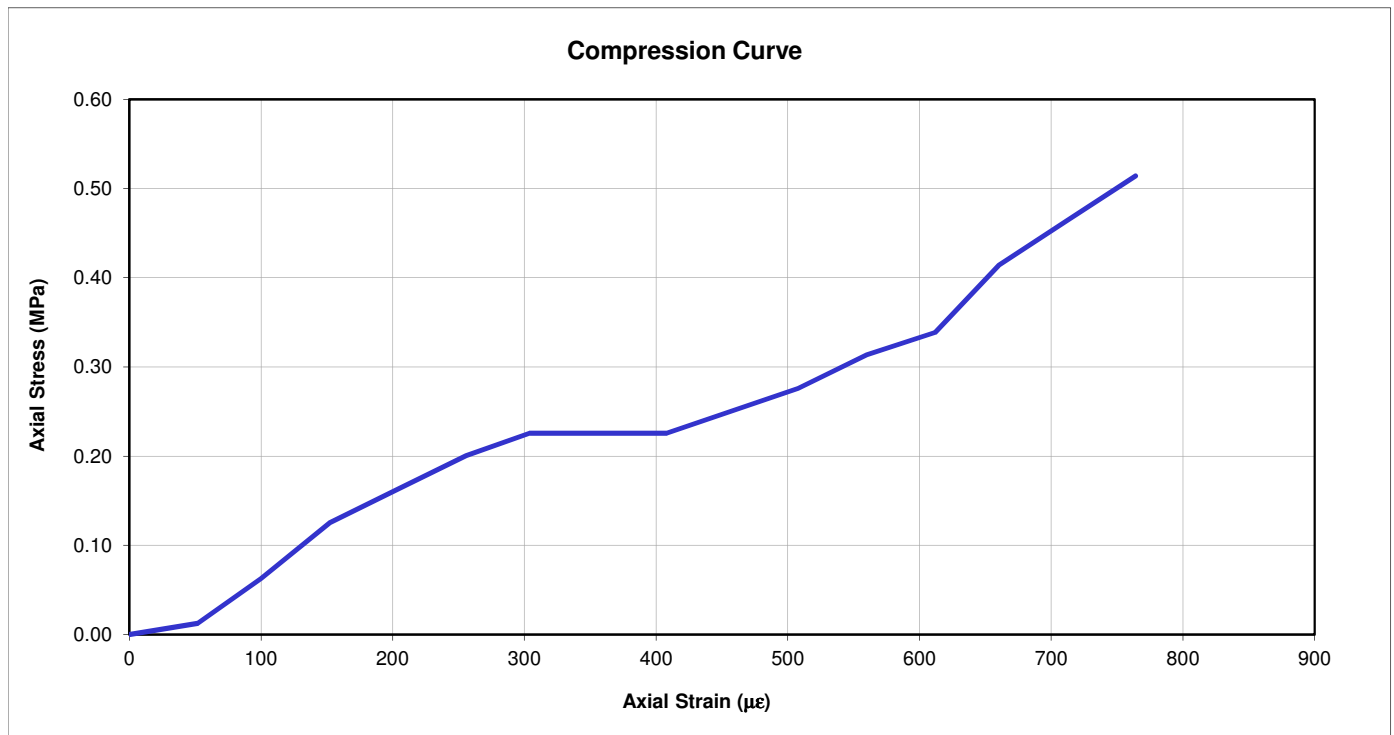
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71801  
 Specimen Depth 25.00 - 25.47m  
 Specimen Type C

Cross section area 79.74 cm<sup>2</sup>  
 Height 213.72 mm  
 Max logged strength 0.51 MPa  
 E<sub>tan</sub> (\*) 0.00 GPa  
 E<sub>sec</sub> (^) 0.55 GPa

(\*) Calculated for axial  $\sigma =$  0.26 MPa  
 (^) Calculated for axial  $\sigma =$  0.26 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 04/01/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

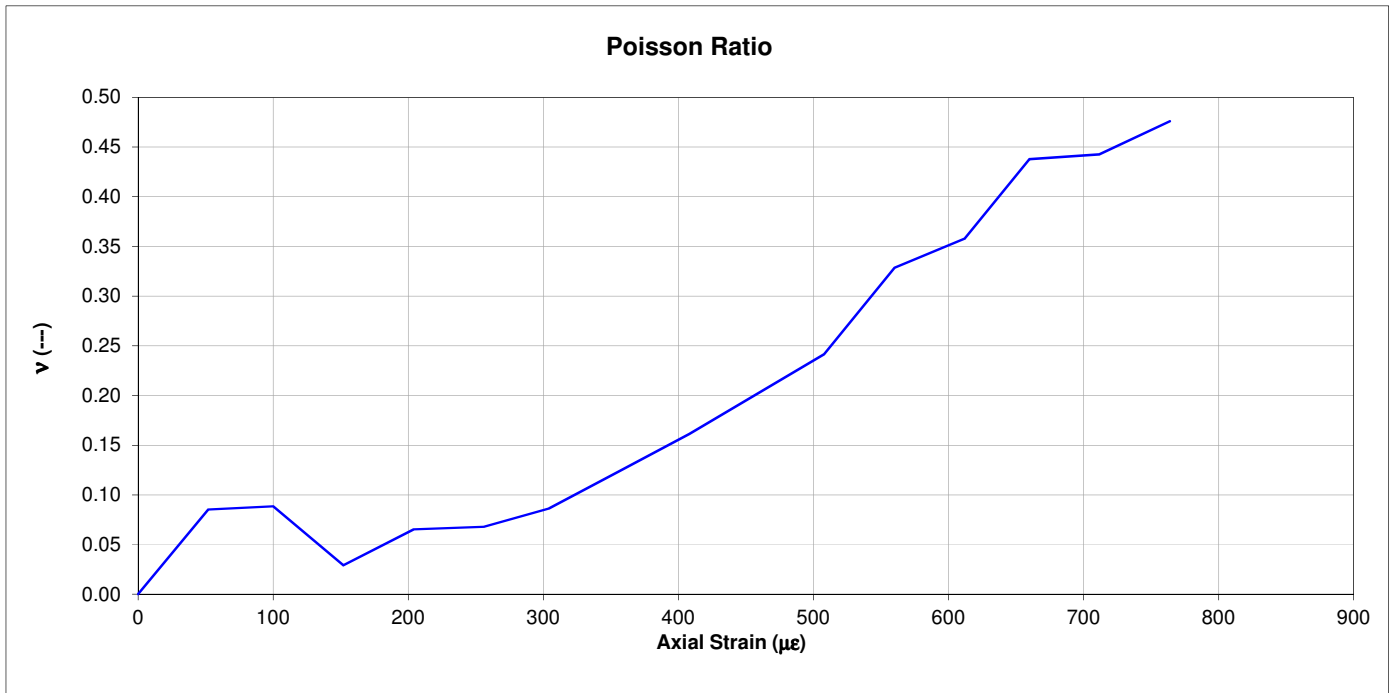
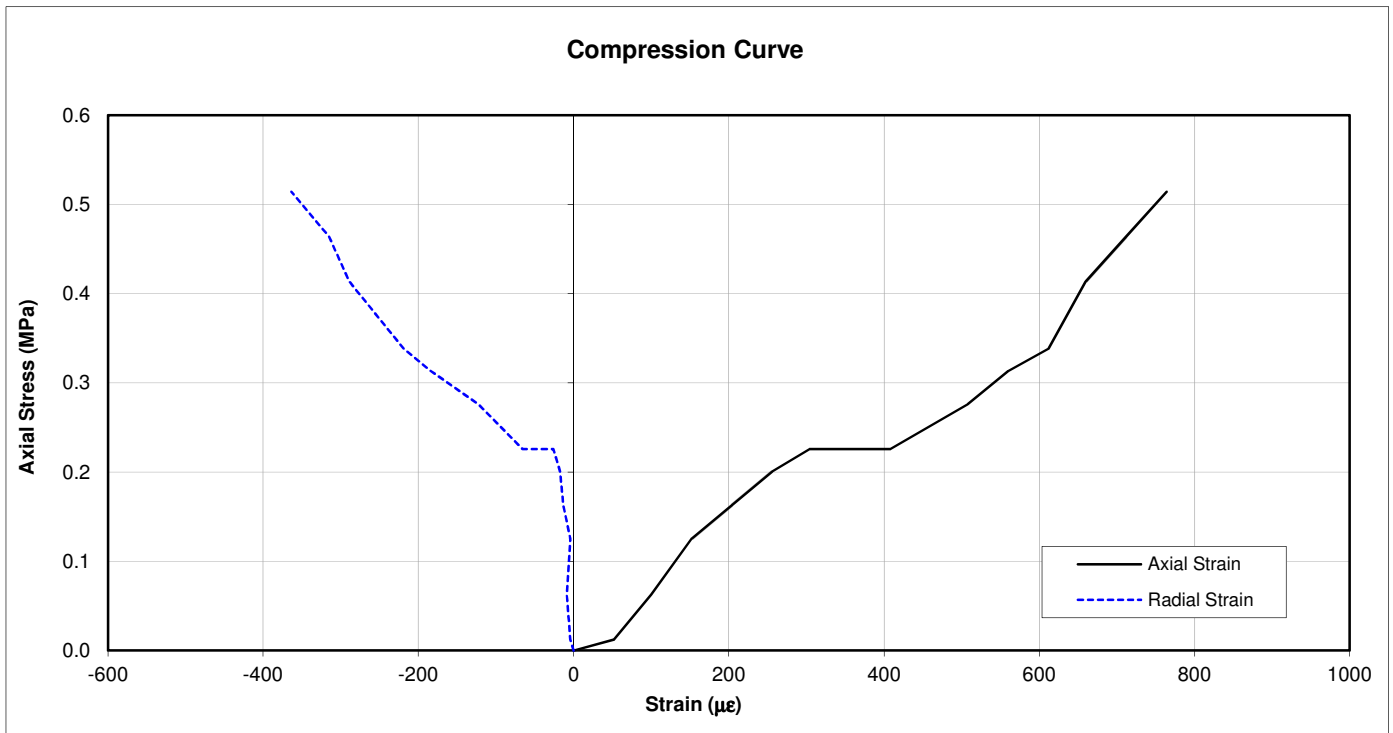
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71801  
 Specimen Depth 25.00 - 25.47m  
 Specimen Type C

Cross section area 79.74 cm<sup>2</sup>  
 Height 213.72 mm  
 Max logged strength 0.51 MPa  
 Poisson at failure 0.476  
 Poisson (\*) 0.161

(\*) Calculated for axial  $\sigma =$  0.26 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71801**      Sample Ref: **51**      Sample Type: **U**      Depth (m): **37.54**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.64**      Moisture Content (%): **24**  
 Length (mm): **213.95**      Diameter (mm): **99.59**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **4:12**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **28.5**  
 UCS (MPa): **3.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**

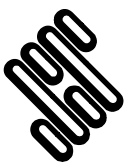


**Front view (post-test)**



**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]		19/02/19
Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

04/01/2019

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

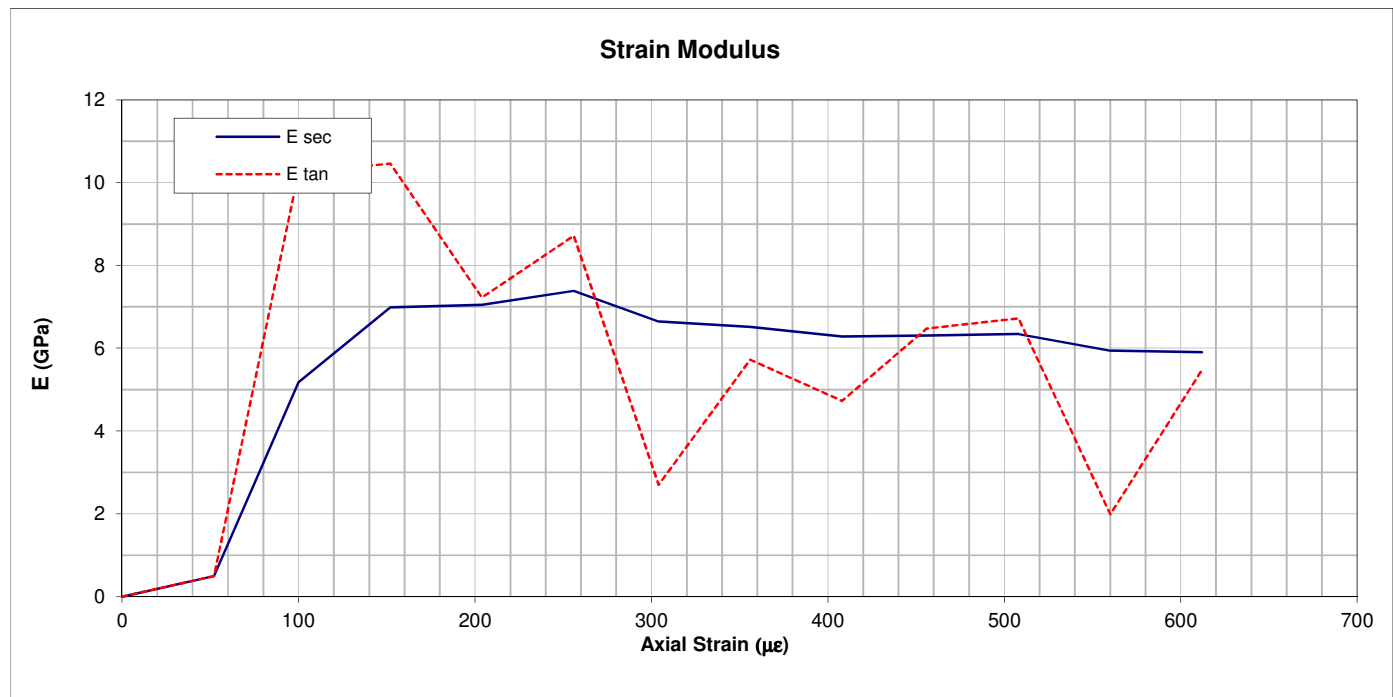
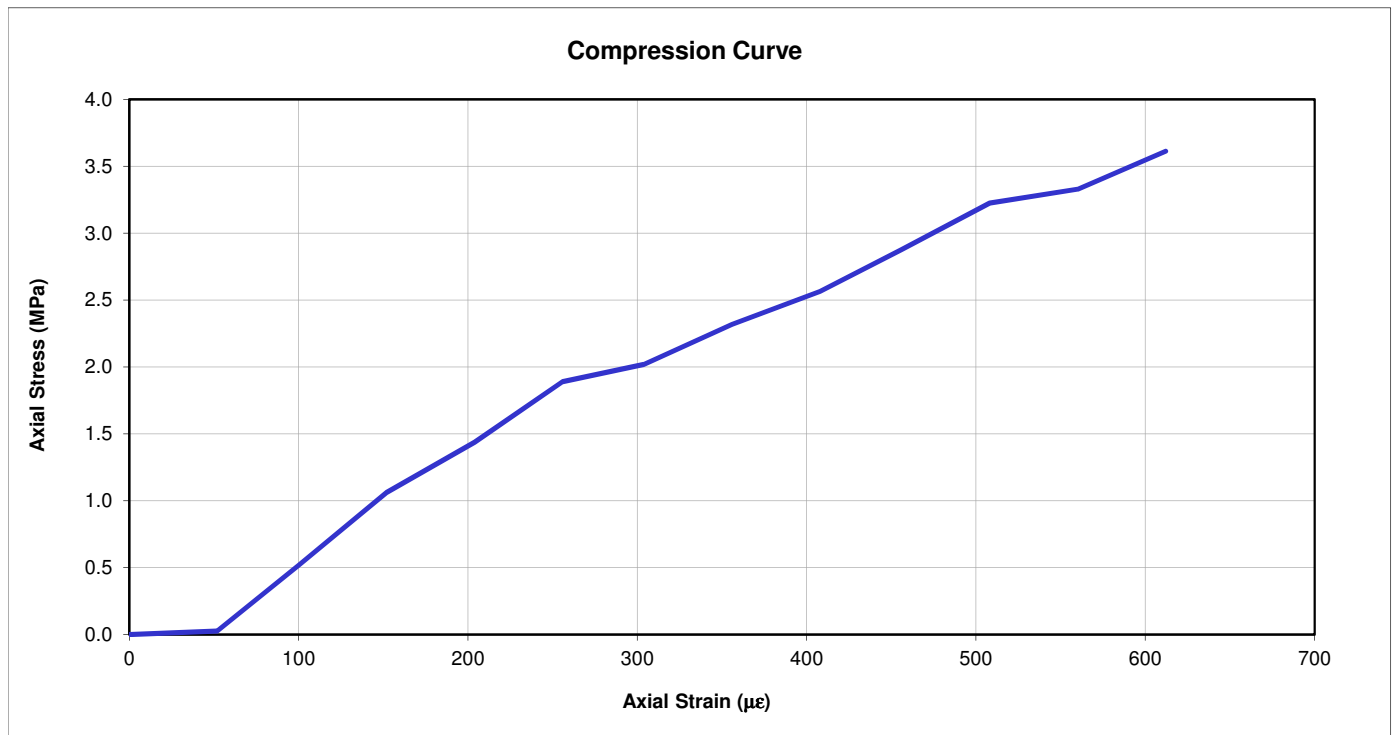
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	733442
Site	
BH No	R71801
Specimen Depth	37.54 - 38.21m
Specimen Type	C

Cross section area	77.23 cm <sup>2</sup>
Height	213.95 mm
Max logged strength	3.61 MPa
E <sub>tan</sub>	(*) 7.22 GPa
E <sub>sec</sub>	(^) 7.05 GPa

(\*) Calculated for axial  $\sigma = 1.81$  MPa  
 (^) Calculated for axial  $\sigma = 1.81$  MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 04/01/2019

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

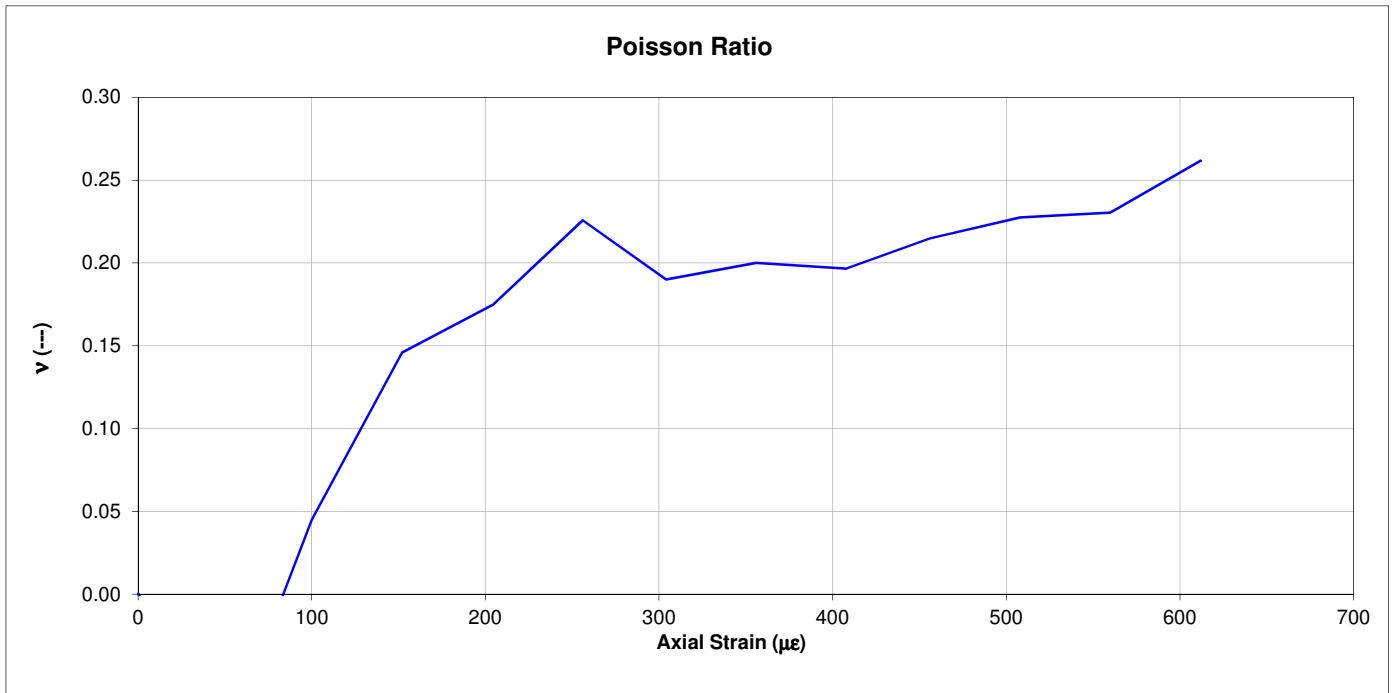
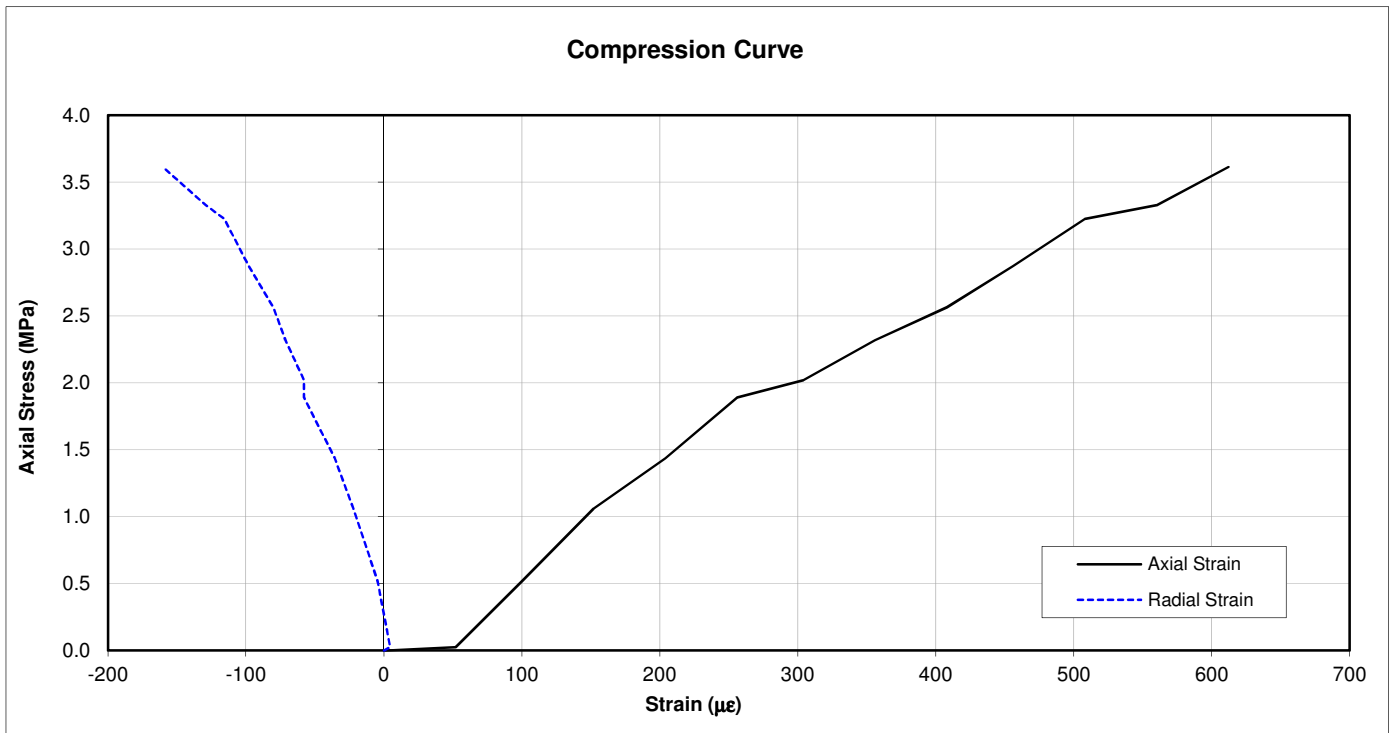
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71801  
 Specimen Depth 37.54 - 38.21m  
 Specimen Type C

Cross section area 77.23 cm<sup>2</sup>  
 Height 213.95 mm  
 Max logged strength 3.61 MPa  
 Poisson at failure 0.262  
 Poisson (\*) 0.175

(\*) Calculated for axial  $\sigma =$  1.81 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **15**      Sample Type: **U**      Depth (m): **13.25**

Bulk Density (Mg/m<sup>3</sup>): **2.00**      Dry Density (Mg/m<sup>3</sup>): **1.60**      Moisture Content (%): **25**  
 Length (mm): **214.75**      Diameter (mm): **99.58**      Length/Diameter Ratio: **2.16**  
 Test Duration (mins:secs): **4:47**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **8.6**  
 UCS (MPa): **1.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 01/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

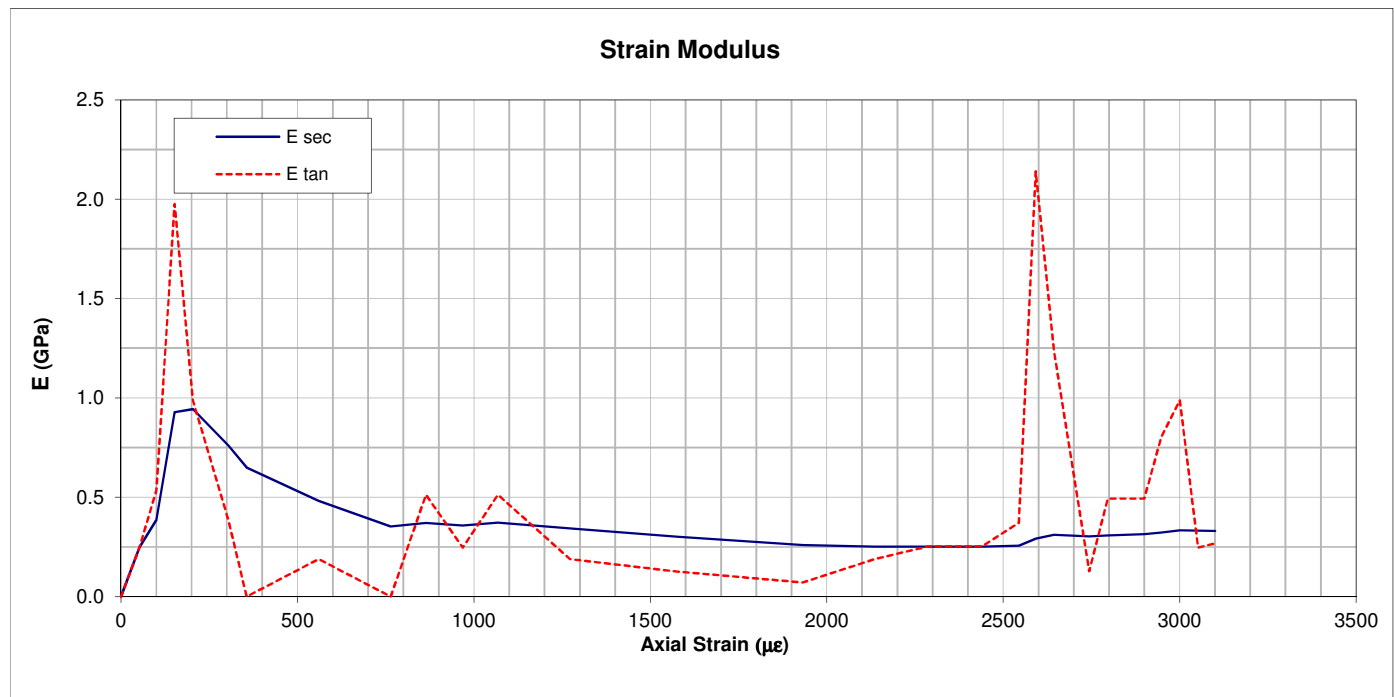
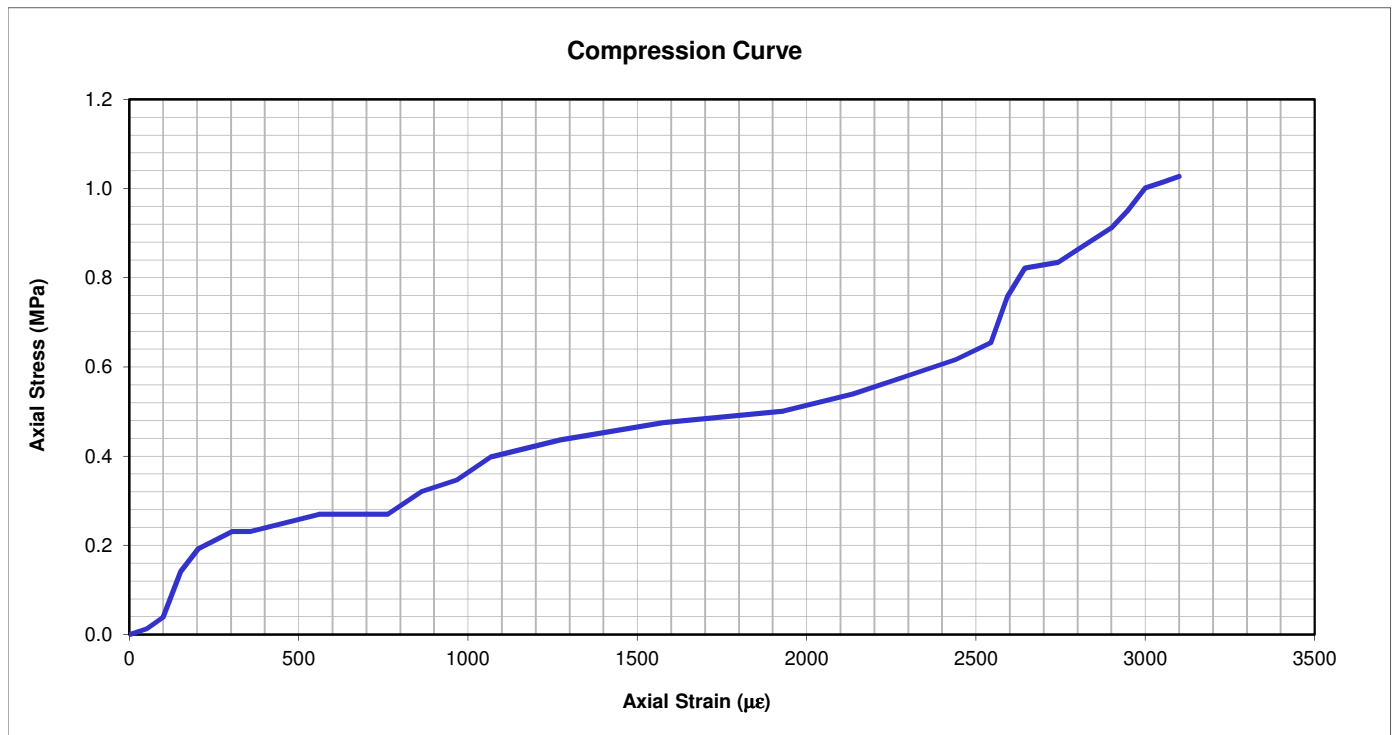
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71805</u>
Specimen Depth	<u>13.25 - 13.55m</u>
Specimen Type	<u>C</u>

Cross section area	<u>77.88 cm<sup>2</sup></u>
Height	<u>214.75 mm</u>
Max logged strength	<u>1.03 MPa</u>
E <sub>tan</sub> (*)	<u>0.07 GPa</u>
E <sub>sec</sub> (^)	<u>0.26 GPa</u>

(\*) Calculated for axial  $\sigma =$  0.51 MPa  
 (^) Calculated for axial  $\sigma =$  0.51 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 01/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

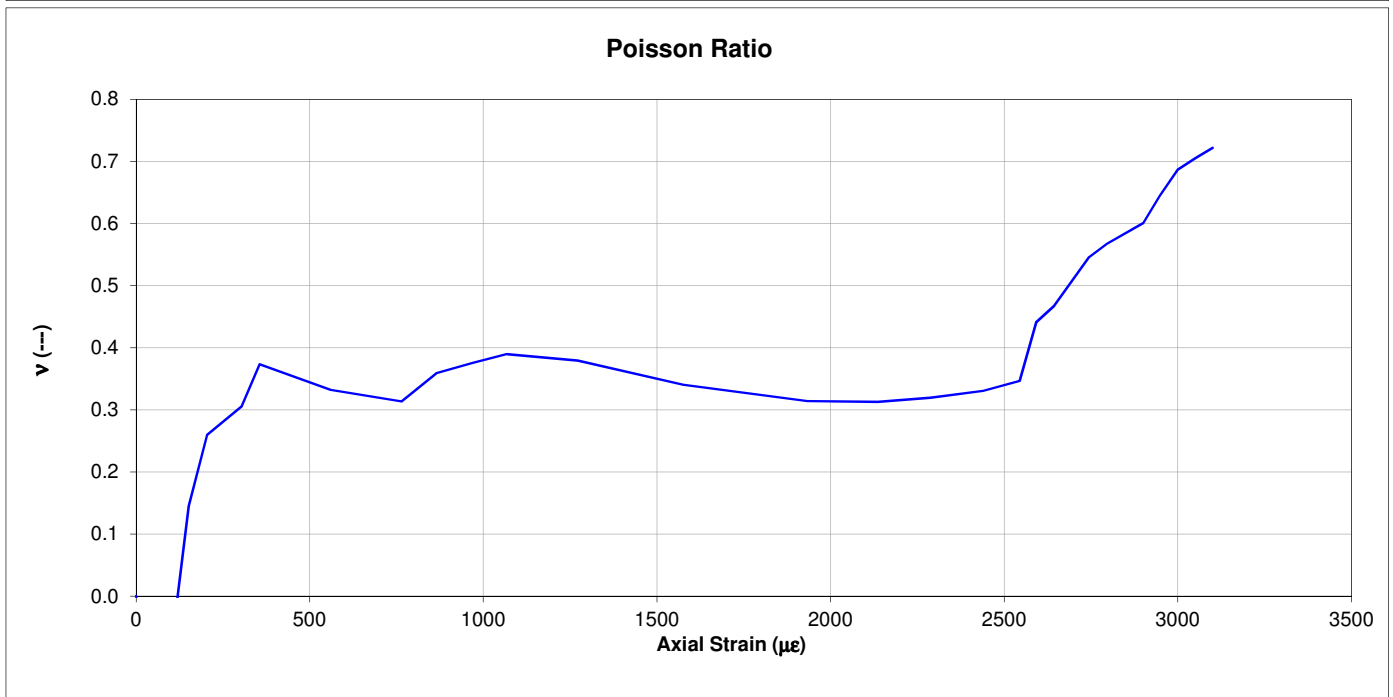
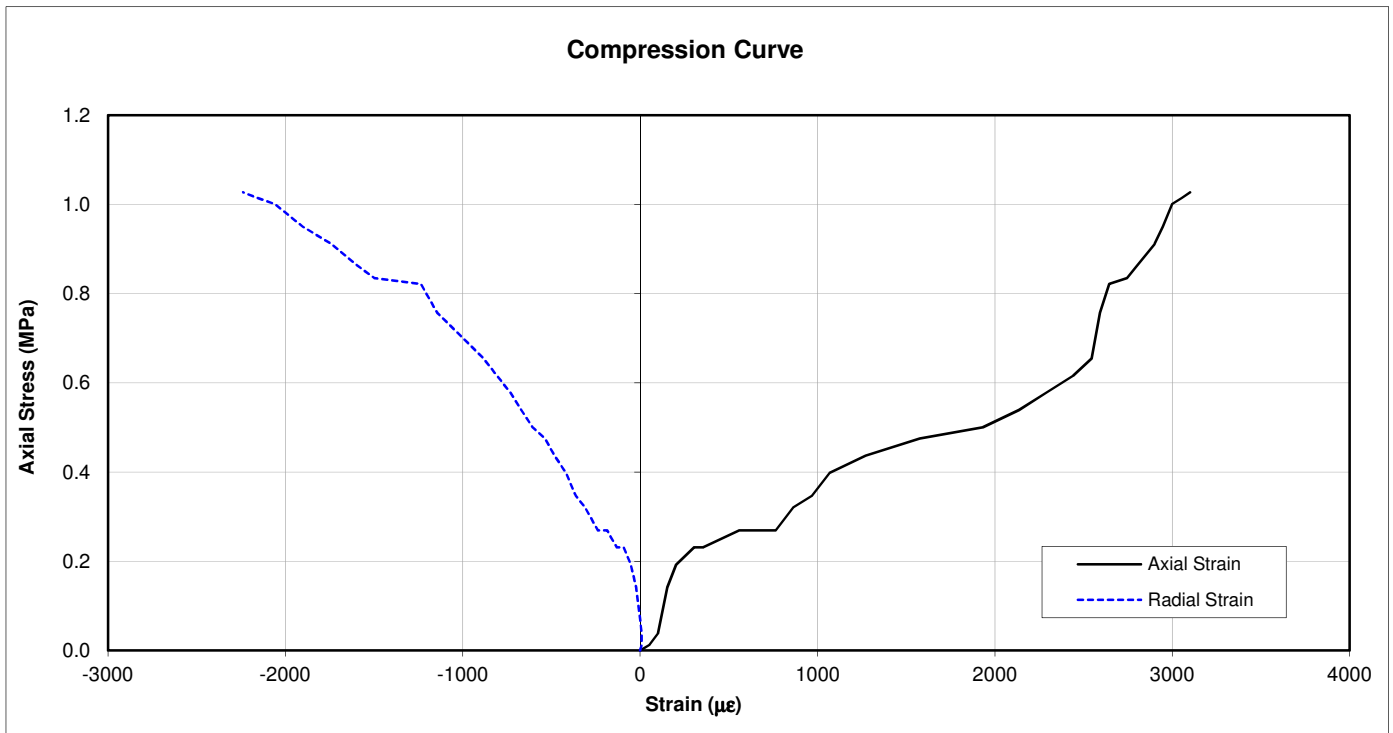
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71805  
 Specimen Depth 13.25 - 13.55m  
 Specimen Type C

Cross section area 77.88 cm<sup>2</sup>  
 Height 214.75 mm  
 Max logged strength 1.03 MPa  
 Poisson at failure 0.722  
 Poisson (\*) 0.314

(\*) Calculated for axial  $\sigma =$  0.51 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **26**      Sample Type: **U**      Depth (m): **22.17**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.54**      Moisture Content (%): **28**  
 Length (mm): **215.11**      Diameter (mm): **100.58**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **5:29**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **18.0**  
 UCS (MPa): **2.3**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

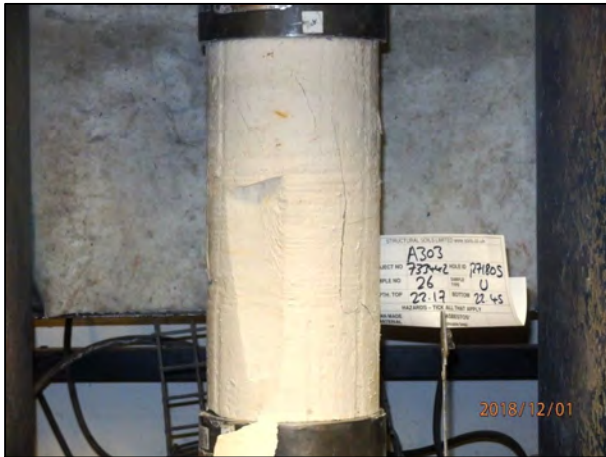
Remarks: **Non-standard test**



**Front view (pre-test)**



**Rear view (pre-test)**



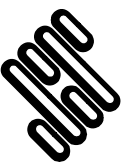
**Front view (post-test)**



**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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - UCS WITH DEFORMATION - A4P | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:51 | AF3

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
			ALAN FROST
	Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

01/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

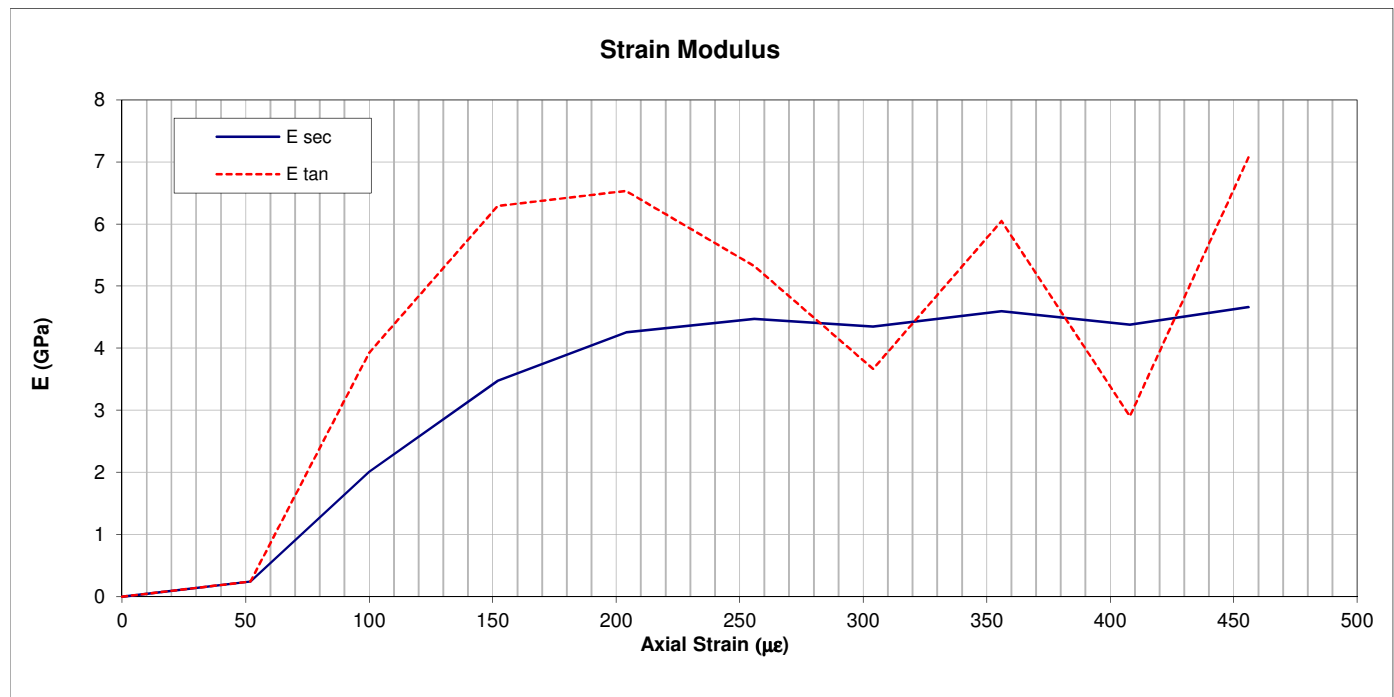
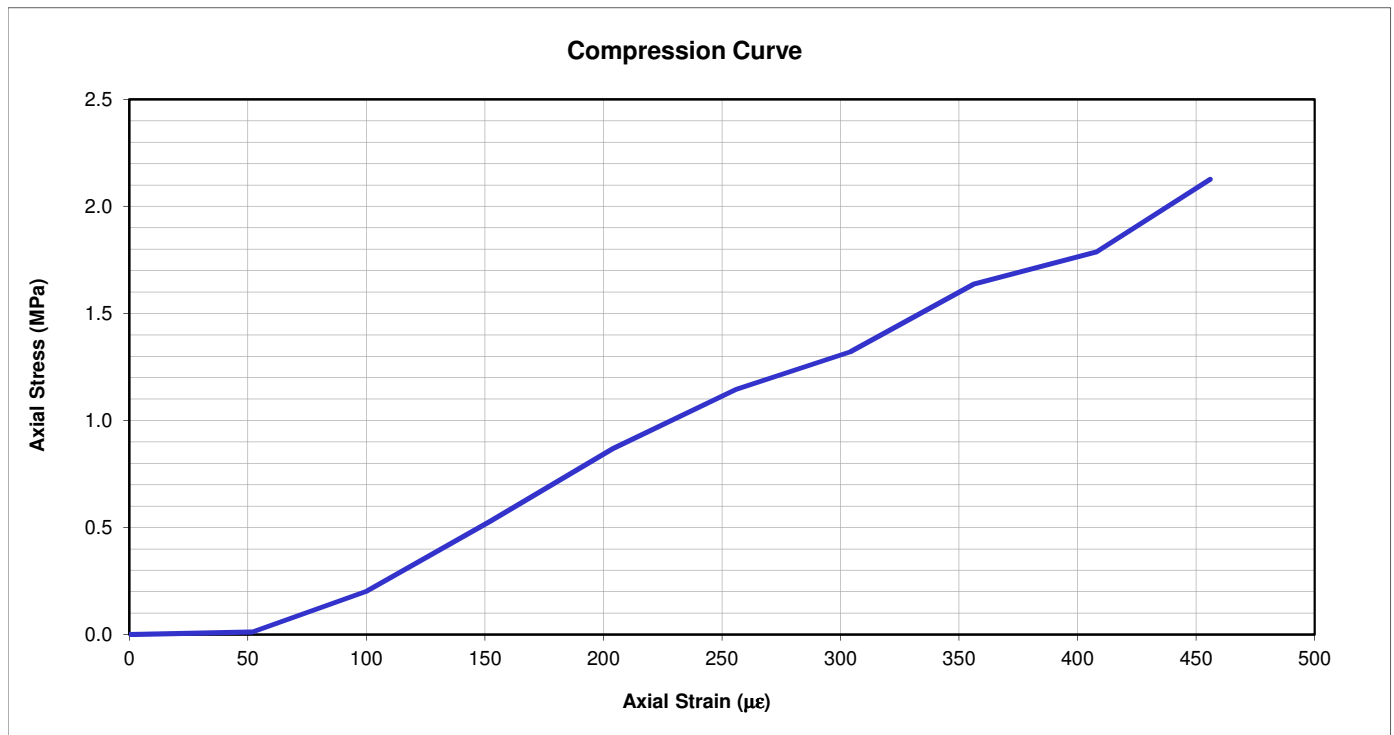
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71805</u>
Specimen Depth	<u>22.17 - 22.45m</u>
Specimen Type	<u>C</u>

Cross section area	<u>79.49 cm<sup>2</sup></u>
Height	<u>215.13 mm</u>
Max logged strength	<u>2.13 MPa</u>
E <sub>tan</sub>	<u>(*) 6.53 GPa</u>
E <sub>sec</sub>	<u>(^) 4.26 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.06 MPa  
 (^) Calculated for axial  $\sigma =$  1.06 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 01/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

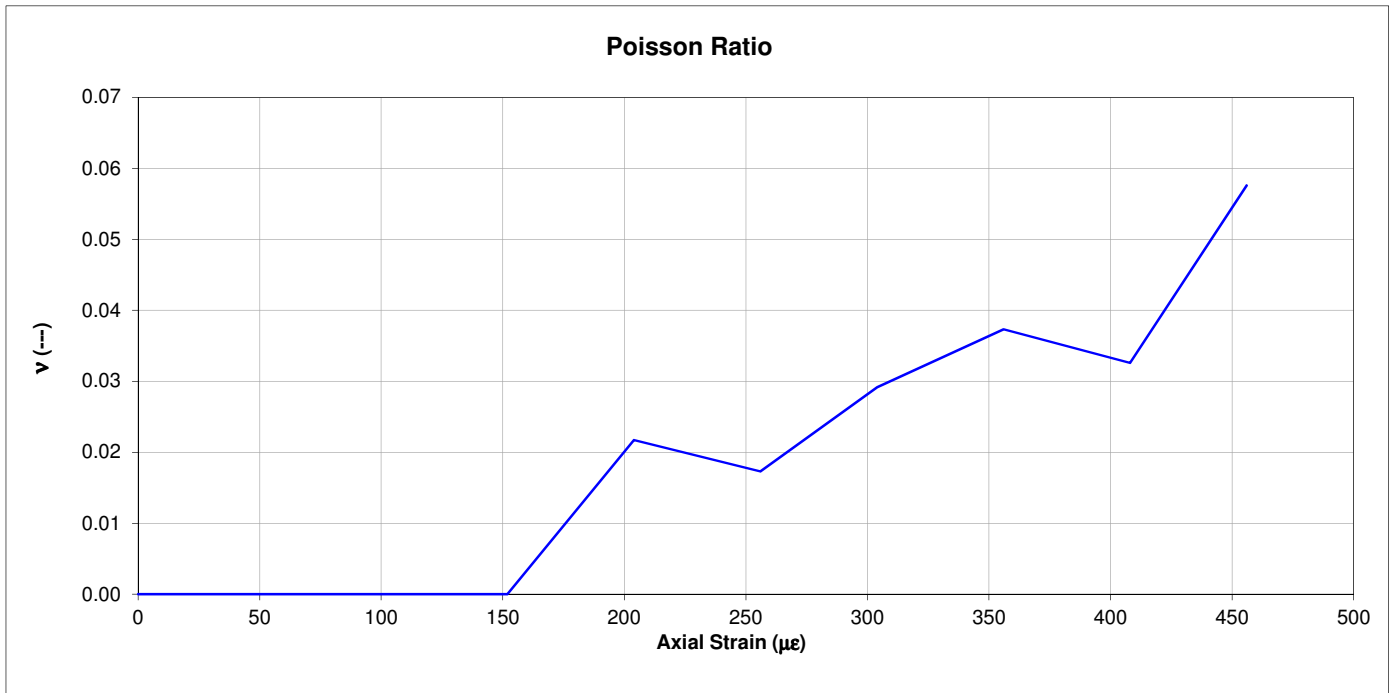
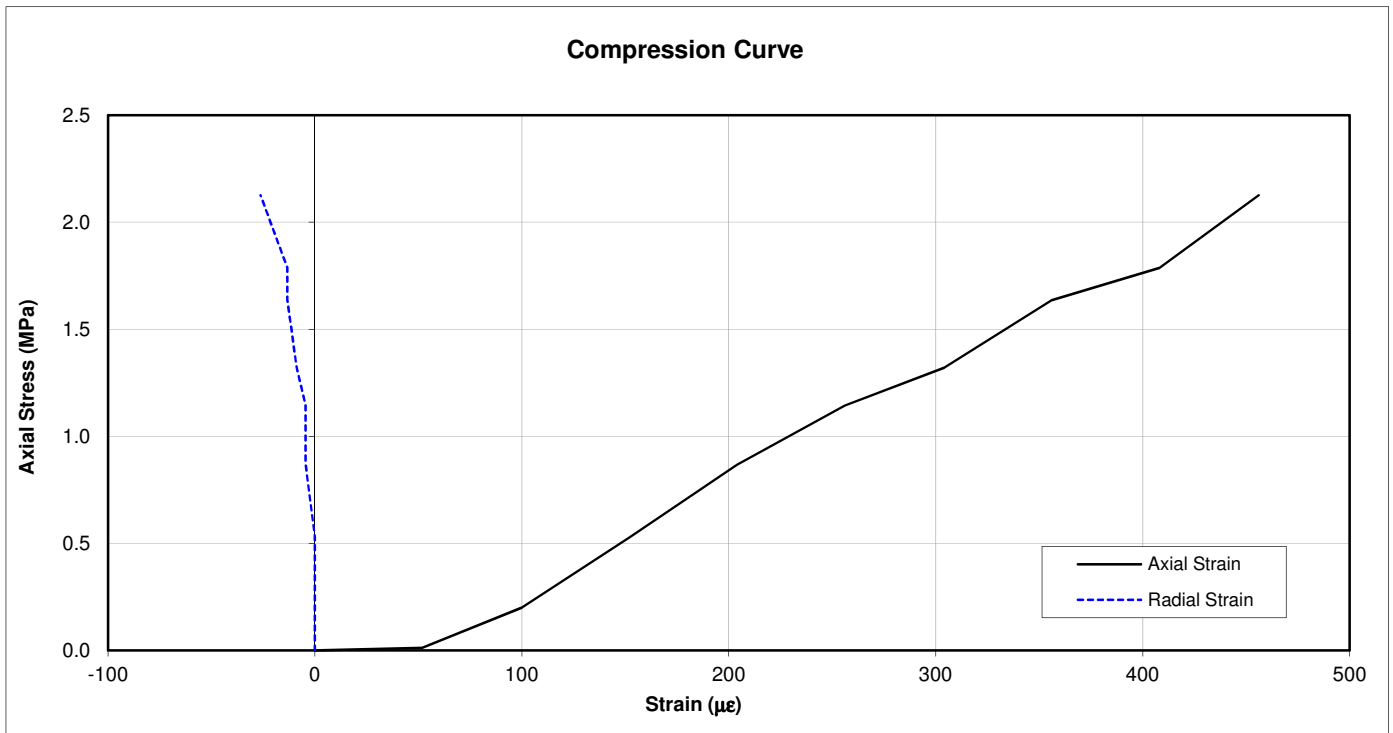
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71805  
 Specimen Depth 22.17 - 22.45m  
 Specimen Type C

Cross section area 79.49 cm<sup>2</sup>  
 Height 215.13 mm  
 Max logged strength 2.13 MPa  
 Poisson at failure 0.058  
 Poisson (\*) 0.022

(\*) Calculated for axial  $\sigma =$  1.06 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71805**      Sample Ref: **44**      Sample Type: **U**      Depth (m): **37.62**

Bulk Density (Mg/m<sup>3</sup>): **2.05**      Dry Density (Mg/m<sup>3</sup>): **1.66**      Moisture Content (%): **23**  
 Length (mm): **213.76**      Diameter (mm): **100.01**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **3:51**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **19.8**  
 UCS (MPa): **2.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

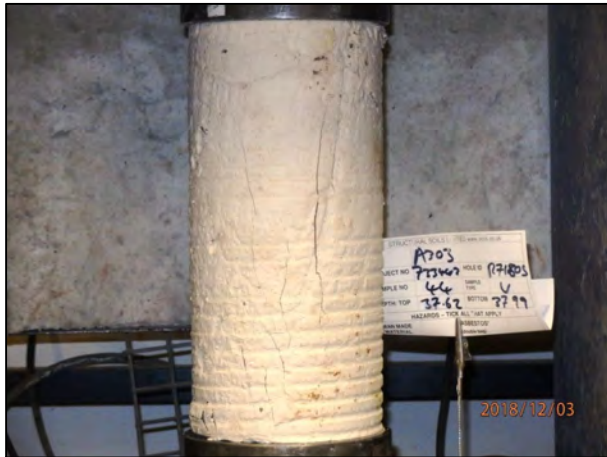
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

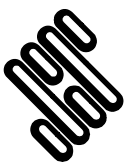


Front view (post-test)



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
ALAN FROST		19/12/18
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

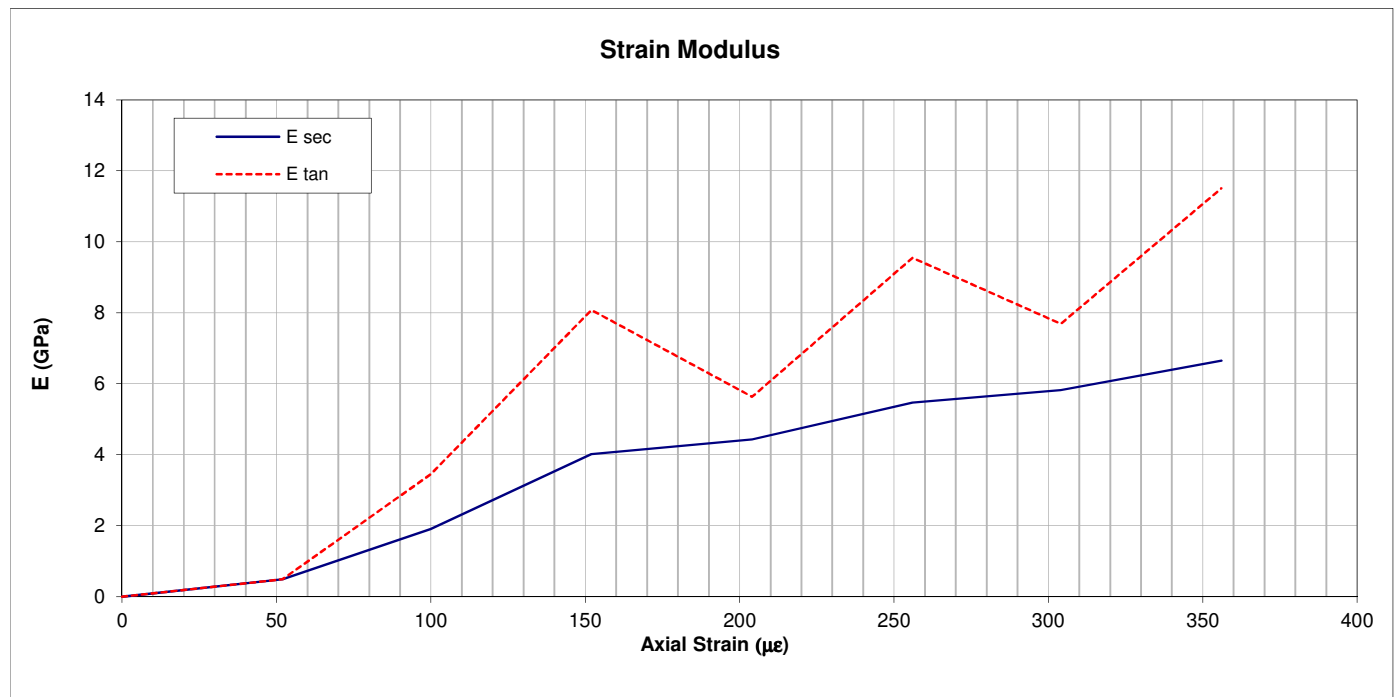
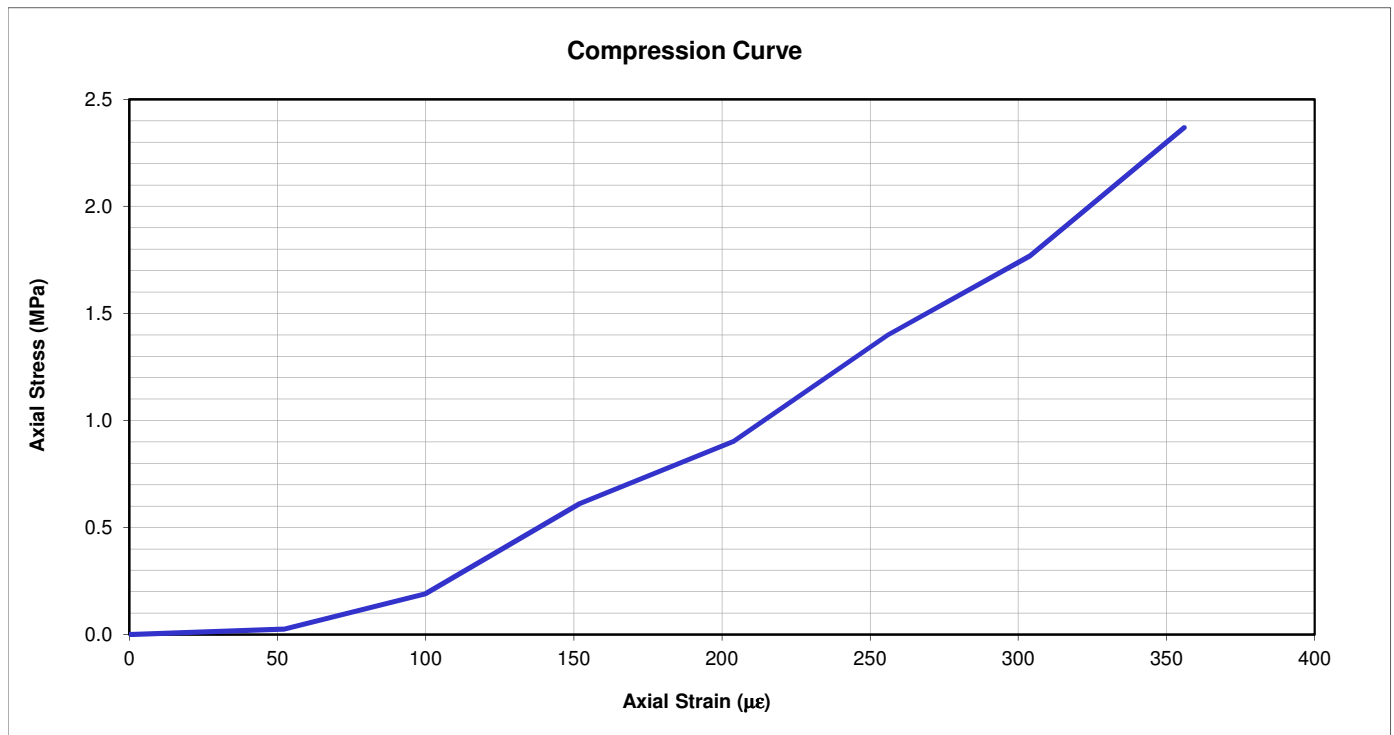
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71805</u>
Specimen Depth	<u>37.62 - 37.99m</u>
Specimen Type	<u>C</u>

Cross section area	<u>78.56 cm<sup>2</sup></u>
Height	<u>213.76 mm</u>
Max logged strength	<u>2.37 MPa</u>
E <sub>tan</sub>	<u>(*) 5.63 GPa</u>
E <sub>sec</sub>	<u>(^) 4.43 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.18 MPa  
 (^) Calculated for axial  $\sigma =$  1.18 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

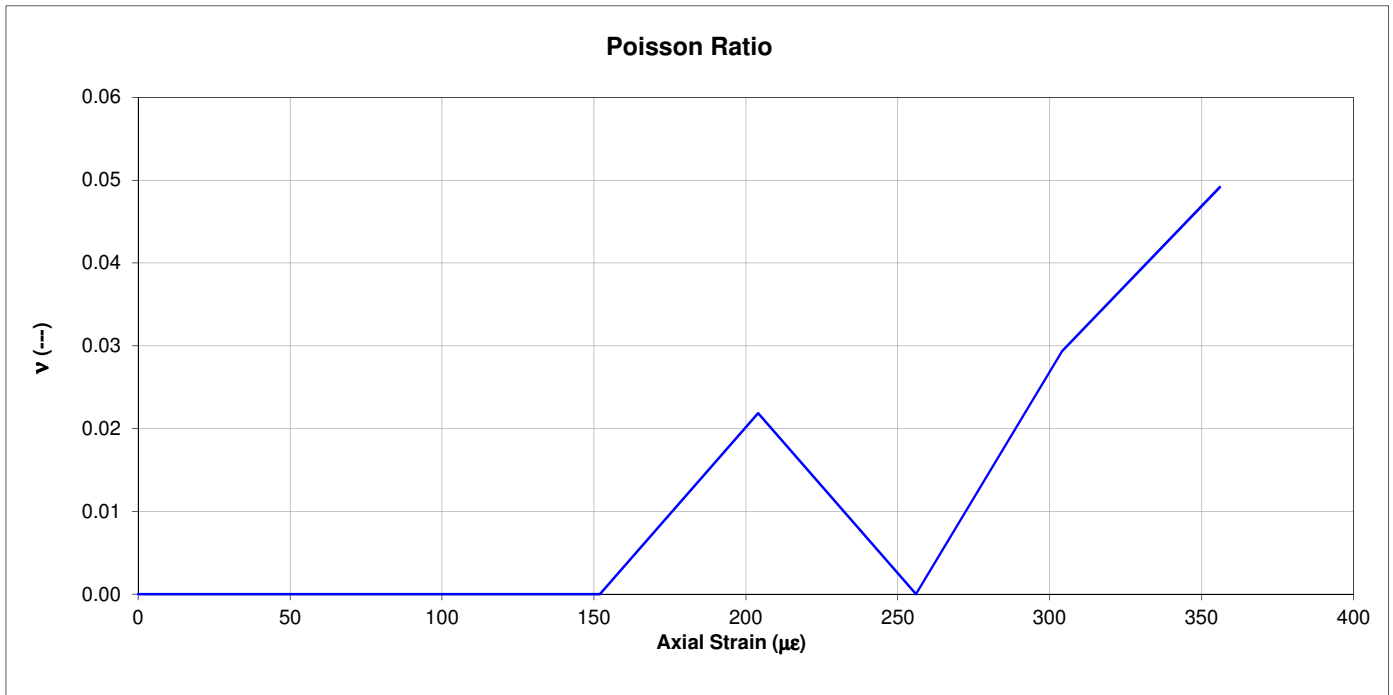
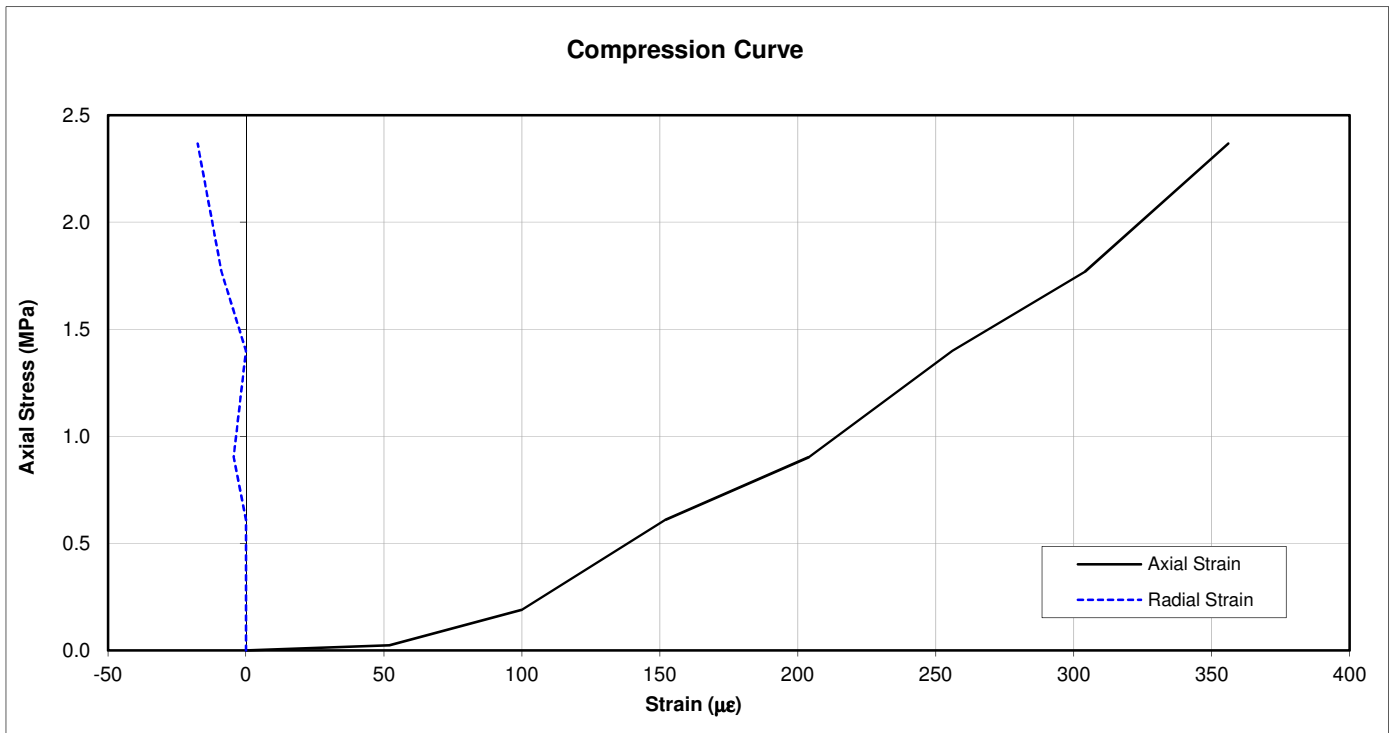
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71805  
 Specimen Depth 37.62 - 37.99m  
 Specimen Type C

Cross section area 78.56 cm<sup>2</sup>  
 Height 213.76 mm  
 Max logged strength 2.37 MPa  
 Poisson at failure 0.049  
 Poisson (\*) 0.022

(\*) Calculated for axial  $\sigma =$  1.18 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71809**      Sample Ref: **30**      Sample Type: **U**      Depth (m): **31.05**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **26**  
 Length (mm): **214.24**      Diameter (mm): **99.38**      Length/Diameter Ratio: **2.16**  
 Test Duration (mins:secs): **3:06**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **24.4**  
 UCS (MPa): **3.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

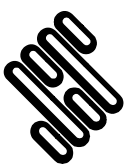


Front view (post-test)



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

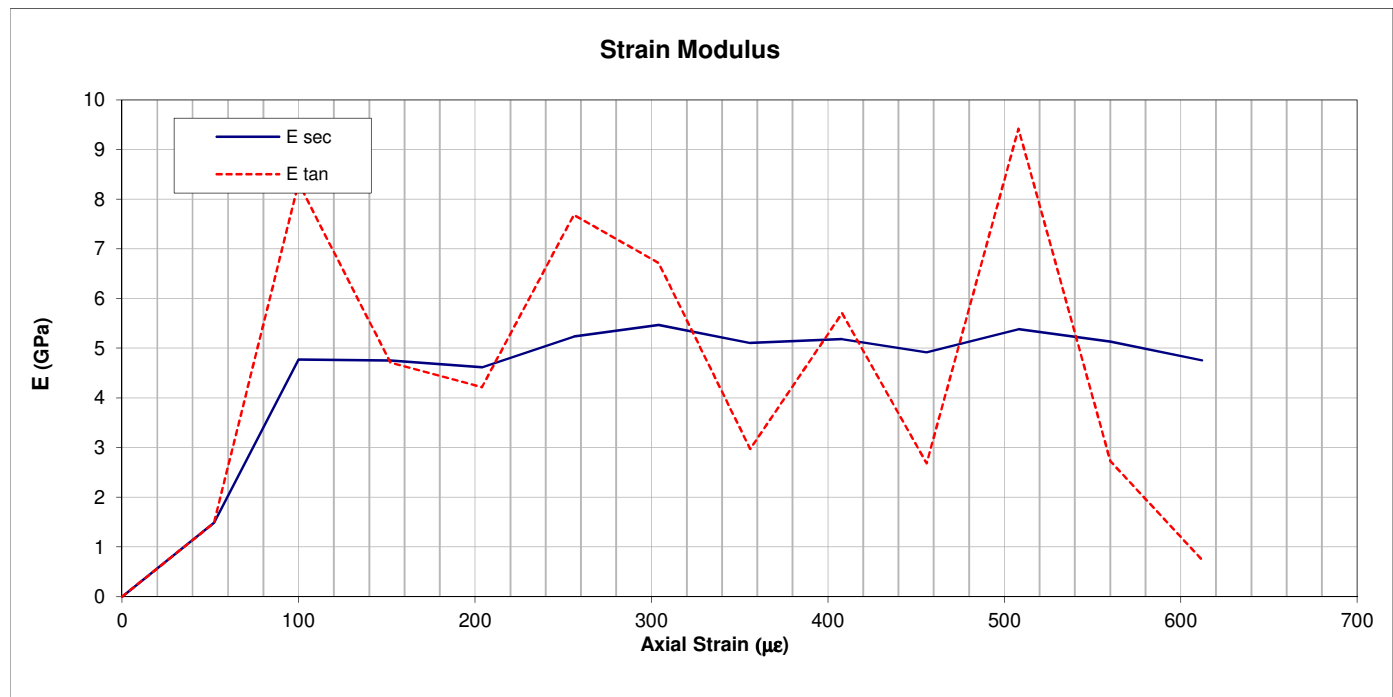
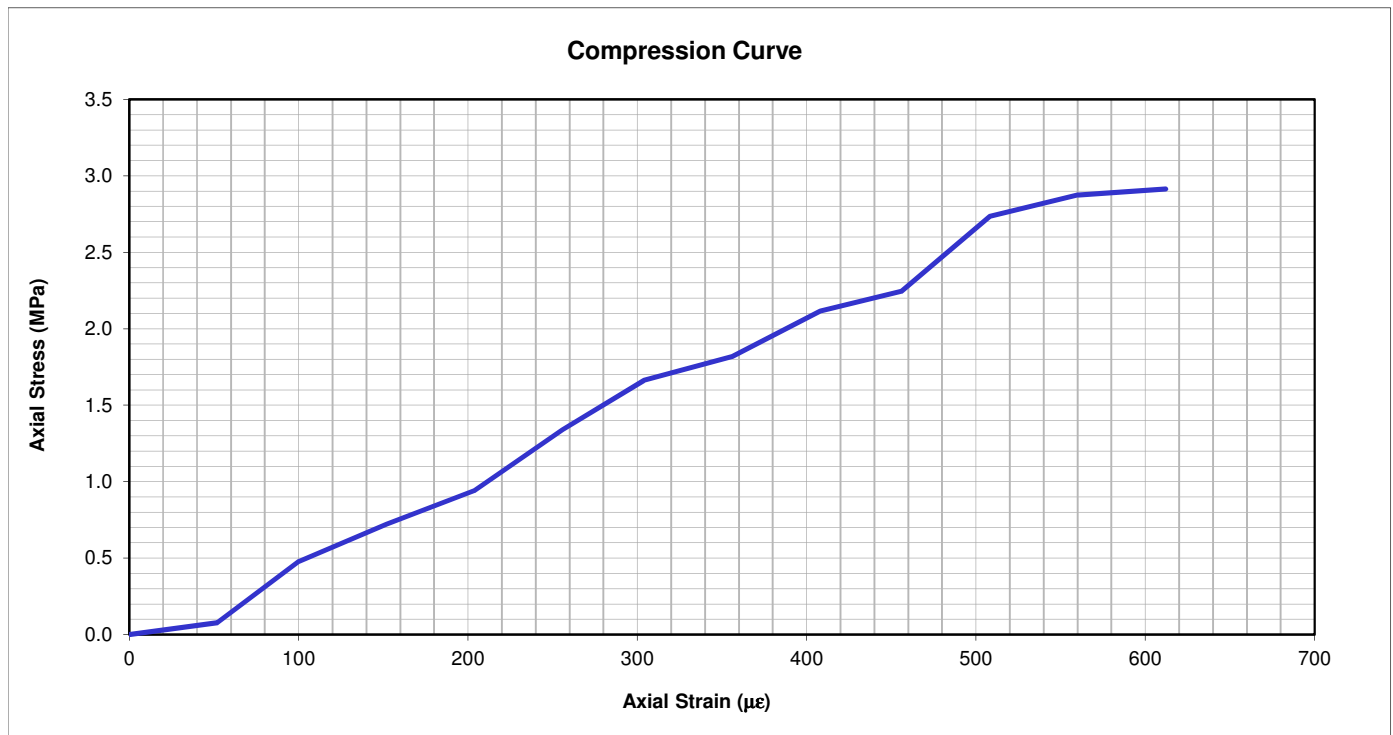
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71809</u>
Specimen Depth	<u>31.05 - 31.35m</u>
Specimen Type	<u>C</u>

Cross section area	<u>77.57 cm<sup>2</sup></u>
Height	<u>214.24 mm</u>
Max logged strength	<u>2.91 MPa</u>
E <sub>tan</sub>	<u>(*) 7.69 GPa</u>
E <sub>sec</sub>	<u>(^) 5.24 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.46 MPa  
 (^) Calculated for axial  $\sigma =$  1.46 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

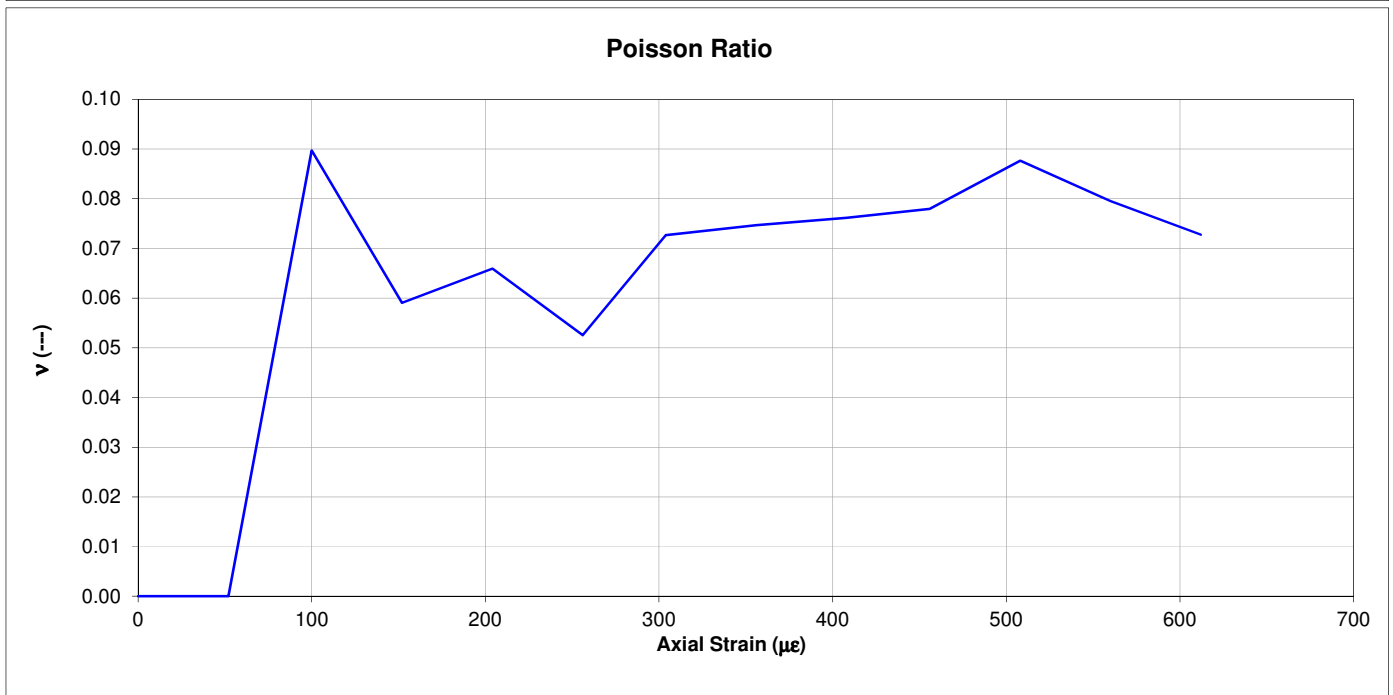
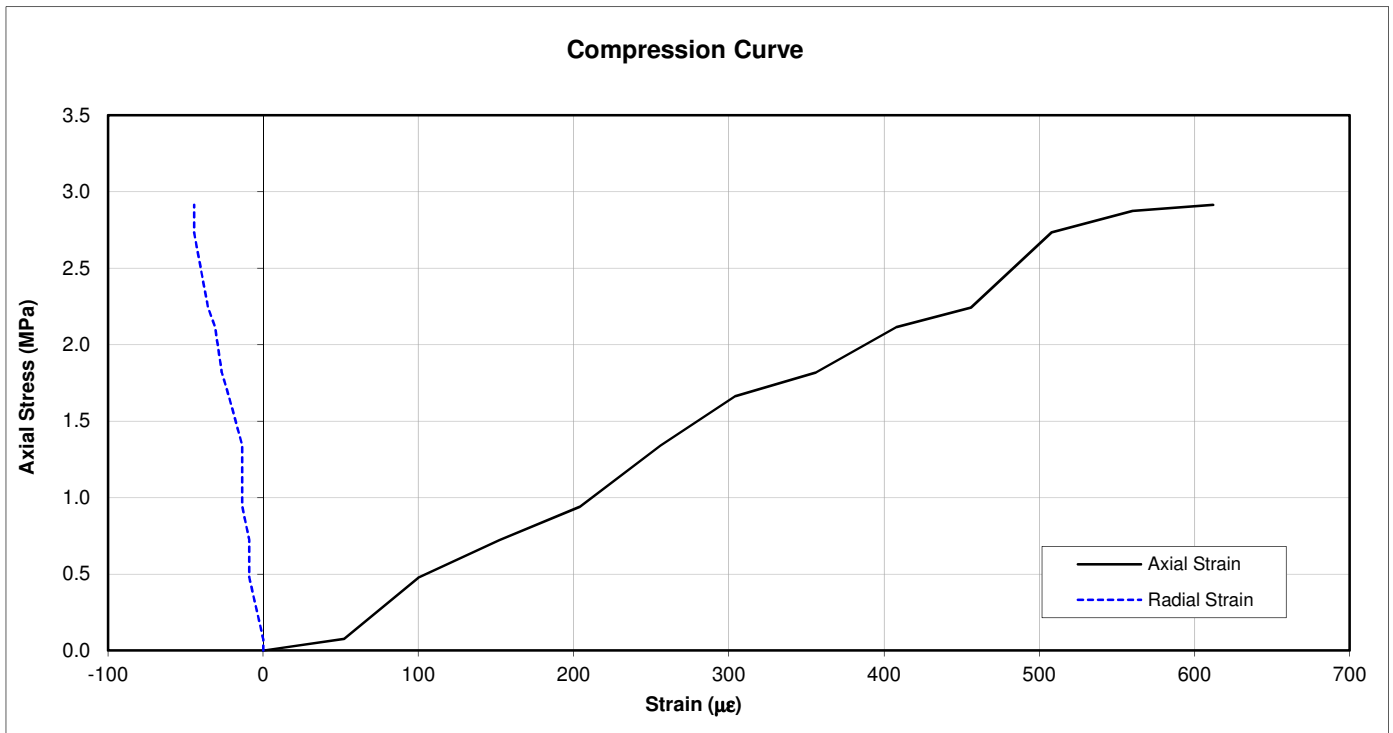
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71809  
 Specimen Depth 31.05 - 31.35m  
 Specimen Type C

Cross section area 77.57 cm<sup>2</sup>  
 Height 214.24 mm  
 Max logged strength 2.91 MPa  
 Poisson at failure 0.073  
 Poisson (\*) 0.053

(\*) Calculated for axial  $\sigma =$  1.46 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71809**      Sample Ref: **38**      Sample Type: **U**      Depth (m): **37.45**

Bulk Density (Mg/m<sup>3</sup>): **2.03**      Dry Density (Mg/m<sup>3</sup>): **1.64**      Moisture Content (%): **24**  
 Length (mm): **215.01**      Diameter (mm): **100.87**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **4:36**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **31.2**  
 UCS (MPa): **3.9**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

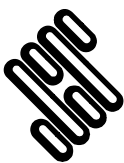


Front view (post-test)



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

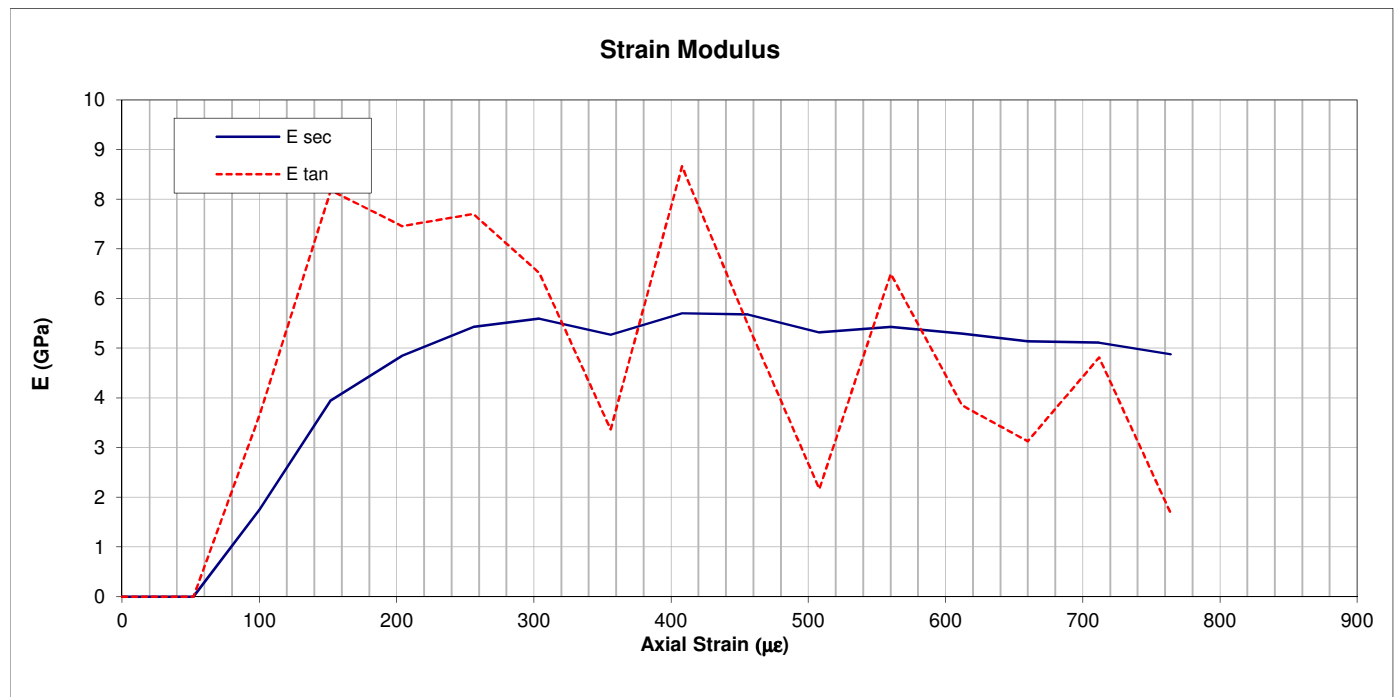
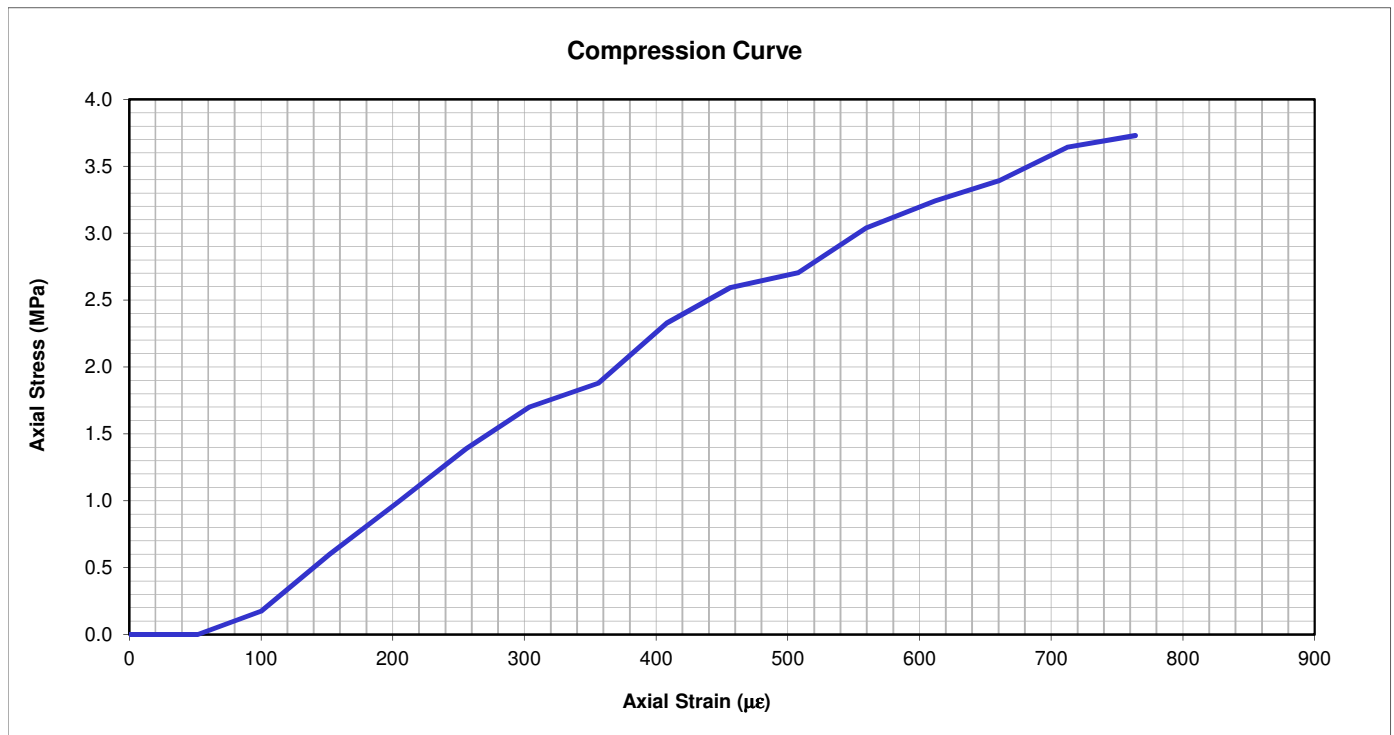
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71809</u>
Specimen Depth	<u>37.45 - 37.80m</u>
Specimen Type	<u>C</u>

Cross section area	<u>79.91 cm<sup>2</sup></u>
Height	<u>215.01 mm</u>
Max logged strength	<u>3.73 MPa</u>
E <sub>tan</sub> (*)	<u>6.52 GPa</u>
E <sub>sec</sub> (^)	<u>5.60 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.86 MPa  
 (^) Calculated for axial  $\sigma =$  1.86 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

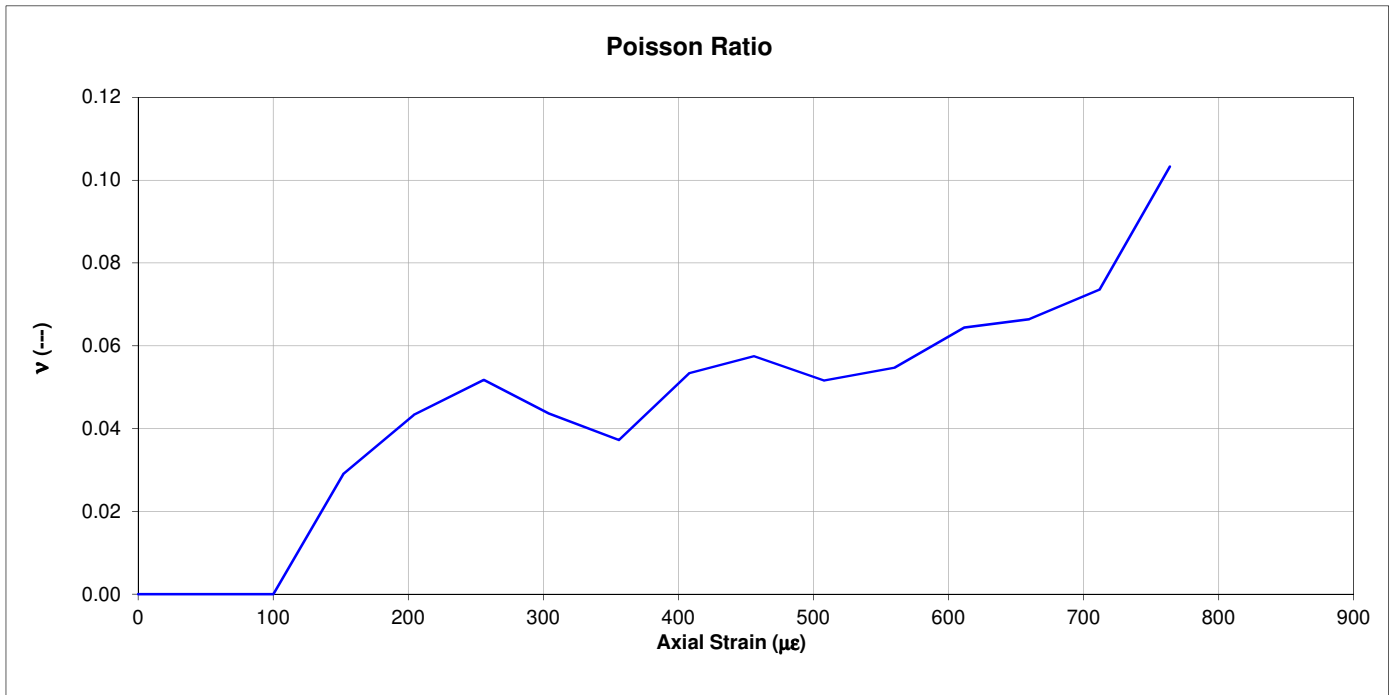
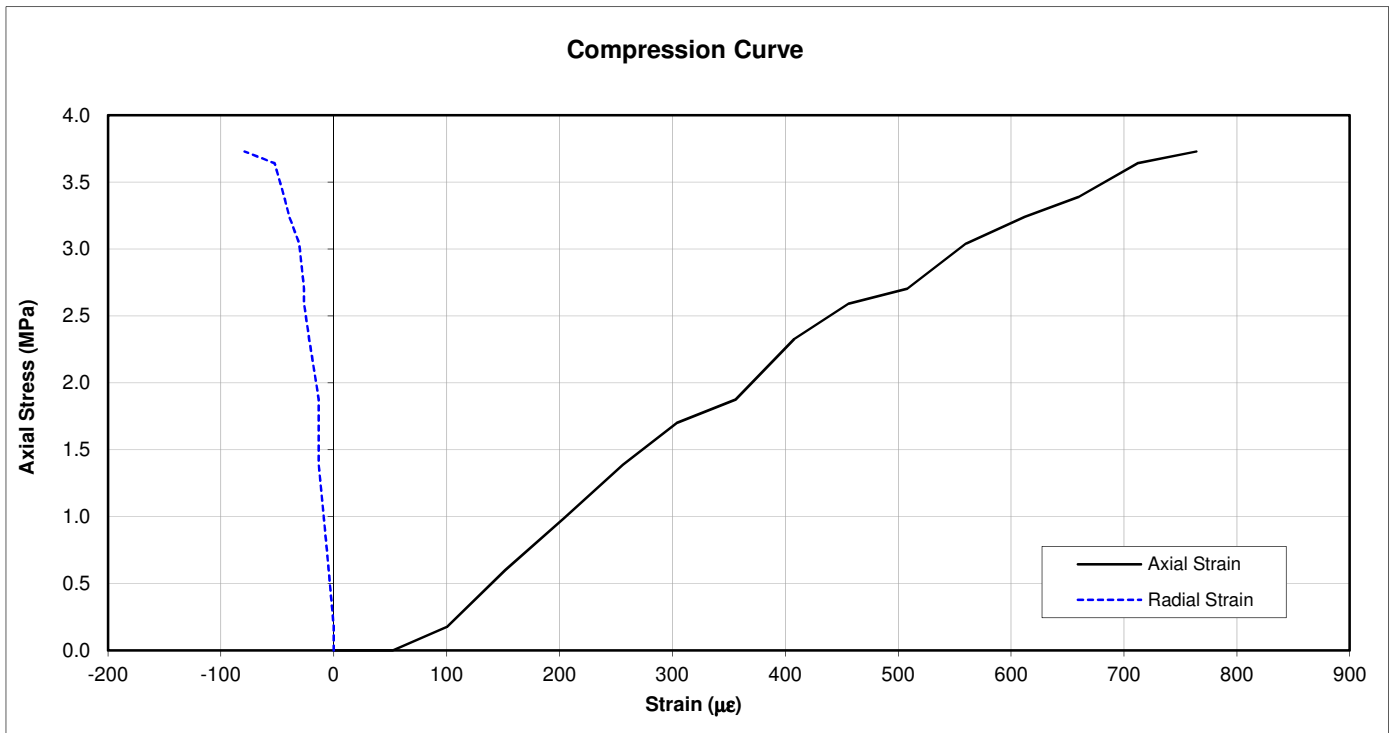
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71809  
 Specimen Depth 37.45 - 37.80m  
 Specimen Type C

Cross section area 79.91 cm<sup>2</sup>  
 Height 215.01 mm  
 Max logged strength 3.73 MPa  
 Poisson at failure 0.103  
 Poisson (\*) 0.044

(\*) Calculated for axial  $\sigma =$  1.86 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71809**      Sample Ref: **44**      Sample Type: **U**      Depth (m): **42.13**

Bulk Density (Mg/m<sup>3</sup>): **2.05**      Dry Density (Mg/m<sup>3</sup>): **1.68**      Moisture Content (%): **22**  
 Length (mm): **214.45**      Diameter (mm): **99.72**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **6:41**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **26.8**  
 UCS (MPa): **3.4**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

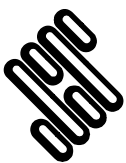


Front view (post-test)



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

01/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

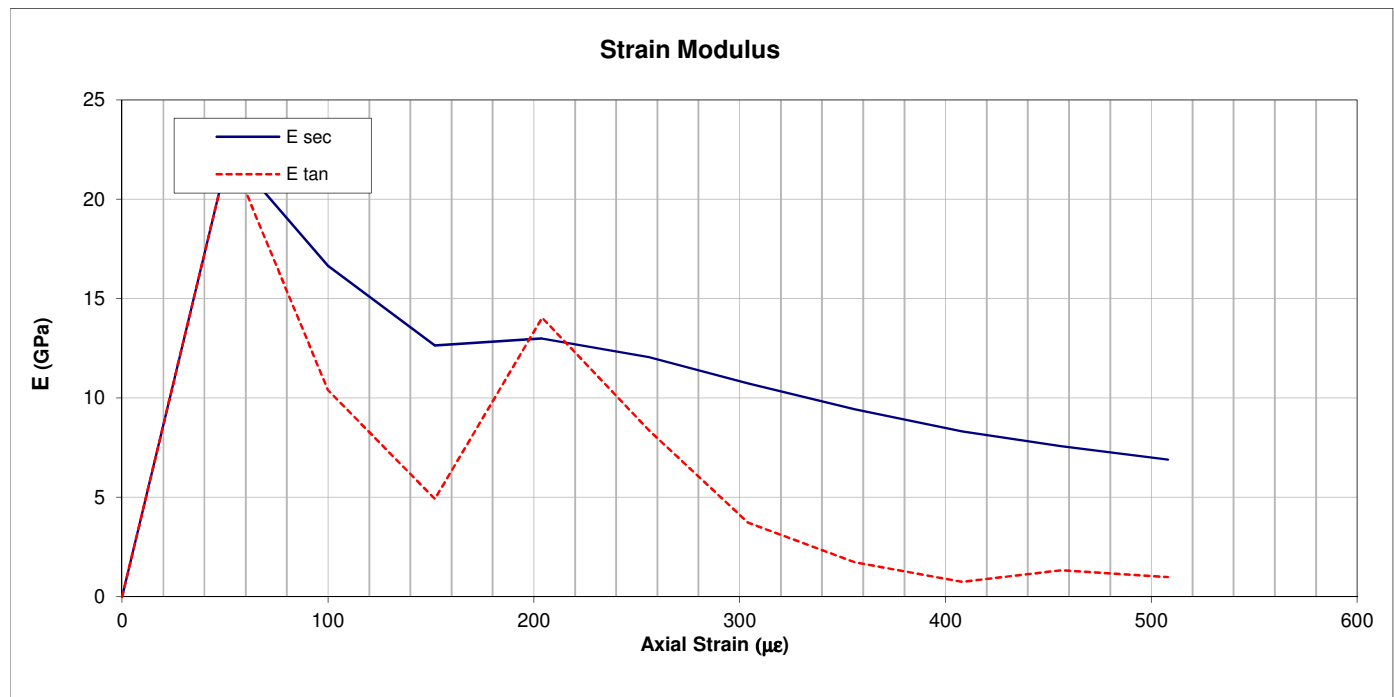
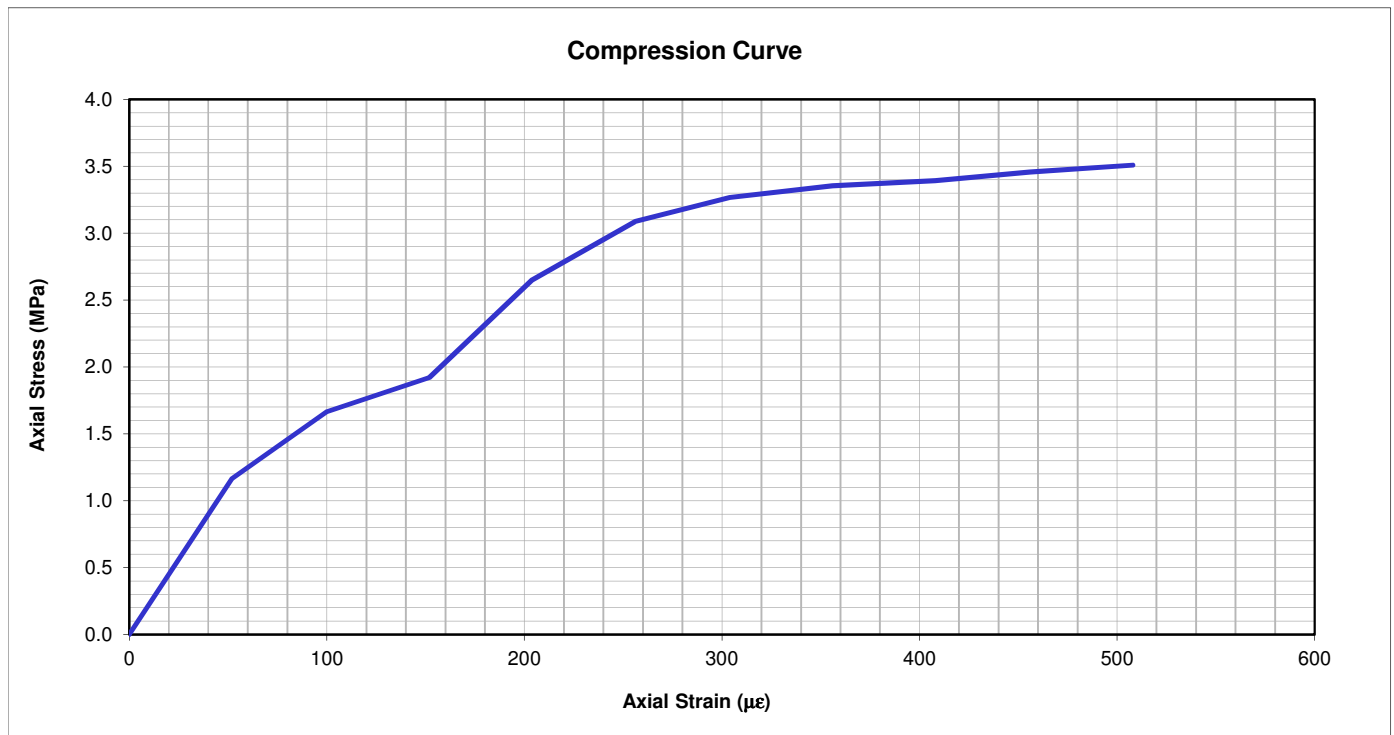
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71809</u>
Specimen Depth	<u>42.13 - 42.40m</u>
Specimen Type	<u>C</u>

Cross section area	<u>78.10 cm<sup>2</sup></u>
Height	<u>214.45 mm</u>
Max logged strength	<u>3.51 MPa</u>
E <sub>tan</sub>	<u>(*) 10.40 GPa</u>
E <sub>sec</sub>	<u>(^) 16.65 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.75 MPa  
 (^) Calculated for axial  $\sigma =$  1.75 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 01/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

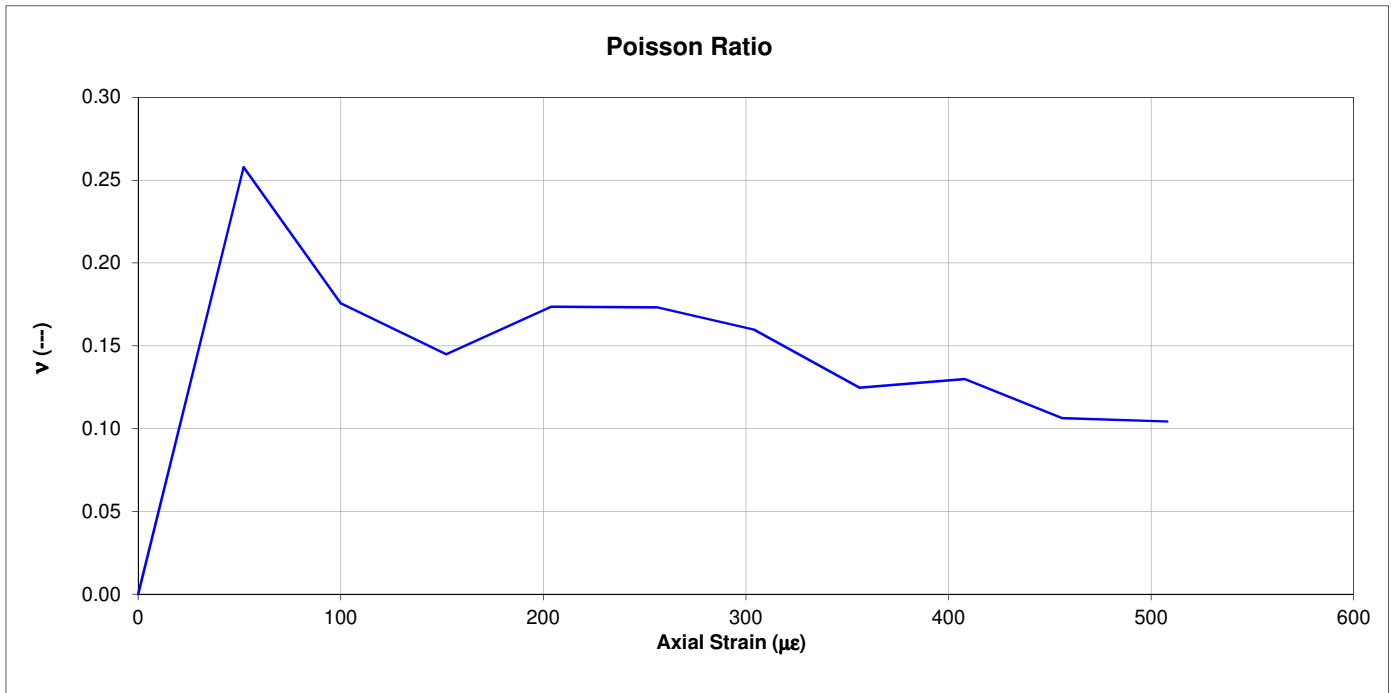
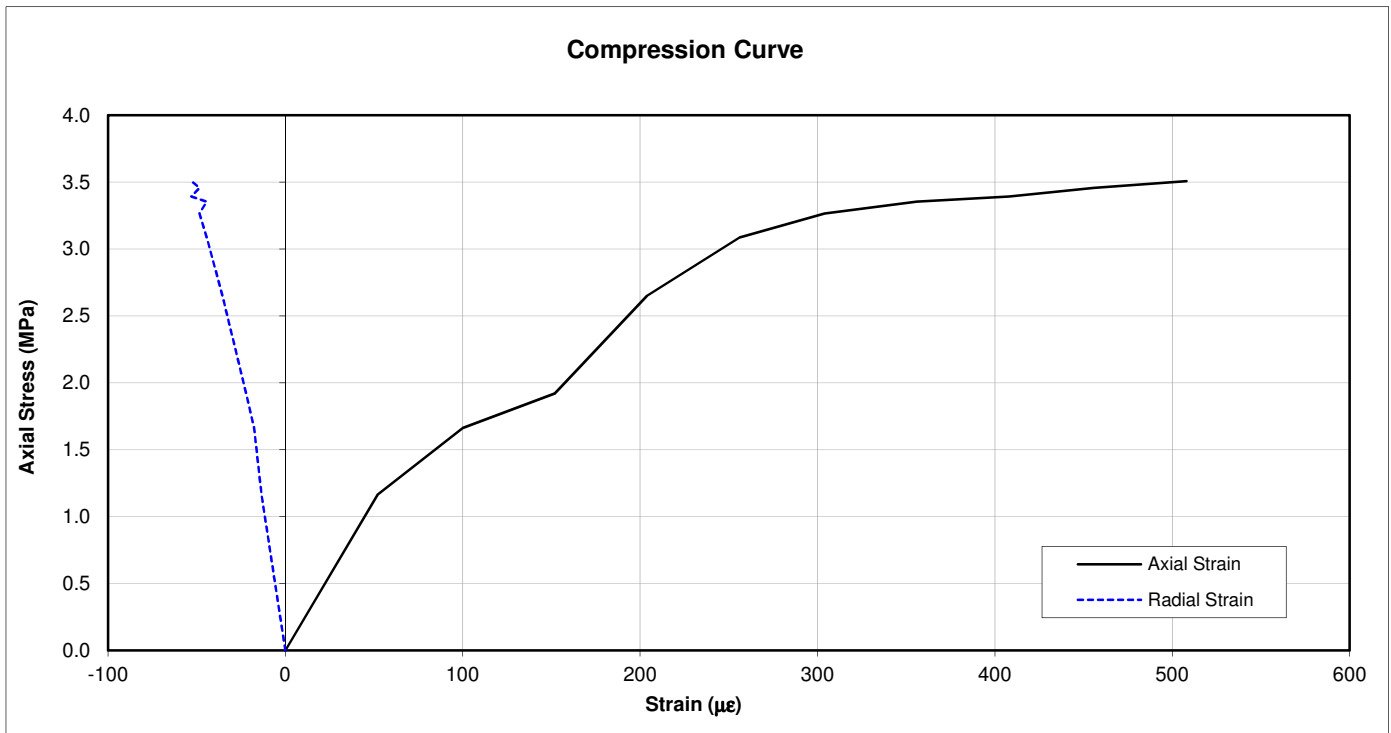
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71809  
 Specimen Depth 42.13 - 42.40m  
 Specimen Type C

Cross section area 78.10 cm<sup>2</sup>  
 Height 214.45 mm  
 Max logged strength 3.51 MPa  
 Poisson at failure 0.104  
 Poisson (\*) 0.176

(\*) Calculated for axial  $\sigma =$  1.75 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71813**      Sample Ref: **34**      Sample Type: **U**      Depth (m): **30.26**

Bulk Density (Mg/m<sup>3</sup>): **2.00**      Dry Density (Mg/m<sup>3</sup>): **1.59**      Moisture Content (%): **26**  
 Length (mm): **215.05**      Diameter (mm): **99.18**      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **4:15**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **28.1**  
 UCS (MPa): **3.6**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



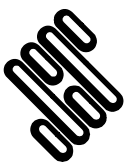
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS WITH DEFORMATION - A4P | 733442 - A303 STONEHENGE PHASE 6\_GROUND\_INVESTIGATION.GPJ - v8\_06  
 Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/02/19 - 07:36 | AF3



**STRUCTURAL SOILS**  
 1a Princess Street  
 Bedminster  
 Bristol  
 BS3 4AG

Compiled By		Date
[REDACTED]		19/02/19
Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 14/01/2019

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

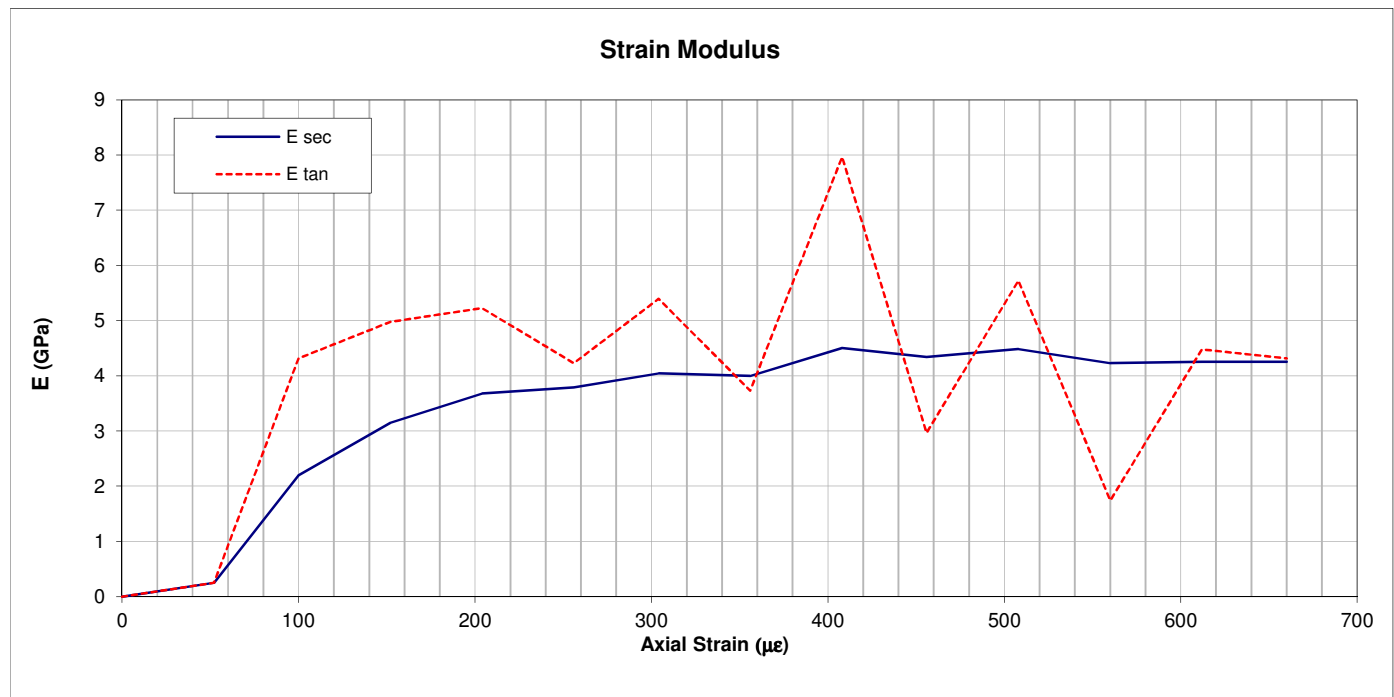
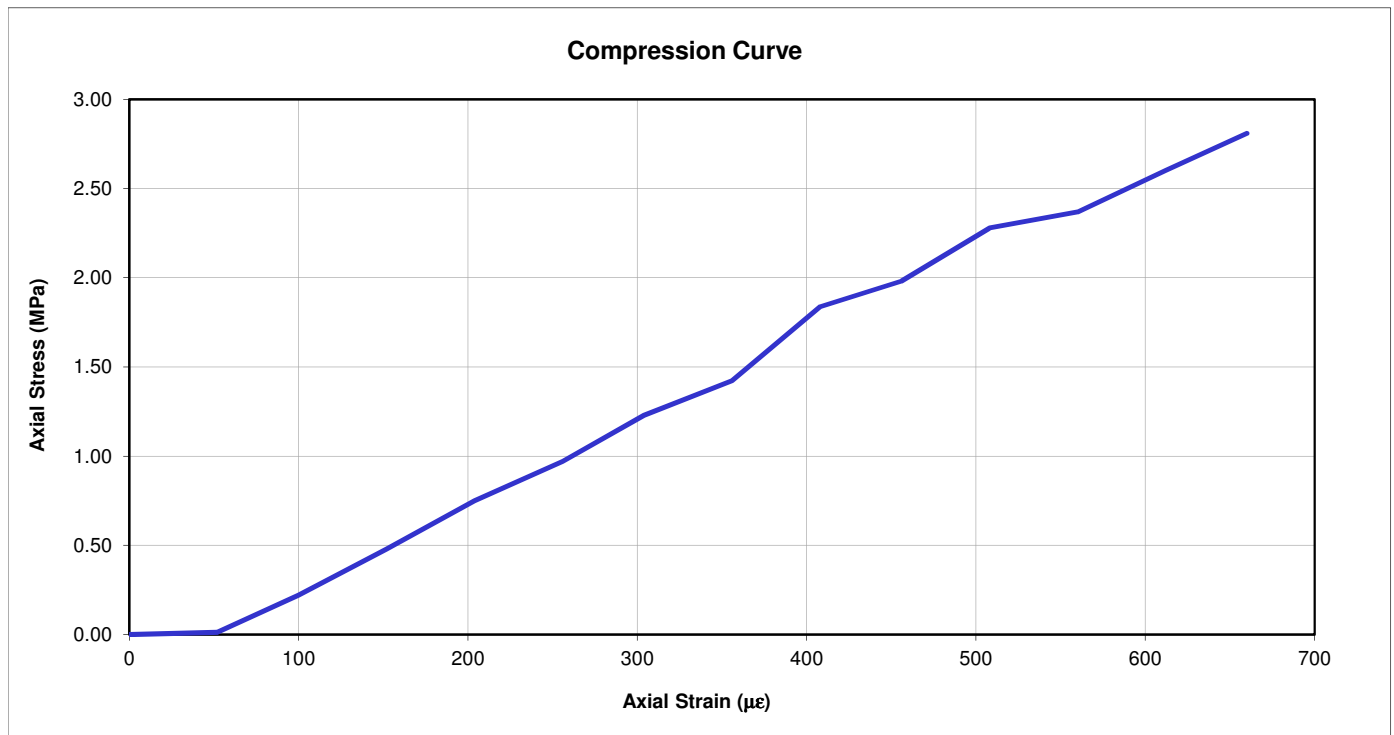
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71813  
 Specimen Depth 30.26 - 30.60m  
 Specimen Type C

Cross section area 77.26 cm<sup>2</sup>  
 Height 215.05 mm  
 Max logged strength 2.81 MPa  
 E<sub>tan</sub> (\*) 5.39 GPa  
 E<sub>sec</sub> (^) 4.04 GPa

(\*) Calculated for axial  $\sigma =$  1.40 MPa  
 (^) Calculated for axial  $\sigma =$  1.40 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 14/01/2019

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

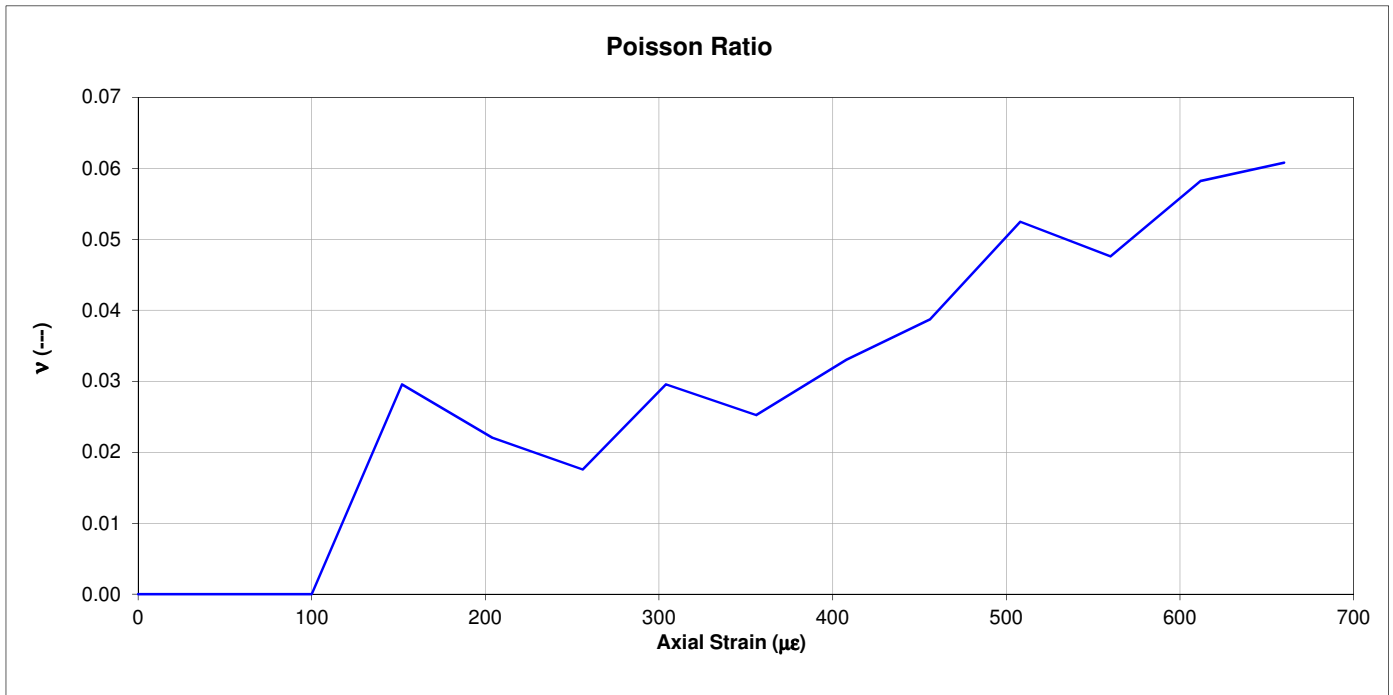
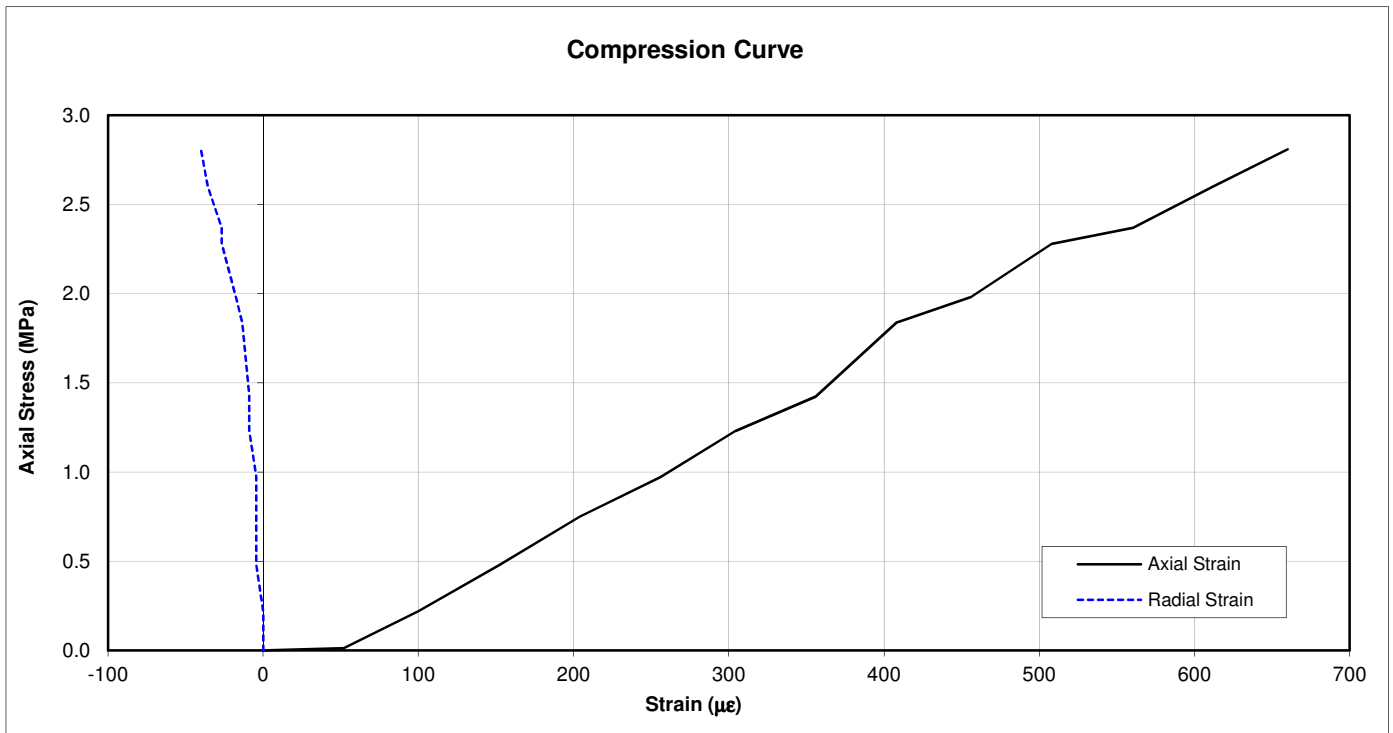
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71813  
 Specimen Depth 30.26 - 30.60m  
 Specimen Type C

Cross section area 77.26 cm<sup>2</sup>  
 Height 215.05 mm  
 Max logged strength 2.81 MPa  
 Poisson at failure 0.061  
 Poisson (\*) 0.030

(\*) Calculated for axial  $\sigma =$  1.40 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71817**      Sample Ref: **21**      Sample Type: **U**      Depth (m): **15.25**

Bulk Density (Mg/m<sup>3</sup>): **2.02**      Dry Density (Mg/m<sup>3</sup>): **1.63**      Moisture Content (%): **24**  
 Length (mm): **214.14**      Diameter (mm): **101.06**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **3.64**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **29.2**  
 UCS (MPa): **3.6**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



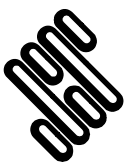
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - UCS WITH DEFORMATION - A4P | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/02/19 - 07:37 | AF3



**STRUCTURAL SOILS**  
 1a Princess Street  
 Bedminster  
 Bristol  
 BS3 4AG

Compiled By		Date
[REDACTED]		19/02/19
Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 16/01/2019

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

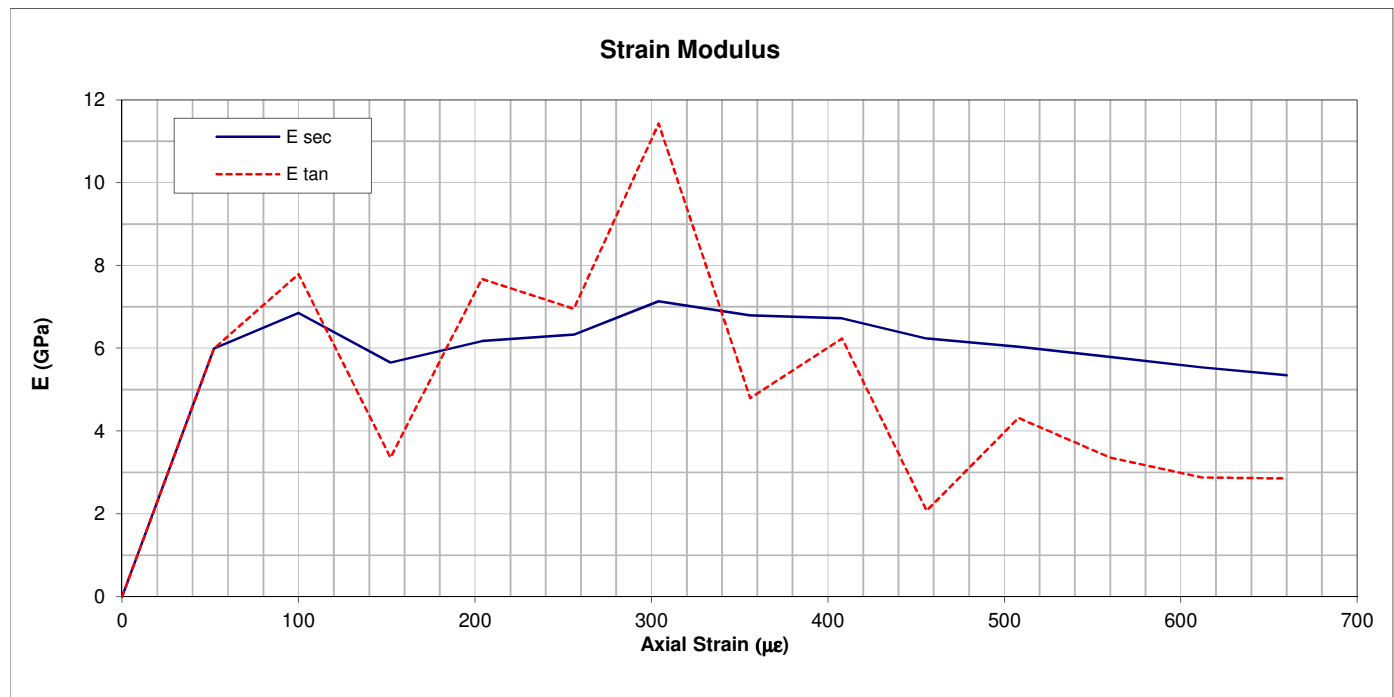
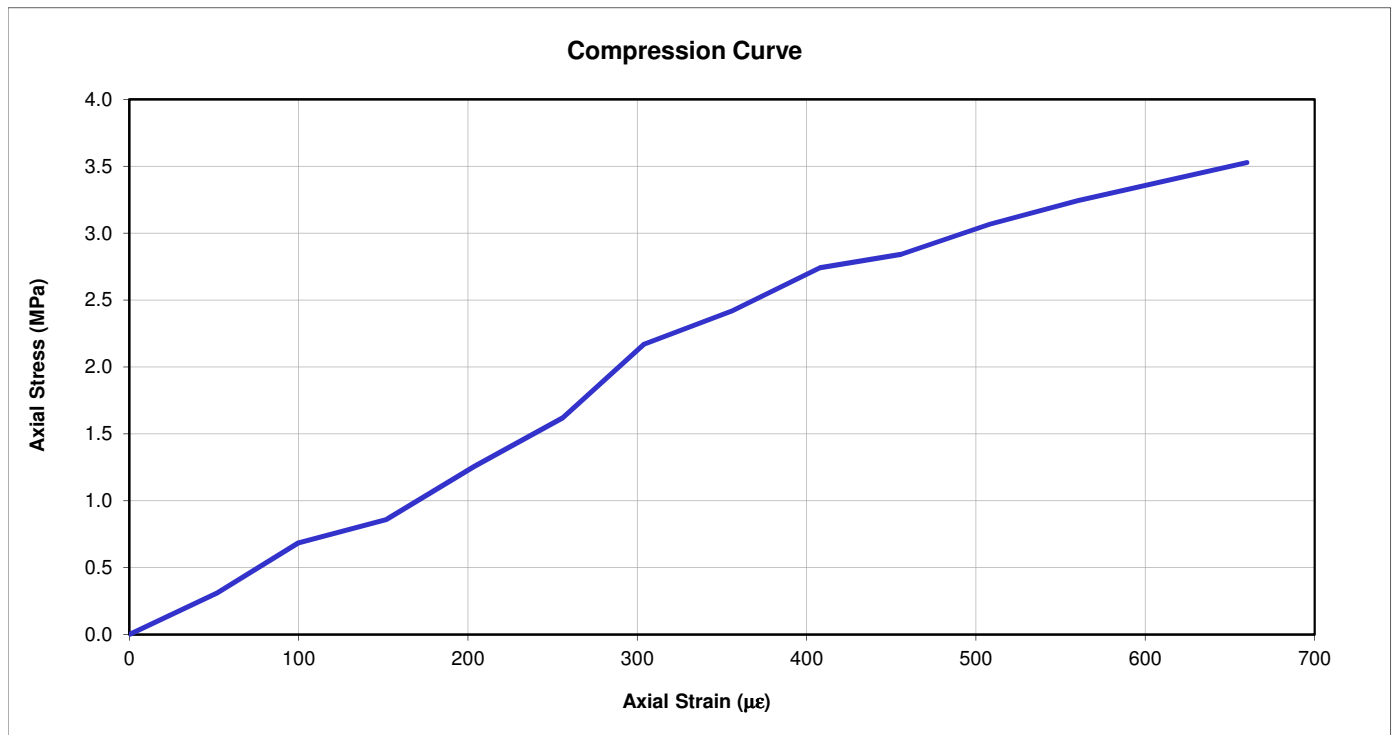
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71817  
 Specimen Depth 15.25 - 15.60m  
 Specimen Type C

Cross section area 80.21 cm<sup>2</sup>  
 Height 214.14 mm  
 Max logged strength 3.53 MPa  
 E<sub>tan</sub> (\*) 6.95 GPa  
 E<sub>sec</sub> (^) 6.33 GPa

(\*) Calculated for axial  $\sigma =$  1.76 MPa  
 (^) Calculated for axial  $\sigma =$  1.76 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 16/01/2019

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

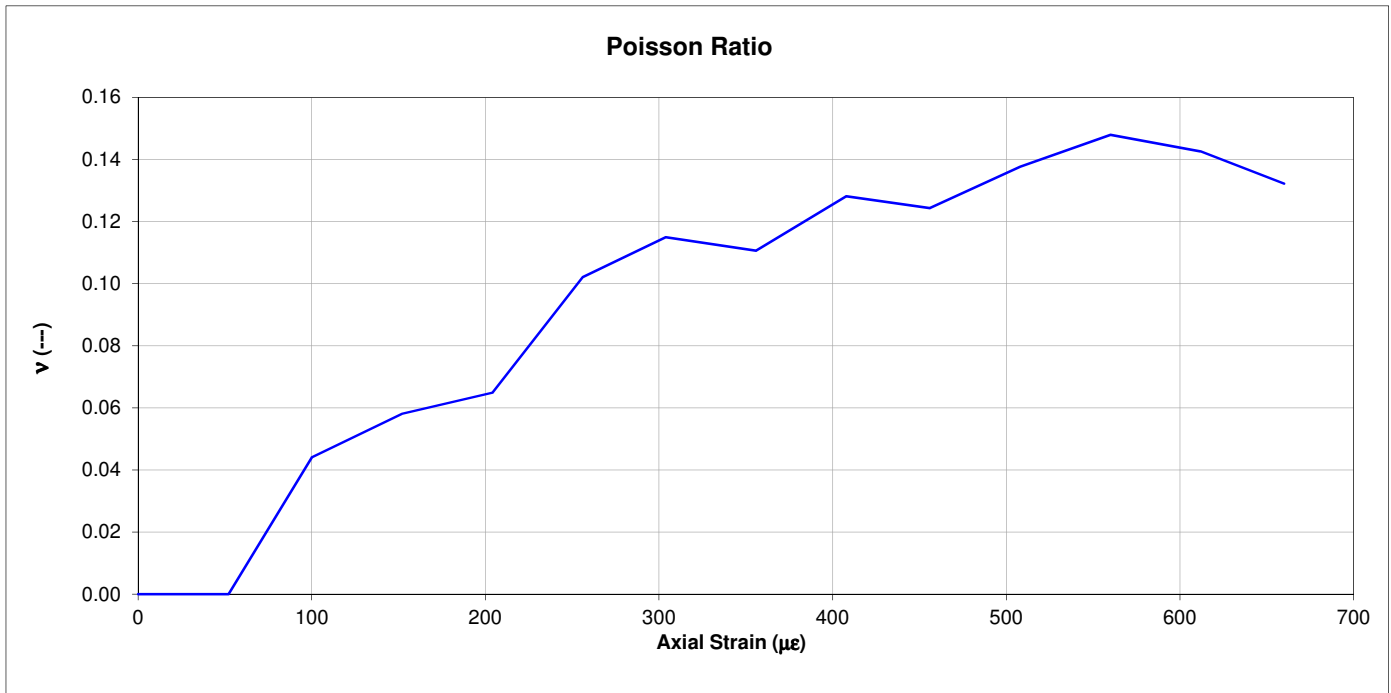
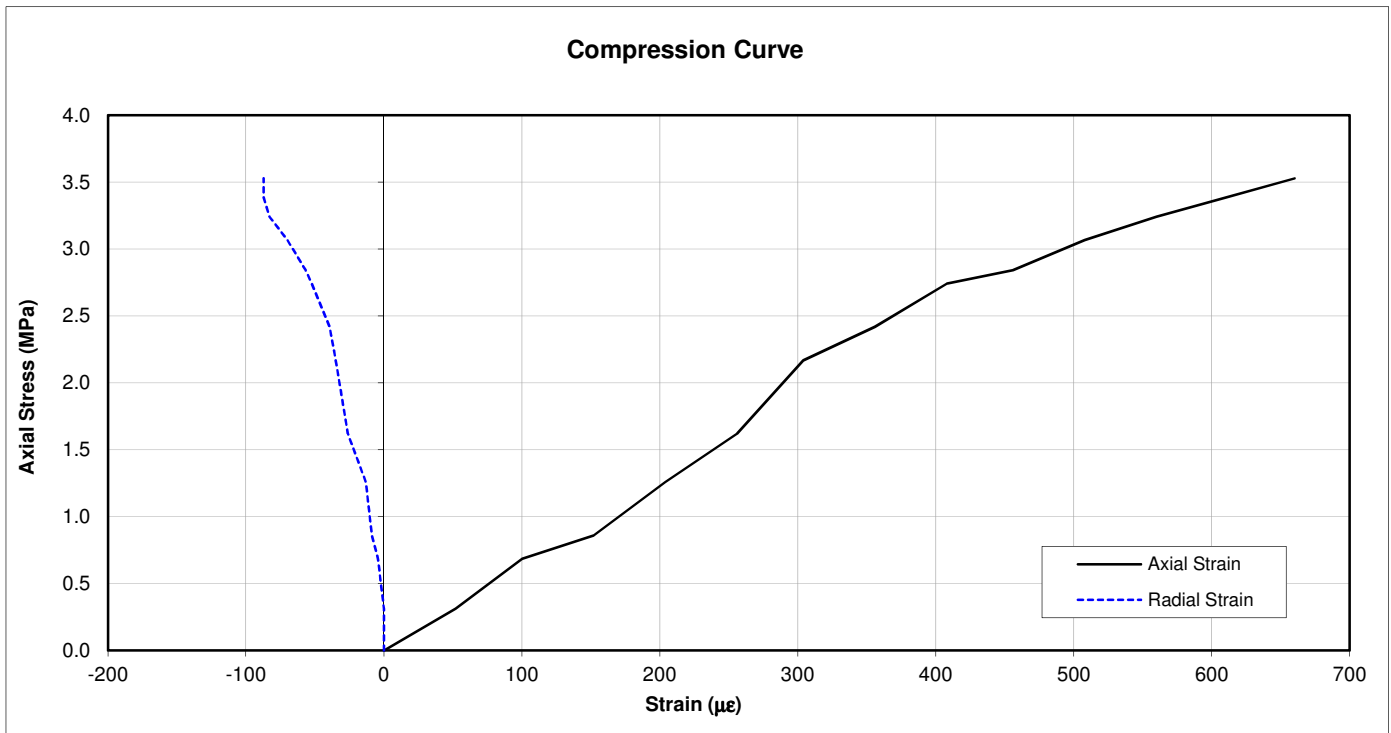
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71817  
 Specimen Depth 15.25 - 15.60m  
 Specimen Type C

Cross section area 80.21 cm<sup>2</sup>  
 Height 214.14 mm  
 Max logged strength 3.53 MPa  
 Poisson at failure 0.132  
 Poisson (\*) 0.102

(\*) Calculated for axial  $\sigma =$  1.76 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71817**      Sample Ref: **28**      Sample Type: **U**      Depth (m): **22.65**

Bulk Density (Mg/m<sup>3</sup>): **2.02**      Dry Density (Mg/m<sup>3</sup>): **1.62**      Moisture Content (%): **25**  
 Length (mm): **214.48**      Diameter (mm): **100.55**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **3:42**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **29.6**  
 UCS (MPa): **3.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



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  
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 Bristol  
 BS3 4AG

Compiled By		Date
[REDACTED]		19/02/19
Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

16/01/2019

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

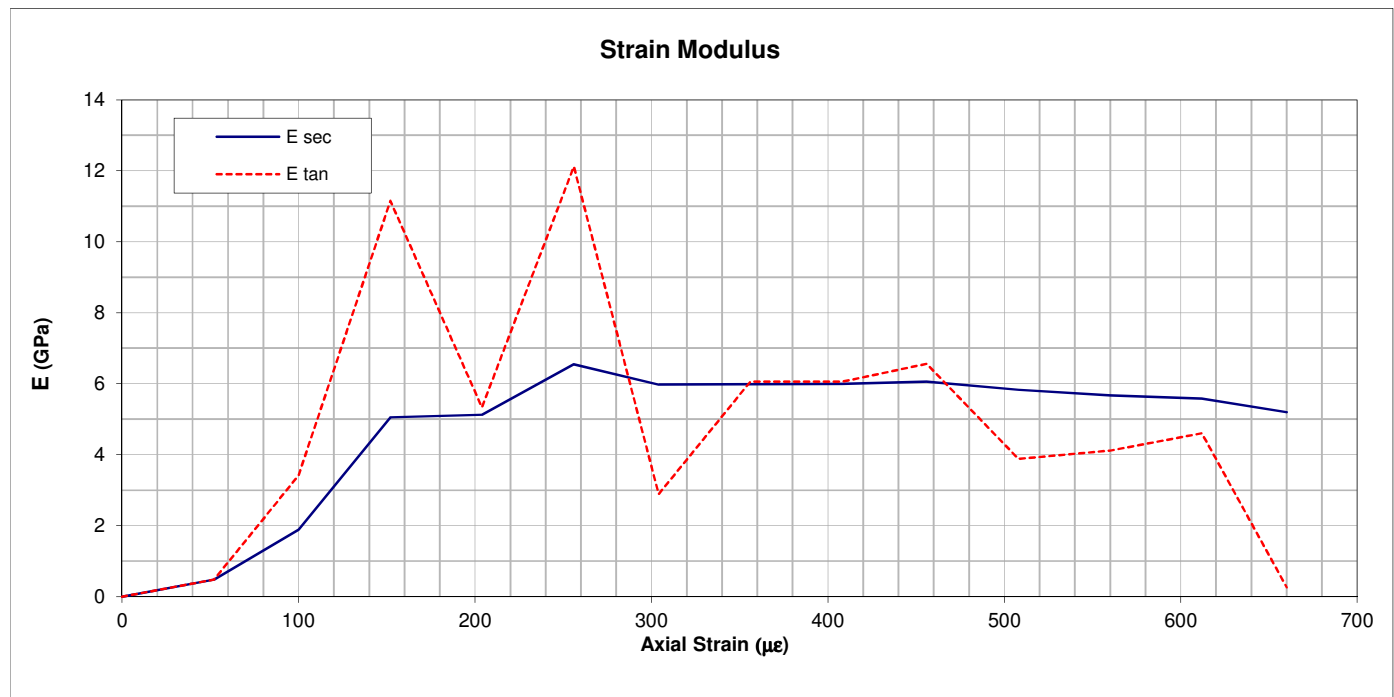
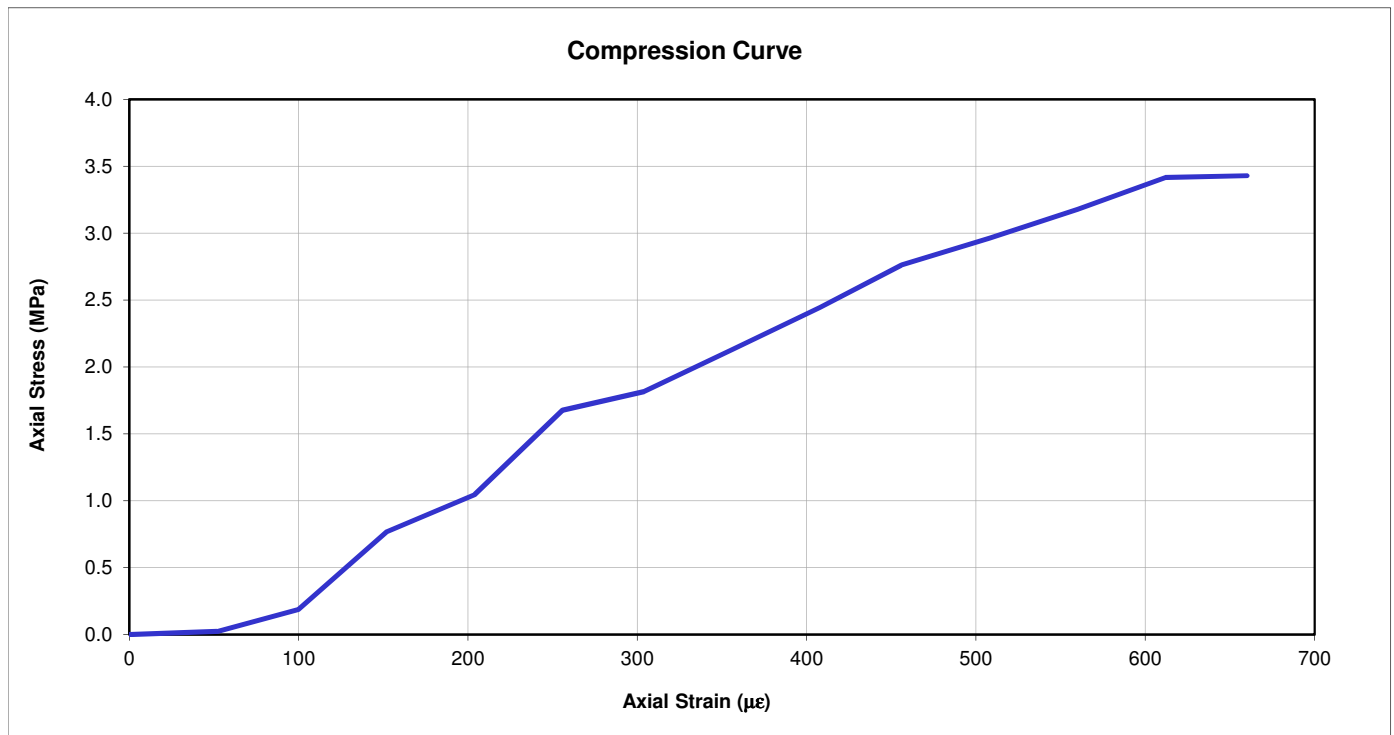
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71817</u>
Specimen Depth	<u>22.65 - 22.90m</u>
Specimen Type	<u>C</u>

Cross section area	<u>79.33 cm<sup>2</sup></u>
Height	<u>214.48 mm</u>
Max logged strength	<u>3.43 MPa</u>
E <sub>tan</sub> (*)	<u>12.12 GPa</u>
E <sub>sec</sub> (^)	<u>6.55 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.71 MPa  
 (^) Calculated for axial  $\sigma =$  1.71 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 16/01/2019

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

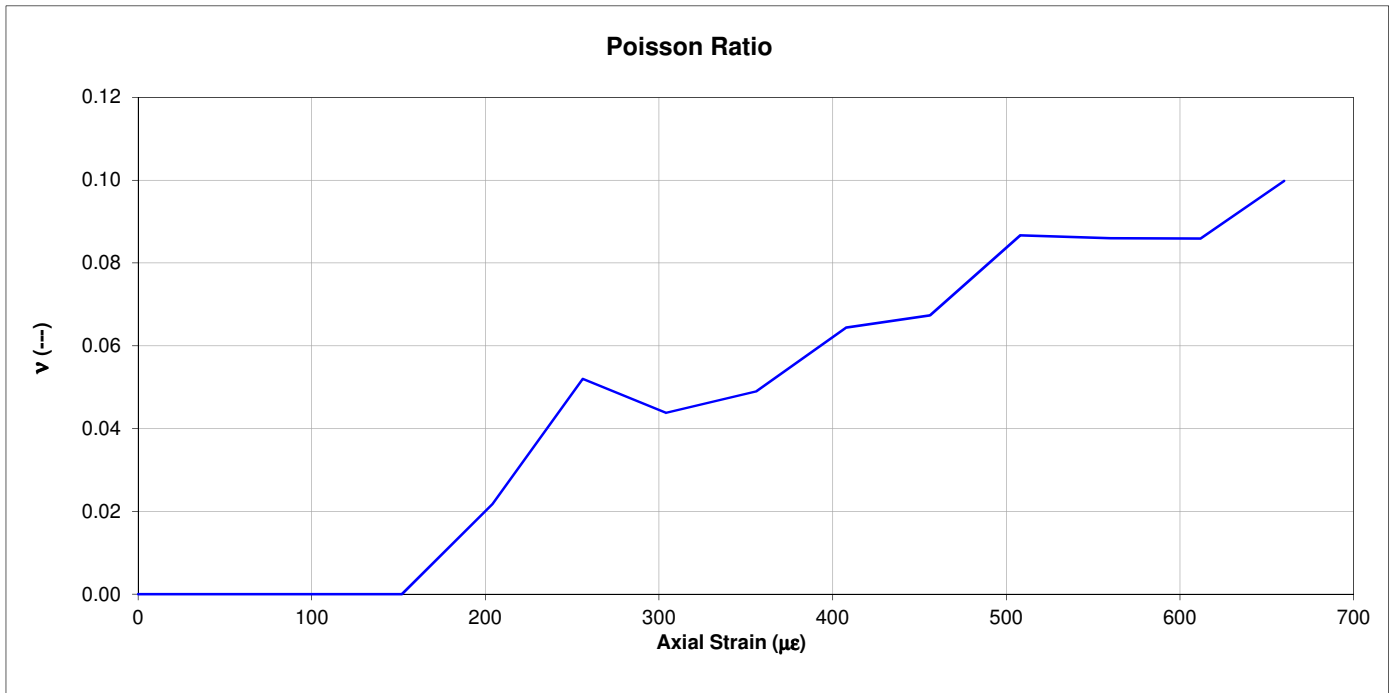
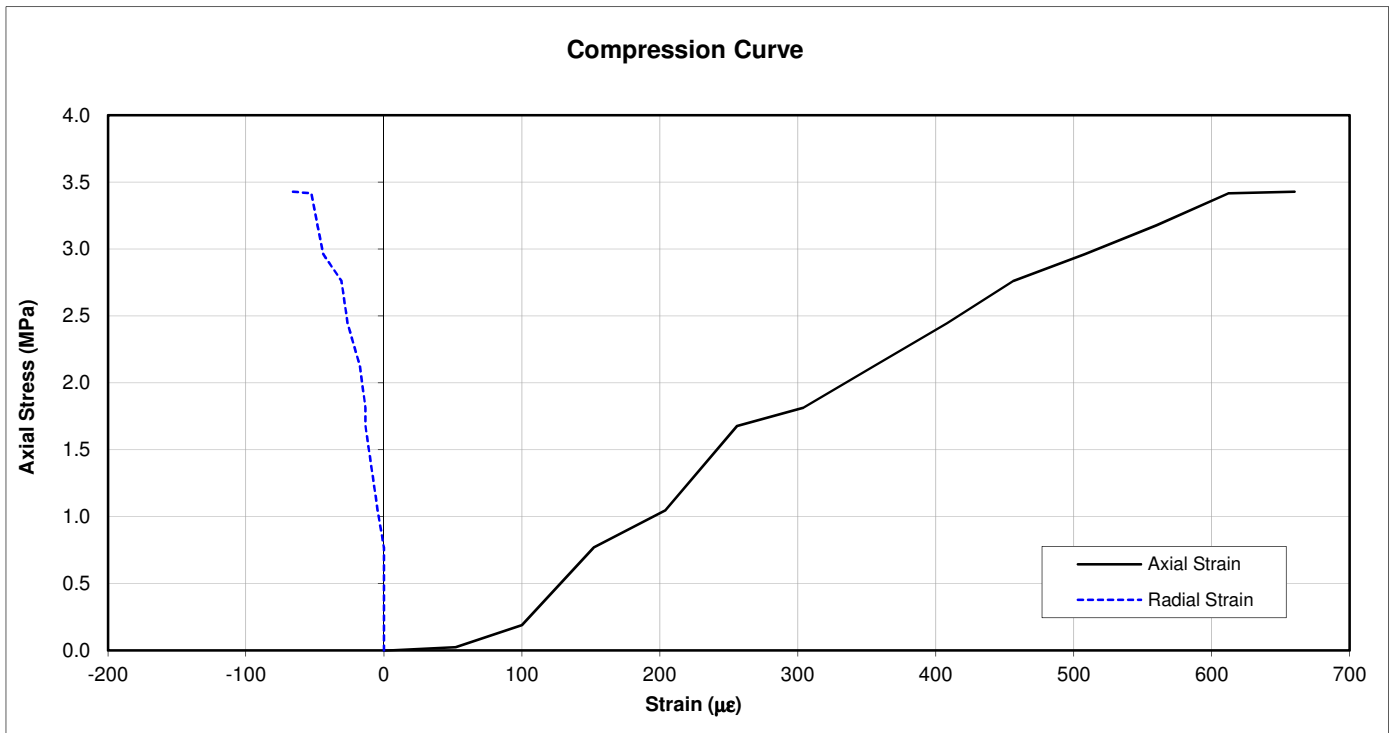
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71817  
 Specimen Depth 22.65 - 22.90m  
 Specimen Type C

Cross section area 79.33 cm<sup>2</sup>  
 Height 214.48 mm  
 Max logged strength 3.43 MPa  
 Poisson at failure 0.100  
 Poisson (\*) 0.052

(\*) Calculated for axial  $\sigma =$  1.71 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





	STRUCTURAL SOILS
	1A Princess Street
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Test Date

16/01/2019

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

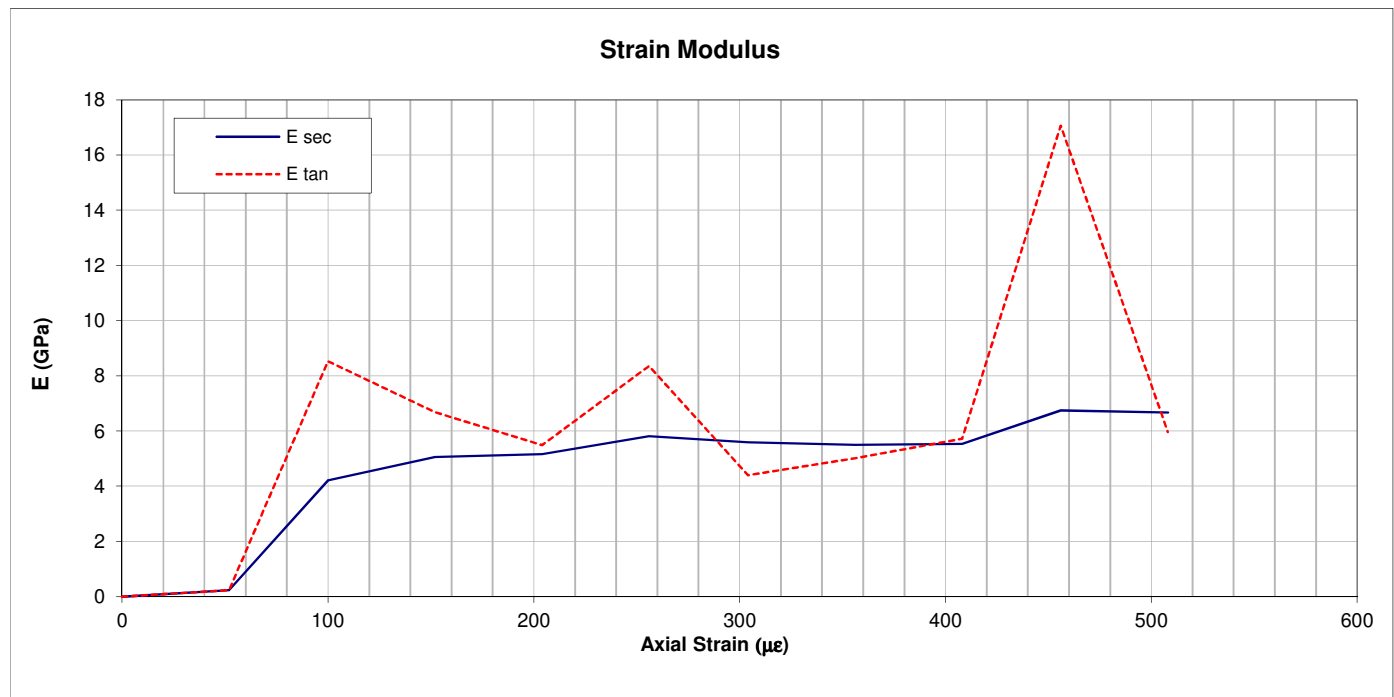
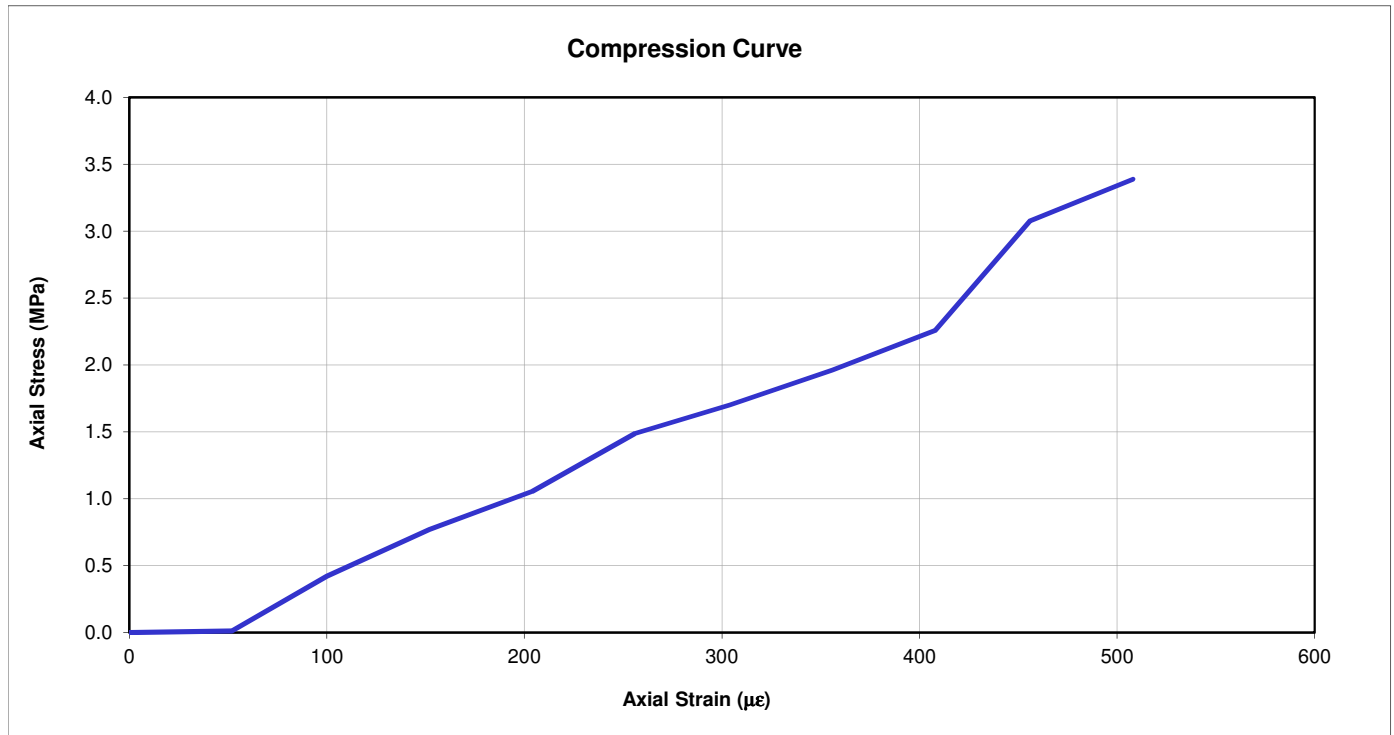
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71817</u>
Specimen Depth	<u>34.45 - 34.95m</u>
Specimen Type	<u>C</u>

Cross section area	<u>80.58 cm<sup>2</sup></u>
Height	<u>214.59 mm</u>
Max logged strength	<u>3.39 MPa</u>
E <sub>tan</sub> (*)	<u>8.35 GPa</u>
E <sub>sec</sub> (^)	<u>5.82 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.69 MPa  
 (^) Calculated for axial  $\sigma =$  1.69 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 16/01/2019

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

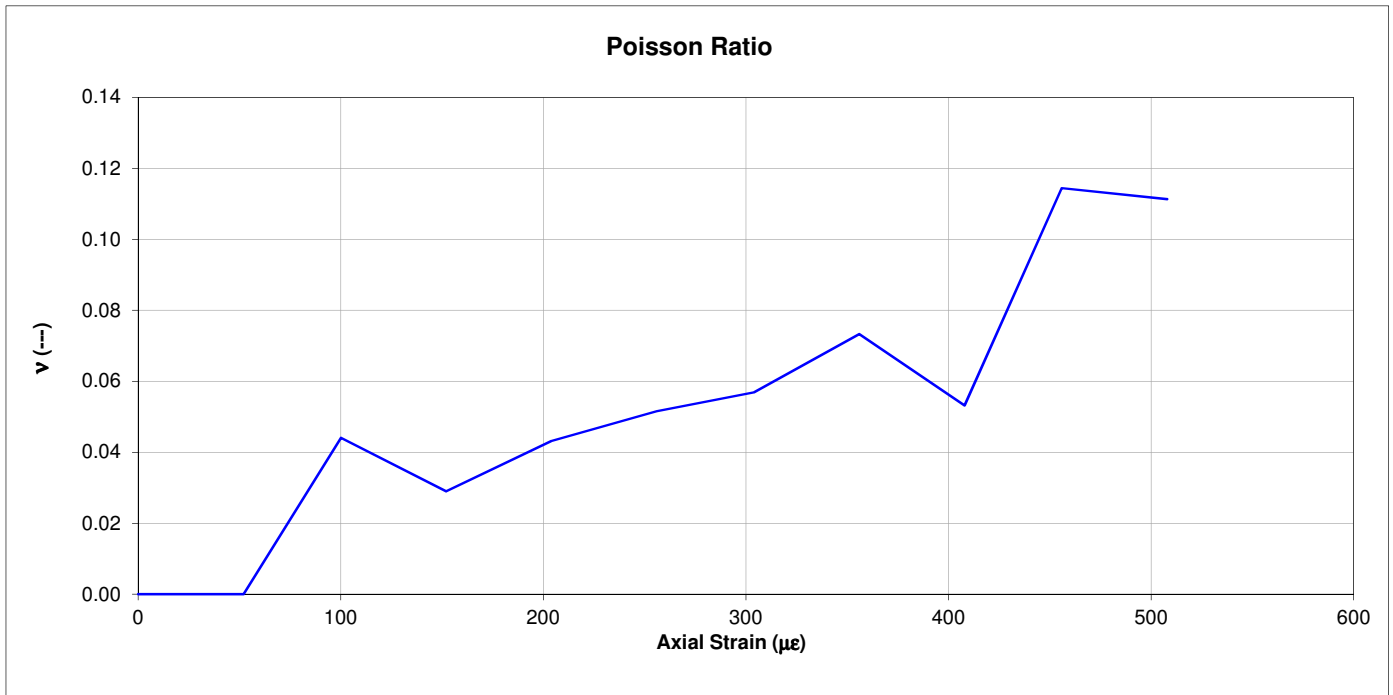
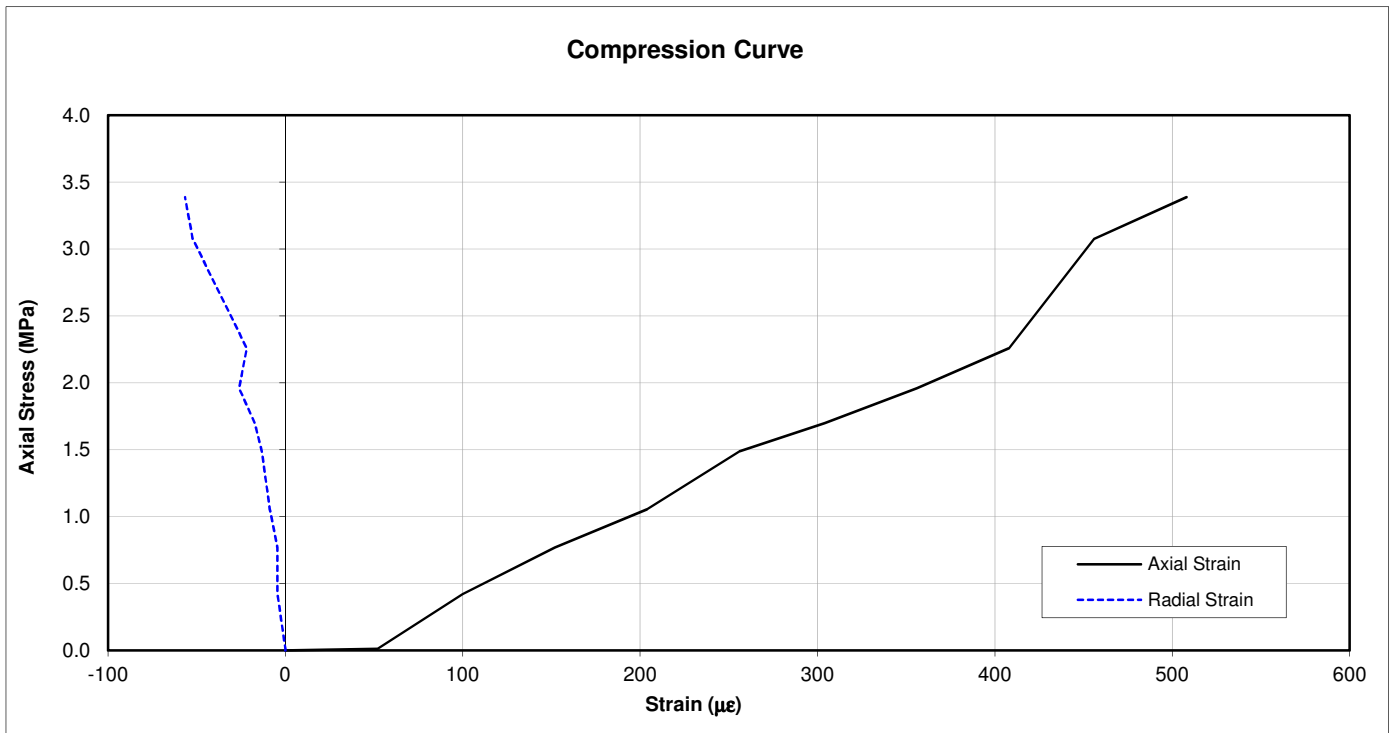
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71817  
 Specimen Depth 34.45 - 34.95m  
 Specimen Type C

Cross section area 80.58 cm<sup>2</sup>  
 Height 214.59 mm  
 Max logged strength 3.39 MPa  
 Poisson at failure 0.111  
 Poisson (\*) 0.052

(\*) Calculated for axial  $\sigma =$  1.69 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71822**      Sample Ref: **15**      Sample Type: **U**      Depth (m): **13.10**

Bulk Density (Mg/m<sup>3</sup>): **2.02**      Dry Density (Mg/m<sup>3</sup>): **1.61**      Moisture Content (%): **25**  
 Length (mm): **214.27**      Diameter (mm): **100.50**      Length/Diameter Ratio: **2.13**  
 Test Duration (mins:secs): **2:22**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **17.7**  
 UCS (MPa): **2.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS WITH DEFORMATION - A4P | 733442 - A303 STONEHENGE PHASE 6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/02/19 - 07:37 | AFS3



**STRUCTURAL SOILS**  
 1a Princess Street  
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 Bristol  
 BS3 4AG

Compiled By		Date
[REDACTED]		19/02/19
Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 21/01/2019

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

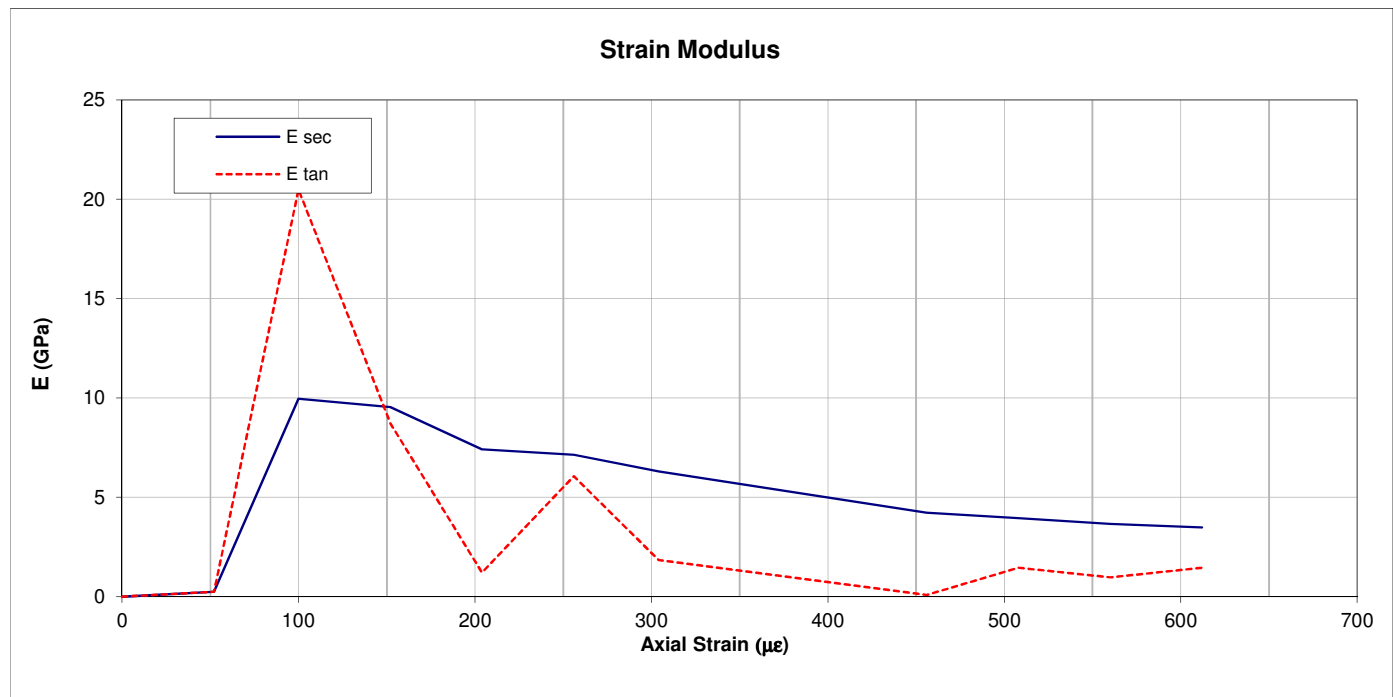
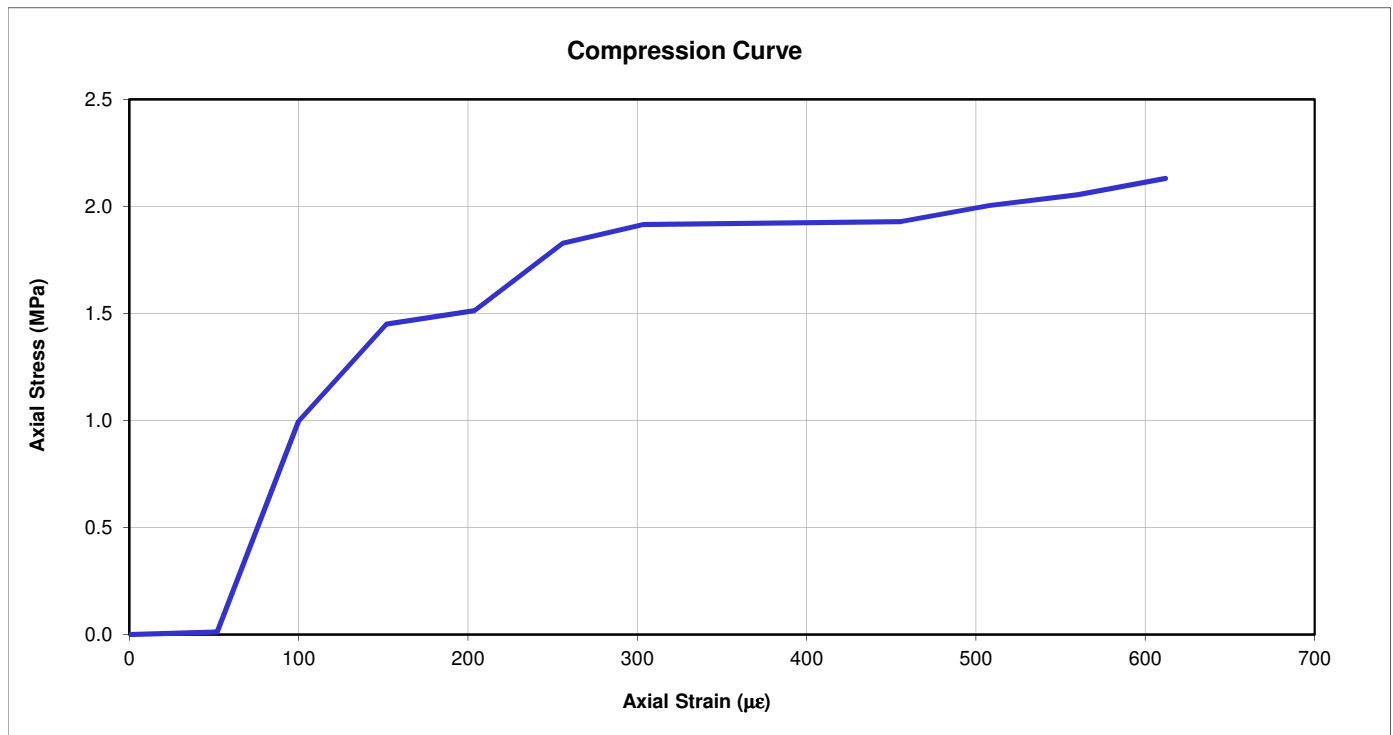
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71822  
 Specimen Depth 13.10 - 13.60m  
 Specimen Type C

Cross section area 79.33 cm<sup>2</sup>  
 Height 214.27 mm  
 Max logged strength 2.13 MPa  
 E<sub>tan</sub> (\*) 20.48 GPa  
 E<sub>sec</sub> (^) 9.96 GPa

(\*) Calculated for axial  $\sigma =$  1.07 MPa  
 (^) Calculated for axial  $\sigma =$  1.07 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
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Test Date 21/01/2019

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

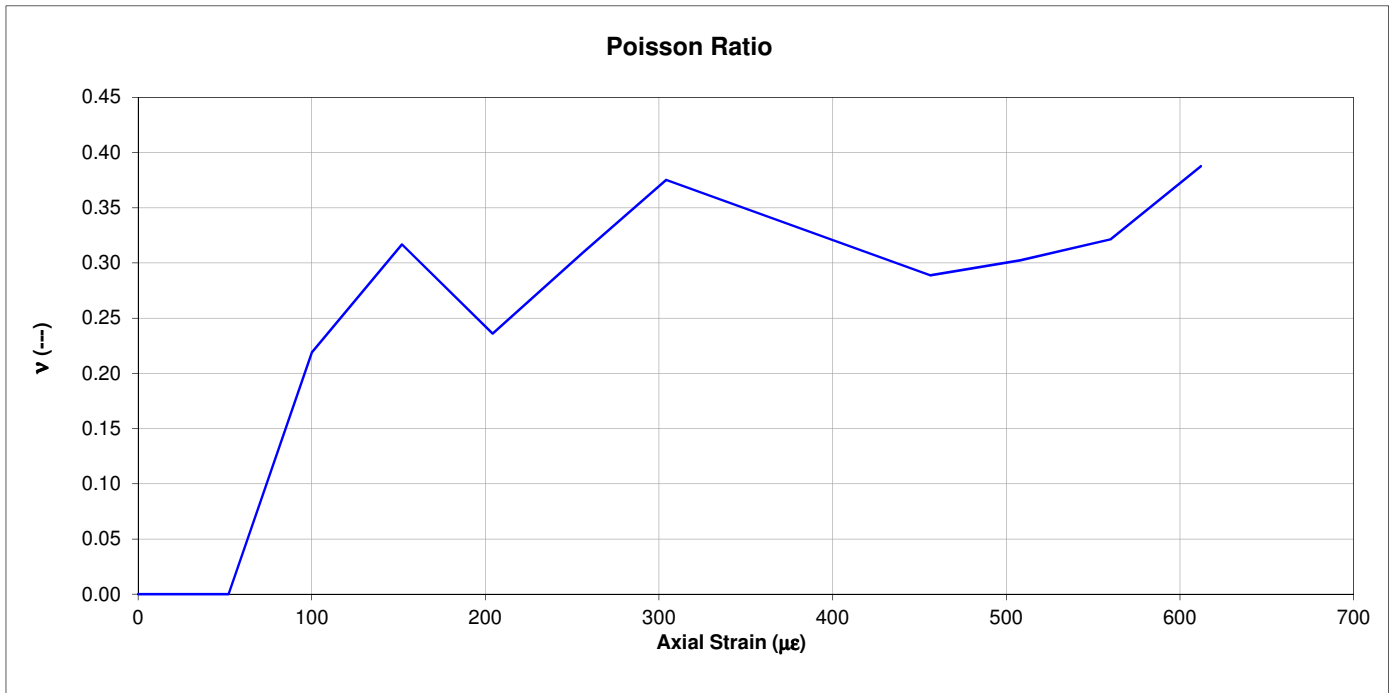
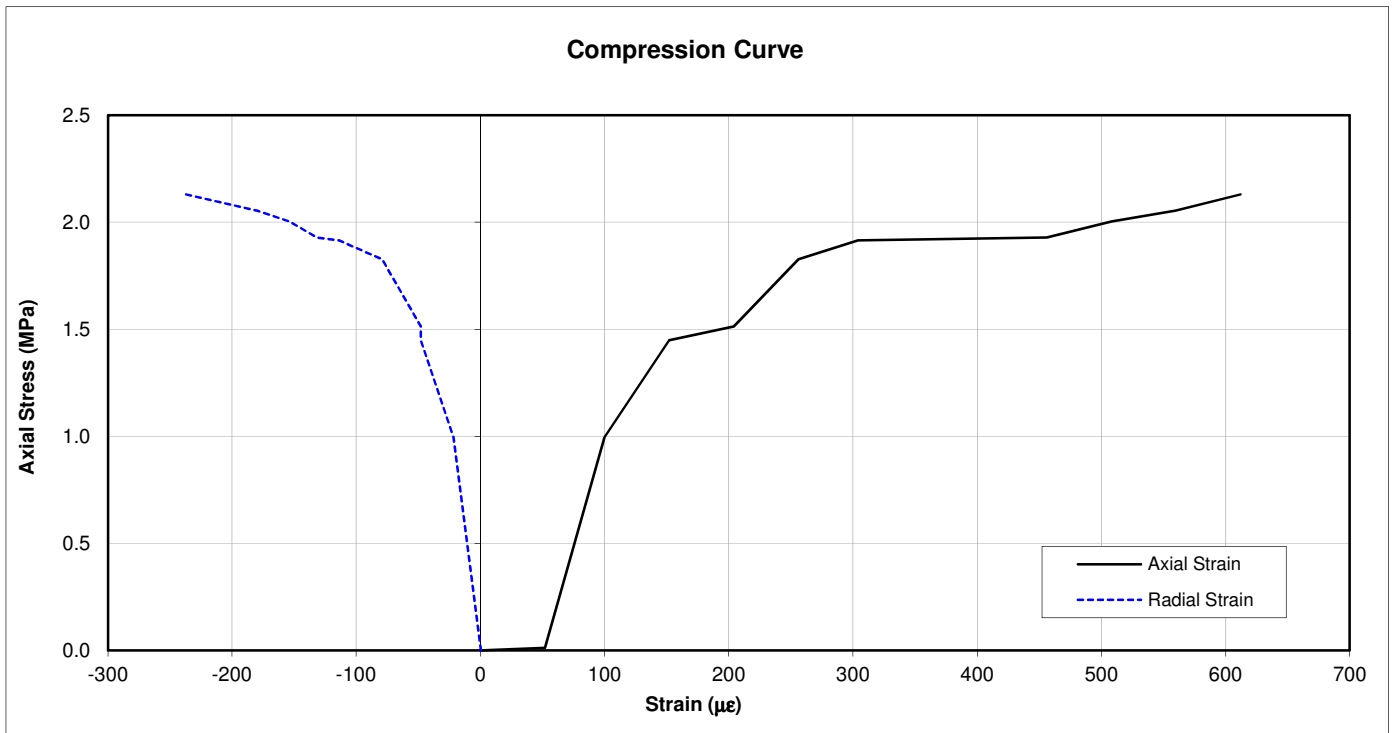
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71822  
 Specimen Depth 13.10 - 13.60m  
 Specimen Type C

Cross section area 79.33 cm<sup>2</sup>  
 Height 214.27 mm  
 Max logged strength 2.13 MPa  
 Poisson at failure 0.388  
 Poisson (\*) 0.219

(\*) Calculated for axial  $\sigma =$  1.07 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71906**      Sample Ref: **34**      Sample Type: **U**      Depth (m): **27.92**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.56**      Moisture Content (%): **27**  
 Length (mm): **214.09**      Diameter (mm): **98.67**      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **2.09**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **15.6**  
 UCS (MPa): **2.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



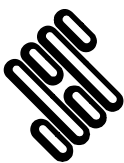
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core=Full Bristol SI - 012 | GfctText L - UCS WITH DEFORMATION - A4P | 733442 - A303 STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:52 | AF3



**STRUCTURAL SOILS**  
 1a Princess Street  
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 Bristol  
 BS3 4AG

Compiled By		Date
[REDACTED]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

17/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

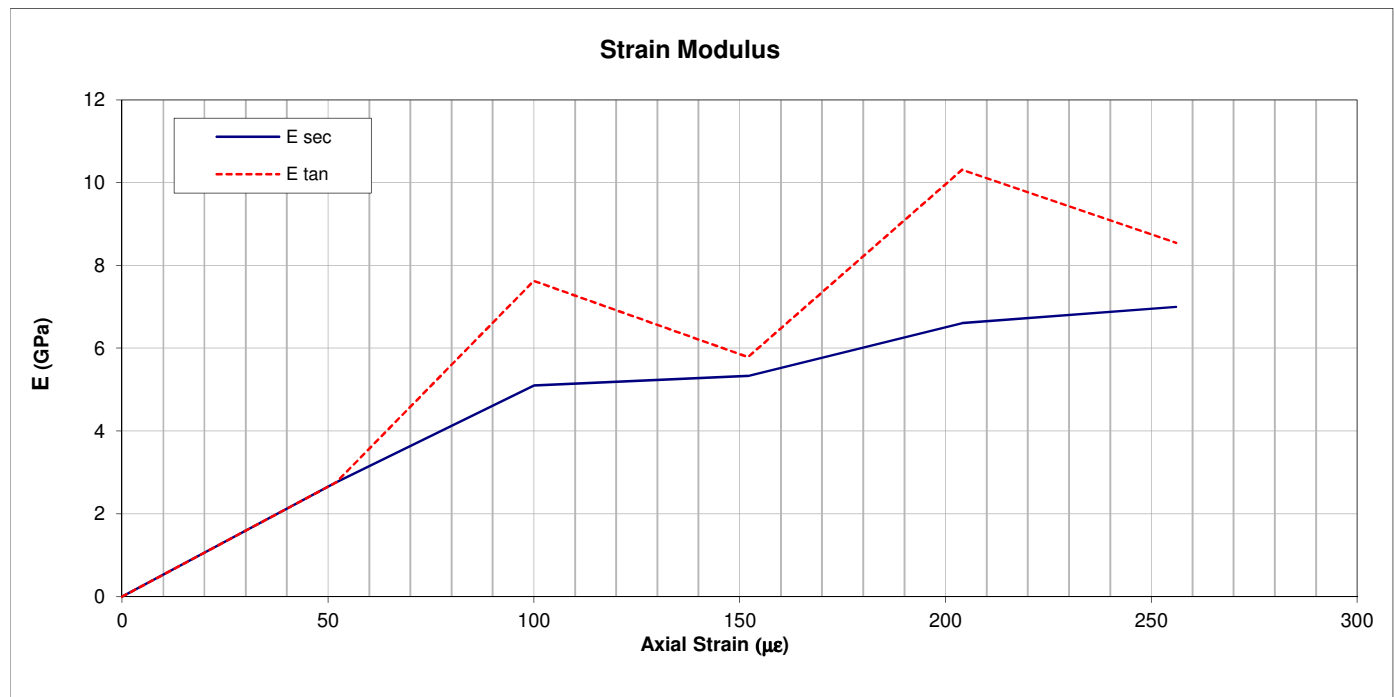
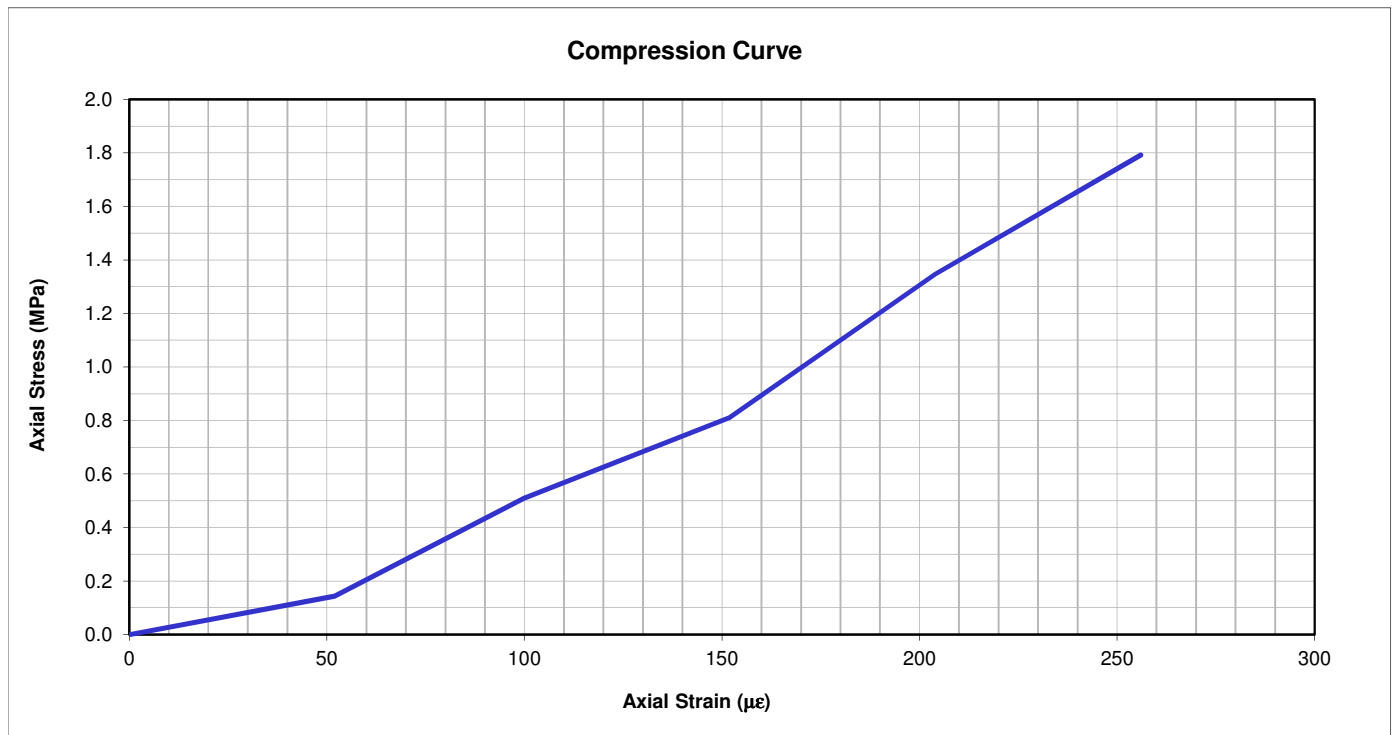
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71906</u>
Specimen Depth	<u>27.92 - 28.25m</u>
Specimen Type	<u>C</u>

Cross section area	<u>76.46 cm<sup>2</sup></u>
Height	<u>214.09 mm</u>
Max logged strength	<u>1.79 MPa</u>
E <sub>tan</sub> (*)	<u>5.78 GPa</u>
E <sub>sec</sub> (^)	<u>5.33 GPa</u>

(\*) Calculated for axial  $\sigma =$  0.90 MPa  
 (^) Calculated for axial  $\sigma =$  0.90 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



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	Bristol BS3 4AG

Test Date 17/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

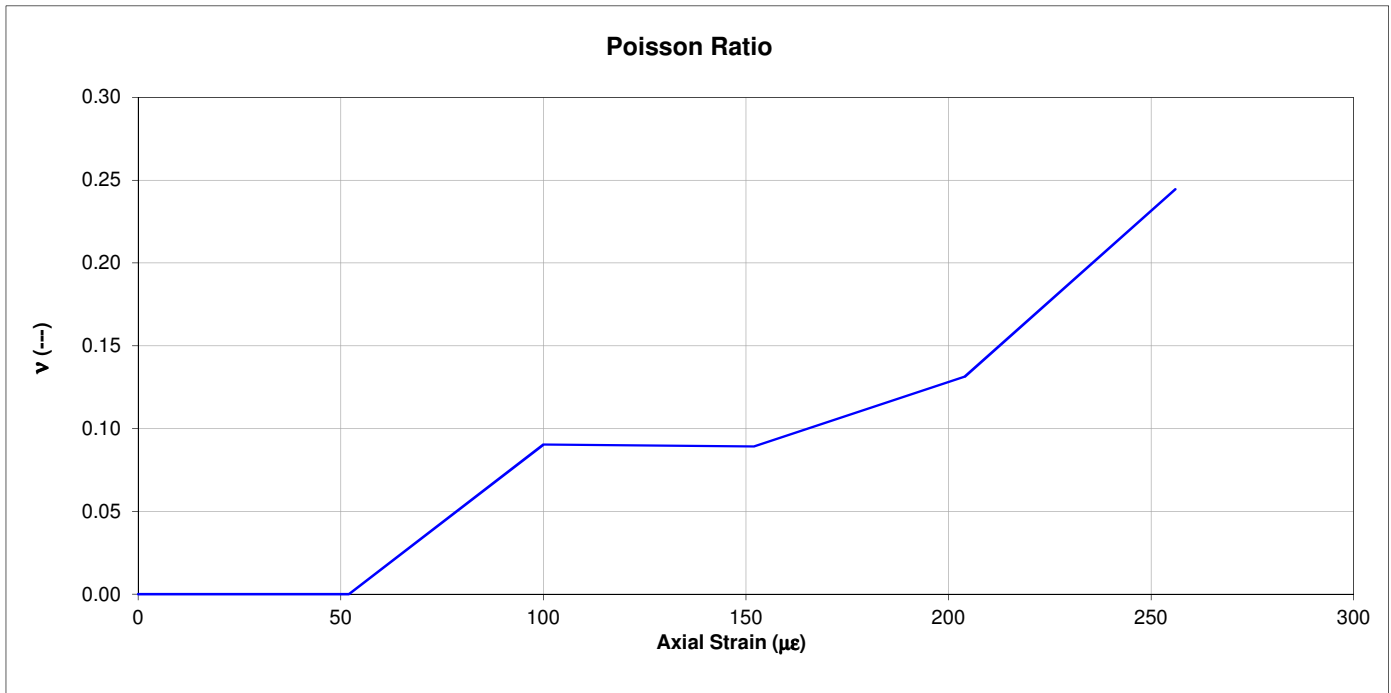
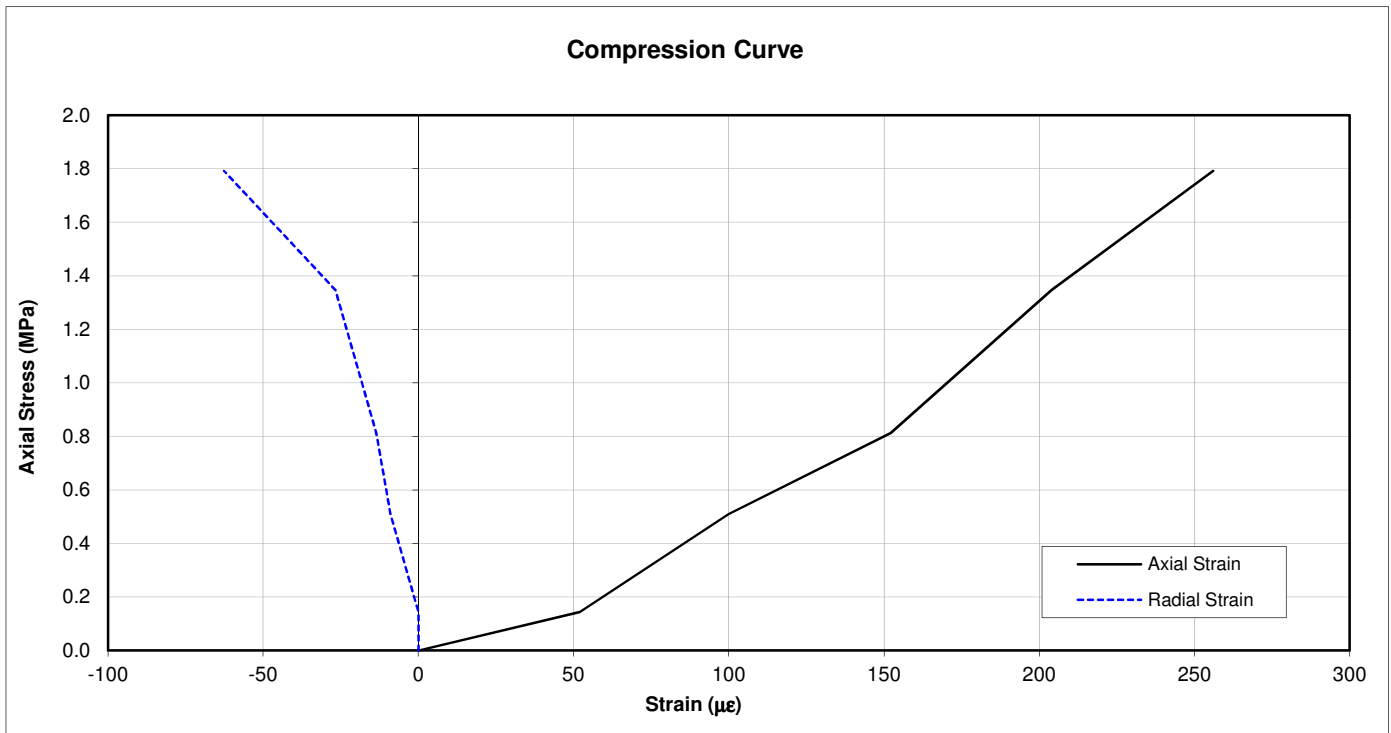
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71906  
 Specimen Depth 27.92 - 28.25m  
 Specimen Type C

Cross section area 76.46 cm<sup>2</sup>  
 Height 214.09 mm  
 Max logged strength 1.79 MPa  
 Poisson at failure 0.244  
 Poisson (\*) 0.089

(\*) Calculated for axial  $\sigma =$  0.90 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71906**      Sample Ref: **48**      Sample Type: **U**      Depth (m): **37.45**

Bulk Density (Mg/m<sup>3</sup>): **2.12**      Dry Density (Mg/m<sup>3</sup>): **1.78**      Moisture Content (%): **19**  
 Length (mm): **214.65**      Diameter (mm): **99.91**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **7:39**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **56.8**  
 UCS (MPa): **7.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

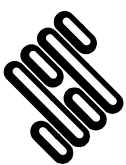


Front view (post-test)



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

17/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

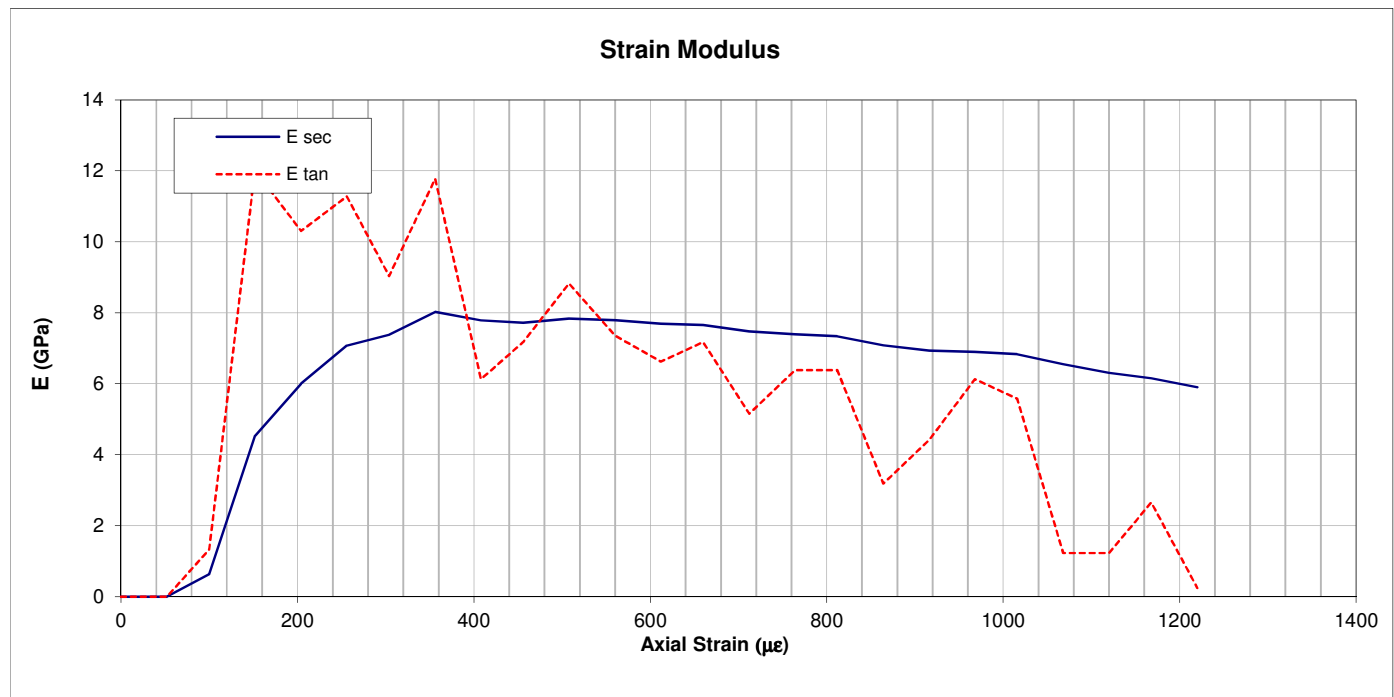
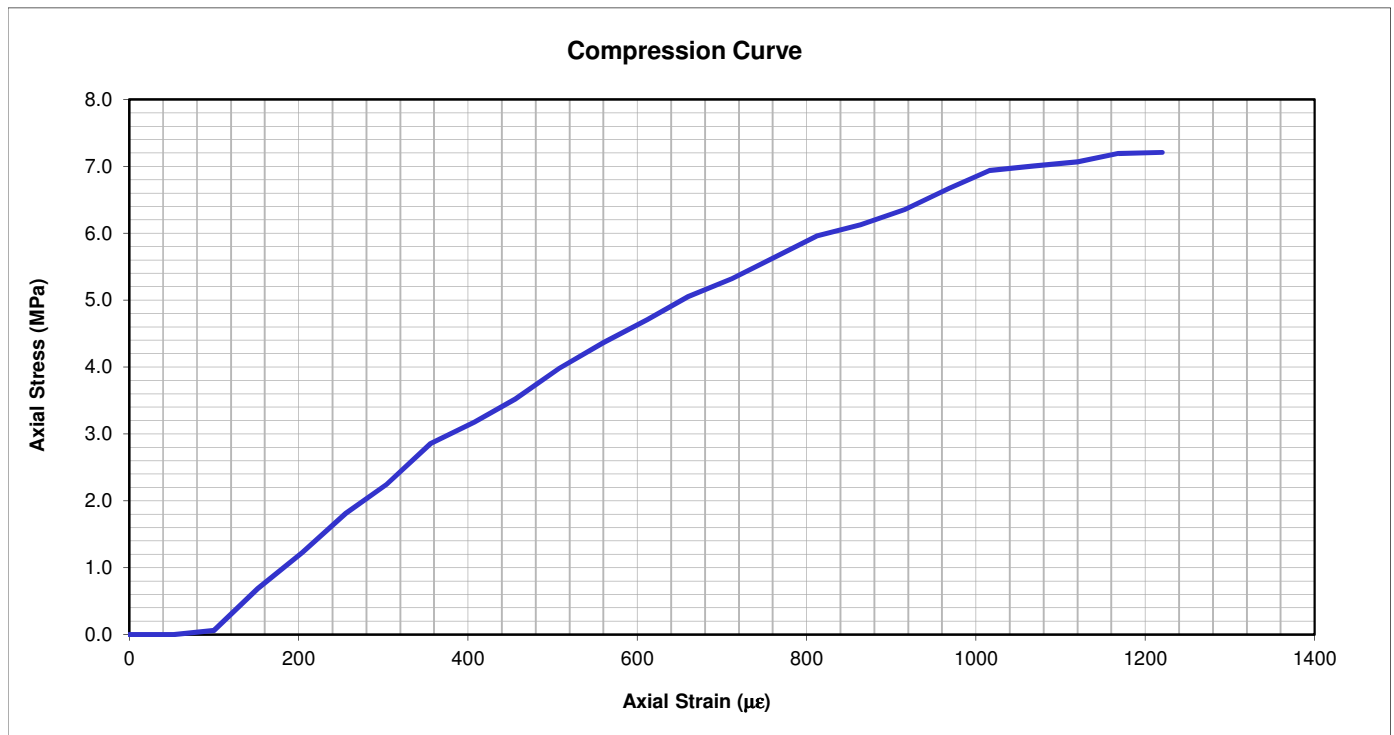
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71906</u>
Specimen Depth	<u>37.45 - 37.78m</u>
Specimen Type	<u>C</u>

Cross section area	<u>78.40 cm<sup>2</sup></u>
Height	<u>214.65 mm</u>
Max logged strength	<u>7.21 MPa</u>
E <sub>tan</sub>	<u>(*) 7.17 GPa</u>
E <sub>sec</sub>	<u>(^) 7.72 GPa</u>

(\*) Calculated for axial  $\sigma =$  3.60 MPa  
 (^) Calculated for axial  $\sigma =$  3.60 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 17/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

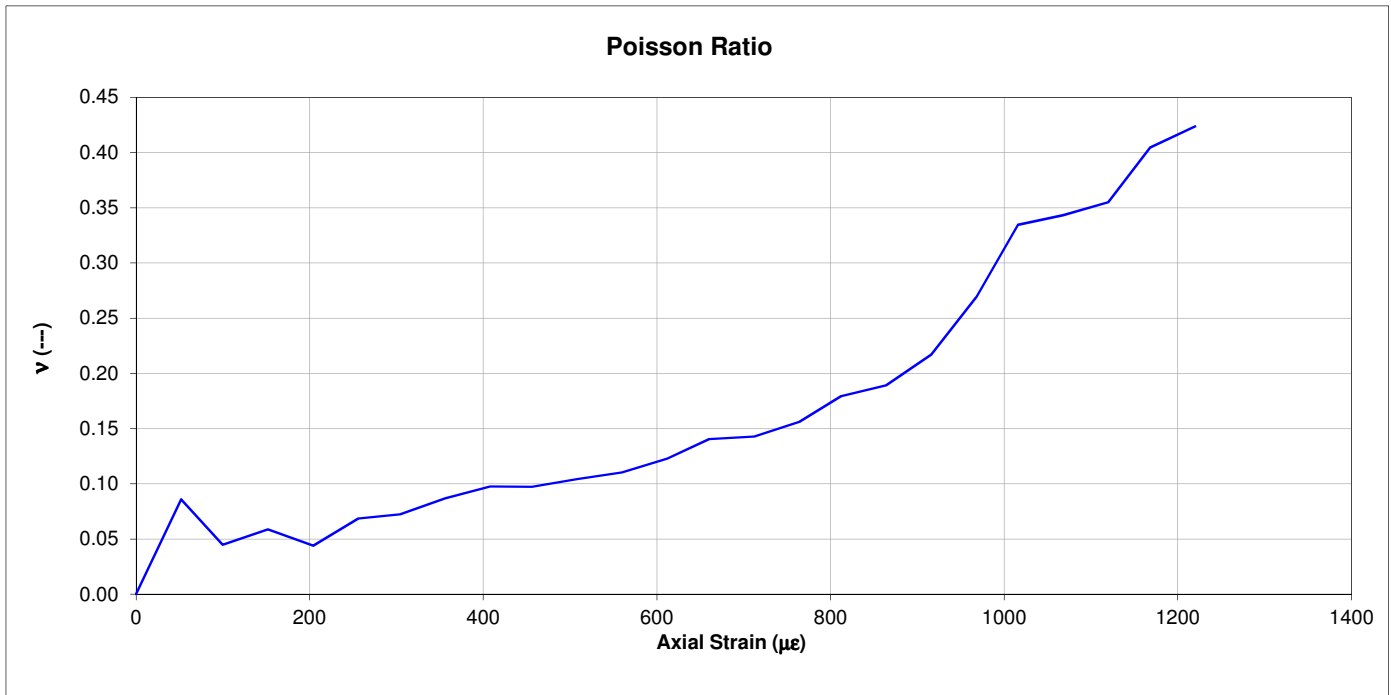
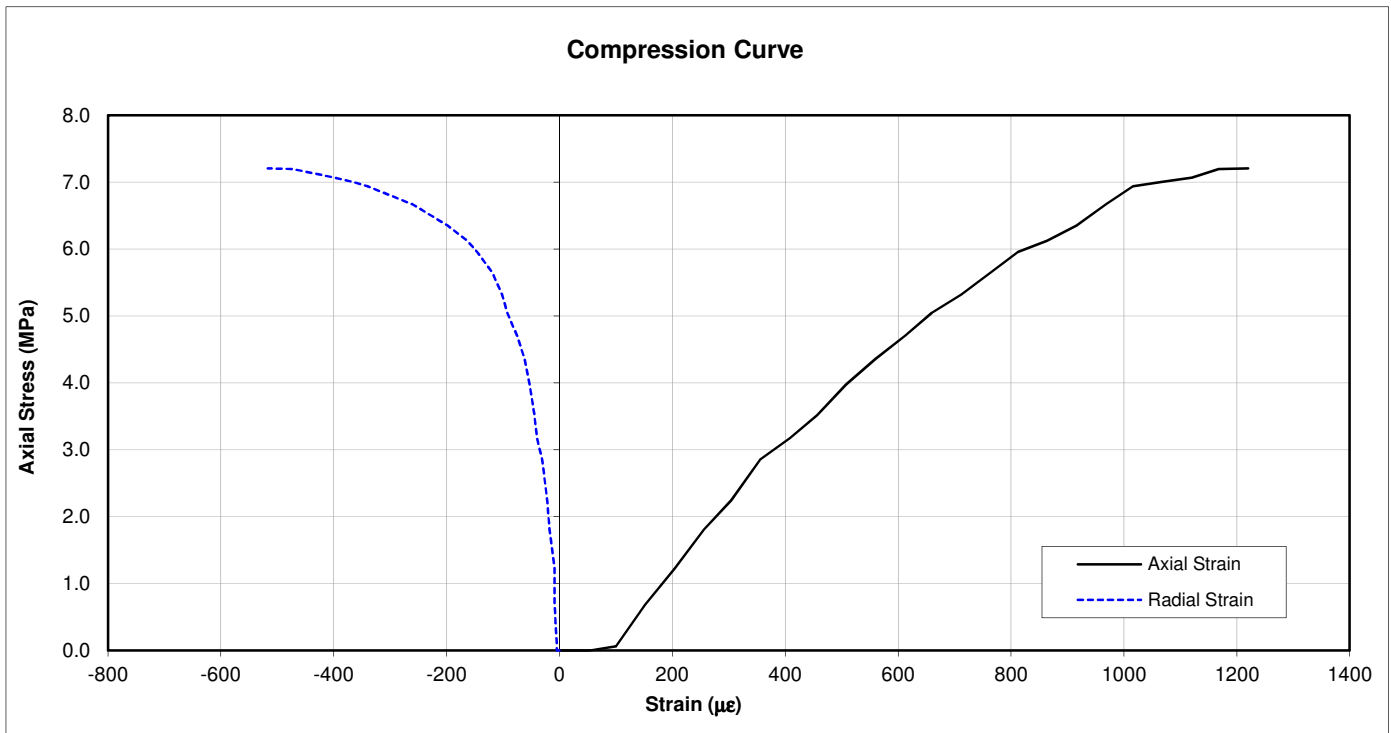
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71906  
 Specimen Depth 37.45 - 37.78m  
 Specimen Type C

Cross section area 78.40 cm<sup>2</sup>  
 Height 214.65 mm  
 Max logged strength 7.21 MPa  
 Poisson at failure 0.424  
 Poisson (\*) 0.097

(\*) Calculated for axial  $\sigma =$  3.60 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **33**      Sample Type: **U**      Depth (m): **28.20**

Bulk Density (Mg/m<sup>3</sup>): **2.02**      Dry Density (Mg/m<sup>3</sup>): **1.61**      Moisture Content (%): **25**  
 Length (mm): **208.95**      Diameter (mm): **98.36**      Length/Diameter Ratio: **2.12**  
 Test Duration (mins:secs): **2:55**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **18.2**  
 UCS (MPa): **2.4**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



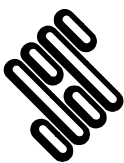
Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS WITH DEFORMATION - A4P | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:52 | AF3



**STRUCTURAL SOILS**  
 1a Princess Street  
 Bedminster  
 Bristol  
 BS3 4AG

Compiled By		Date
[Redacted]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

18/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

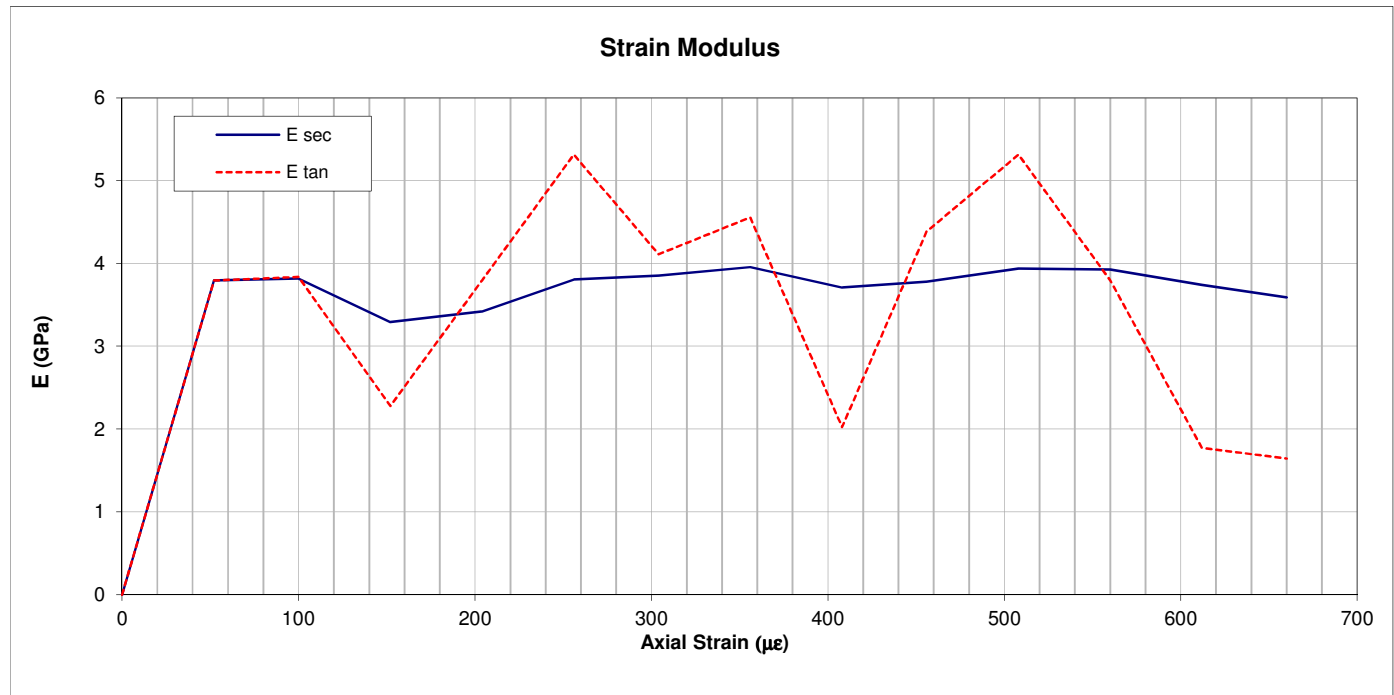
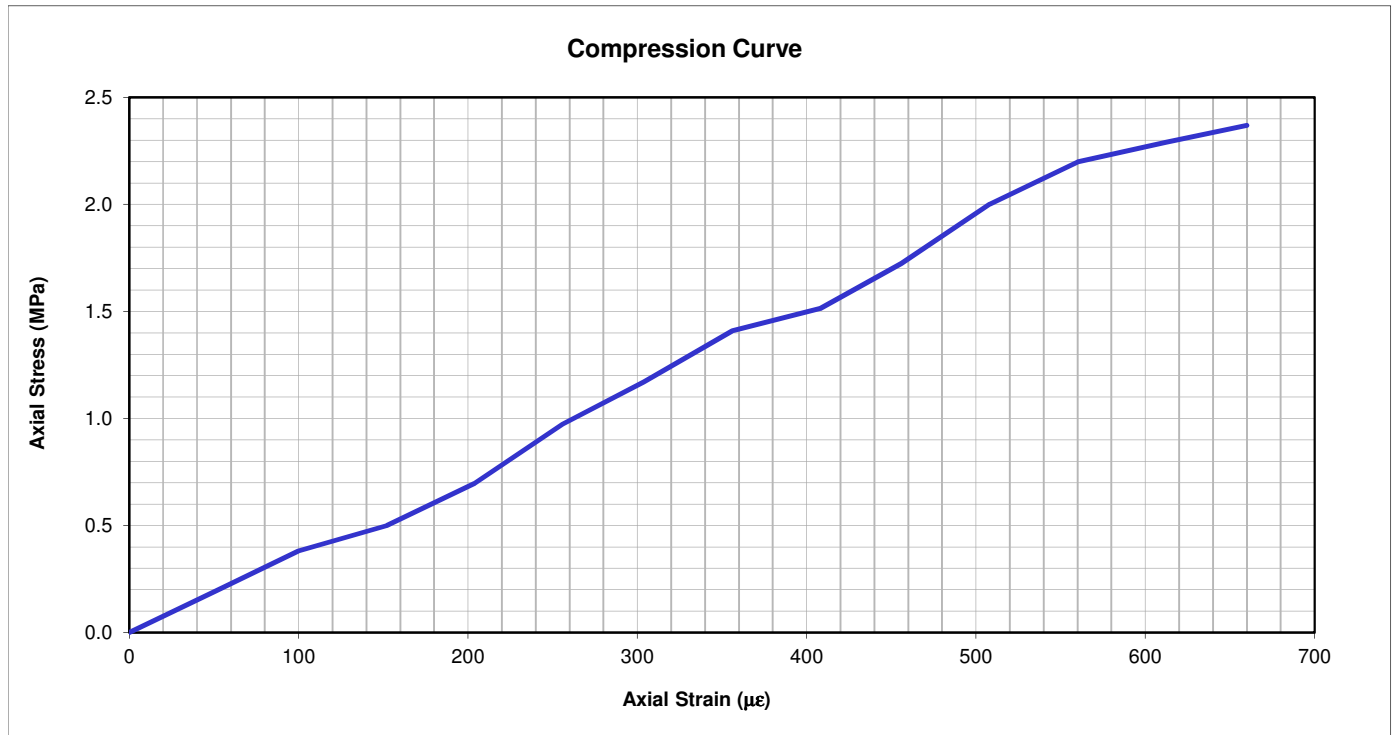
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71907</u>
Specimen Depth	<u>28.20 - 28.46m</u>
Specimen Type	<u>C</u>

Cross section area	<u>75.98 cm<sup>2</sup></u>
Height	<u>208.95 mm</u>
Max logged strength	<u>2.37 MPa</u>
E <sub>tan</sub> (*)	<u>4.11 GPa</u>
E <sub>sec</sub> (^)	<u>3.85 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.18 MPa  
 (^) Calculated for axial  $\sigma =$  1.18 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 18/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

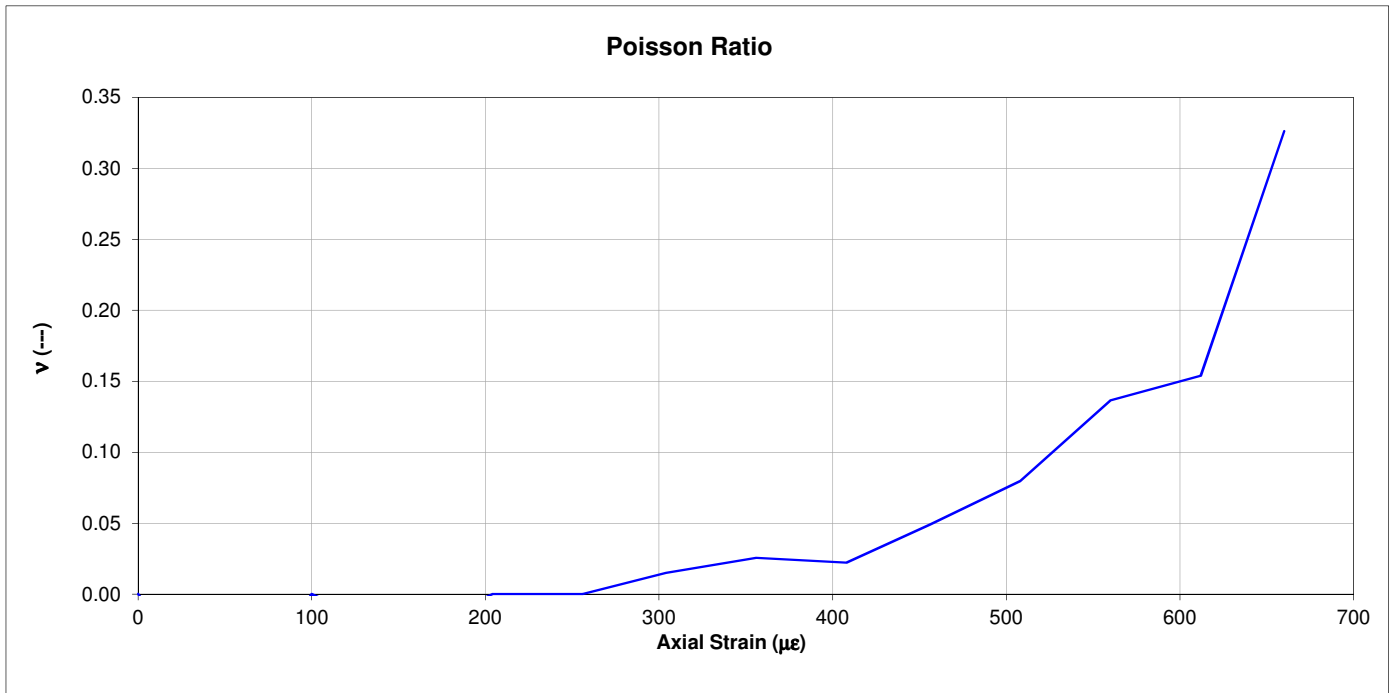
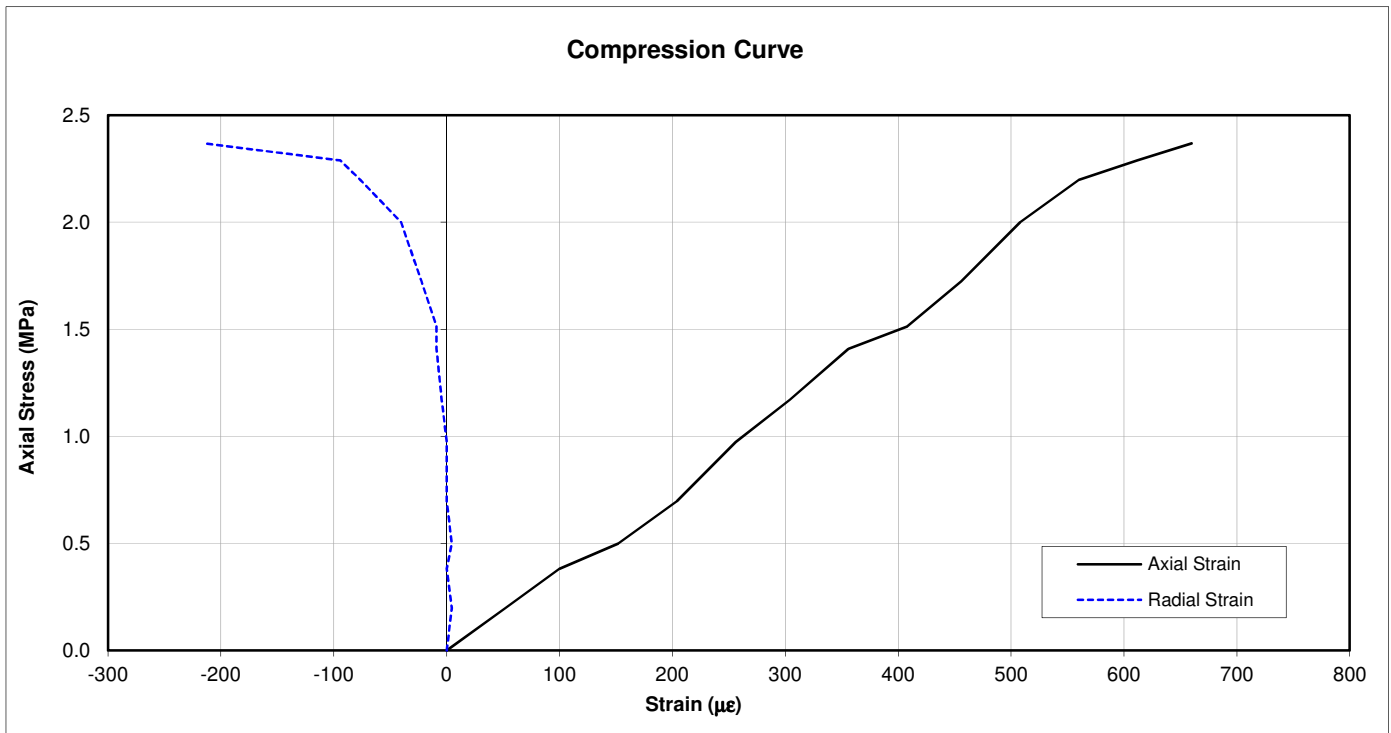
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71907  
 Specimen Depth 28.20 - 28.46m  
 Specimen Type C

Cross section area 75.98 cm<sup>2</sup>  
 Height 208.95 mm  
 Max logged strength 2.37 MPa  
 Poisson at failure 0.326  
 Poisson (\*) 0.015

(\*) Calculated for axial  $\sigma =$  1.18 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71907**      Sample Ref: **57B**      Sample Type: **U**      Depth (m): **45.45**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.58**      Moisture Content (%): **26**  
 Length (mm): **212.92**      Diameter (mm): **96.41**      Length/Diameter Ratio: **2.21**  
 Test Duration (mins:secs): **3:28**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **21.9**  
 UCS (MPa): **3.0**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



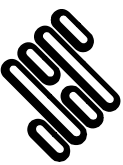

Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS WITH DEFORMATION - A4P | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004. Email: ask@soils.co.uk | 19/12/18 - 09:52 | AF3

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
	[REDACTED]		19/12/18
	Contract		Job No
<p><b>A303 Stonehenge Phase 7 Ground Investigation</b></p>		<p><b>733442</b></p>	

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	1A Princess Street
	Bristol BS3 4AG

Test Date 18/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

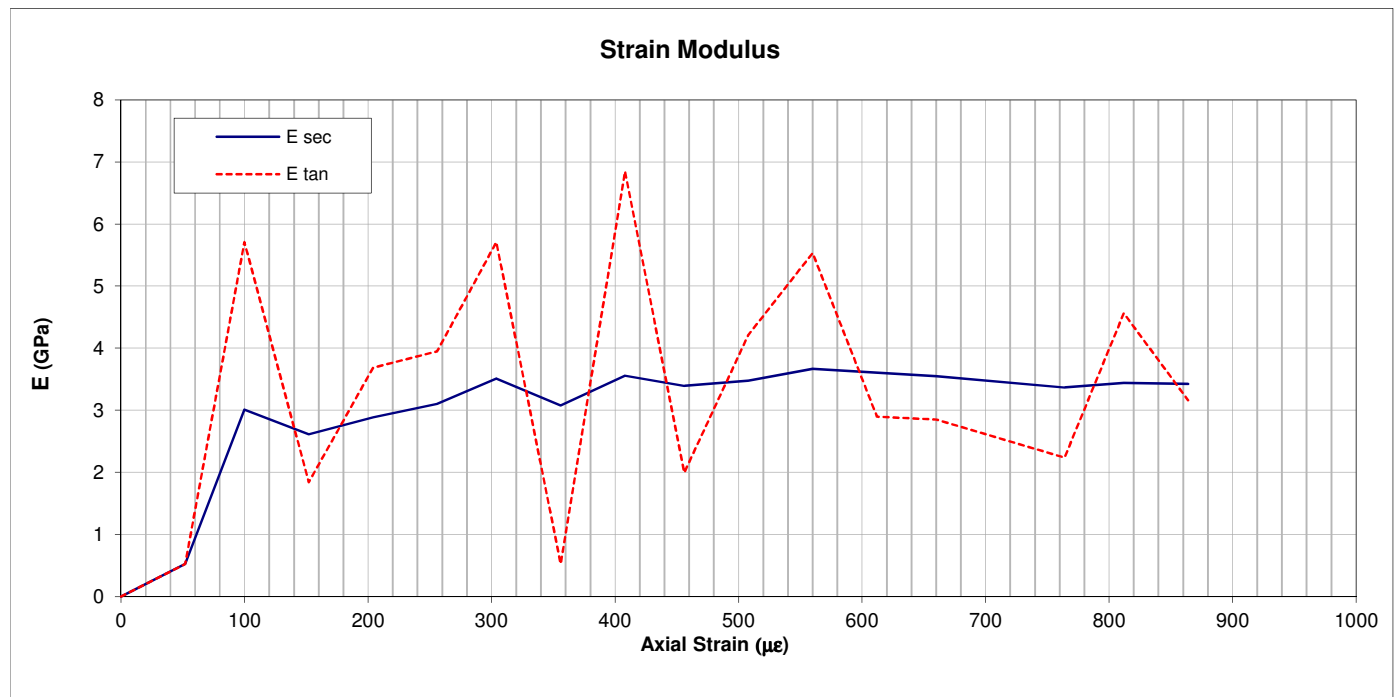
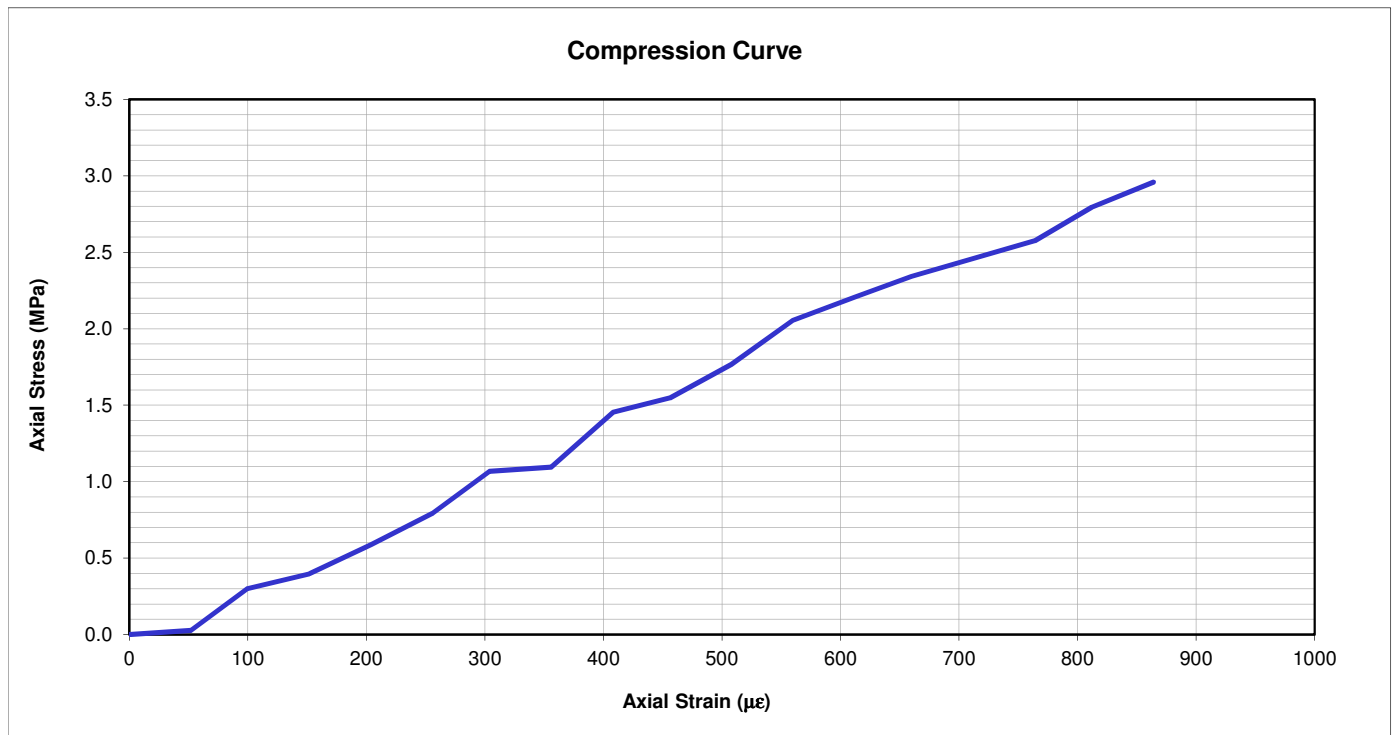
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71907  
 Specimen Depth 45.45 - 45.80m  
 Specimen Type C

Cross section area 73.00 cm<sup>2</sup>  
 Height 212.92 mm  
 Max logged strength 2.96 MPa  
 E<sub>tan</sub> (\*) 6.85 GPa  
 E<sub>sec</sub> (^) 3.56 GPa

(\*) Calculated for axial  $\sigma =$  1.48 MPa  
 (^) Calculated for axial  $\sigma =$  1.48 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 18/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

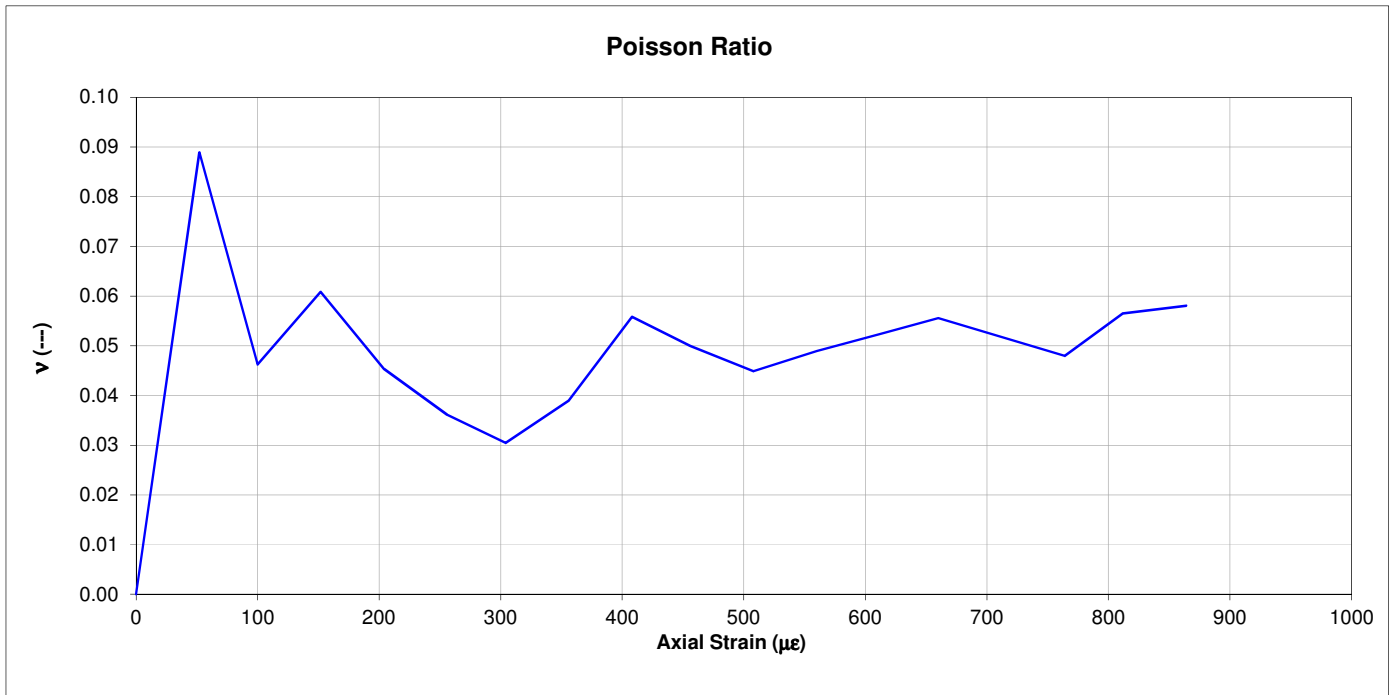
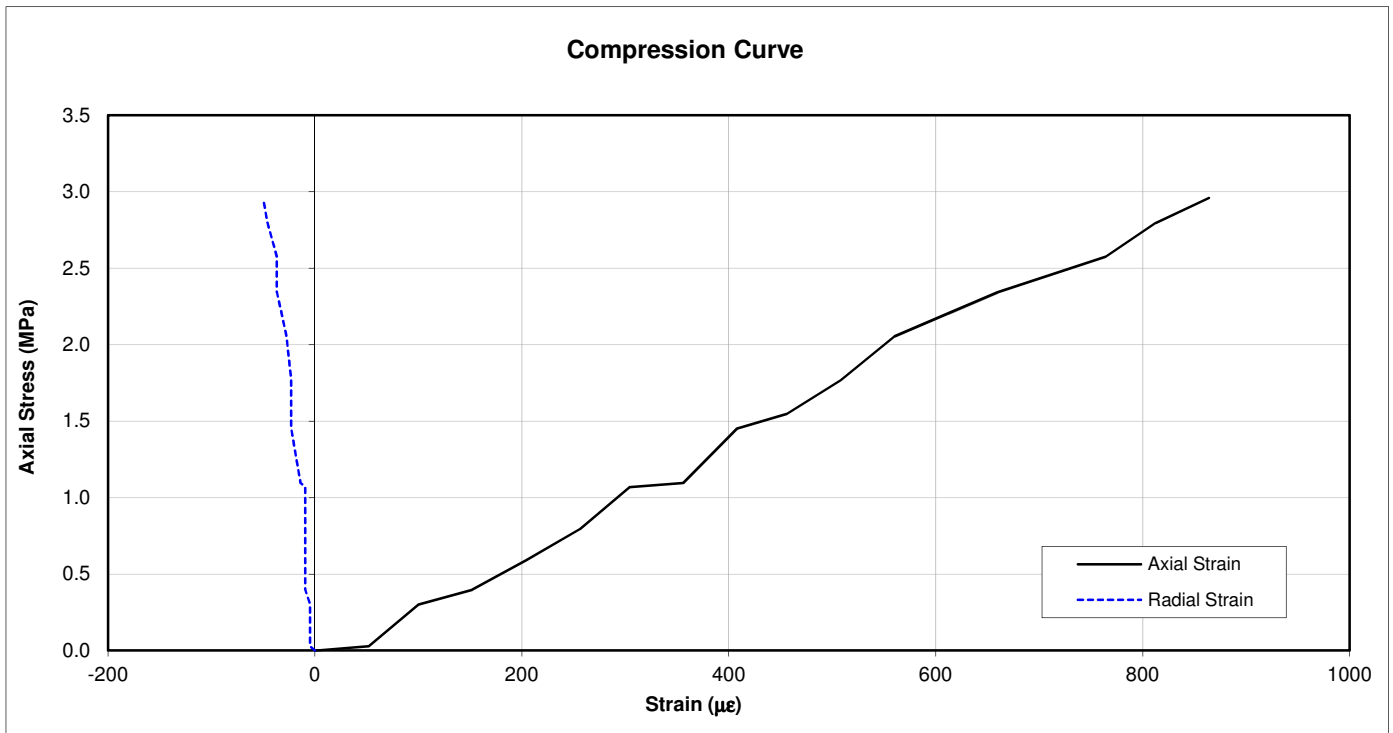
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71907  
 Specimen Depth 45.45 - 45.80m  
 Specimen Type C

Cross section area 73.00 cm<sup>2</sup>  
 Height 212.92 mm  
 Max logged strength 2.96 MPa  
 Poisson at failure 0.058  
 Poisson (\*) 0.056

(\*) Calculated for axial  $\sigma =$  1.48 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **57**      Sample Type: **U**      Depth (m): **45.55**

Bulk Density (Mg/m<sup>3</sup>): **2.01**      Dry Density (Mg/m<sup>3</sup>): **1.61**      Moisture Content (%): **25**  
 Length (mm): **214.48**      Diameter (mm): **100.42**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **4:35**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **25.8**  
 UCS (MPa): **3.3**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

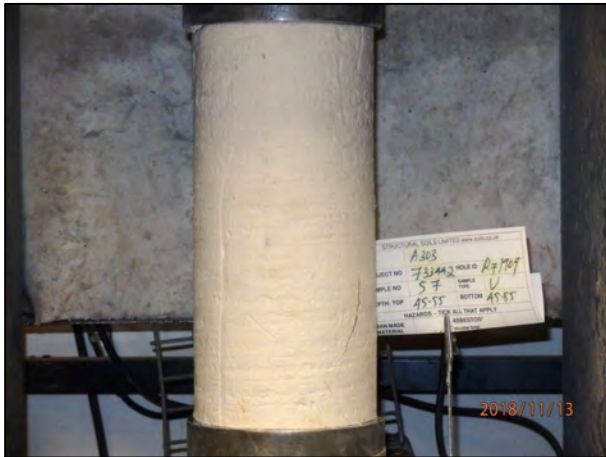
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

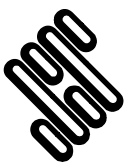


Front view (post-test)



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]		19/12/18
Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 13/11/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

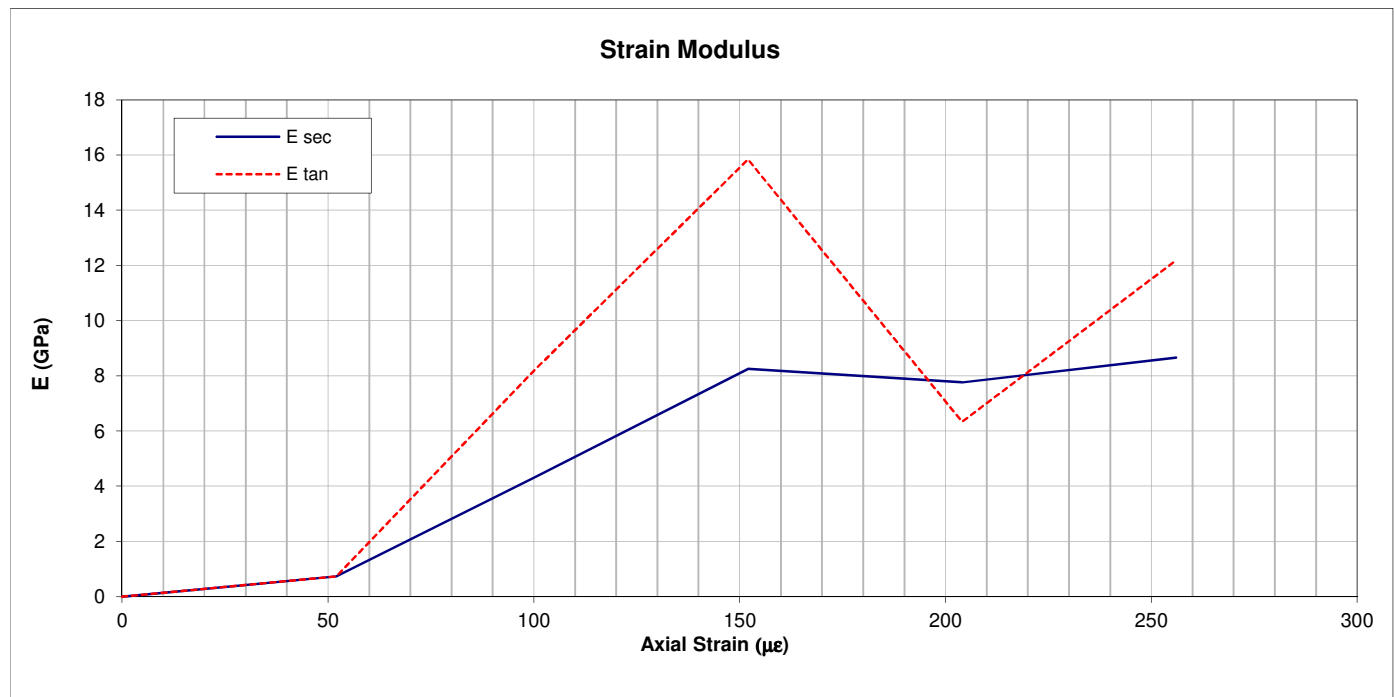
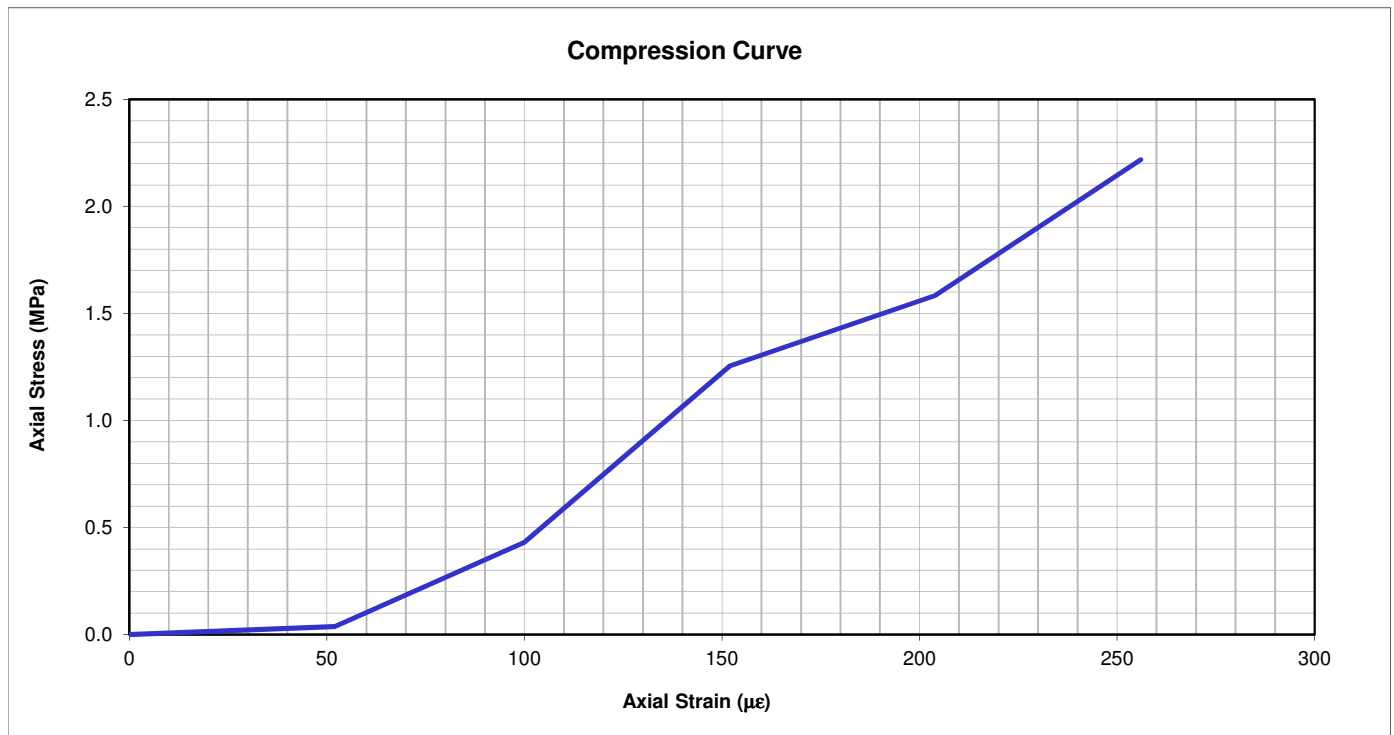
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71909</u>
Specimen Depth	<u>45.55 - 45.85m</u>
Specimen Type	<u>C</u>

Cross section area	<u>78.90 cm<sup>2</sup></u>
Height	<u>214.48 mm</u>
Max logged strength	<u>2.22 MPa</u>
E <sub>tan</sub> (*)	<u>8.19 GPa</u>
E <sub>sec</sub> (^)	<u>4.31 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.11 MPa  
 (^) Calculated for axial  $\sigma =$  1.11 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 13/11/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

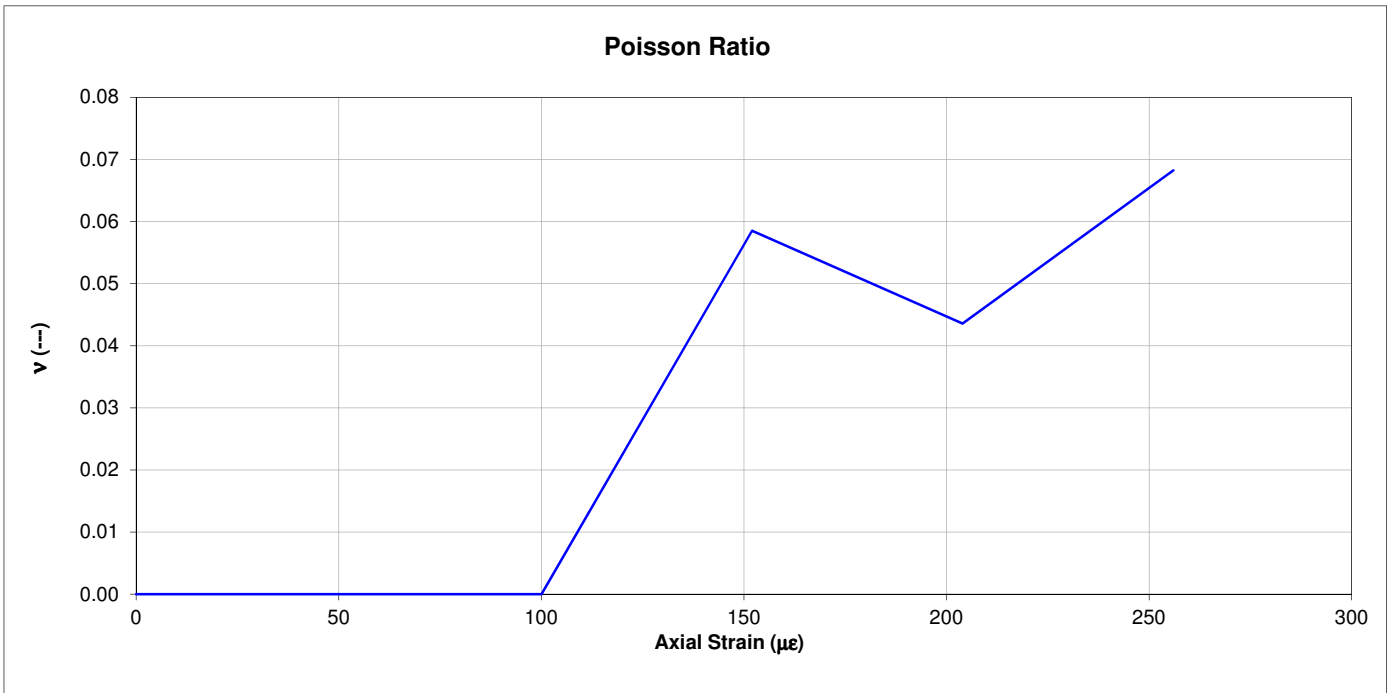
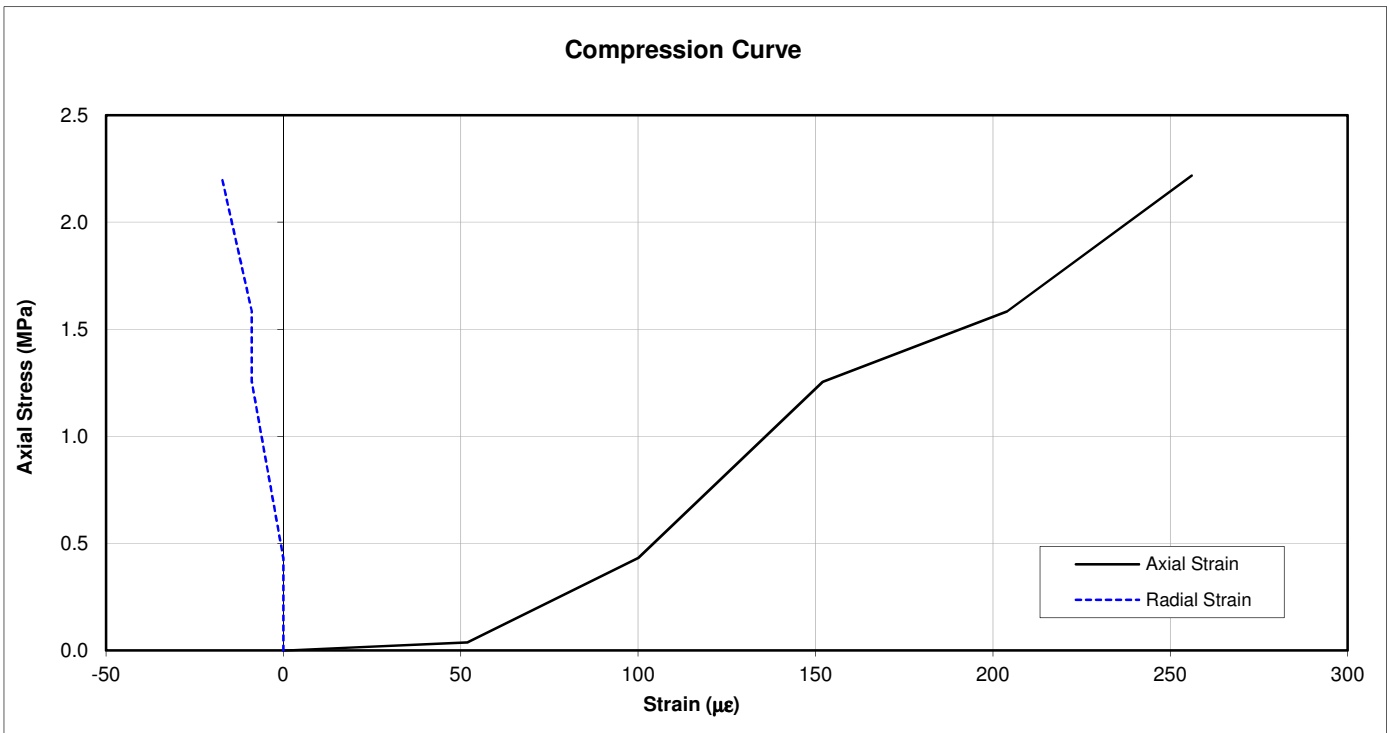
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71909  
 Specimen Depth 45.55 - 45.85m  
 Specimen Type C

Cross section area 78.90 cm<sup>2</sup>  
 Height 214.48 mm  
 Max logged strength 2.22 MPa  
 Poisson at failure 0.068  
 Poisson (\*) \_\_\_\_\_

(\*) Calculated for axial  $\sigma =$  1.11 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71909**      Sample Ref: **68**      Sample Type: **U**      Depth (m): **53.50**

Bulk Density (Mg/m<sup>3</sup>): **2.02**      Dry Density (Mg/m<sup>3</sup>): **1.61**      Moisture Content (%): **26**  
 Length (mm): **213.68**      Diameter (mm): **99.70**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **5:17**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **16.8**  
 UCS (MPa): **2.2**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)



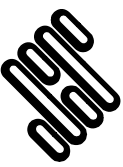

Front view (post-test)



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Grfctext L - UCS WITH DEFORMATION - A4P | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/12/18 - 09:52 | AF3

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
	[REDACTED]		19/12/18
	Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>	



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

13/11/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

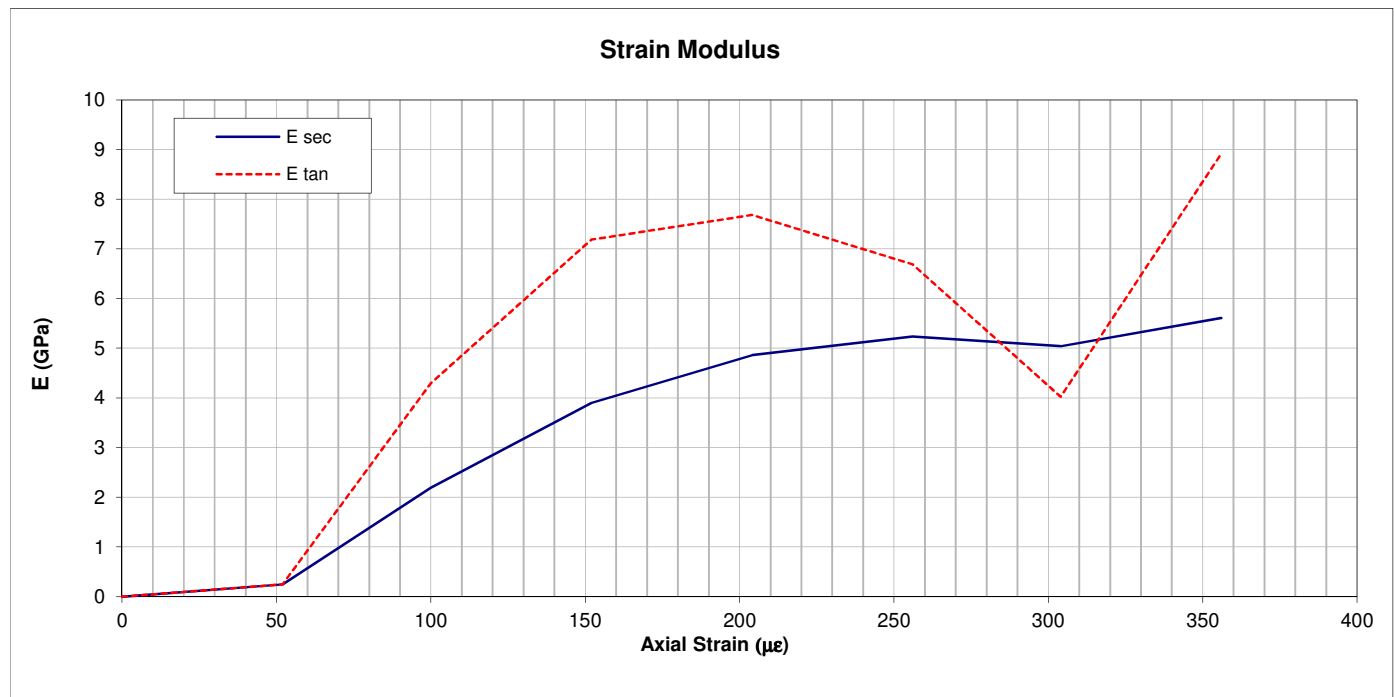
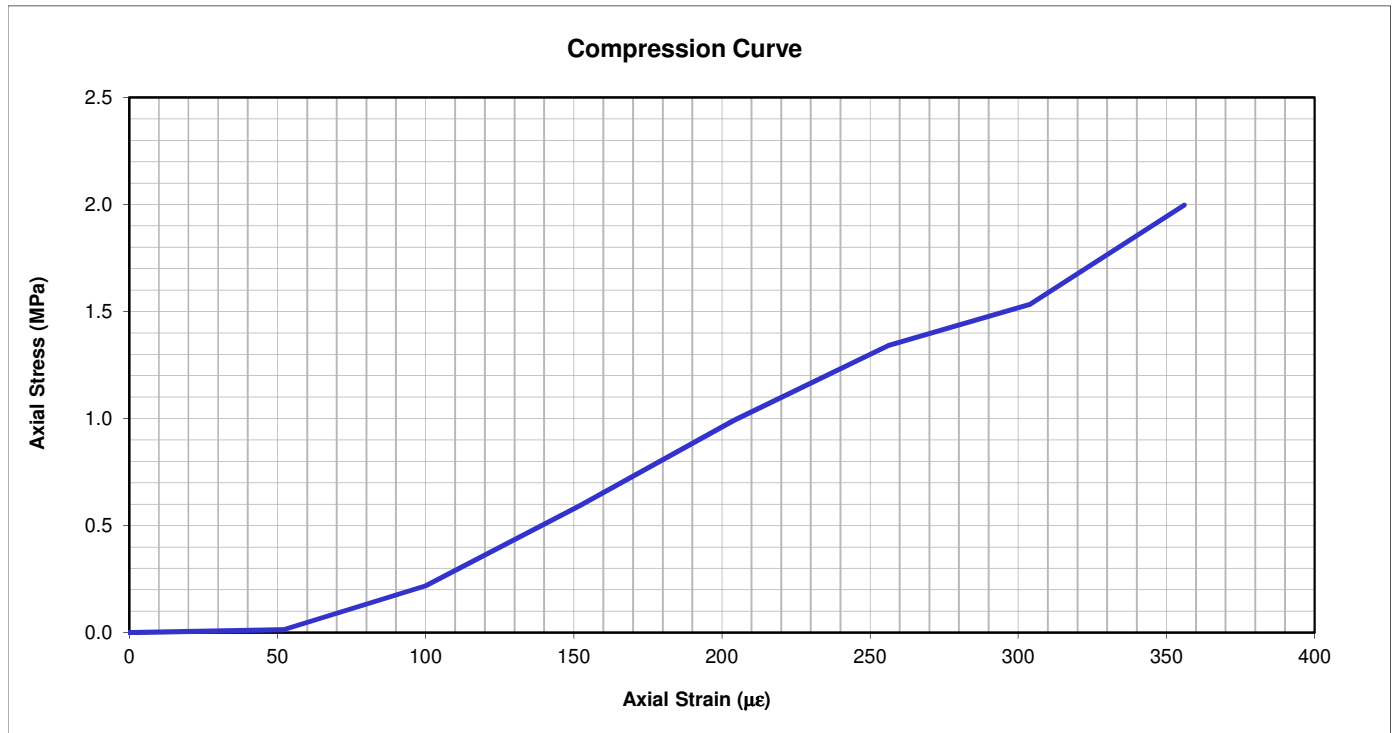
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	733442
Site	
BH No	R71909
Specimen Depth	53.50 - 53.80m
Specimen Type	C

Cross section area	77.62 cm <sup>2</sup>
Height	213.68 mm
Max logged strength	2.00 MPa
E <sub>tan</sub>	(*) 7.68 GPa
E <sub>sec</sub>	(^) 4.86 GPa

(\*) Calculated for axial  $\sigma = 1.00$  MPa  
 (^) Calculated for axial  $\sigma = 1.00$  MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 13/11/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

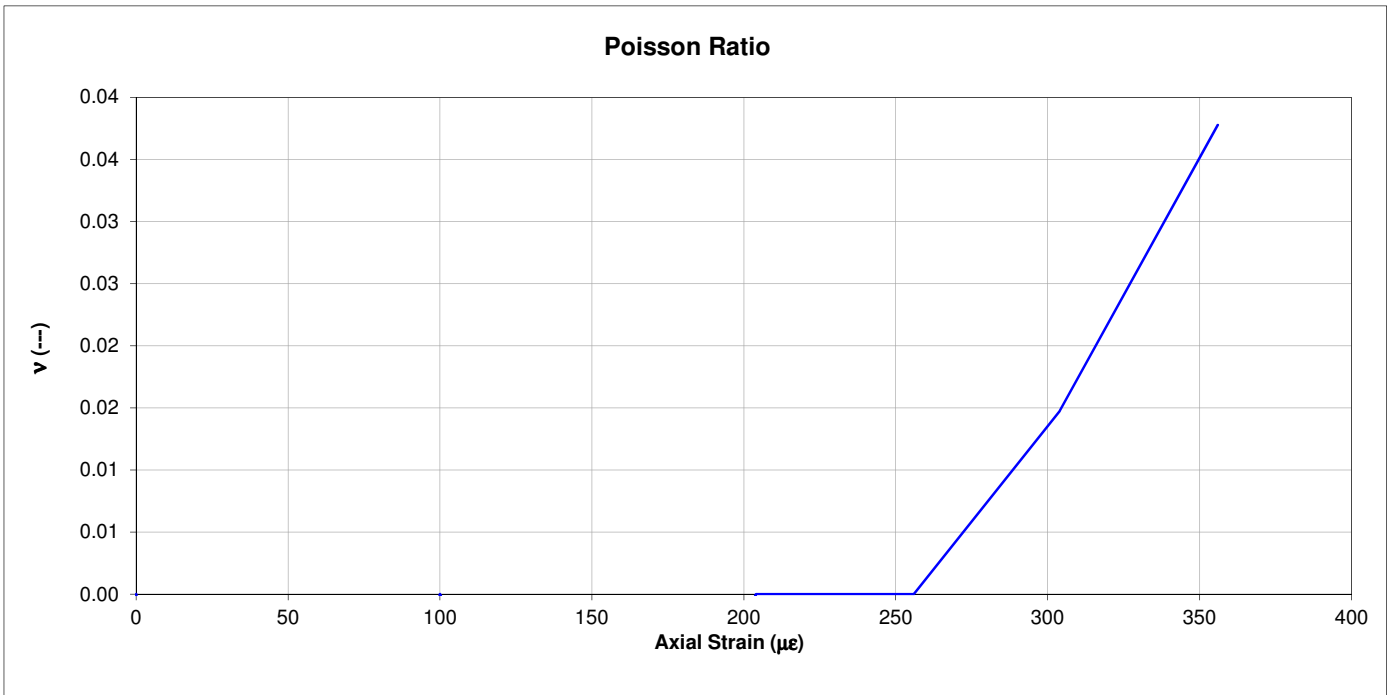
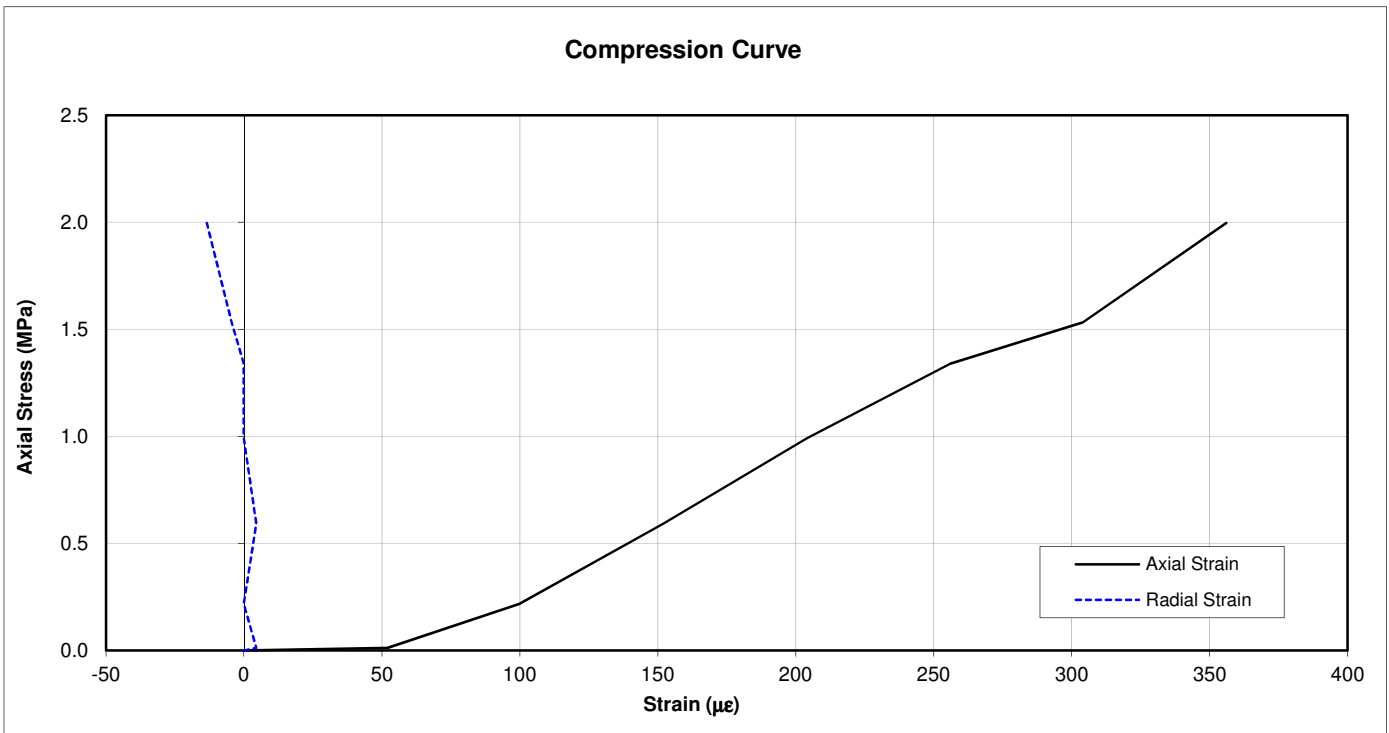
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71909  
 Specimen Depth 53.50 - 53.80m  
 Specimen Type C

Cross section area 77.62 cm<sup>2</sup>  
 Height 213.68 mm  
 Max logged strength 2.00 MPa  
 Poisson at failure 0.038  
 Poisson (\*) \_\_\_\_\_

(\*) Calculated for axial  $\sigma =$  1.00 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **60**      Sample Type: **U**      Depth (m): **38.50**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **27**  
 Length (mm): **215.30**      Diameter (mm): **100.06**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **3:00**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **22.9**  
 UCS (MPa): **2.9**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - UCS WITH DEFORMATION - A4P | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_018 | Email: ask@soils.co.uk | 19/12/18 - 09:52 | AF3



**STRUCTURAL SOILS**  
 1a Princess Street  
 Bedminster  
 Bristol  
 BS3 4AG

Compiled By		Date
[REDACTED]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 24/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

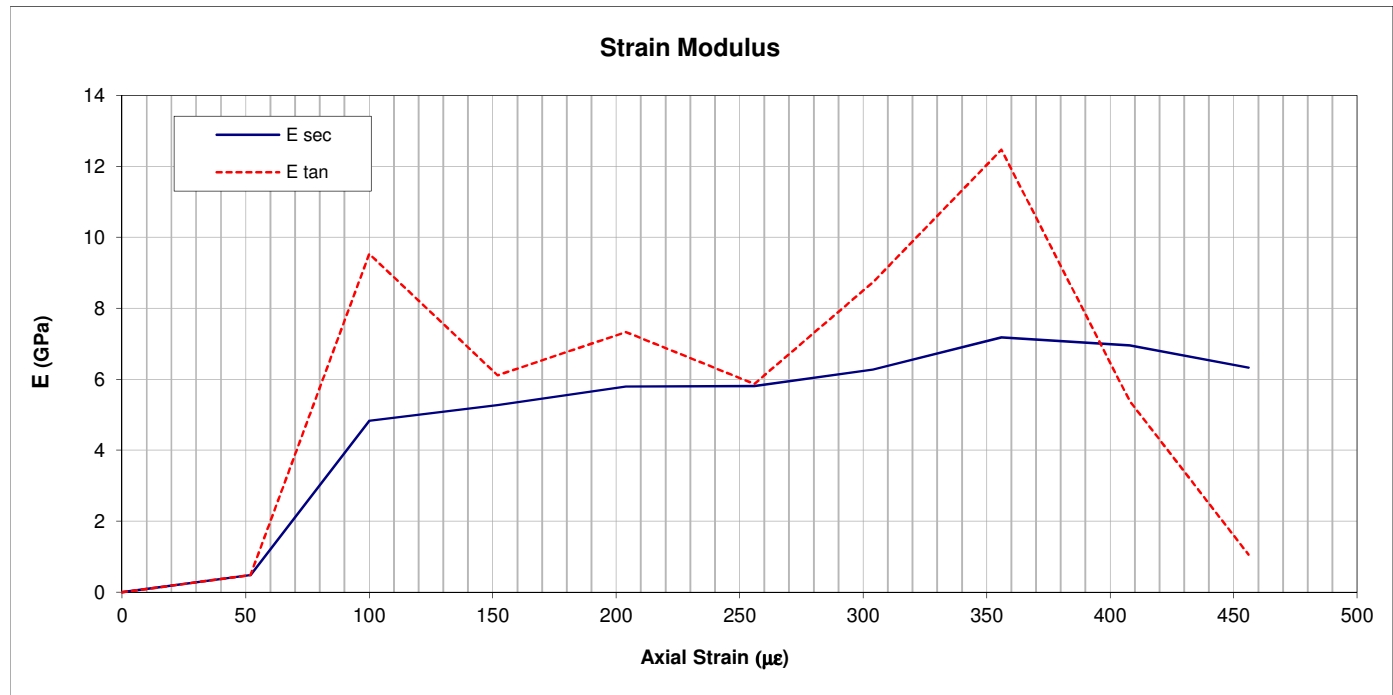
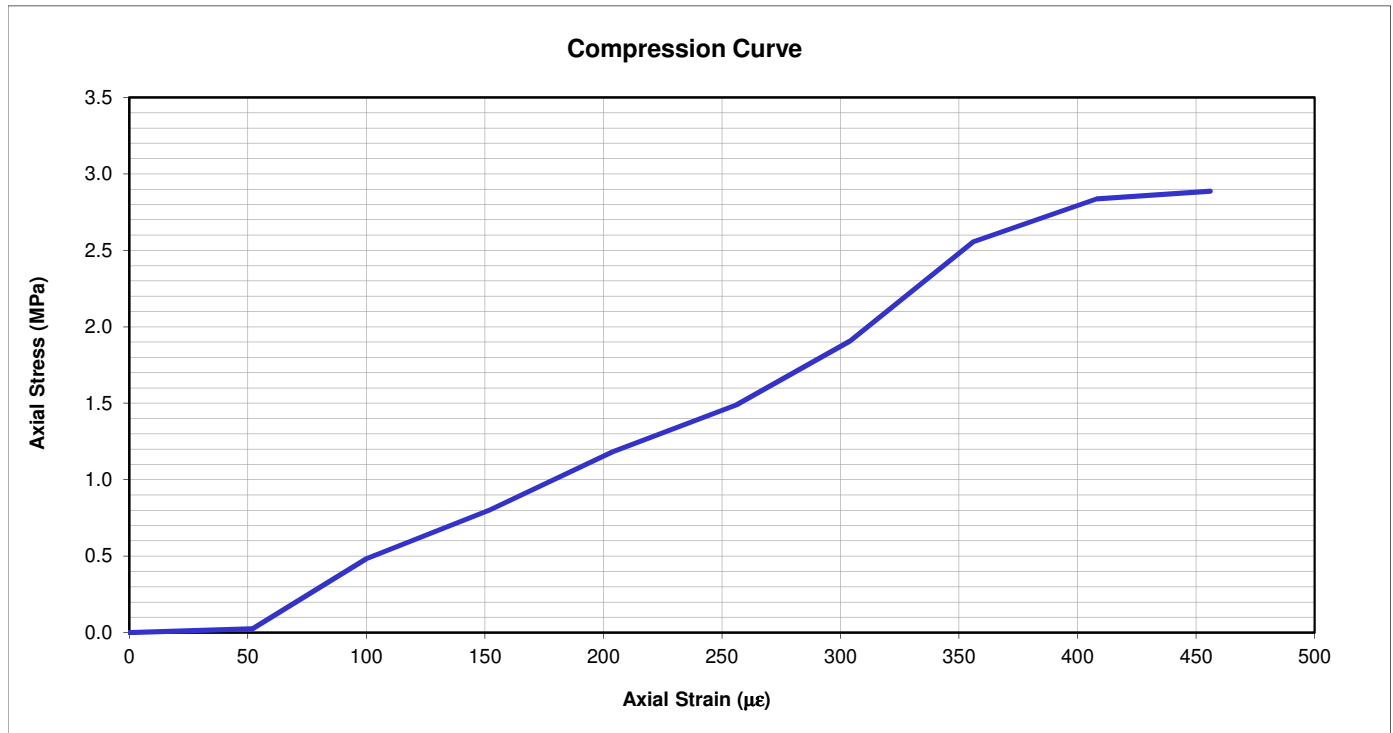
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71911</u>
Specimen Depth	<u>38.50 - 38.87m</u>
Specimen Type	<u>C</u>

Cross section area	<u>78.63 cm<sup>2</sup></u>
Height	<u>215.30 mm</u>
Max logged strength	<u>2.89 MPa</u>
E <sub>tan</sub>	<u>(*) 7.34 GPa</u>
E <sub>sec</sub>	<u>(^)</u>

(\*) Calculated for axial  $\sigma =$  1.44 MPa  
 (^) Calculated for axial  $\sigma =$  1.44 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 24/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

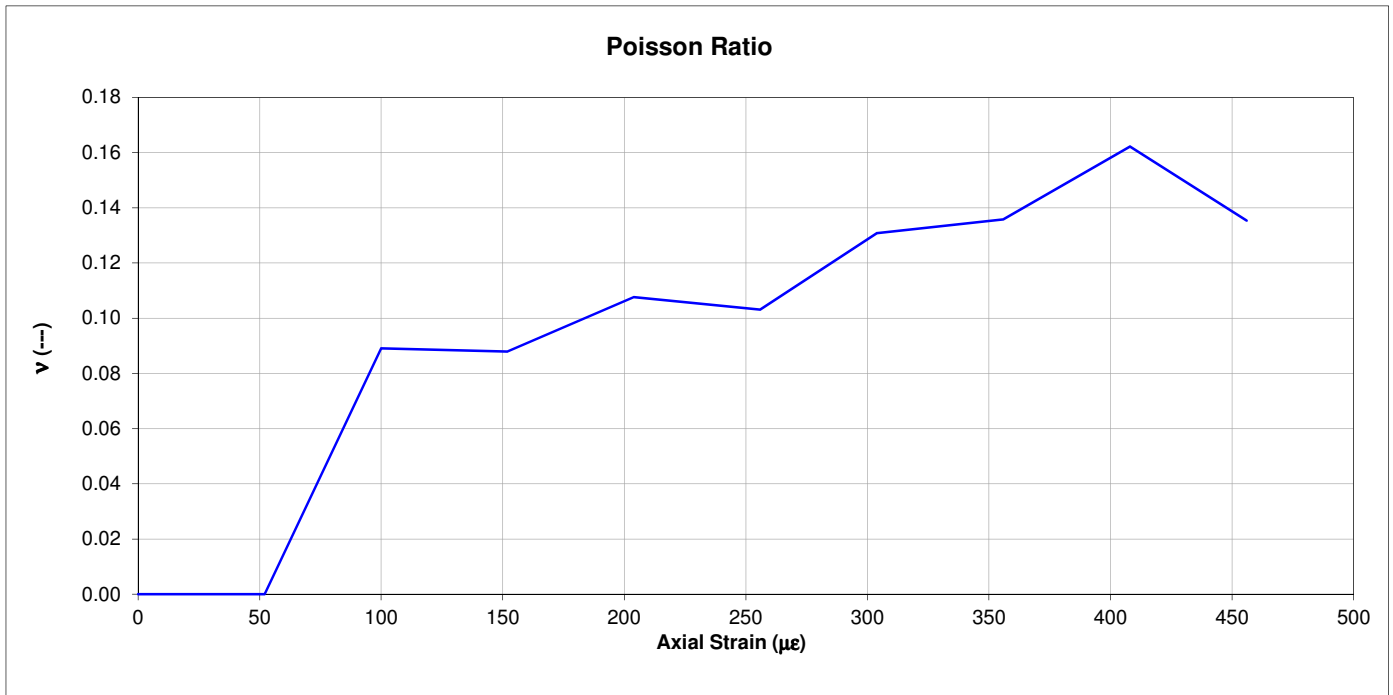
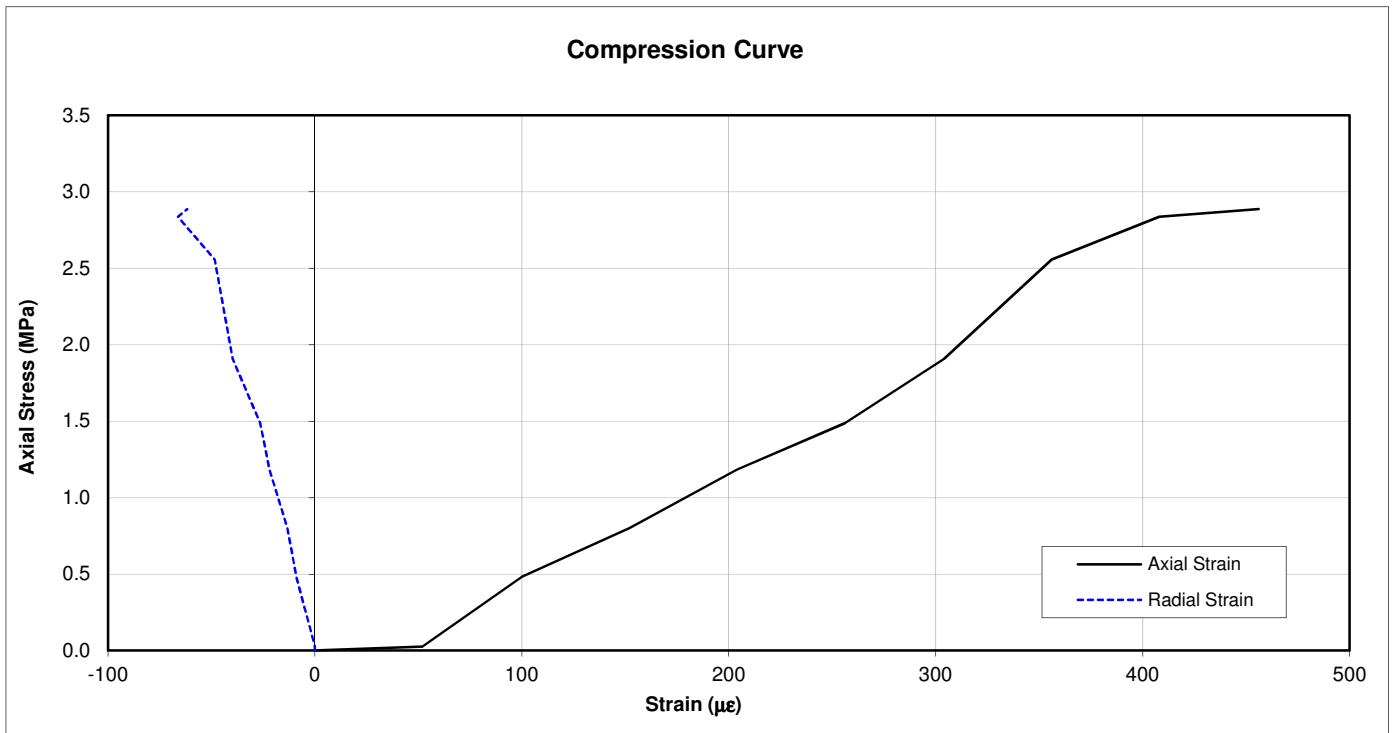
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71911  
 Specimen Depth 38.50 - 38.87m  
 Specimen Type C

Cross section area 78.63 cm<sup>2</sup>  
 Height 215.30 mm  
 Max logged strength 2.89 MPa  
 Poisson at failure 0.135  
 Poisson (\*) 0.108

(\*) Calculated for axial  $\sigma =$  1.44 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71911**      Sample Ref: **75**      Sample Type: **U**      Depth (m): **47.00**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **27**  
 Length (mm): **214.48**      Diameter (mm): **99.86**      Length/Diameter Ratio: **2.15**  
 Test Duration (mins:secs): **3:50**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **27.8**  
 UCS (MPa): **3.5**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **PASS**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



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]		19/12/18
Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 24/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

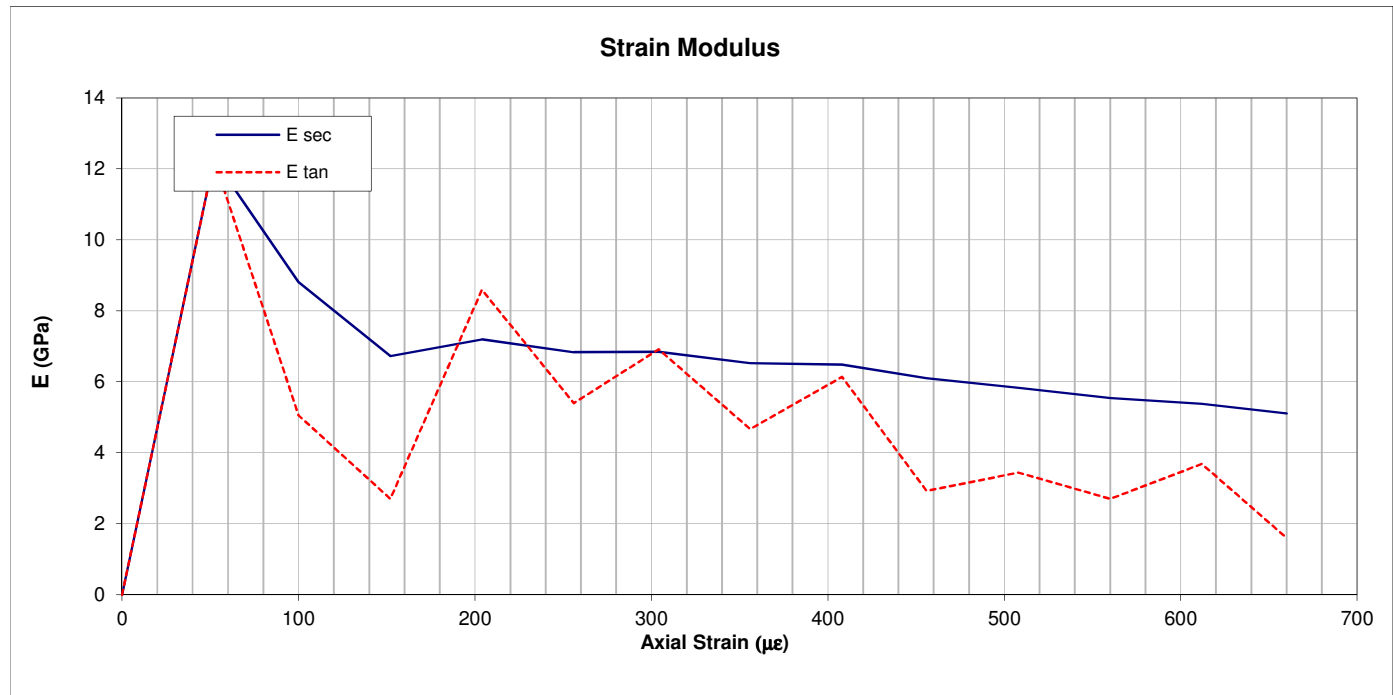
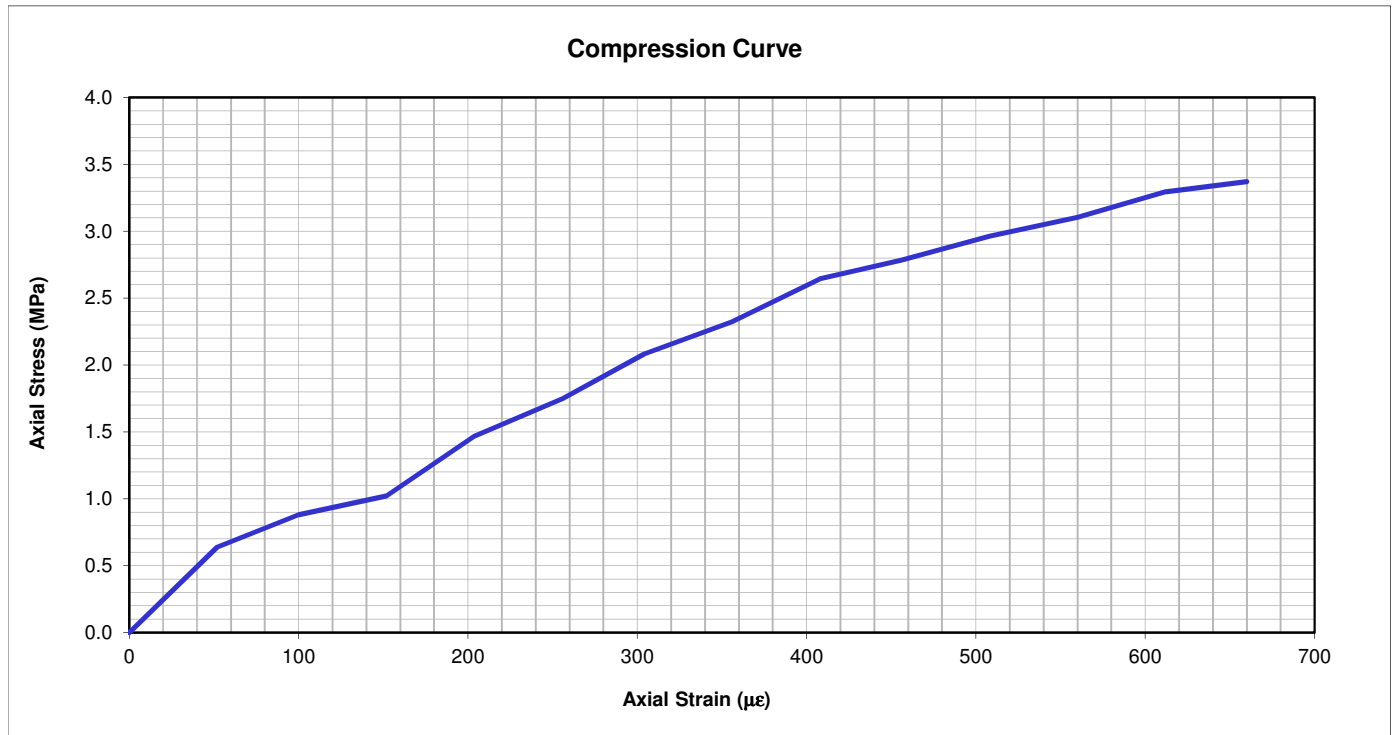
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71911  
 Specimen Depth 47.00 - 47.40m  
 Specimen Type C

Cross section area 78.32 cm<sup>2</sup>  
 Height 214.48 mm  
 Max logged strength 3.37 MPa  
 E<sub>tan</sub> (\*) 8.59 GPa  
 E<sub>sec</sub> (^) 7.20 GPa

(\*) Calculated for axial  $\sigma =$  1.69 MPa  
 (^) Calculated for axial  $\sigma =$  1.69 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 24/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

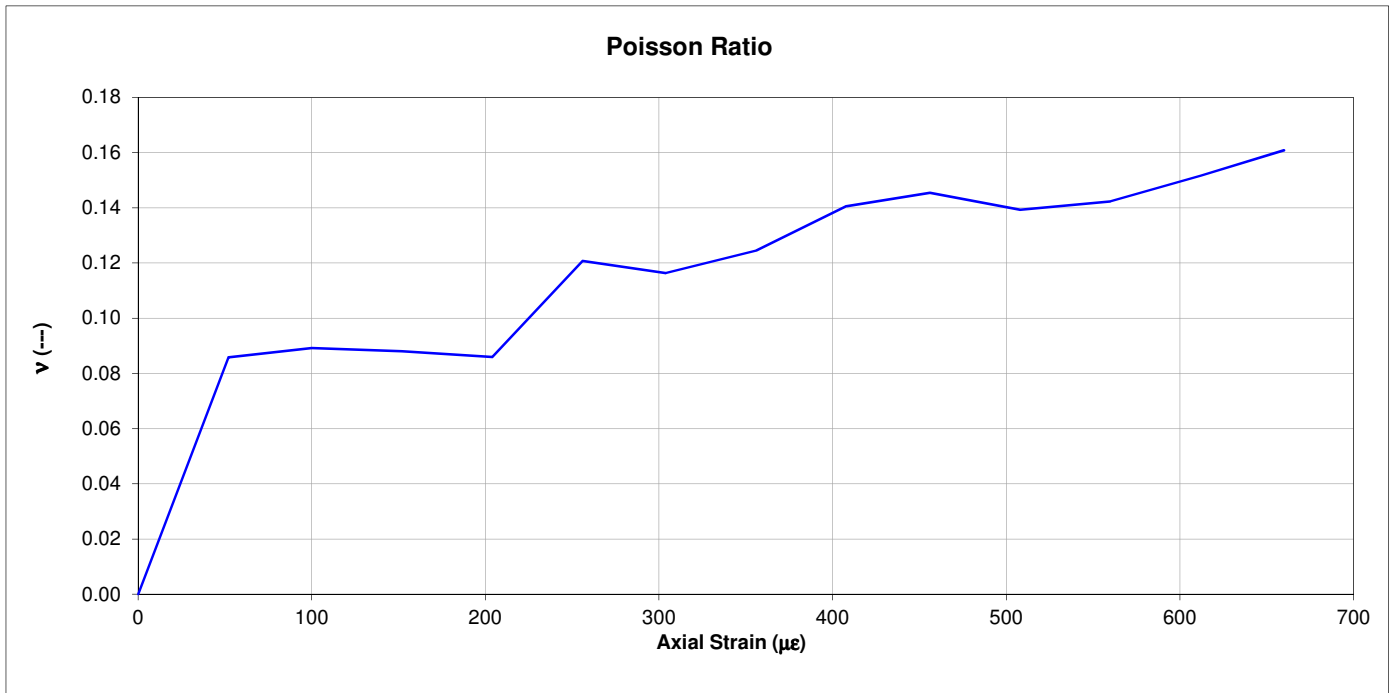
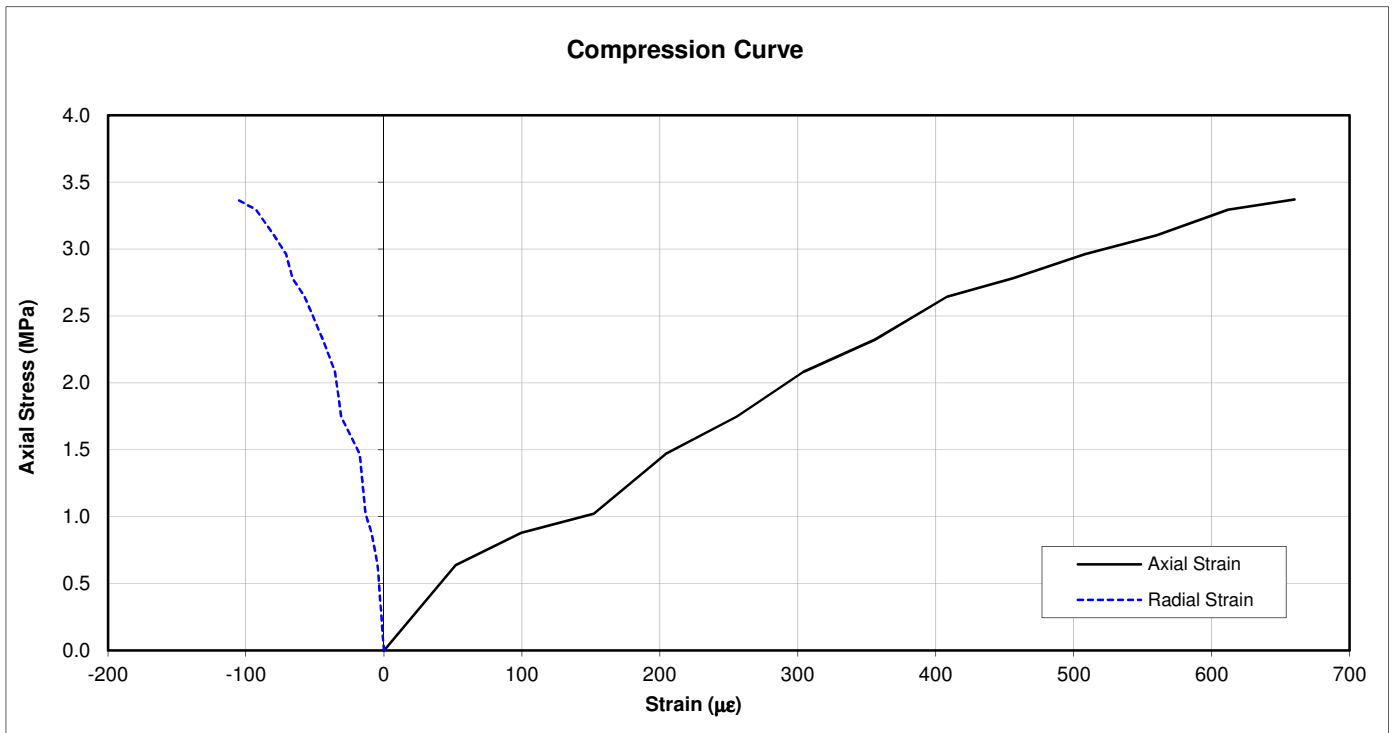
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71911  
 Specimen Depth 47.00 - 47.40m  
 Specimen Type C

Cross section area 78.32 cm<sup>2</sup>  
 Height 214.48 mm  
 Max logged strength 3.37 MPa  
 Poisson at failure 0.161  
 Poisson (\*) 0.086

(\*) Calculated for axial  $\sigma =$  1.69 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71913**      Sample Ref: **31**      Sample Type: **U**      Depth (m): **19.80**

Bulk Density (Mg/m<sup>3</sup>): **1.91**      Dry Density (Mg/m<sup>3</sup>): **1.48**      Moisture Content (%): **29**  
 Length (mm): **214.90**      Diameter (mm): **98.61**      Length/Diameter Ratio: **2.18**  
 Test Duration (mins:secs): **5:02**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **20.5**  
 UCS (MPa): **2.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

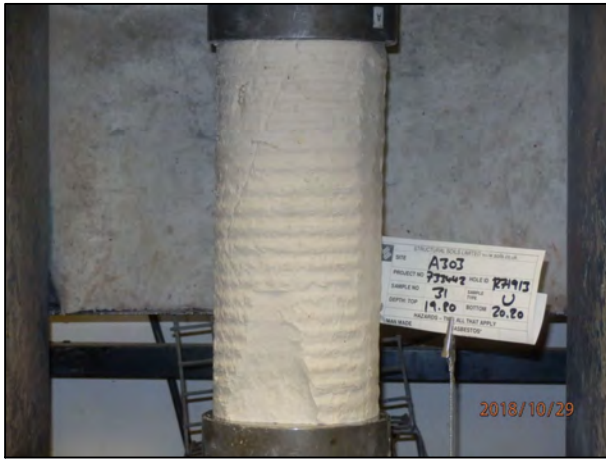
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

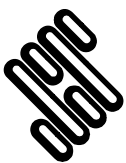


Front view (post-test)



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]		19/12/18
Contract		Job No
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 29/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

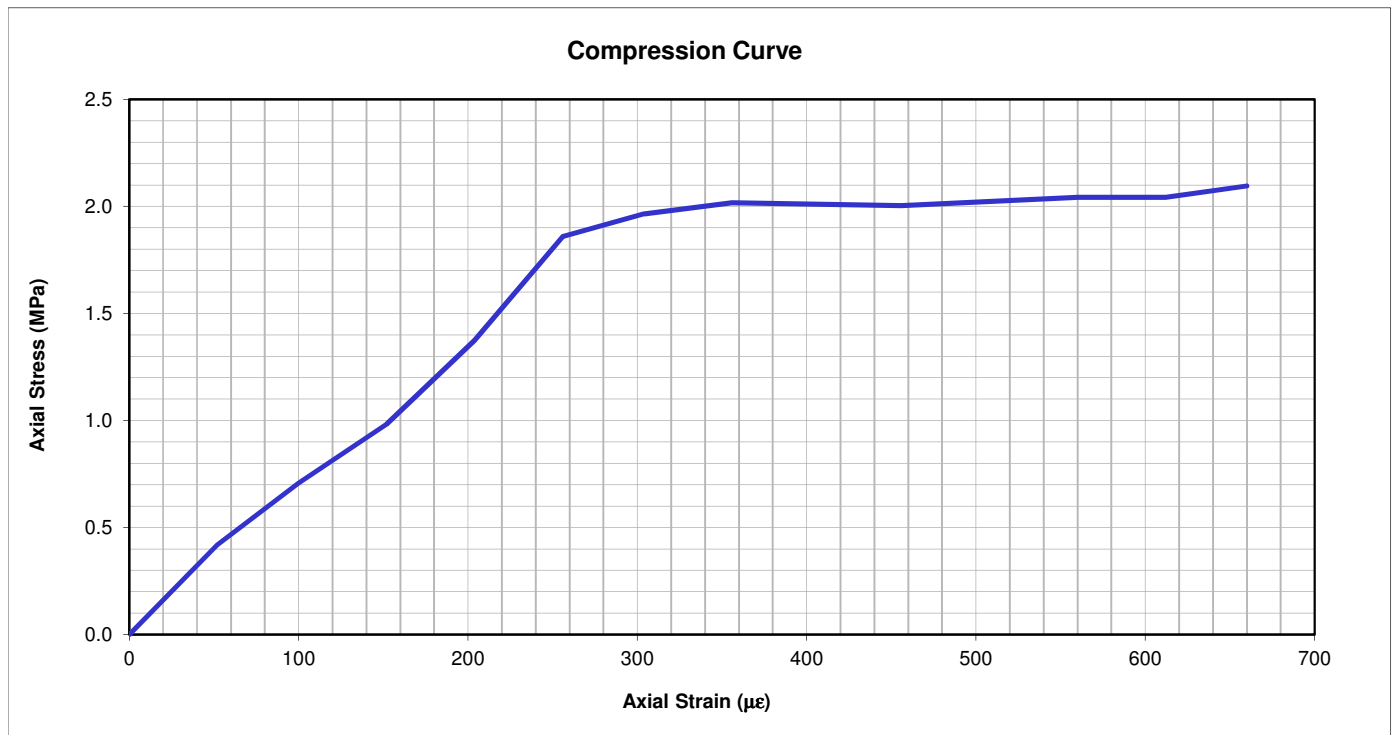
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71913  
 Specimen Depth 19.80 - 20.20m  
 Specimen Type C

Cross section area 76.37 cm<sup>2</sup>  
 Height 214.90 mm  
 Max logged strength 2.10 MPa  
 E<sub>tan</sub> (\*) 5.29 GPa  
 E<sub>sec</sub> (^) 6.46 GPa

(\*) Calculated for axial  $\sigma =$  1.05 MPa  
 (^) Calculated for axial  $\sigma =$  1.05 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 29/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

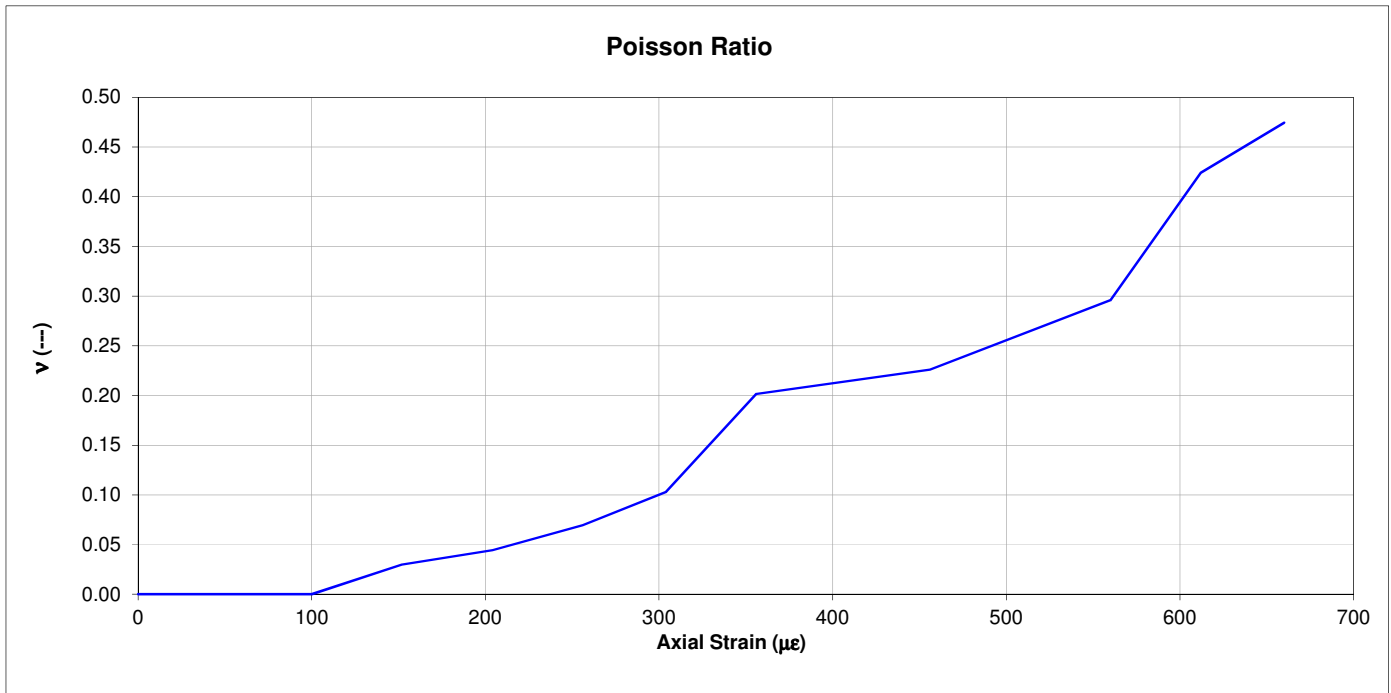
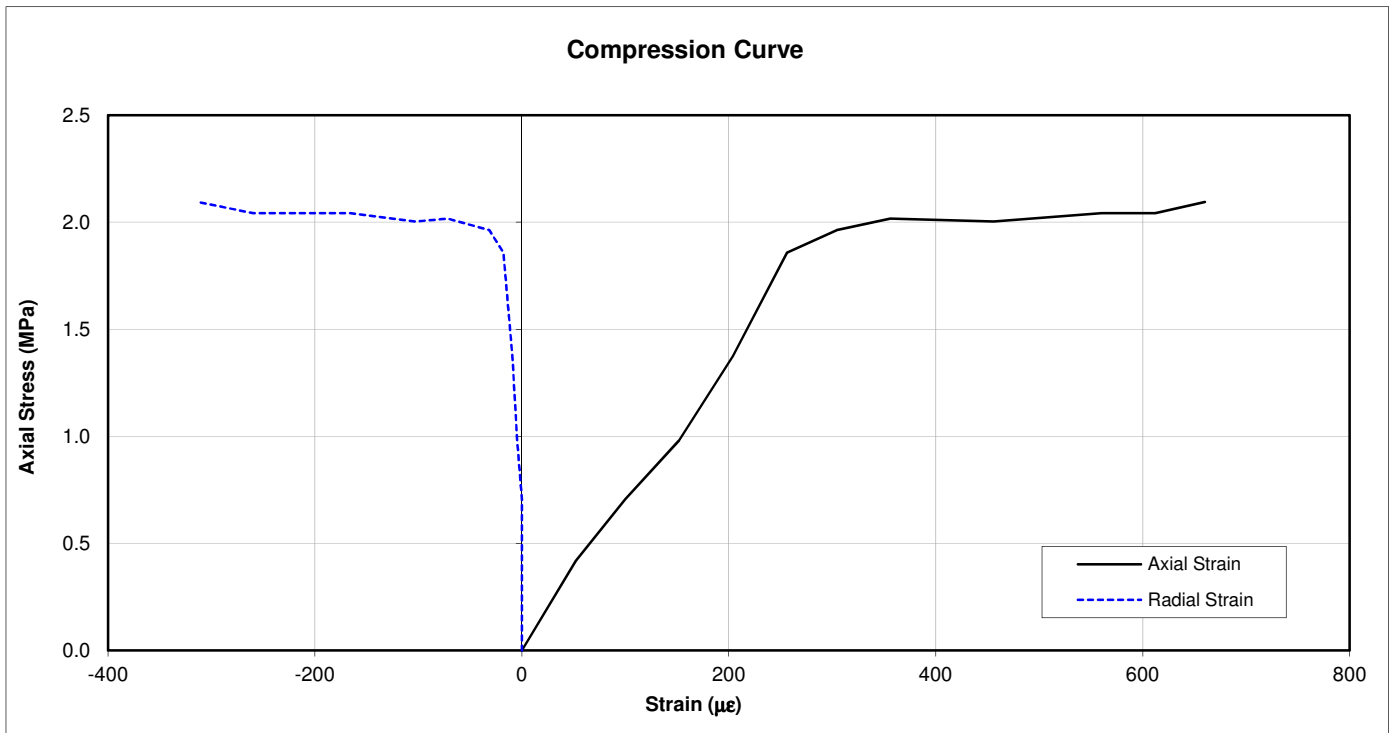
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71913</u>
Specimen Depth	<u>19.80 - 20.20m</u>
Specimen Type	<u>C</u>

Cross section area	<u>76.37 cm<sup>2</sup></u>
Height	<u>214.90 mm</u>
Max logged strength	<u>2.10 MPa</u>
Poisson at failure	<u>0.474</u>
Poisson (*)	<u>0.030</u>

(\*) Calculated for axial  $\sigma =$  1.05 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R71913**      Sample Ref: **39**      Sample Type: **U**      Depth (m): **23.80**

Bulk Density (Mg/m<sup>3</sup>): **1.99**      Dry Density (Mg/m<sup>3</sup>): **1.58**      Moisture Content (%): **26**  
 Length (mm): **215.73**      Diameter (mm): **99.48**      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **3:19**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **16.5**  
 UCS (MPa): **2.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

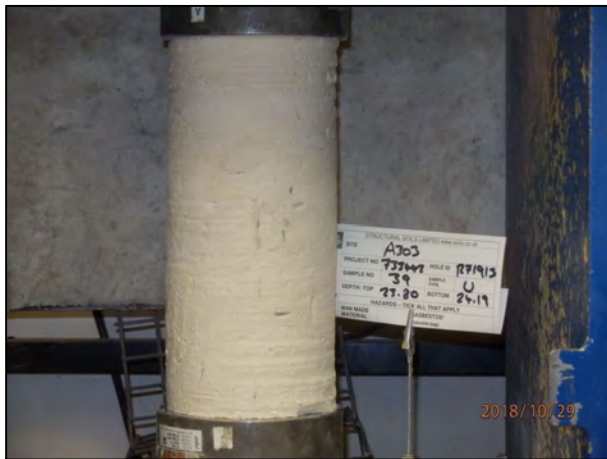
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

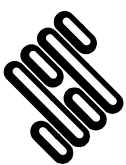


Front view (post-test)



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

29/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

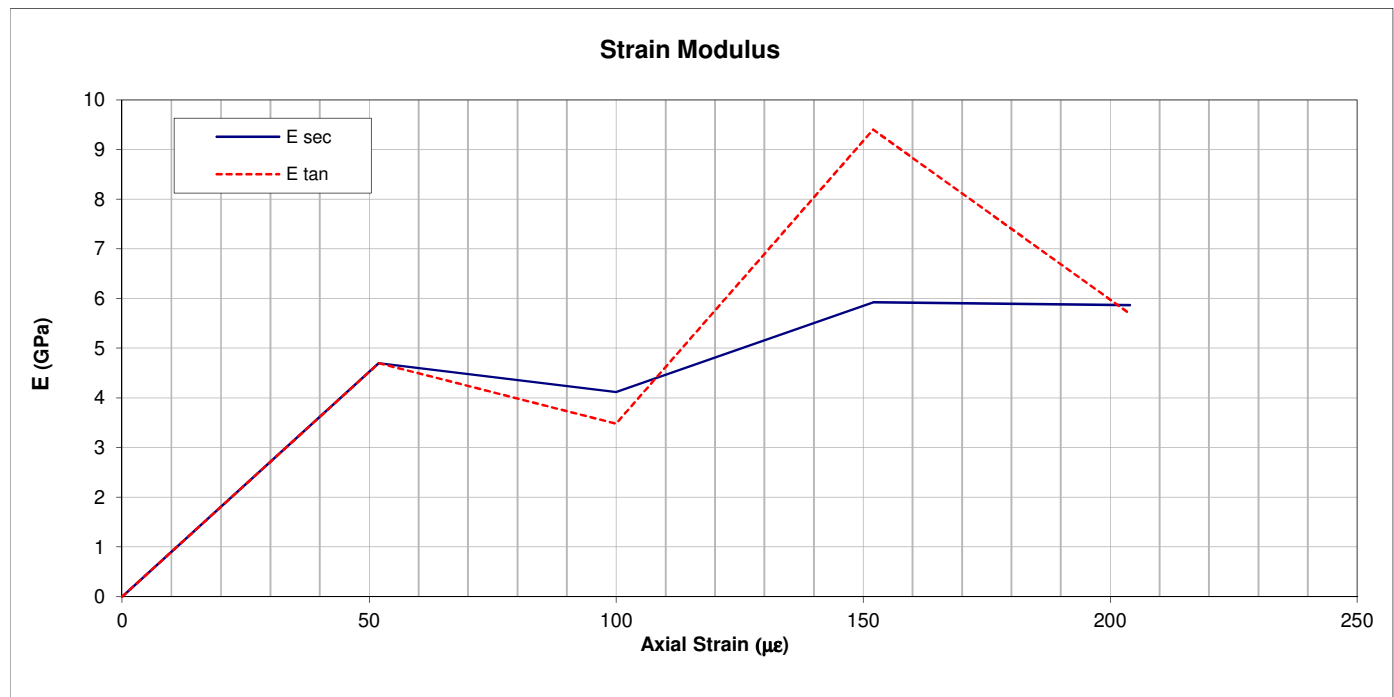
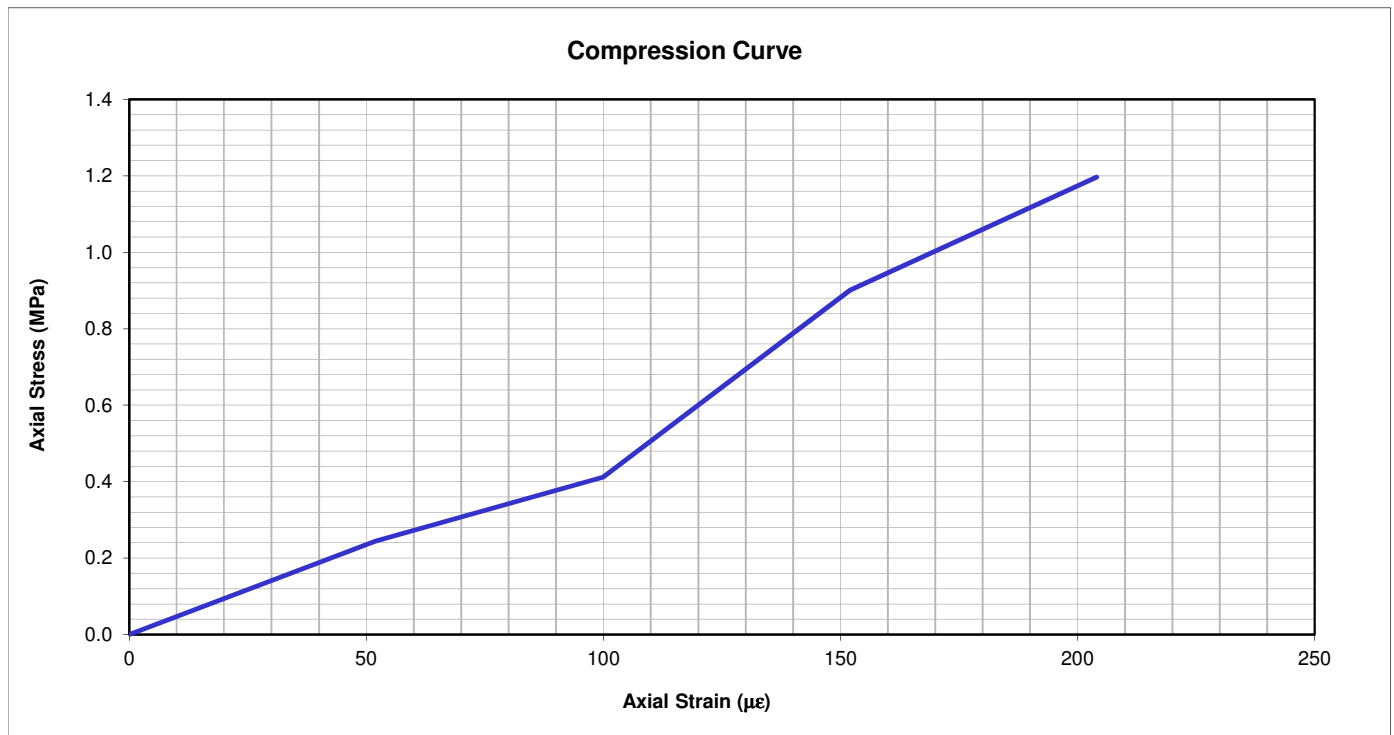
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R71913</u>
Specimen Depth	<u>23.80 - 24.19m</u>
Specimen Type	<u>C</u>

Cross section area	<u>77.73 cm<sup>2</sup></u>
Height	<u>215.73 mm</u>
Max logged strength	<u>1.20 MPa</u>
E <sub>tan</sub> (*)	<u>3.48 GPa</u>
E <sub>sec</sub> (^)	<u>4.12 GPa</u>

(\*) Calculated for axial  $\sigma =$  0.60 MPa  
 (^) Calculated for axial  $\sigma =$  0.60 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
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Test Date 29/10/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

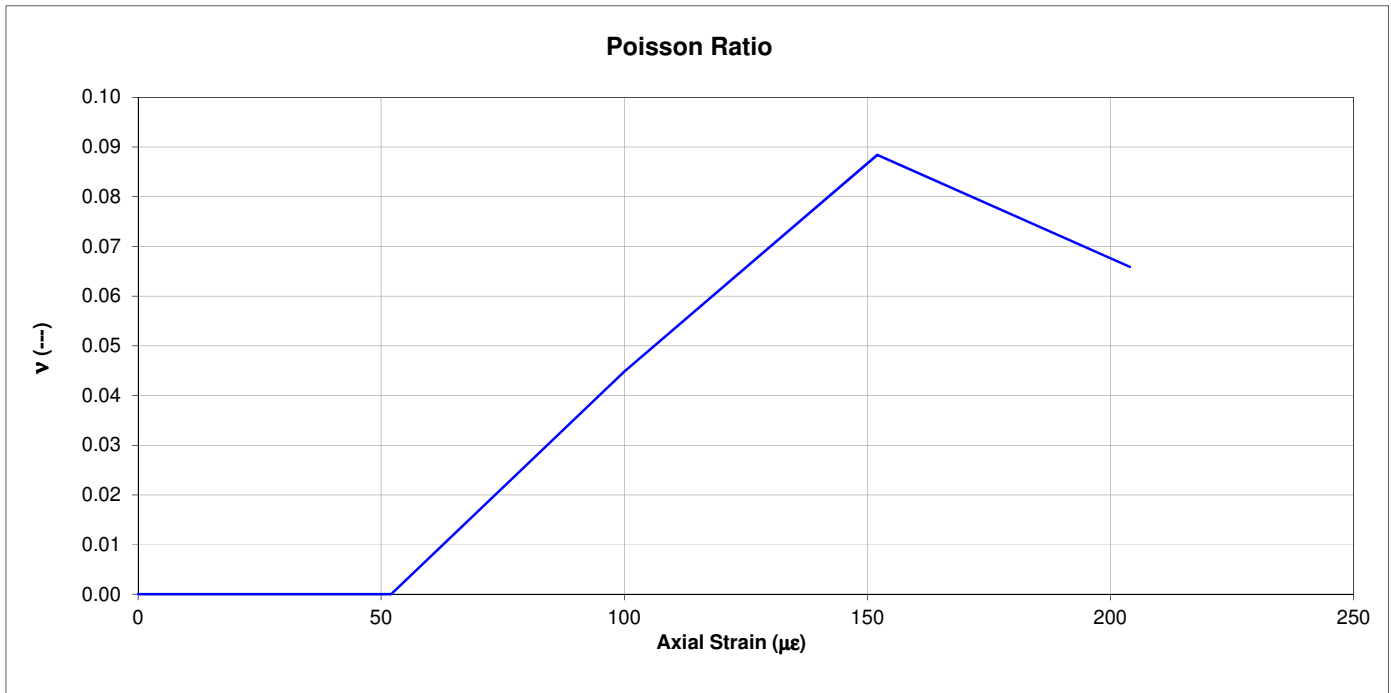
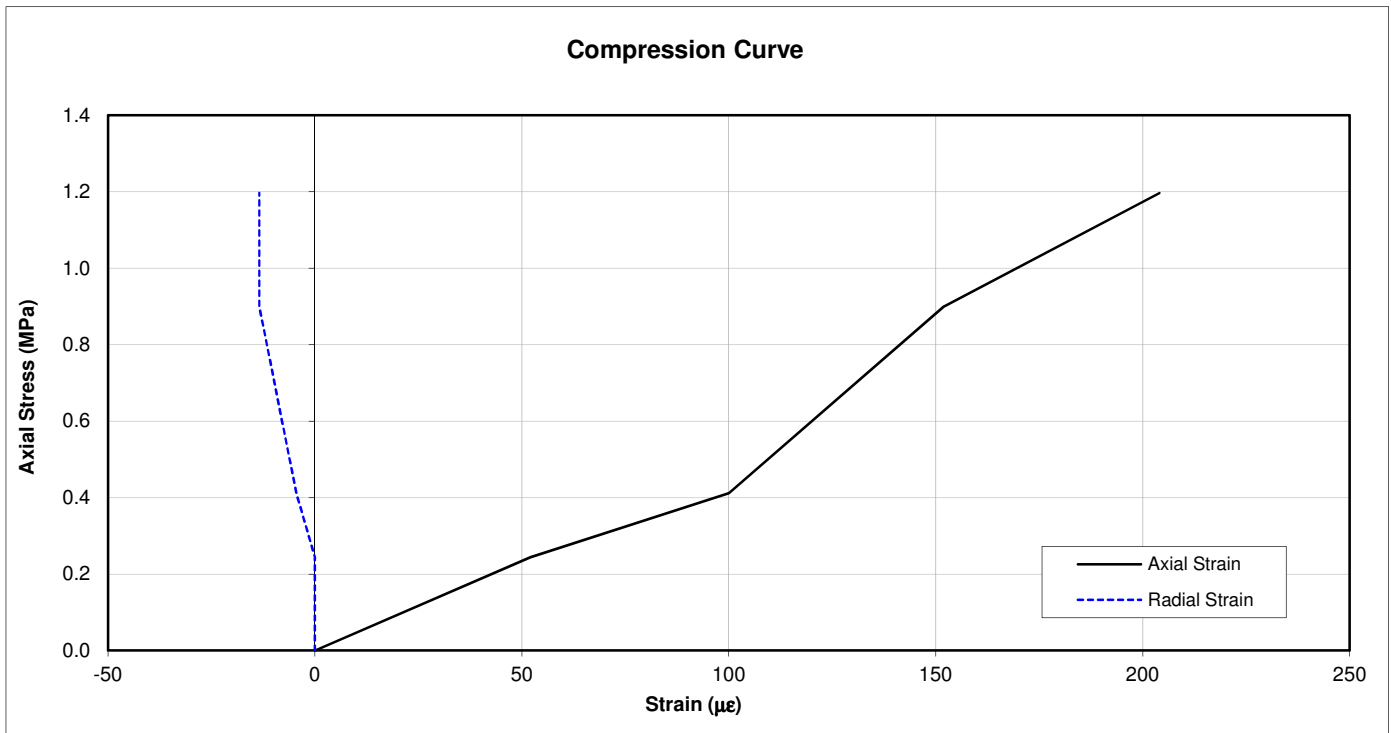
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R71913  
 Specimen Depth 23.80 - 24.19m  
 Specimen Type C

Cross section area 77.73 cm<sup>2</sup>  
 Height 215.73 mm  
 Max logged strength 1.20 MPa  
 Poisson at failure 0.066  
 Poisson (\*) 0.045

(\*) Calculated for axial  $\sigma =$  0.60 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72002**      Sample Ref: **20**      Sample Type: **U**      Depth (m): **14.50**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.56**      Moisture Content (%): **27**  
 Length (mm): **209.23**      Diameter (mm): **100.50**      Length/Diameter Ratio: **2.08**  
 Test Duration (mins:secs): **3:11**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **11.0**  
 UCS (MPa): **1.4**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

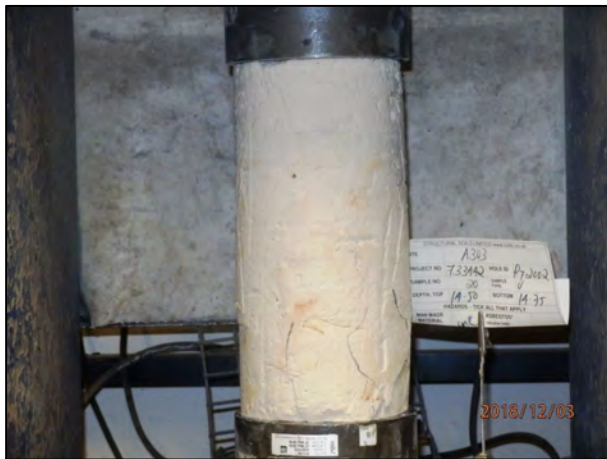
Remarks: **Non-standard test**



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

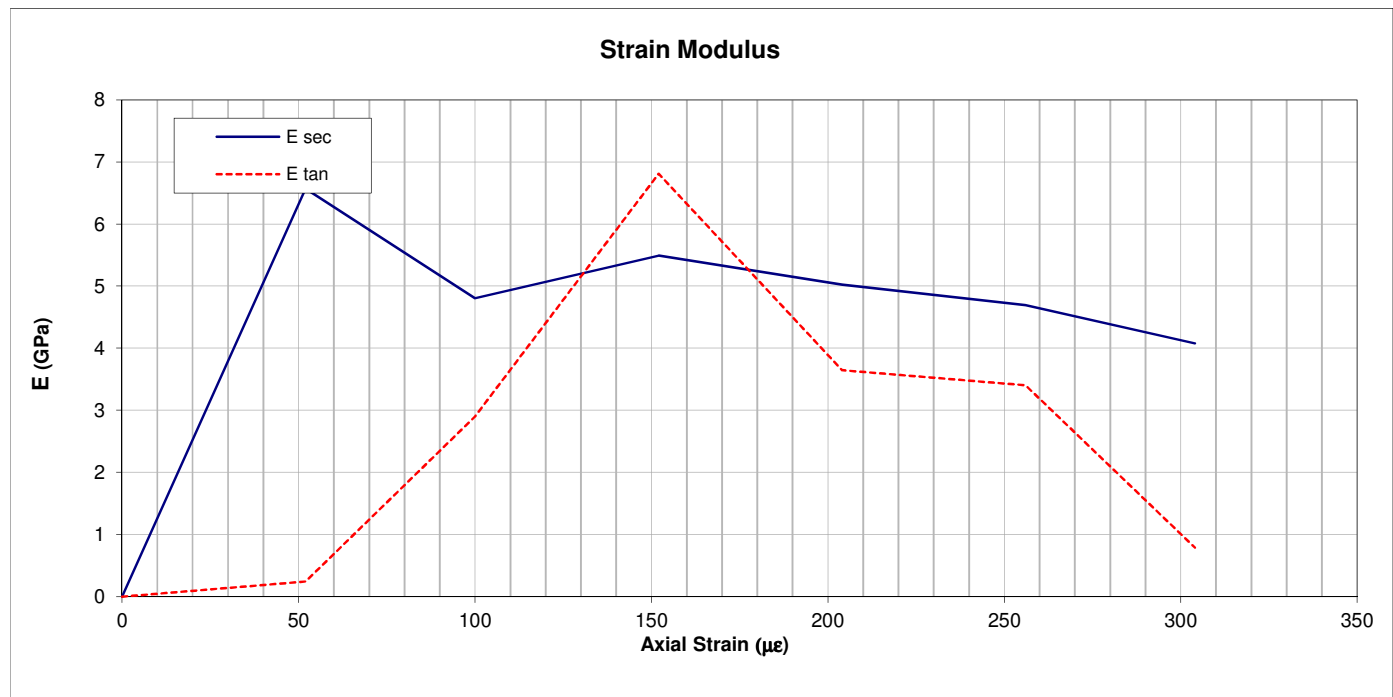
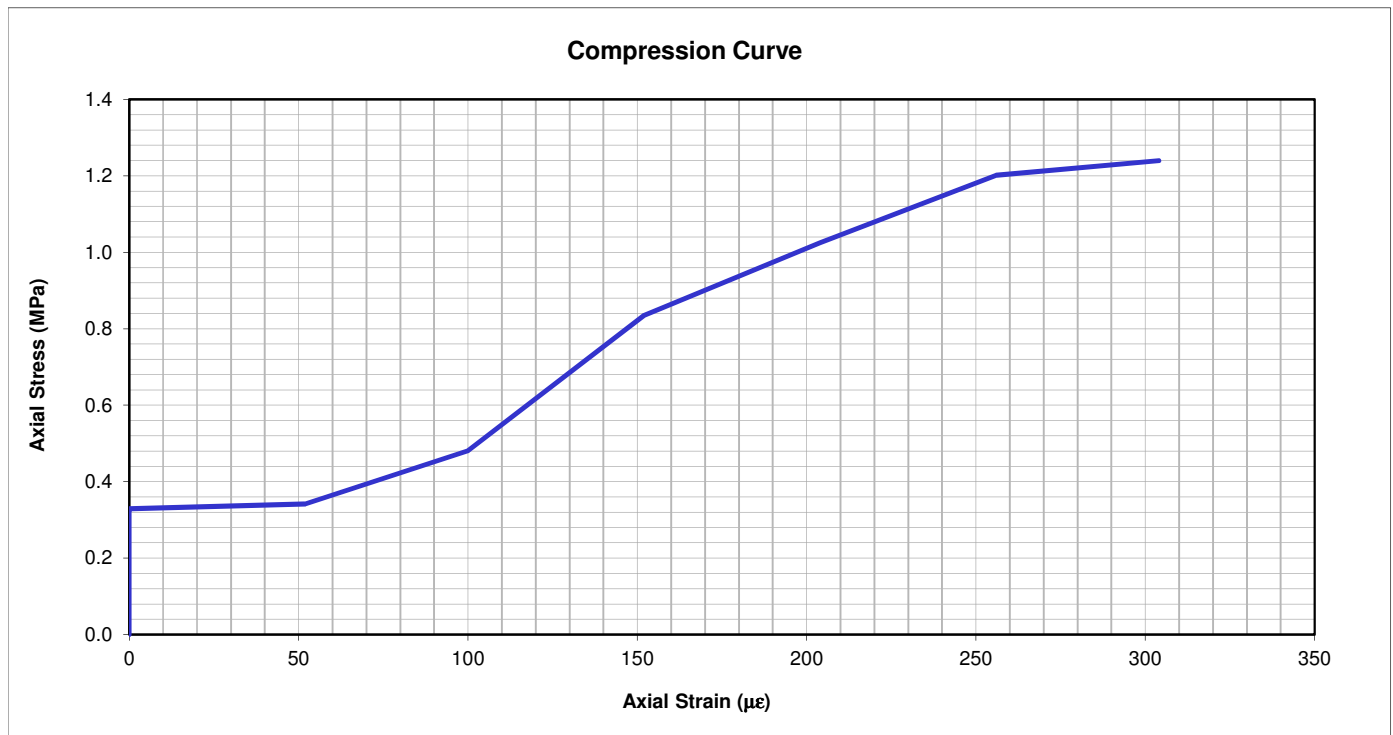
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R72002  
 Specimen Depth 14.50 - 14.75m  
 Specimen Type C

Cross section area 79.06 cm<sup>2</sup>  
 Height 209.23 mm  
 Max logged strength 1.24 MPa  
 E<sub>tan</sub> (\*) 2.90 GPa  
 E<sub>sec</sub> (^) 4.81 GPa

(\*) Calculated for axial  $\sigma =$  0.62 MPa  
 (^) Calculated for axial  $\sigma =$  0.62 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*





	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

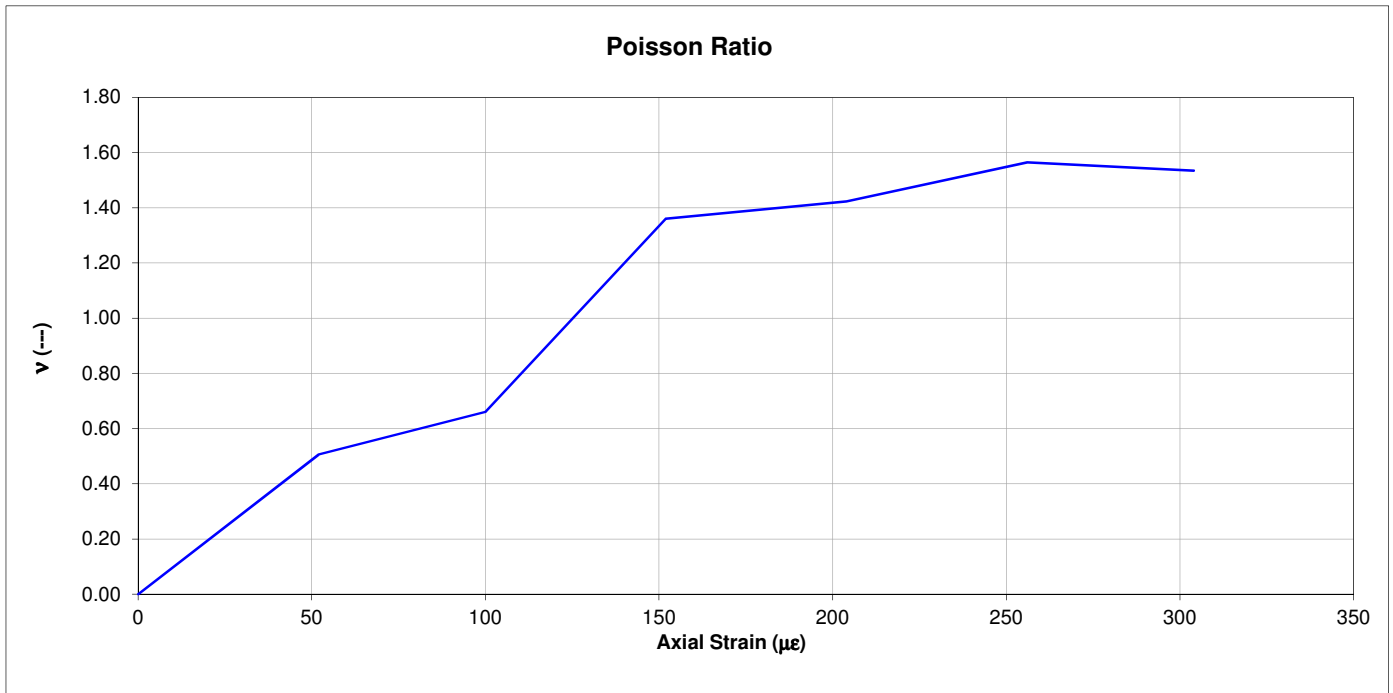
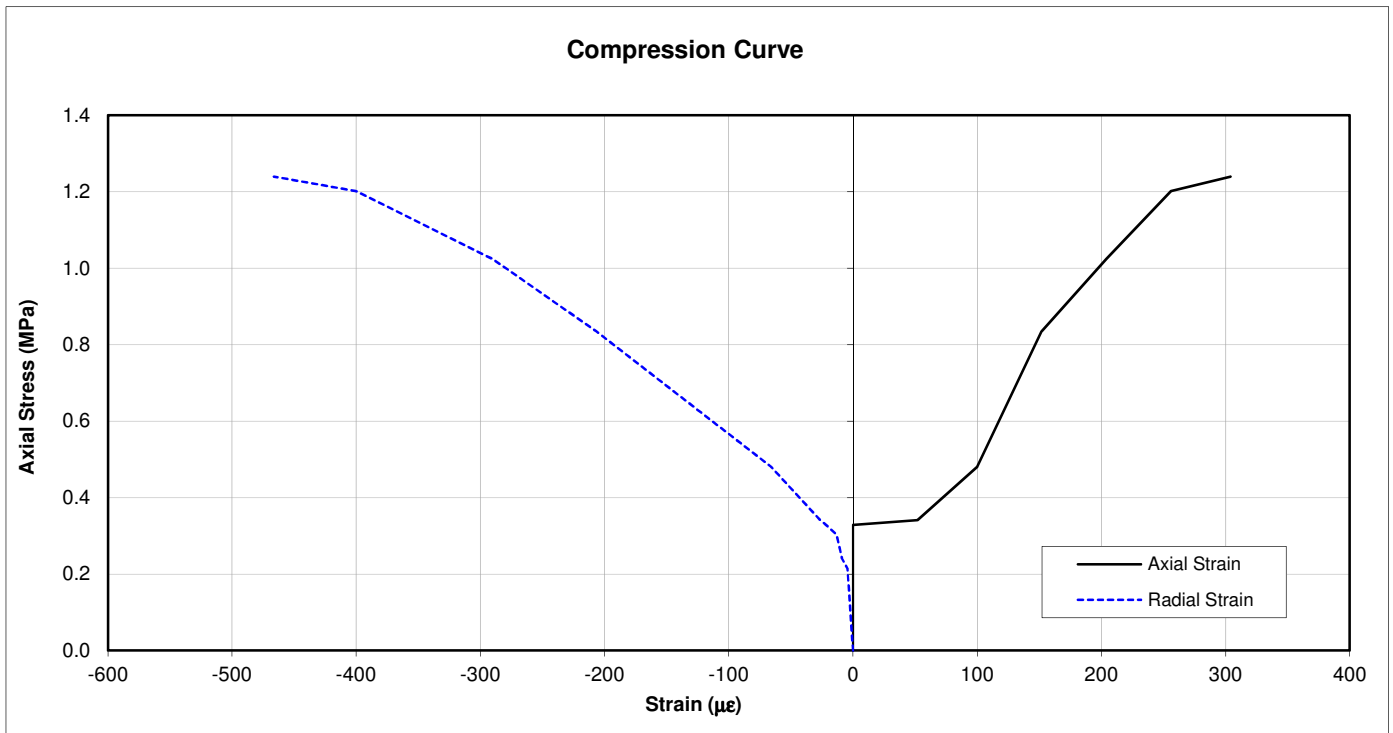
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R72002  
 Specimen Depth 14.50 - 14.75m  
 Specimen Type C

Cross section area 79.06 cm<sup>2</sup>  
 Height 209.23 mm  
 Max logged strength 1.24 MPa  
 Poisson at failure 1.534  
 Poisson (\*) 0.660

(\*) Calculated for axial  $\sigma =$  0.62 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72002**      Sample Ref: **38**      Sample Type: **U**      Depth (m): **28.90**

Bulk Density (Mg/m<sup>3</sup>): **1.93**      Dry Density (Mg/m<sup>3</sup>): **1.49**      Moisture Content (%): **30**  
 Length (mm): **214.87**      Diameter (mm): **100.61**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **5:23**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **21.6**  
 UCS (MPa): **2.7**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



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

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - UCS WITH DEFORMATION - A4P | 733442 - A303 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/12/18 - 09:53 | AF3

 <p><b>STRUCTURAL SOILS</b>                  1a Princess Street                  Bedminster                  Bristol                  BS3 4AG</p>	Compiled By		Date
			ALAN FROST
	Contract		Job No
<p><b>A303 Stonehenge Phase 7 Ground Investigation</b></p>		<p><b>733442</b></p>	
			19/12/18

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

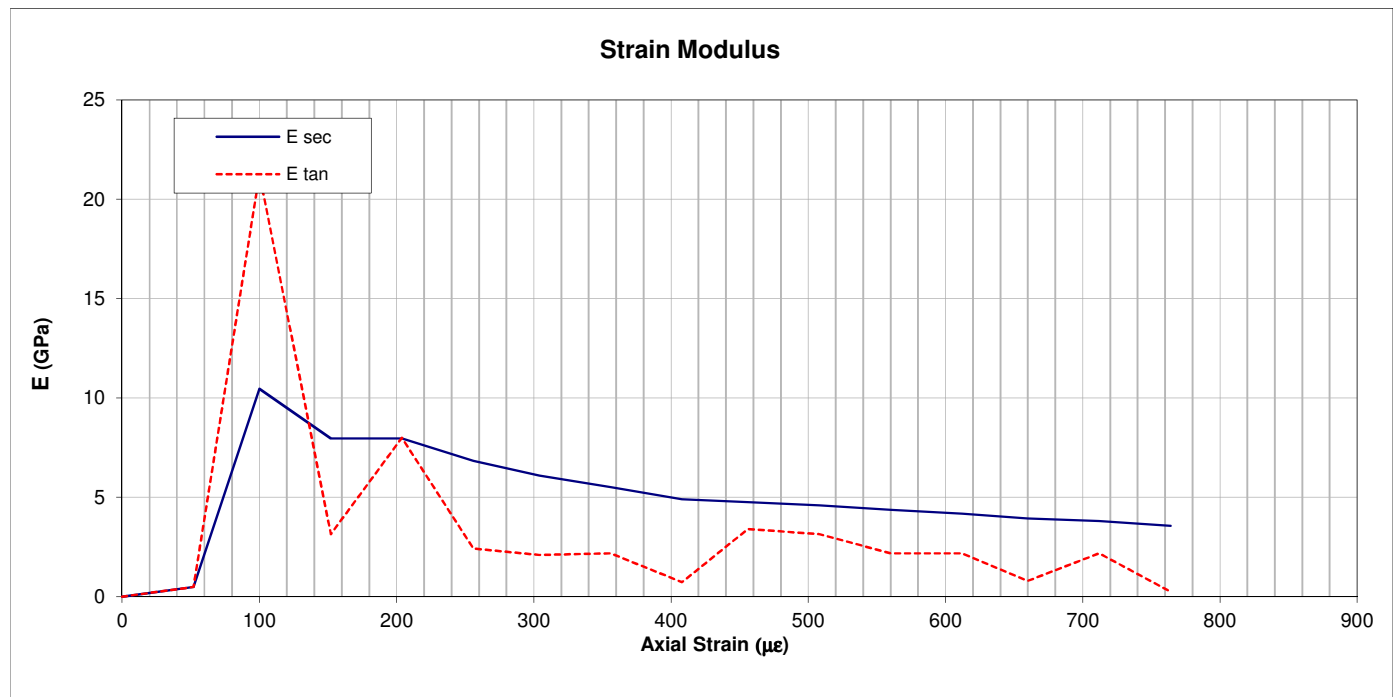
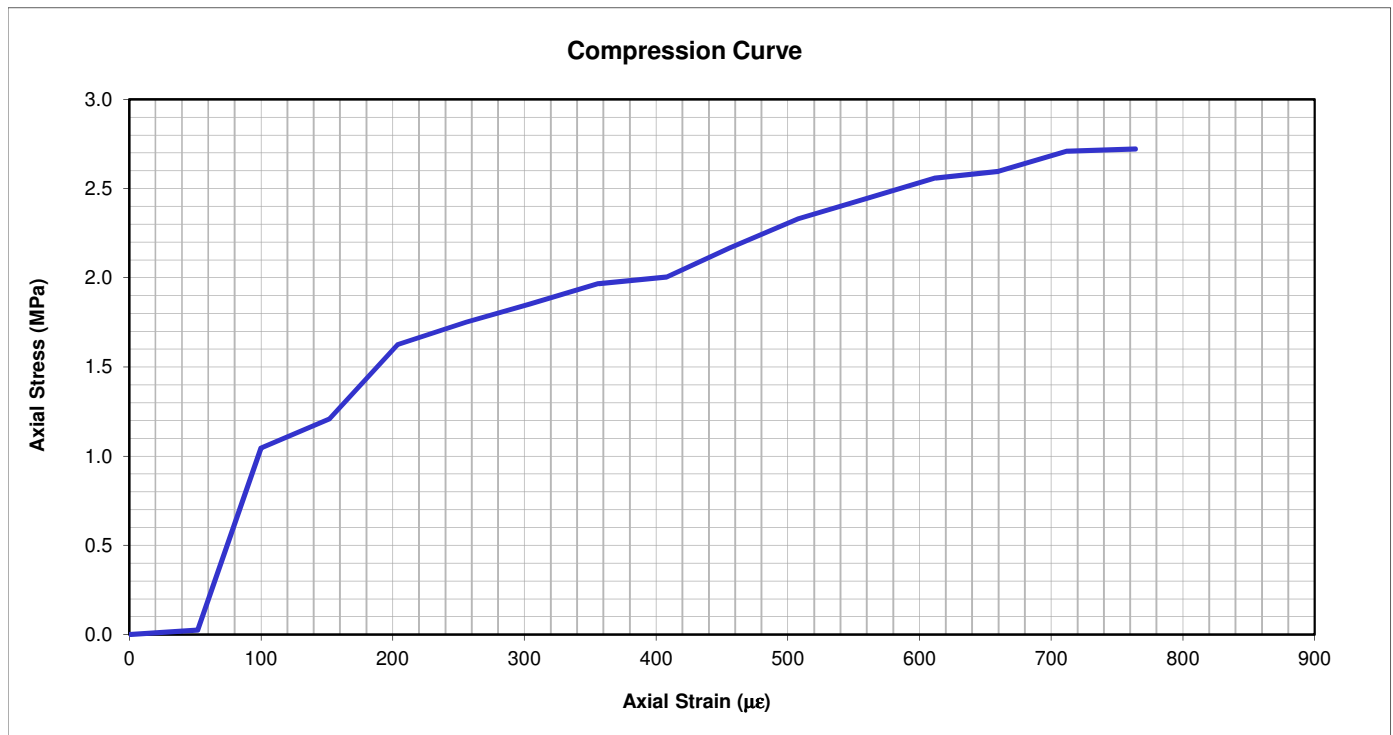
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R72002</u>
Specimen Depth	<u>28.90 - 29.30m</u>
Specimen Type	<u>C</u>

Cross section area	<u>79.36 cm<sup>2</sup></u>
Height	<u>214.87 mm</u>
Max logged strength	<u>2.72 MPa</u>
E <sub>tan</sub>	<u>(*) 3.15 GPa</u>
E <sub>sec</sub>	<u>(^) 7.96 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.36 MPa  
 (^) Calculated for axial  $\sigma =$  1.36 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 03/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

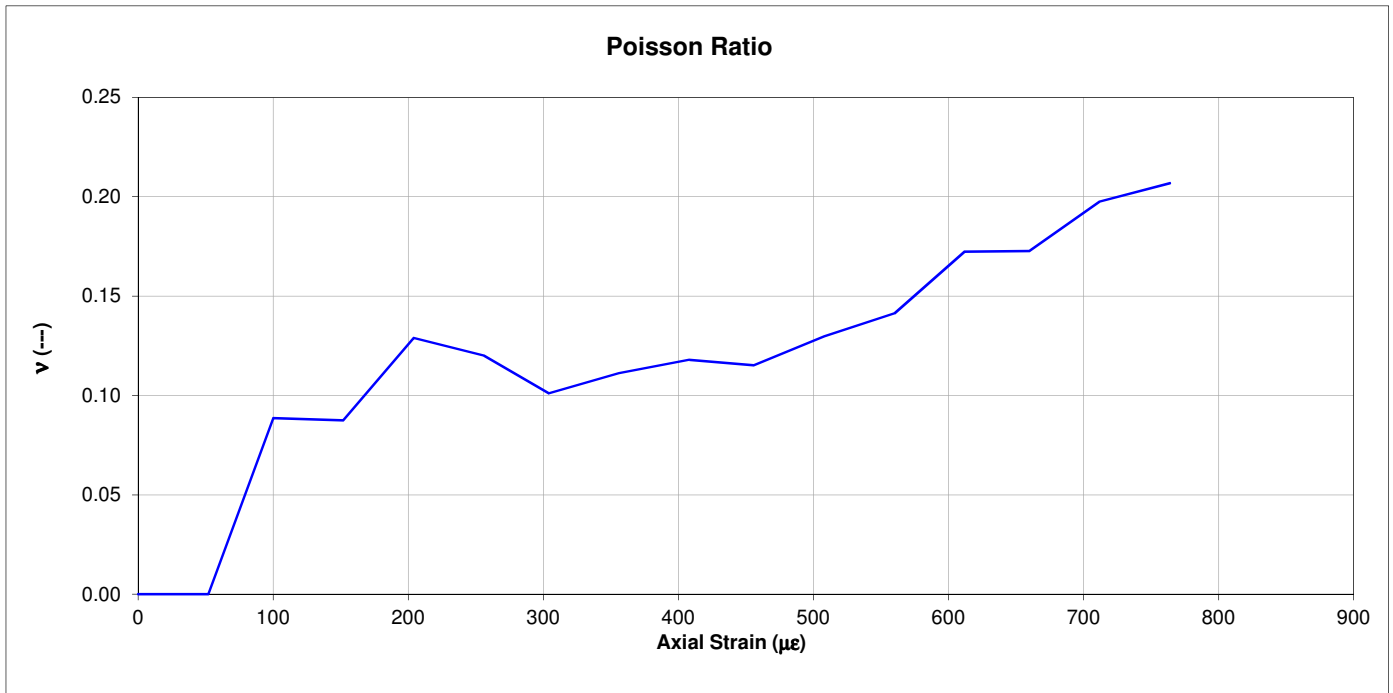
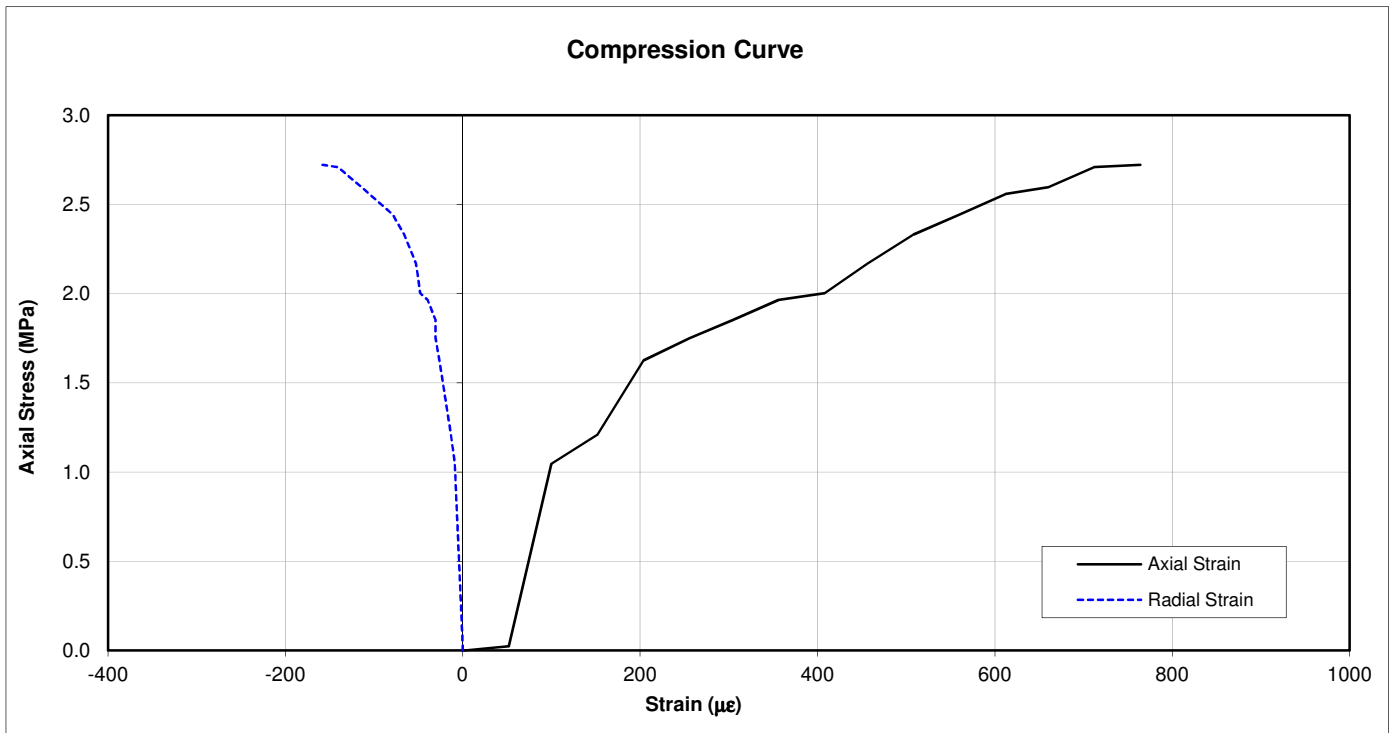
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R72002  
 Specimen Depth 28.90 - 29.30m  
 Specimen Type C

Cross section area 79.36 cm<sup>2</sup>  
 Height 214.87 mm  
 Max logged strength 2.72 MPa  
 Poisson at failure 0.207  
 Poisson (\*) 0.087

(\*) Calculated for axial  $\sigma =$  1.36 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72003**      Sample Ref: **23**      Sample Type: **U**      Depth (m): **17.37**

Bulk Density (Mg/m<sup>3</sup>): **1.96**      Dry Density (Mg/m<sup>3</sup>): **1.53**      Moisture Content (%): **28**  
 Length (mm): **213.67**      Diameter (mm): **99.75**      Length/Diameter Ratio: **2.14**  
 Test Duration (mins:secs): **4:11**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **24.1**  
 UCS (MPa): **3.1**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

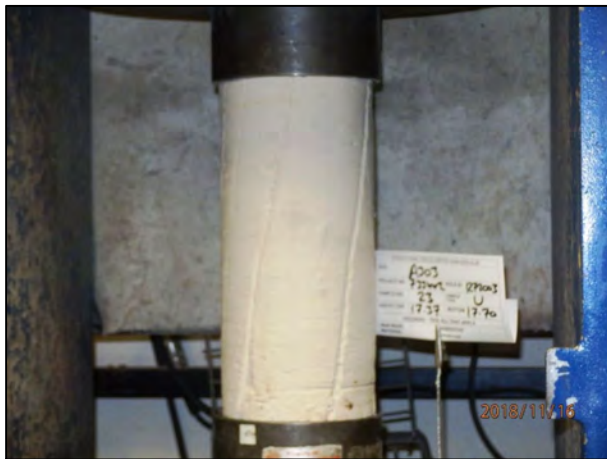
Remarks: **Non-standard test**



Front view (pre-test)



Rear view (pre-test)

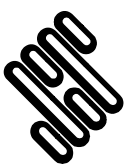


Front view (post-test)



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	

	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

16/11/2018.

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

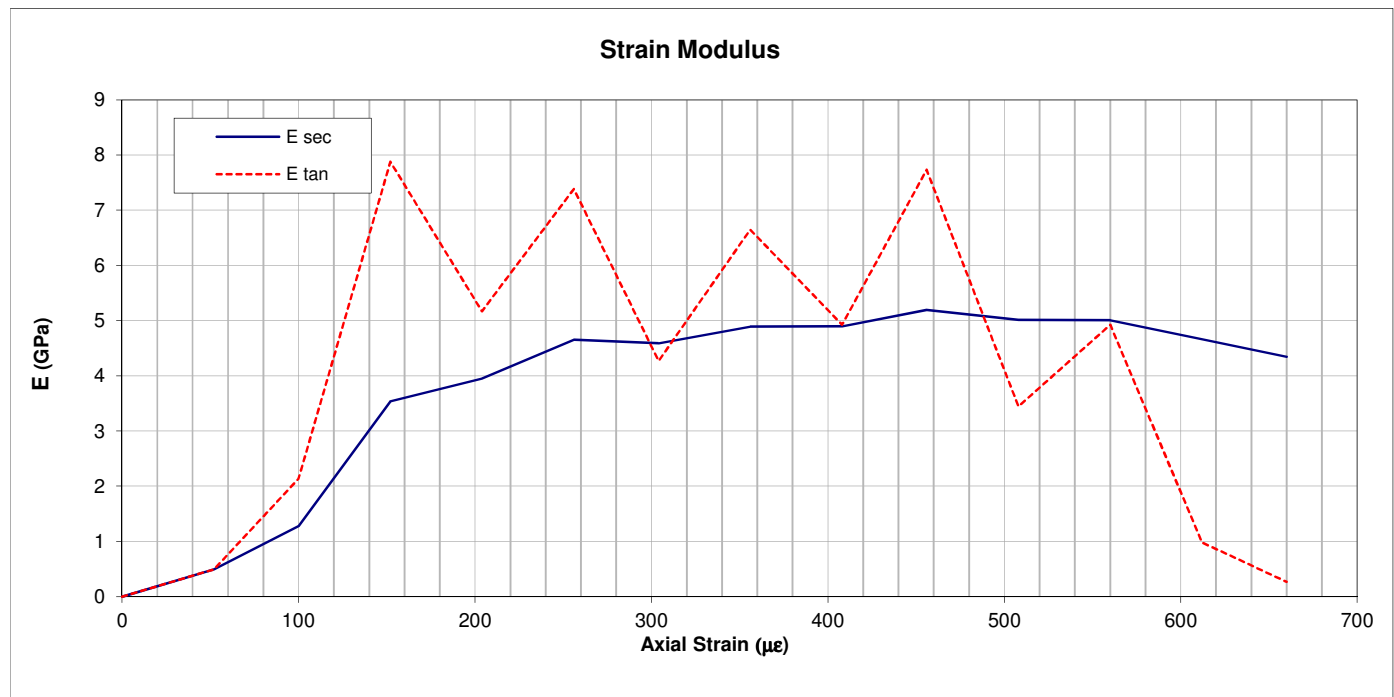
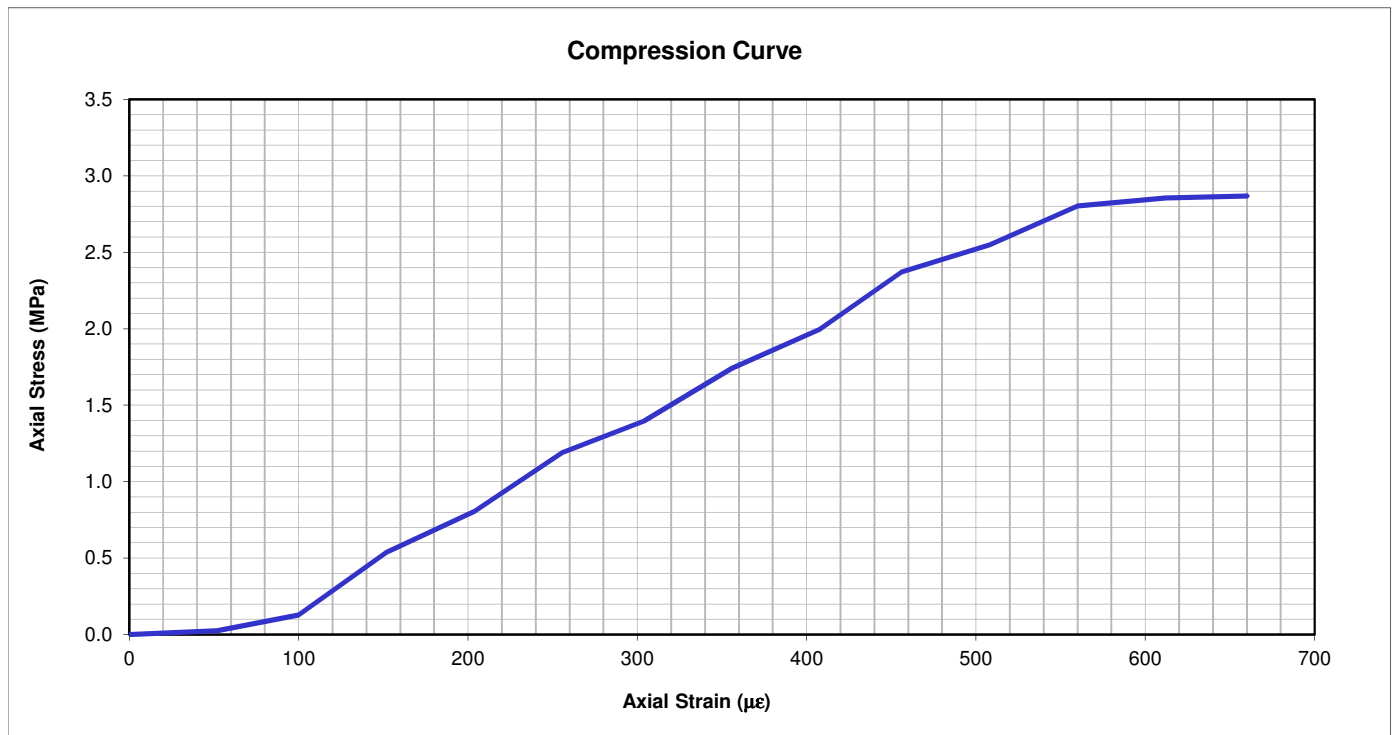
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R72003</u>
Specimen Depth	<u>17.37 - 17.70m</u>
Specimen Type	<u>C</u>

Cross section area	<u>78.10 cm<sup>2</sup></u>
Height	<u>213.67 mm</u>
Max logged strength	<u>2.87 MPa</u>
E <sub>tan</sub>	<u>(*) 4.27 GPa</u>
E <sub>sec</sub>	<u>(^) 4.59 GPa</u>

(\*) Calculated for axial  $\sigma =$  1.43 MPa  
 (^) Calculated for axial  $\sigma =$  1.43 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 16/11/2018.

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

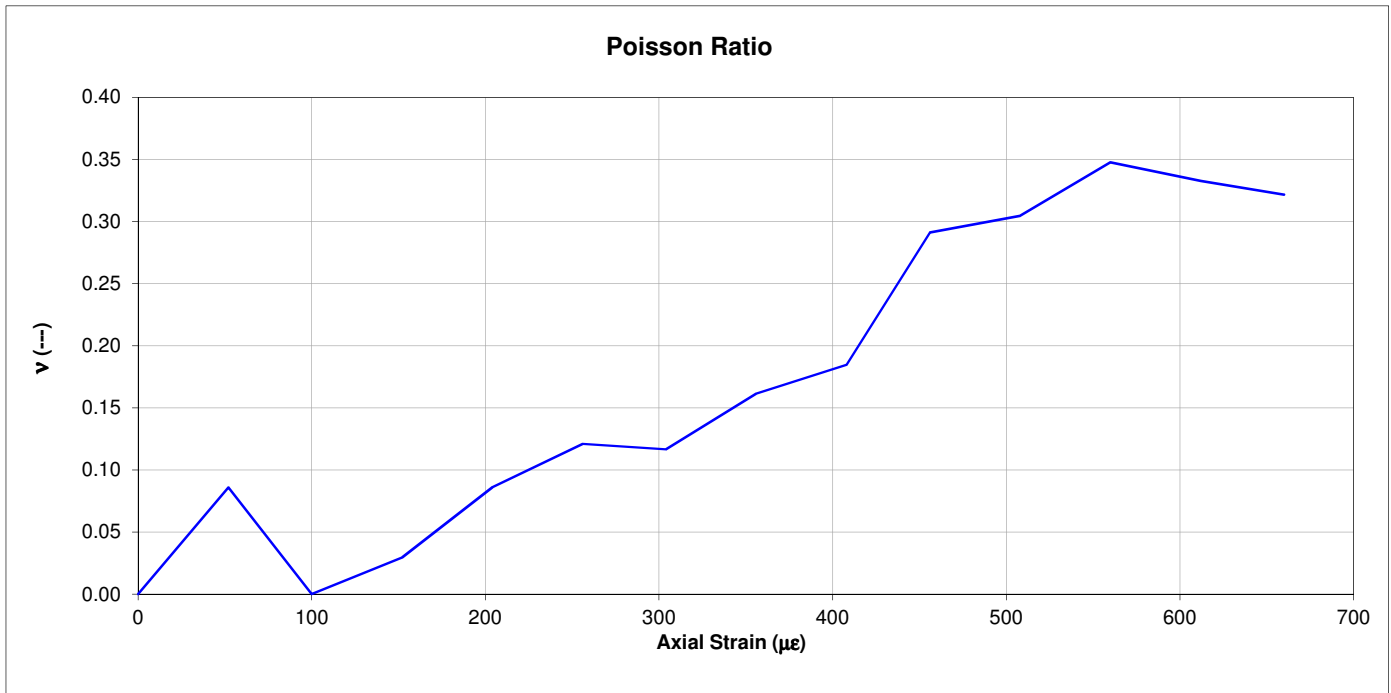
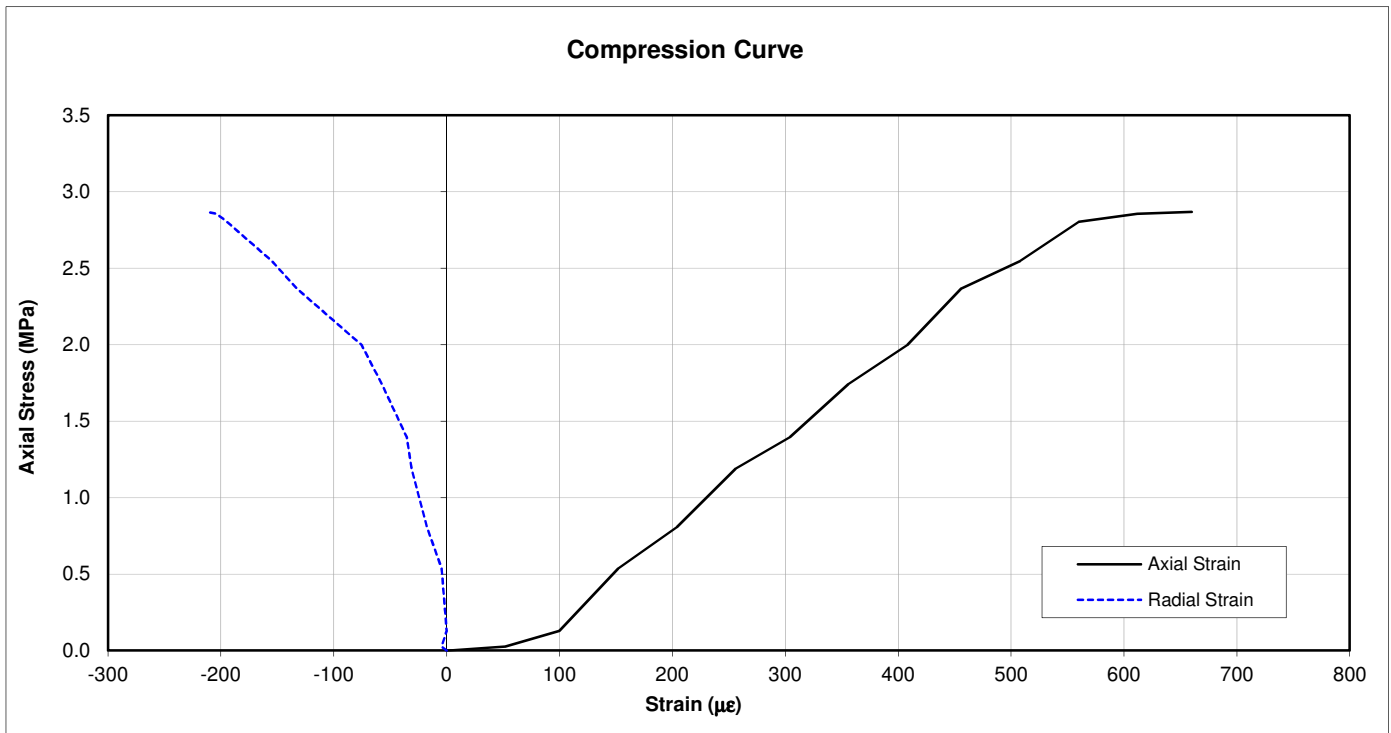
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R72003  
 Specimen Depth 17.37 - 17.70m  
 Specimen Type C

Cross section area 78.10 cm<sup>2</sup>  
 Height 213.67 mm  
 Max logged strength 2.87 MPa  
 Poisson at failure 0.322  
 Poisson (\*) 0.117

(\*) Calculated for axial  $\sigma =$  1.43 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# DEFORMABILITY OF ROCK IN UNIAXIAL COMPRESSION

RT05 UCS of Rock-Sample Preparation (In-house method based on ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)  
 RT07 UCS of Rock with Deformation (In-house method based on ISRM 2007, ASTM D4543-08 and Eurocode 7 Part 2 W.1.1)

Borehole: **R72003**      Sample Ref: **29**      Sample Type: **U**      Depth (m): **22.06**

Bulk Density (Mg/m<sup>3</sup>): **1.98**      Dry Density (Mg/m<sup>3</sup>): **1.57**      Moisture Content (%): **26**  
 Length (mm): **212.76**      Diameter (mm): **98.09**      Length/Diameter Ratio: **2.17**  
 Test Duration (mins:secs): **4:15**      Stress Rate (kN/min): **6.0**      Load at Failure (kN): **21.0**  
 UCS (MPa): **2.8**      Failure Type: **Axial cleavage**

Note: **Axis of loading parallel to core axis**

Description: **White CHALK**

Specimen Preparation: **Specimen was not recored.**

Sample tolerance checks: Straightness: **FAIL**. Flatness: **FAIL**. Perpendicularity: **FAIL**.

Remarks: **Non-standard test**



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]		19/12/18
ALAN FROST		
Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>	<b>733442</b>	



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date

19/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

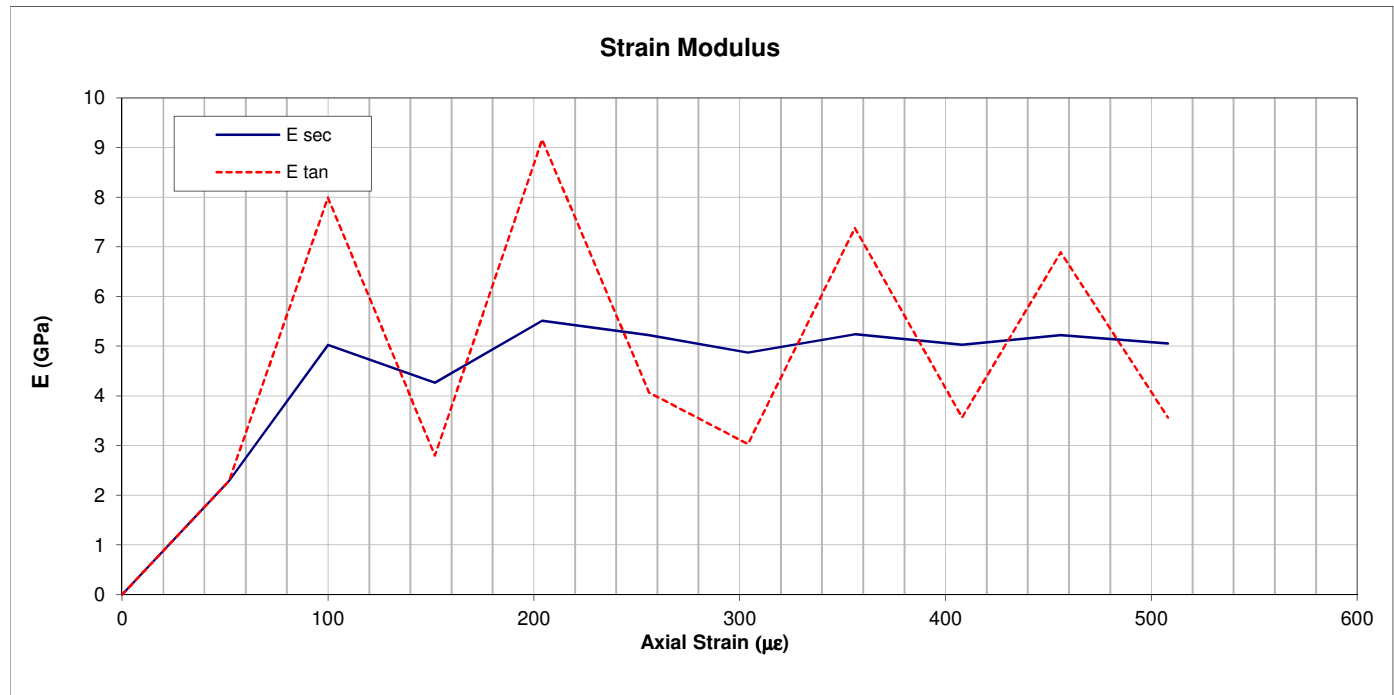
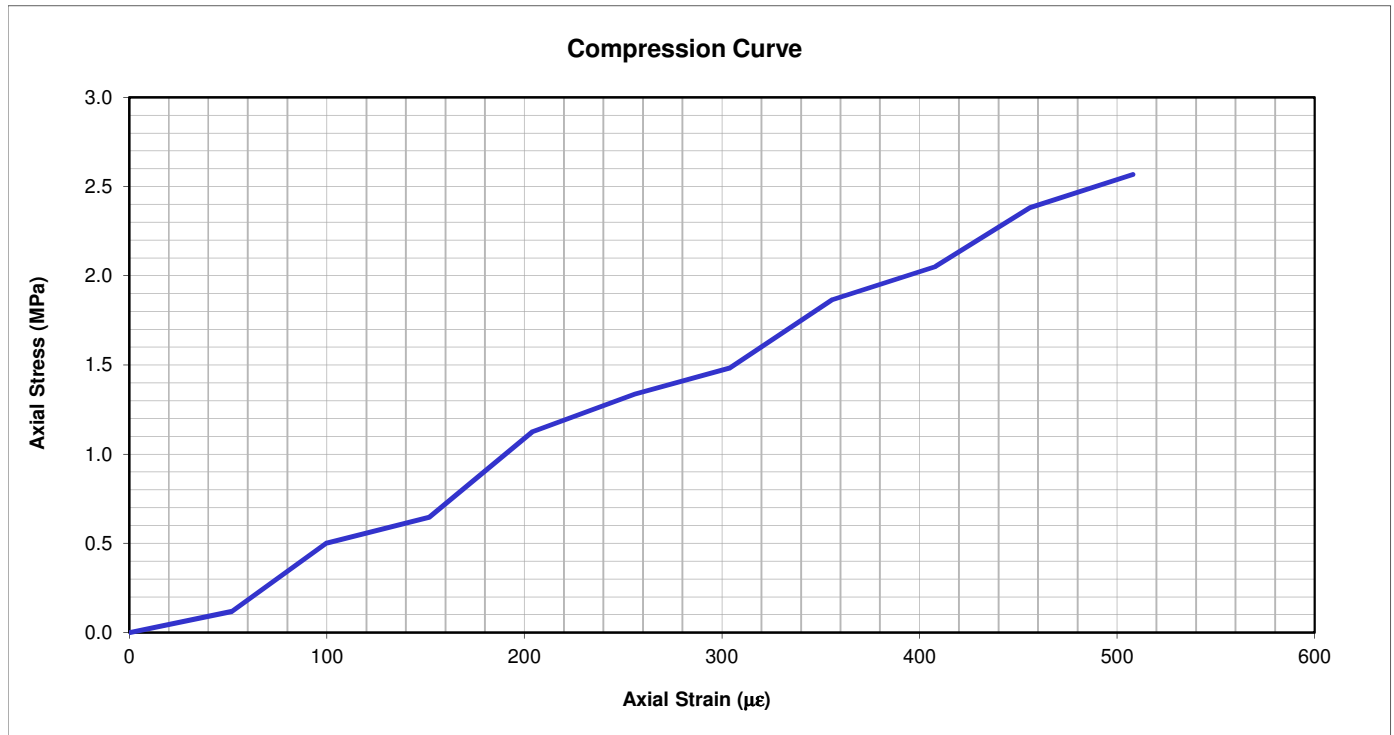
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No	<u>733442</u>
Site	<u></u>
BH No	<u>R72003</u>
Specimen Depth	<u>22.06 - 22.36m</u>
Specimen Type	<u>C</u>

Cross section area	<u>75.57 cm<sup>2</sup></u>
Height	<u>212.76 mm</u>
Max logged strength	<u>2.57 MPa</u>
E <sub>tan</sub>	<u>(*) 9.16 GPa</u>
E <sub>sec</sub>	<u>(^)</u> 5.51 GPa

(\*) Calculated for axial  $\sigma =$  1.28 MPa  
 (^) Calculated for axial  $\sigma =$  1.28 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



	STRUCTURAL SOILS
	1A Princess Street
	Bristol BS3 4AG

Test Date 19/12/2018

**UNIAXIAL COMPRESSION TEST with DEFORMATION**

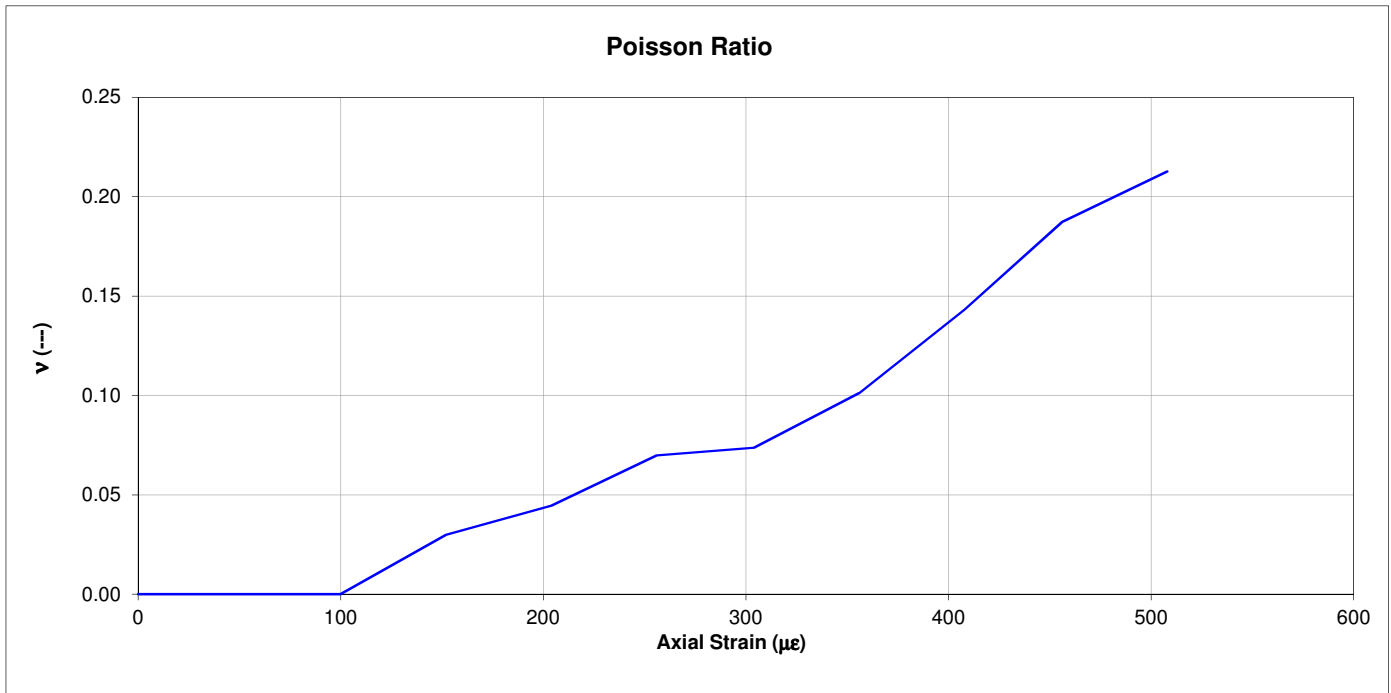
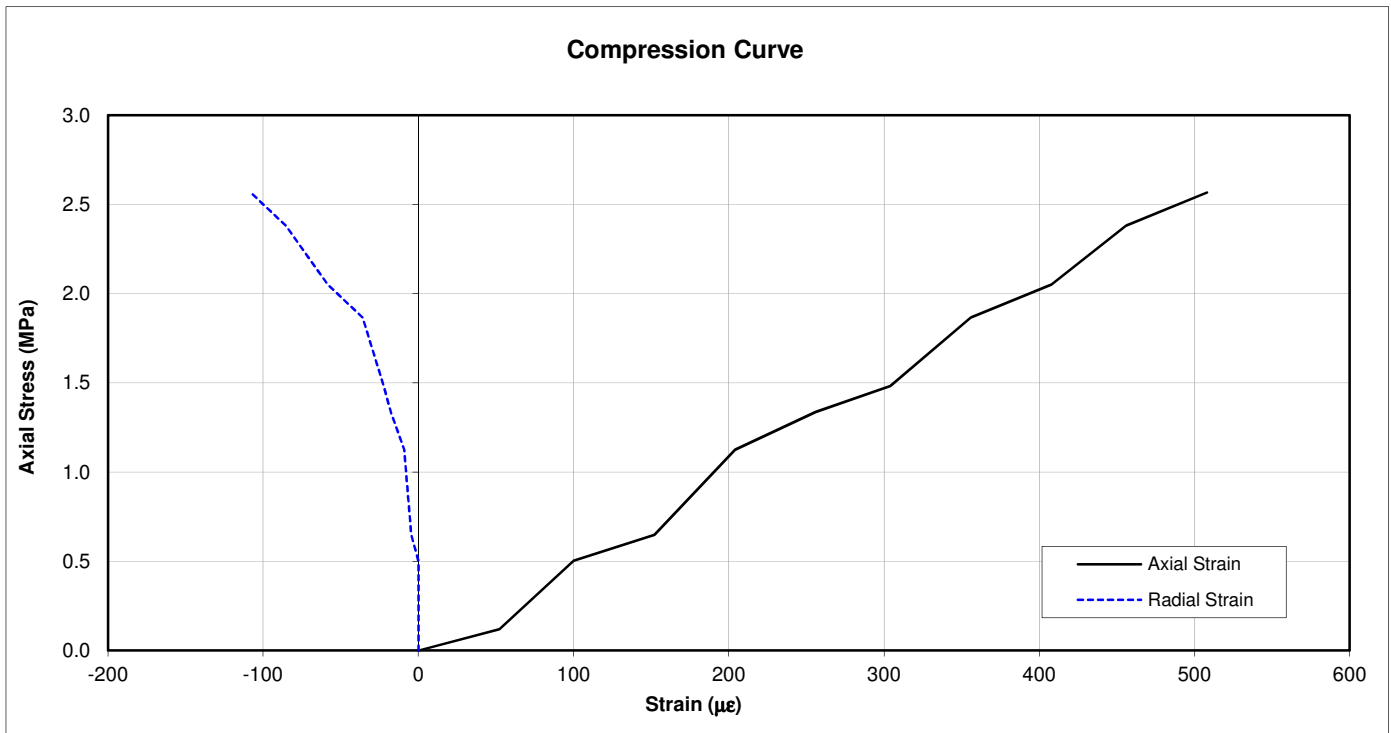
In accordance with ISRM 1974-2006 and ASTM D4543-08

Job No 733442  
 Site \_\_\_\_\_  
 BH No R72003  
 Specimen Depth 22.06 - 22.36m  
 Specimen Type C

Cross section area 75.57 cm<sup>2</sup>  
 Height 212.76 mm  
 Max logged strength 2.57 MPa  
 Poisson at failure 0.213  
 Poisson (\*) 0.045

(\*) Calculated for axial  $\sigma =$  1.28 MPa

*NB 'Max logged strength' is the maximum value captured by the data logging process for the Youngs/Poissons measurement portion of the test. It is often less than the final strength of the specimen*



# SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: <b>R71906</b>	Sample Type: <b>U</b>	Depth (m): <b>30.18</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>2.08</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.73</b>	Moisture Content (%): <b>20</b>
Sample Diameter (mm): <b>54.08</b>	Sample Thickness (mm): <b>28.15</b>	Thickness/Diameter Ratio: <b>0.52</b>
Orientation of loading: <b>Diametral</b>	Stress Rate (kN/s): <b>0.10</b>	Test duration (secs): <b>16</b>
Load at Failure (kN): <b>5.7</b>		Tensile Strength (MPa): <b>2.38</b>

Description: **White CHALK**

Loading / Foliation relationship: **Not recorded**

Failure notes: **None**



Post-test photo

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcText L - BRAZILIAN ROCK TEST - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Bristol Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/12/18 - 09:16 | AFS ]

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[REDACTED]		<b>ABBY MITCHELL</b>	<b>19/12/18</b>
	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>	

# SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: <b>R71906</b>	Sample Type: <b>U</b>	Depth (m): <b>36.15</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>2.12</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.79</b>	Moisture Content (%): <b>18</b>
Sample Diameter (mm): <b>53.82</b>	Sample Thickness (mm): <b>29.12</b>	Thickness/Diameter Ratio: <b>0.54</b>
Orientation of loading: <b>Diametral</b>	Stress Rate (kN/s): <b>0.10</b>	Test duration (secs): <b>48</b>
Load at Failure (kN): <b>5.6</b>	Tensile Strength (MPa): <b>2.27</b>	

Description: **White CHALK**

Loading / Foliation relationship: **Not recorded**

Failure notes: **None**



Post-test photo

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrcText L - BRAZILIAN ROCK TEST - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 19/12/18 - 09:16 [AF3]

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
		[REDACTED]	<b>ABBY MITCHELL</b>	<b>19/12/18</b>
	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>	

# SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: <b>R71907</b>	Sample Type: <b>U</b>	Depth (m): <b>44.45</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>1.97</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.55</b>	Moisture Content (%): <b>27</b>
Sample Diameter (mm): <b>53.51</b>	Sample Thickness (mm): <b>27.07</b>	Thickness/Diameter Ratio: <b>0.51</b>
Orientation of loading: <b>Diametral</b>	Stress Rate (kN/s): <b>0.10</b>	Test duration (secs): <b>19</b>
Load at Failure (kN): <b>5.9</b>	Tensile Strength (MPa): <b>2.59</b>	

Description: **White CHALK**

Loading / Foliation relationship: **Not recorded**

Failure notes: **None**



Post-test photo

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - BRAZILIAN ROCK TEST - APJ 1738442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 19/12/18 - 09:16 [AF3]

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[REDACTED]		<b>ABBY MITCHELL</b>	<b>19/12/18</b>
	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>	

# SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

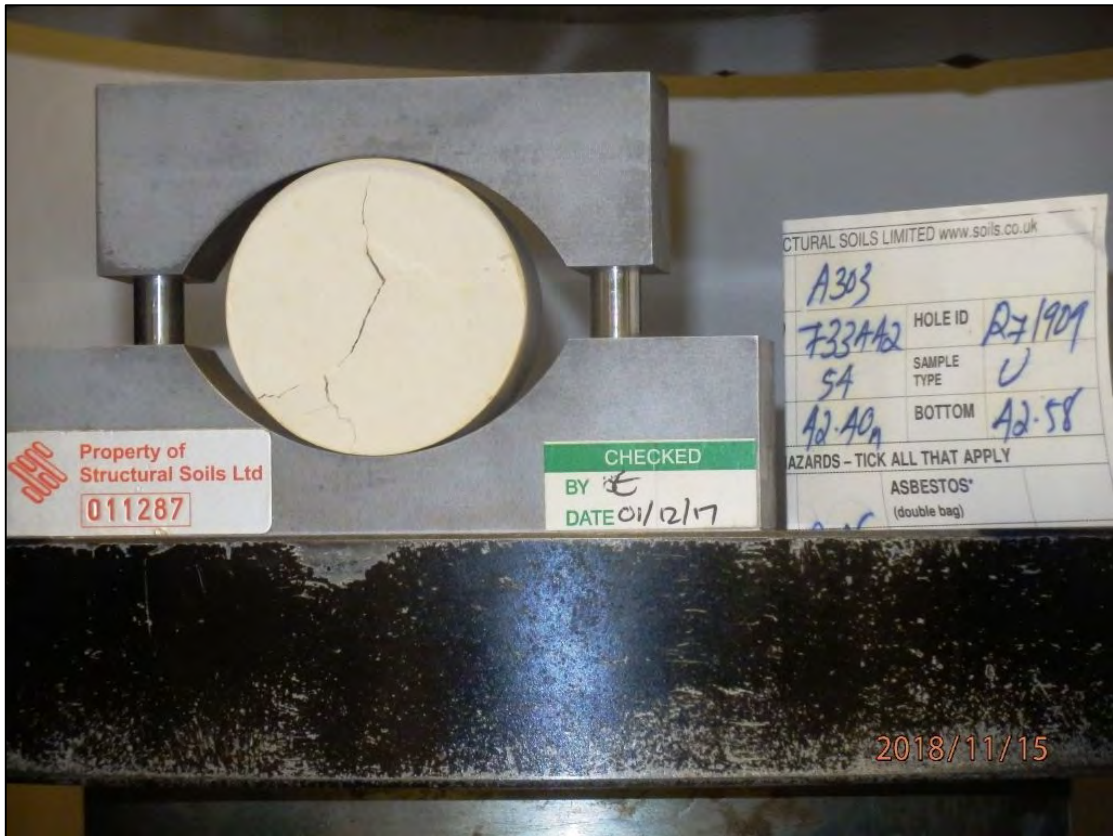
In accordance with ISRM Suggested Methods

Borehole: <b>R71909</b>	Sample Type: <b>U</b>	Depth (m): <b>42.40</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>1.98</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.56</b>	Moisture Content (%): <b>27</b>
Sample Diameter (mm): <b>54.01</b>	Sample Thickness (mm): <b>29.31</b>	Thickness/Diameter Ratio: <b>0.54</b>
Orientation of loading: <b>Diametral</b>	Stress Rate (kN/s): <b>0.10</b>	Test duration (secs): <b>25</b>
Load at Failure (kN): <b>5.2</b>		Tensile Strength (MPa): <b>2.09</b>

Description: **White CHALK**

Loading / Foliation relationship: **Not recorded**

Failure notes: **None**



Post-test photo

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol SI - 012 | Gfctext L - BRAZILIAN ROCK TEST - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_018 | 19/12/18 - 09:16 | AF3 | Email: ask@soils.co.uk | 0117-947-1000, Fax: 0117-947-1004

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[Redacted]		<b>ABBY MITCHELL</b>	<b>19/12/18</b>
	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>	







# SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: <b>R71911</b>	Sample Type: <b>U</b>	Depth (m): <b>46.16</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>1.99</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.58</b>	Moisture Content (%): <b>25</b>
Sample Diameter (mm): <b>53.96</b>	Sample Thickness (mm): <b>28.42</b>	Thickness/Diameter Ratio: <b>0.53</b>
Orientation of loading: <b>Diametral</b>	Stress Rate (kN/s): <b>0.10</b>	Test duration (secs): <b>16</b>
Load at Failure (kN): <b>5.8</b>	Tensile Strength (MPa): <b>2.41</b>	

Description: **White CHALK**

Loading / Foliation relationship: **Not recorded**

Failure notes: **None**



Post-test photo

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GfctText L - BRAZILIAN ROCK TEST - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 19/12/18 - 09:16 [AF3]

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[Redacted]		<b>ABBY MITCHELL</b>	<b>19/12/18</b>
	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>	

# SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: **R71913**

Sample Type: **U**

Depth (m): **18.47**

Bulk Density (Mg/m<sup>3</sup>): **2.01**

Dry Density (Mg/m<sup>3</sup>): **1.62**

Moisture Content (%): **24**

Sample Diameter (mm): **53.95**

Sample Thickness (mm): **28.82**

Thickness/Diameter Ratio: **0.53**

Orientation of loading: **Diametral**

Stress Rate (kN/s): **0.10**

Test duration (secs): **12**

Load at Failure (kN): **5.6**

Tensile Strength (MPa): **2.29**

Description: **White CHALK**

Loading / Foliation relationship: **Not recorded**

Failure notes: **None**



Post-test photo

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrcText L - BRAZILIAN ROCK TEST - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 19/12/18 - 09:16 | AF3 ]

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	<div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div>		<b>ABBY MITCHELL</b>	<b>19/12/18</b>
	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>	

# SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: <b>R71906</b>	Sample Type: <b>U</b>	Depth (m): <b>30.18</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>2.08</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.73</b>	Moisture Content (%): <b>20</b>
Sample Diameter (mm): <b>54.08</b>	Sample Thickness (mm): <b>28.15</b>	Thickness/Diameter Ratio: <b>0.52</b>
Orientation of loading: <b>Diametral</b>	Stress Rate (kN/s): <b>0.10</b>	Test duration (secs): <b>16</b>
Load at Failure (kN): <b>5.7</b>		Tensile Strength (MPa): <b>2.38</b>

Description: **White CHALK**

Loading / Foliation relationship: **Not recorded**

Failure notes: **None**



Post-test photo

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcText L - BRAZILIAN ROCK TEST - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/12/18 - 09:16 | AFS ]

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[REDACTED]		<b>ABBY MITCHELL</b>	<b>19/12/18</b>
	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>	



# SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: <b>R71907</b>	Sample Type: <b>U</b>	Depth (m): <b>44.45</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>1.97</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.55</b>	Moisture Content (%): <b>27</b>
Sample Diameter (mm): <b>53.51</b>	Sample Thickness (mm): <b>27.07</b>	Thickness/Diameter Ratio: <b>0.51</b>
Orientation of loading: <b>Diametral</b>	Stress Rate (kN/s): <b>0.10</b>	Test duration (secs): <b>19</b>
Load at Failure (kN): <b>5.9</b>	Tensile Strength (MPa): <b>2.59</b>	

Description: **White CHALK**

Loading / Foliation relationship: **Not recorded**

Failure notes: **None**



Post-test photo

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - BRAZILIAN ROCK TEST - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_Structural Soils Ltd, Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 19/12/18 - 09:16 | AF3 ]

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[Redacted]		<b>ABBY MITCHELL</b>	<b>19/12/18</b>
	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>	

# SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

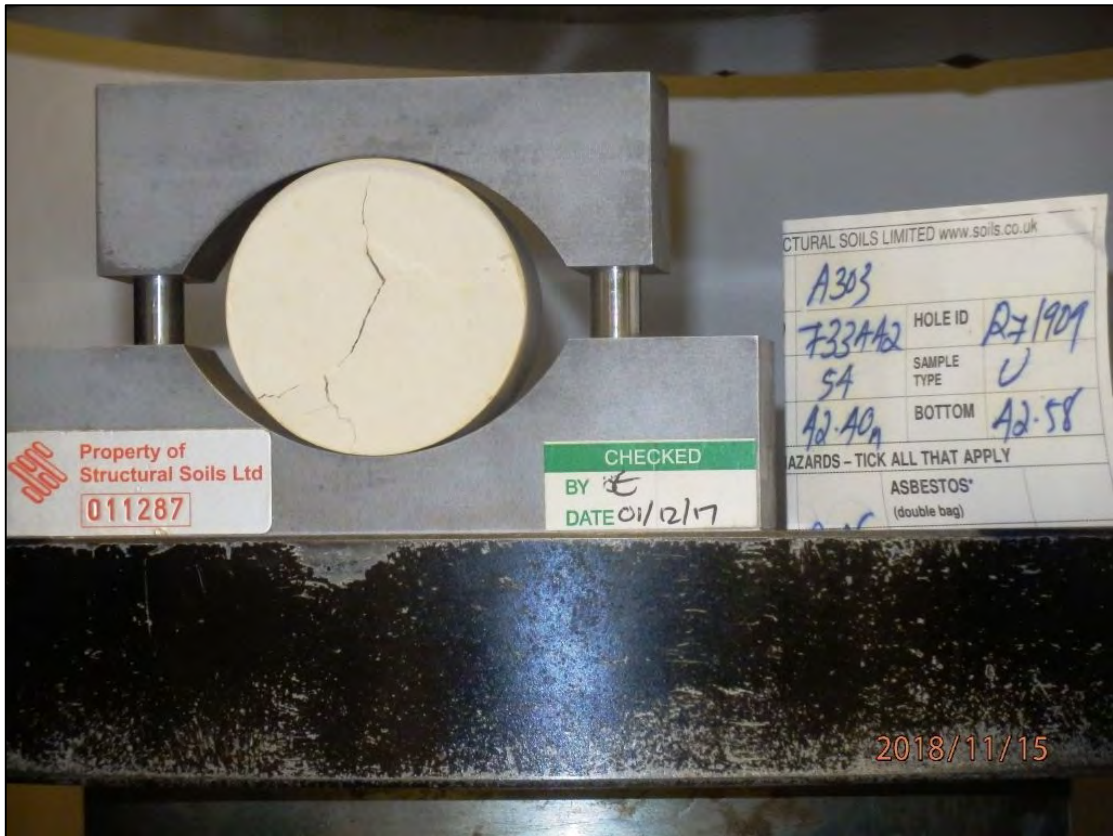
In accordance with ISRM Suggested Methods

Borehole: <b>R71909</b>	Sample Type: <b>U</b>	Depth (m): <b>42.40</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>1.98</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.56</b>	Moisture Content (%): <b>27</b>
Sample Diameter (mm): <b>54.01</b>	Sample Thickness (mm): <b>29.31</b>	Thickness/Diameter Ratio: <b>0.54</b>
Orientation of loading: <b>Diametral</b>	Stress Rate (kN/s): <b>0.10</b>	Test duration (secs): <b>25</b>
Load at Failure (kN): <b>5.2</b>	Tensile Strength (MPa): <b>2.09</b>	

Description: **White CHALK**

Loading / Foliation relationship: **Not recorded**

Failure notes: **None**



Post-test photo

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol SI - 012 | Gfctext L - BRAZILIAN ROCK TEST - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_018 | Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 19/12/18 - 09:16 [AF3]

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[Redacted]		<b>ABBY MITCHELL</b>	<b>19/12/18</b>
	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>	

# SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

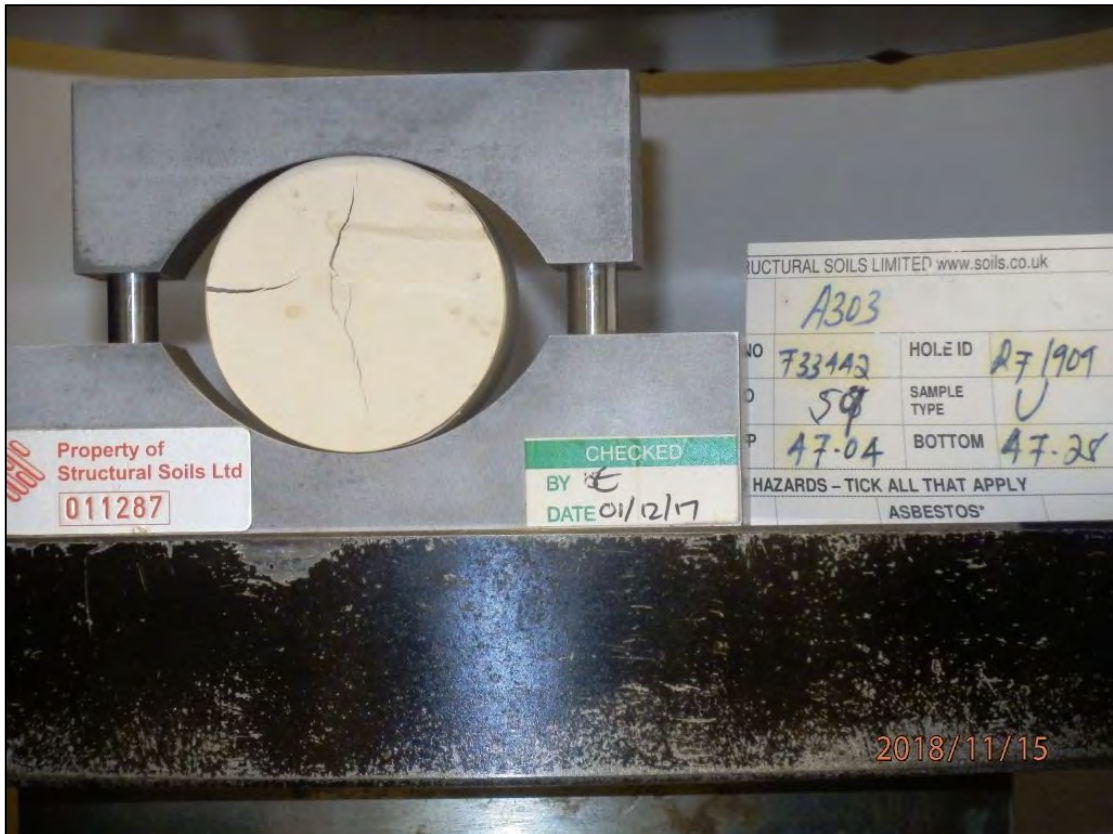
In accordance with ISRM Suggested Methods

Borehole: <b>R71909</b>	Sample Type: <b>U</b>	Depth (m): <b>47.04</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>2.03</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.64</b>	Moisture Content (%): <b>24</b>
Sample Diameter (mm): <b>53.98</b>	Sample Thickness (mm): <b>29.31</b>	Thickness/Diameter Ratio: <b>0.54</b>
Orientation of loading: <b>Diametral</b>	Stress Rate (kN/s): <b>0.10</b>	Test duration (secs): <b>47</b>
Load at Failure (kN): <b>5.3</b>		Tensile Strength (MPa): <b>2.13</b>

Description: **White CHALK**

Loading / Foliation relationship: **Not recorded**

Failure notes: **None**



Post-test photo

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcText L - BRAZILIAN ROCK TEST - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 19/12/18 - 09:16 [AF3]

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	<div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div>		<b>ABBY MITCHELL</b>	<b>19/12/18</b>
	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>	

# SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: **R71911**

Sample Type: **U**

Depth (m): **40.87**

Bulk Density (Mg/m<sup>3</sup>): **1.99**

Dry Density (Mg/m<sup>3</sup>): **1.59**

Moisture Content (%): **25**

Sample Diameter (mm): **53.93**

Sample Thickness (mm): **28.21**

Thickness/Diameter Ratio: **0.52**

Orientation of loading: **Diametral**

Stress Rate (kN/s): **0.10**

Test duration (secs): **37**

Load at Failure (kN): **5.7**

Tensile Strength (MPa): **2.38**

Description: **White CHALK**

Loading / Foliation relationship: **Not recorded**

Failure notes: **None**



Post-test photo

GINT\_LIBRARY\_v8\_06.GLB LibVersion: v8\_06\_018 ProjVersion: v8\_06\_018 Core+Full Bristol.SI - 012 | GfctText L - BRAZILIAN ROCK TEST - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_018 | 19/12/18 - 09:16 | AF3 | Email: ask@soils.co.uk | 19/12/18 - 09:16 | AF3 |

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
			<b>ABBY MITCHELL</b>	<b>19/12/18</b>
	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>	



# SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: <b>R71911</b>	Sample Type: <b>U</b>	Depth (m): <b>46.16</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>1.99</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.58</b>	Moisture Content (%): <b>25</b>
Sample Diameter (mm): <b>53.96</b>	Sample Thickness (mm): <b>28.42</b>	Thickness/Diameter Ratio: <b>0.53</b>
Orientation of loading: <b>Diametral</b>	Stress Rate (kN/s): <b>0.10</b>	Test duration (secs): <b>16</b>
Load at Failure (kN): <b>5.8</b>	Tensile Strength (MPa): <b>2.41</b>	

Description: **White CHALK**

Loading / Foliation relationship: **Not recorded**

Failure notes: **None**



Post-test photo

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GfctText L - BRAZILIAN ROCK TEST - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 19/12/18 - 09:16 [AF3]

	<b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	[Redacted]		<b>ABBY MITCHELL</b>	<b>19/12/18</b>
	Contract <b>A303 Stonehenge Phase 7 Ground Investigation</b>		Job No <b>733442</b>	

# SUMMARY OF INDIRECT TENSILE STRENGTH BY THE BRAZIL TEST

In accordance with ISRM Suggested Methods

Borehole: <b>R71913</b>	Sample Type: <b>U</b>	Depth (m): <b>18.47</b>
Bulk Density (Mg/m <sup>3</sup> ): <b>2.01</b>	Dry Density (Mg/m <sup>3</sup> ): <b>1.62</b>	Moisture Content (%): <b>24</b>
Sample Diameter (mm): <b>53.95</b>	Sample Thickness (mm): <b>28.82</b>	Thickness/Diameter Ratio: <b>0.53</b>
Orientation of loading: <b>Diametral</b>	Stress Rate (kN/s): <b>0.10</b>	Test duration (secs): <b>12</b>
Load at Failure (kN): <b>5.6</b>		Tensile Strength (MPa): <b>2.29</b>

Description: **White CHALK**

Loading / Foliation relationship: **Not recorded**

Failure notes: **None**



Post-test photo

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol.SI - 012 | GrcText L - BRAZILIAN ROCK TEST - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06\_Structural Soils Ltd, Bristol Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, 19/12/18 - 09:16 [AF3]

 <b>STRUCTURAL SOILS</b> 1a Princess Street Bedminster Bristol BS3 4AG	Compiled By		Date
	<div style="background-color: black; width: 100px; height: 15px; margin: 0 auto;"></div>		<b>ABBY MITCHELL</b>
	Contract	Job No	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>		<b>733442</b>	

# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R602**

Sample Ref: **27**

Sample Type: **D**

Depth (m): **21.80**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **87.1**

Description of Fragments in Drum: **Sub-rounded**

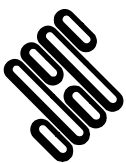
Description of Material Passing Drum: **Fine to medium SAND and SILT**

### Second Cycle

Slake Durability (%): **78.5**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium SAND and SILT**



**STRUCTURAL SOILS**  
1a Princess Street  
Bedminster  
Bristol  
BS3 4AG

Compiled By

Date

**ABBY MITCHELL**

**29/09/18**

Contract

Job No

**A303 Stonehenge Phase 6 Ground Investigation**

**733442**



# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R602**

Sample Ref: **39**

Sample Type: **D**

Depth (m): **31.30**

Sample Description: **Off white CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **87.4**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

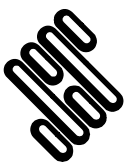
### Second Cycle

Slake Durability (%): **77.3**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcfText L - SLAKE DURABILITY - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 29/09/18 - 07:39 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R606**

Sample Ref: **34**

Sample Type: **U**

Depth (m): **26.42**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **91.6**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

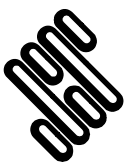
### Second Cycle

Slake Durability (%): **85.3**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - SLAKE DURABILITY - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 29/09/18 - 09:03 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R606**

Sample Ref: **42**

Sample Type: **D**

Depth (m): **31.50**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **91.5**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

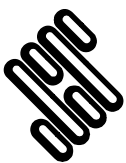
### Second Cycle

Slake Durability (%): **84.4**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - SLAKE DURABILITY - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 29/09/18 - 09:03 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R607**

Sample Ref: **30**

Sample Type: **D**

Depth (m): **22.75**

Sample Description: **White and light brown CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **89.0**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

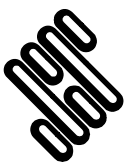
### Second Cycle

Slake Durability (%): **82.3**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - SLAKE DURABILITY - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 02/10/18 - 12:01 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R607**

Sample Ref: **39**

Sample Type: **D**

Depth (m): **31.60**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **90.5**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

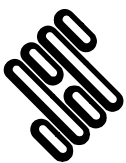
### Second Cycle

Slake Durability (%): **84.2**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - SLAKE DURABILITY - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 02/10/18 - 12:01 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R608**

Sample Ref: **42**

Sample Type: **U**

Depth (m): **31.80**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **92.7**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

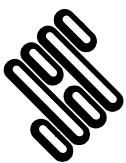
### Second Cycle

Slake Durability (%): **86.3**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcfText L - SLAKE DURABILITY - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 20/10/18 - 07:39 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R608**

Sample Ref: **73**

Sample Type: **D**

Depth (m): **56.80**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **92.7**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

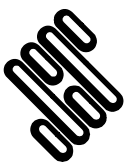
### Second Cycle

Slake Durability (%): **86.3**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - SLAKE DURABILITY - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 20/10/18 - 07:39 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R610**

Sample Ref: **14**

Sample Type: **D**

Depth (m): **9.90**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **89.6**

Description of Fragments in Drum: **Sub-rounded**

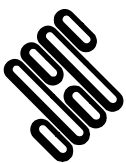
Description of Material Passing Drum: **Fine to medium sand and silt**

### Second Cycle

Slake Durability (%): **82.0**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R610**

Sample Ref: **20**

Sample Type: **D**

Depth (m): **13.70**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **76.2**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

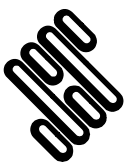
### Second Cycle

Slake Durability (%): **65.0**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R610**

Sample Ref: **26**

Sample Type: **D**

Depth (m): **18.16**

Sample Description: **Off white CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **85.8**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

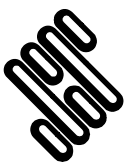
### Second Cycle

Slake Durability (%): **76.1**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R610**

Sample Ref: **31**

Sample Type: **D**

Depth (m): **23.59**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **75.0**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

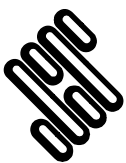
### Second Cycle

Slake Durability (%): **63.2**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R610**

Sample Ref: **43**

Sample Type: **D**

Depth (m): **31.70**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **92.0**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

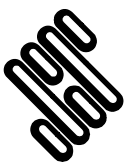
### Second Cycle

Slake Durability (%): **86.6**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - SLAKE DURABILITY - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 20/10/18 - 09:44 | AF3



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R610**

Sample Ref: **51**

Sample Type: **D**

Depth (m): **38.25**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **91.9**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

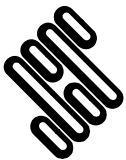
### Second Cycle

Slake Durability (%): **86.1**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcfText L - SLAKE DURABILITY - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 20/10/18 - 09:44 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R610**

Sample Ref: **61**

Sample Type: **U**

Depth (m): **45.30**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **92.5**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **fine to medium SAND and SILT**

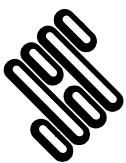
### Second Cycle

Slake Durability (%): **87.3**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **fine to medium SAND and SILT**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcfText L - SLAKE DURABILITY - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 20/10/18 - 09:44 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R611**

Sample Ref: **34**

Sample Type: **D**

Depth (m): **26.70**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **81.4**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

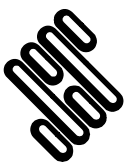
### Second Cycle

Slake Durability (%): **71.1**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R611**

Sample Ref: **42**

Sample Type: **D**

Depth (m): **31.60**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **88.6**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

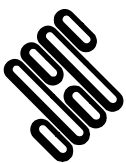
### Second Cycle

Slake Durability (%): **79.0**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcfText L - SLAKE DURABILITY - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, | 06/11/18 - 10:55 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R611**

Sample Ref: **48**

Sample Type: **D**

Depth (m): **36.25**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **91.8**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

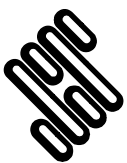
### Second Cycle

Slake Durability (%): **83.6**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - SLAKE DURABILITY - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, | 06/11/18 - 10:55 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R612**

Sample Ref: **32**

Sample Type: **D**

Depth (m): **27.25**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **89.5**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

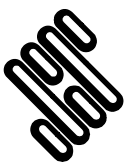
### Second Cycle

Slake Durability (%): **81.8**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcfText L - SLAKE DURABILITY - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, [06/11/18 - 14:31 | AF3]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R613**

Sample Ref: **32**

Sample Type: **D**

Depth (m): **25.10**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **98.2**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

### Second Cycle

Slake Durability (%): **96.4**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcfText L - SLAKE DURABILITY - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, [07/11/18 - 07:15 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R613**

Sample Ref: **41**

Sample Type: **D**

Depth (m): **31.25**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **93.9**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

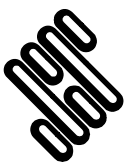
### Second Cycle

Slake Durability (%): **81.7**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - SLAKE DURABILITY - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, | 10/7/11/18 - 07:15 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R614**

Sample Ref: **40**

Sample Type: **D**

Depth (m): **28.25**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **88.6**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

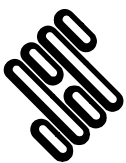
### Second Cycle

Slake Durability (%): **79.4**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - SLAKE DURABILITY - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, [07/11/18 - 08:27 | AF3]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R614**

Sample Ref: **51**

Sample Type: **D**

Depth (m): **35.25**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **93.7**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

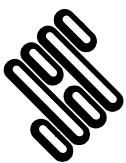
### Second Cycle

Slake Durability (%): **86.5**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - SLAKE DURABILITY - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, [07/11/18 - 08:27 | AF3]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R615**

Sample Ref: **34**

Sample Type: **D**

Depth (m): **26.08**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **93.4**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

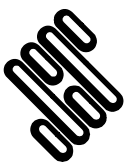
### Second Cycle

Slake Durability (%): **88.6**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcfText L - SLAKE DURABILITY - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, [07/11/18 - 09:23 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R615**

Sample Ref: **44**

Sample Type: **D**

Depth (m): **34.90**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **93.1**

Description of Fragments in Drum: **Sub-rounded**

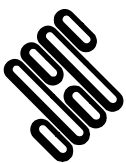
Description of Material Passing Drum: **Fine to medium sand and silt**

### Second Cycle

Slake Durability (%): **86.2**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R616**

Sample Ref: **49**

Sample Type: **D**

Depth (m): **35.70**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **93.7**

Description of Fragments in Drum: **Sub-rounded**

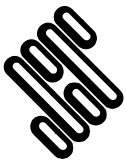
Description of Material Passing Drum: **Fine to medium sand and silt**

### Second Cycle

Slake Durability (%): **88.5**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R616**

Sample Ref: **57**

Sample Type: **D**

Depth (m): **41.25**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **91.0**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

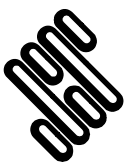
### Second Cycle

Slake Durability (%): **84.4**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcfText L - SLAKE DURABILITY - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, [07/11/18 - 10:22 | AF3]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R618**

Sample Ref: **33**

Sample Type: **D**

Depth (m): **26.28**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **93.5**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

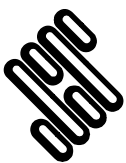
### Second Cycle

Slake Durability (%): **87.6**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - SLAKE DURABILITY - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, [24/06/18 - 08:33 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R618**

Sample Ref: **47**

Sample Type: **D**

Depth (m): **36.50**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **94.0**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

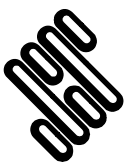
### Second Cycle

Slake Durability (%): **88.0**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R619**

Sample Ref: **30**

Sample Type: **D**

Depth (m): **28.30**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **93.4**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

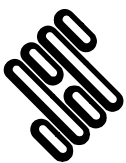
### Second Cycle

Slake Durability (%): **87.2**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - SLAKE DURABILITY - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 26/06/18 - 08:38 | AF3



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R619**

Sample Ref: **37**

Sample Type: **D**

Depth (m): **33.65**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **95.1**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

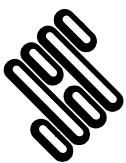
### Second Cycle

Slake Durability (%): **90.3**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - SLAKE DURABILITY - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 26/06/18 - 08:38 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R620**

Sample Ref: **27**

Sample Type: **D**

Depth (m): **25.35**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **89.4**

Description of Fragments in Drum: **Sub-rounded**

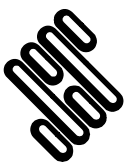
Description of Material Passing Drum: **Fine to medium sand and silt**

### Second Cycle

Slake Durability (%): **81.7**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R620**

Sample Ref: **30**

Sample Type: **D**

Depth (m): **27.15**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **93.3**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

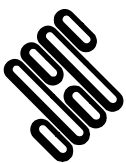
### Second Cycle

Slake Durability (%): **87.5**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - SLAKE DURABILITY - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, | 16/07/18 - 06:39 | AF3 ]



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16/07/18

Contract

Job No

**A303 Stonehenge Phase 6 Ground Investigation**

**733442**



# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **RZ603**

Sample Ref: **33**

Sample Type: **D**

Depth (m): **26.00**

Sample Description: **Off white CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **80.3**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

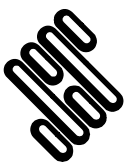
### Second Cycle

Slake Durability (%): **67.5**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - SLAKE DURABILITY - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, [07/11/18 - 12:01 | AF3]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **RZ603**

Sample Ref: **40**

Sample Type: **D**

Depth (m): **31.73**

Sample Description: **Off white CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **78.1**

Description of Fragments in Drum: **Sub-rounded**

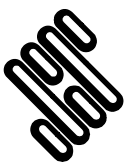
Description of Material Passing Drum: **Fine to medium sand and silt**

### Second Cycle

Slake Durability (%): **63.6**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71906**

Sample Ref: **31**

Sample Type: **U**

Depth (m): **26.15**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **90.4**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

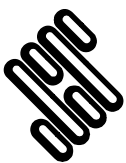
### Second Cycle

Slake Durability (%): **84.2**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71906**

Sample Ref: **51**

Sample Type: **U**

Depth (m): **39.55**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **94.0**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

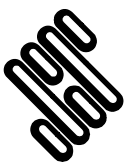
### Second Cycle

Slake Durability (%): **89.9**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71906**

Sample Ref: **56**

Sample Type: **U**

Depth (m): **41.65**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **95.4**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

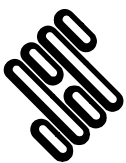
### Second Cycle

Slake Durability (%): **92.0**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcfText L - SLAKE DURABILITY - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, | 19/12/18 - 10:15 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71907**

Sample Ref: **38**

Sample Type: **U**

Depth (m): **31.80**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **92.6**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

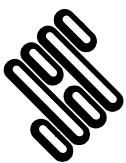
### Second Cycle

Slake Durability (%): **86.9**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcfText L - SLAKE DURABILITY - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, | 19/12/18 - 10:15 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71907**

Sample Ref: **62**

Sample Type: **U**

Depth (m): **49.30**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **93.0**

Description of Fragments in Drum: **Sub-rounded**

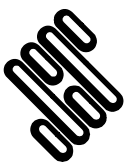
Description of Material Passing Drum: **Fine to medium sand and silt**

### Second Cycle

Slake Durability (%): **87.9**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71907**

Sample Ref: **74**

Sample Type: **U**

Depth (m): **58.30**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **94.4**

Description of Fragments in Drum: **Sub-rounded**

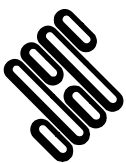
Description of Material Passing Drum: **Fine to medium sand and silt**

### Second Cycle

Slake Durability (%): **90.0**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71909**

Sample Ref: **45**

Sample Type: **U**

Depth (m): **32.70**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **91.6**

Description of Fragments in Drum: **Sub-rounded**

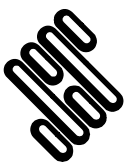
Description of Material Passing Drum: **Fine to medium sand and silt**

### Second Cycle

Slake Durability (%): **85.4**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71909**

Sample Ref: **55**

Sample Type: **U**

Depth (m): **43.30**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **87.2**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

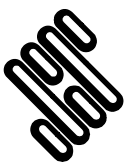
### Second Cycle

Slake Durability (%): **80.0**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71909**

Sample Ref: **64**

Sample Type: **U**

Depth (m): **50.32**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **93.3**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

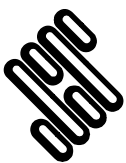
### Second Cycle

Slake Durability (%): **87.2**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | GrcfText L - SLAKE DURABILITY - A4P | 733442\_A3003\_STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk | 19/12/18 - 10:15 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71911**

Sample Ref: **67**

Sample Type: **U**

Depth (m): **43.24**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **90.9**

Description of Fragments in Drum: **Sub-rounded**

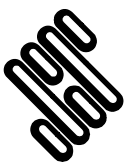
Description of Material Passing Drum: **Fine to medium sand and silt**

### Second Cycle

Slake Durability (%): **83.9**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71911**

Sample Ref: **77**

Sample Type: **U**

Depth (m): **48.55**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **92.4**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

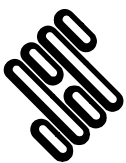
### Second Cycle

Slake Durability (%): **86.4**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71913**

Sample Ref: **36**

Sample Type: **U**

Depth (m): **22.00**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **91.3**

Description of Fragments in Drum: **Sub-rounded**

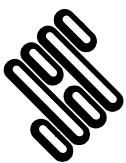
Description of Material Passing Drum: **Fine to medium sand and silt**

### Second Cycle

Slake Durability (%): **83.6**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71913**

Sample Ref: **58**

Sample Type: **U**

Depth (m): **37.10**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **89.6**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

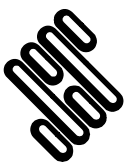
### Second Cycle

Slake Durability (%): **80.3**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71906**

Sample Ref: **31**

Sample Type: **U**

Depth (m): **26.15**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **90.4**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

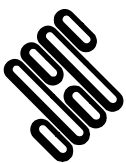
### Second Cycle

Slake Durability (%): **84.2**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71906**

Sample Ref: **51**

Sample Type: **U**

Depth (m): **39.55**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **94.0**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

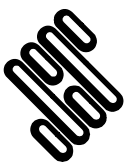
### Second Cycle

Slake Durability (%): **89.9**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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**733442**



# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71906**

Sample Ref: **56**

Sample Type: **U**

Depth (m): **41.65**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **95.4**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

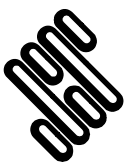
### Second Cycle

Slake Durability (%): **92.0**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

GINT\_LIBRARY\_v8\_06.GLB.LibVersion: v8\_06\_018 ProjVersion: v8\_06 - Core+Full Bristol SI - 012 | Gfctext L - SLAKE DURABILITY - A4P | 733442 - A3003 - STONEHENGE\_PHASE\_6\_GROUND\_INVESTIGATION.GPJ - v8\_06 - Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG, Tel: 0117-947-1000, Fax: 0117-947-1004, Email: ask@soils.co.uk, | 19/12/18 - 10:15 | AF3 ]



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71907**

Sample Ref: **38**

Sample Type: **U**

Depth (m): **31.80**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **92.6**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

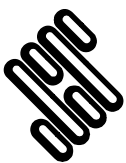
### Second Cycle

Slake Durability (%): **86.9**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71907**

Sample Ref: **62**

Sample Type: **U**

Depth (m): **49.30**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **93.0**

Description of Fragments in Drum: **Sub-rounded**

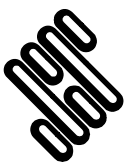
Description of Material Passing Drum: **Fine to medium sand and silt**

### Second Cycle

Slake Durability (%): **87.9**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71907**

Sample Ref: **74**

Sample Type: **U**

Depth (m): **58.30**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **94.4**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

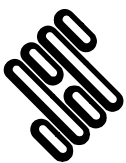
### Second Cycle

Slake Durability (%): **90.0**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71909**

Sample Ref: **45**

Sample Type: **U**

Depth (m): **32.70**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **91.6**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

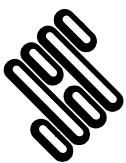
### Second Cycle

Slake Durability (%): **85.4**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71909**

Sample Ref: **55**

Sample Type: **U**

Depth (m): **43.30**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **87.2**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

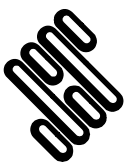
### Second Cycle

Slake Durability (%): **80.0**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71909**

Sample Ref: **64**

Sample Type: **U**

Depth (m): **50.32**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **93.3**

Description of Fragments in Drum: **Sub-rounded**

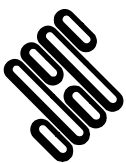
Description of Material Passing Drum: **Fine to medium sand and silt**

### Second Cycle

Slake Durability (%): **87.2**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71911**

Sample Ref: **67**

Sample Type: **U**

Depth (m): **43.24**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **90.9**

Description of Fragments in Drum: **Sub-rounded**

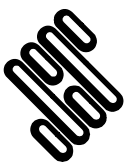
Description of Material Passing Drum: **Fine to medium sand and silt**

### Second Cycle

Slake Durability (%): **83.9**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71911**

Sample Ref: **77**

Sample Type: **U**

Depth (m): **48.55**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **92.4**

Description of Fragments in Drum: **Sub-rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

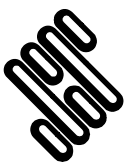
### Second Cycle

Slake Durability (%): **86.4**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**

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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71913**

Sample Ref: **36**

Sample Type: **U**

Depth (m): **22.00**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **91.3**

Description of Fragments in Drum: **Sub-rounded**

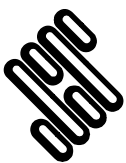
Description of Material Passing Drum: **Fine to medium sand and silt**

### Second Cycle

Slake Durability (%): **83.6**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**



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# TEST REPORT

## SLAKE DURABILITY INDEX

In accordance with ISRM 2007

Location ID: **R71913**

Sample Ref: **58**

Sample Type: **U**

Depth (m): **37.10**

Sample Description: **White CHALK**

Slaking Fluid Used: **Tap water**

Slaking Fluid Temperature (°C): **20**

### First Cycle

Slake Durability (%): **89.6**

Description of Fragments in Drum: **Sub-rounded**

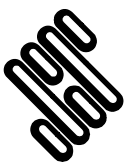
Description of Material Passing Drum: **Fine to medium sand and silt**

### Second Cycle

Slake Durability (%): **80.3**

Description of Fragments in Drum: **Rounded**

Description of Material Passing Drum: **Fine to medium sand and silt**



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## SUMMARY OF CHEMICAL ANALYSES

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Acid Soluble Sulphate (% SO <sub>4</sub> )	Aqueous Extract Sulphate (mg/l SO <sub>4</sub> )	pH	Description
R71805	9	D	7.20		<10	8.97	White CHALK
R71805	22	U	19.51		<10	9.03	White CHALK
R71805	34	D	30.10		<10	9.13	White CHALK
R72002	9	D	5.70		<10	9.01	White CHALK
R72002	15	D	10.30		<10	8.99	White CHALK
R72002	21	D	15.50		<10	9.05	White CHALK
R72002	27	D	20.30		<10	9.04	White CHALK
R72003	7	D	3.70		17	8.87	White CHALK

NOTES:- Chemical tests were undertaken by Envirolab

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	Contract: <span style="background-color: black; color: black;">[REDACTED]</span>		19.12.18	
<b>A303 Stonehenge Phase 7 Ground Investigation</b>				<b>733442</b>
				









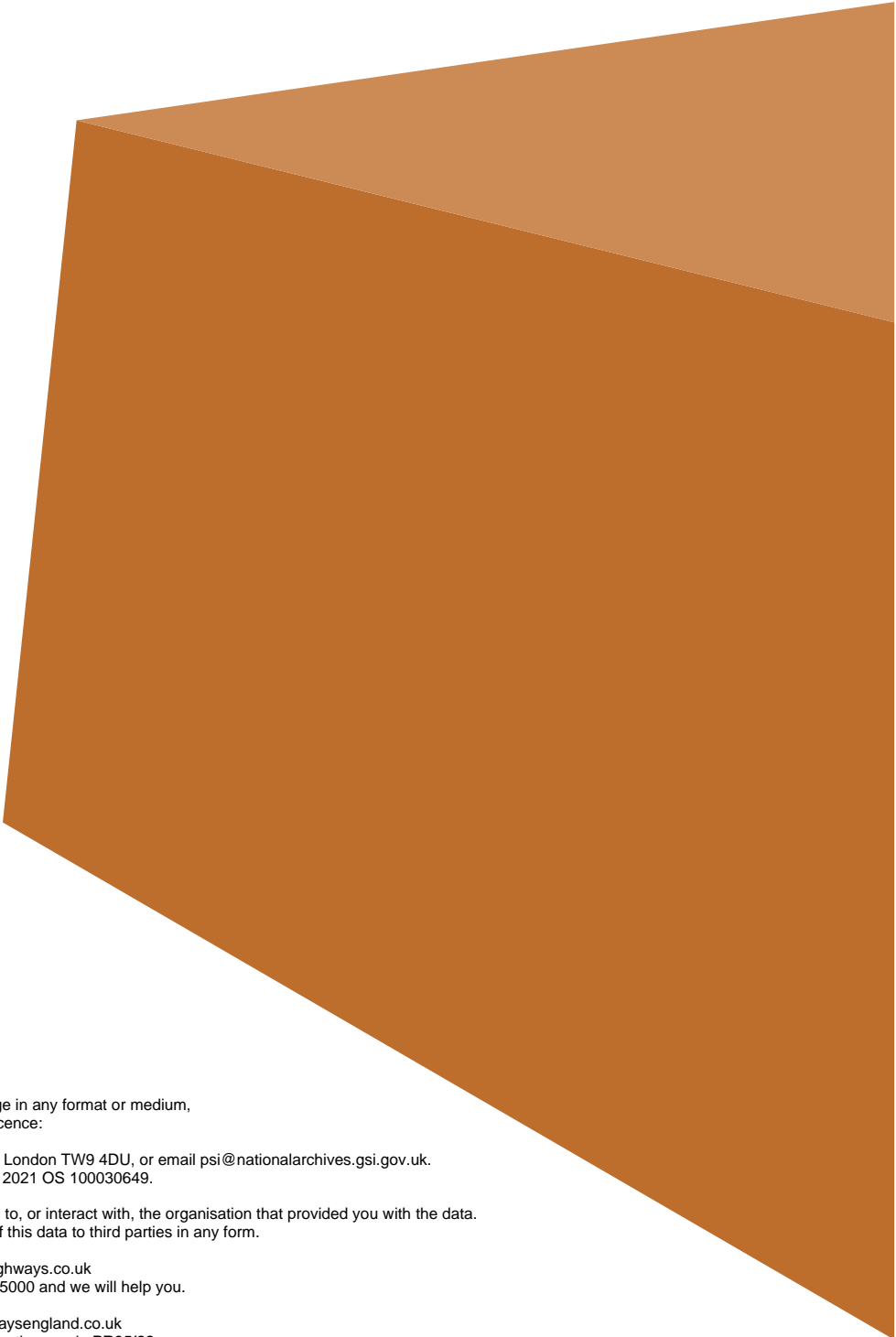












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