TERRA TEK SITE INVESTIGATION & LABORATORY SERVICES 20 YEARS

Nott Group
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For the attention of Mark Hiatt

Report No: B18319-2
Issue No 01

LABORATORY TEST REPORT

Project Name	**ROYSTON**		
Project Number	**B18319-2**	Date samples received	08/05/2014
Your Ref	72302	Date written instructions received	08/05/2014
Purchase Order		Date testing commenced	08/05/2014

Please find enclosed the results as summarised below

Figure / Table	Test Quantity	Description	ISO 17025 Accredited
1	22	Point Load Index	Yes
2	2	Unixial Compressive Strength	Yes
3-4	2	Photographs of Specimen Failures	N/A
5	7	Saturation Moisture Content of Chalk	No

Remarks :

Issued by : Stephen Langman Date of Issue : 04/06/2014

Approved Signatories : S. Langman 04/06/2014

G Wilson (JMD/Laboratories Director), S Langman (Laboratory Coordinator), S A Reynolds (Quality Manager)

Key to symbols used in this report
S/C : Testing was sub-contracted

Unless we are notified to the contrary, samples will be disposed after a period of one month from this date.
The results reported relate to samples received in the laboratory only.
All results contained in this report are provisional unless signed by an approved signatory
This report should not be reproduced except in full without the written approval of the laboratory.
Under multisite accreditation the testing contained in this report may have been performed at another Terra Tek laboratory.
The enclosed results remain the property of Terra Tek Limited and we reserve the right to withdraw
our report if we have not received cleared funds in accordance with our standard terms and conditions
Only those results indicated in this report are UKAS accredited and any opinions or interpretations expressed are outside the scope of UKAS accreditation.
Feedback on the this report may be left via our website www.terratek.co.uk/contact-us

MCERTS UKAS TESTING 0126

TERRA TEK
Site Investigation & Laboratory Services

Site ROYSTON

Client Nott Group

Engineer

Contract No B18319-2

~ Indicates test not carried out

Sample Identification		Orientation of Test	Dimension A	Dimension B	Load	Is	Corrected Is(50)	Comments
Exploratory Hole	Depth m		mm	mm	kN	MN/m²	MN/m²	
RC1	2.40	Axial	74.0	30.0	1.5	0.53	0.55	
RC1	2.40	Diametral	55.0	80.0	0.1	0.02	0.02	
RC1	2.90	Axial	79.0	40.0	1.8	0.45	0.50	
RC1	2.90	Diametral	45.0	80.0	2.0	0.31	0.39	
RC1	3.60	Axial	79.0	50.0	1.8	0.36	0.42	
RC1	3.60	Diametral	74.0	70.0	0.3	0.06	0.07	
RC1	5.00	Axial	74.0	50.0	2.4	0.51	0.59	
RC1	5.00	Diametral	69.0	75.0	0.3	0.05	0.06	
RC1	5.60	Axial	75.0	80.0	0.9	0.12	0.15	

Notes

1. Dimension A= Minimum Width for Lump Tests
   Dimension A=Length for Diametral Tests
   Dimension A=Diameter for Axial Tests
   Dimension B=Platen Separation
2. Moisture Content of sample : as-received
3. All preparation and testing carried out in accordance with ISRM Commission on Testing Methods 1985
4. Opinions and interpretations are outside the scope of UKAS accreditation

Originator	Approved
SE	03/06/2014

POINT LOAD INDEX TESTS

Figure 1

TERRA TEK
Site Investigation & Laboratory Services

Site ROYSTON

Client Nott Group

Engineer

Contract No B18319-2

~ Indicates test not carried out

Sample Identification		Orientation of Test	Dimension A	Dimension B	Load	Is	Corrected Is(50)	Comments
Exploratory Hole	Depth m		mm	mm	kN	MN/m²	MN/m²	
RC1	5.60	Diametral	180.0	75.0	1.8	0.32	0.38	
RC1	6.50	Axial	75.0	60.0	0.7	0.12	0.15	
RC1	6.50	Diametral	114.0	75.0	0.8	0.14	0.17	
RC2	2.35	Axial	79.0	40.0	1.8	0.45	0.50	
RC2	2.35	Diametral	60.0	70.0	1.8	0.37	0.43	
RC2	3.50	Axial	78.0	40.0	0.8	0.20	0.22	
RC2	3.50	Diametral	97.0	80.0	0.7	0.11	0.14	
RC2	5.45	Axial	79.0	60.0	1.3	0.22	0.26	
RC2	5.45	Diametral	184.0	80.0	1.1	0.17	0.21	

Notes

1. Dimension A= Minimum Width for Lump Tests
   Dimension A=Length for Diametral Tests
   Dimension A=Diameter for Axial Tests
   Dimension B=Platen Separation
2. Moisture Content of sample : as-received
3. All preparation and testing carried out in accordance with ISRM Commission on Testing Methods 1985
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Originator	Approved
SE	03/06/2014

POINT LOAD INDEX TESTS

Figure 1

TERRA TEK
Site Investigation & Laboratory Services

Site ROYSTON

Client Nott Group

Engineer

Contract No B18319-2

~ Indicates test not carried out

Sample Identification		Orientation of Test	Dimension A	Dimension B	Load	Is	Corrected Is(50)	Comments
Exploratory Hole	Depth m		mm	mm	kN	MN/m²	MN/m²	
RC2	7.00	Axial	76.0	40.0	0.4	0.10	0.11	
RC2	7.00	Diametral	100.0	70.0	0.3	0.06	0.07	
RC2	8.50	Axial	75.0	40.0	0.8	0.21	0.23	
RC2	8.50	Diametral	72.0	80.0	0.3	0.05	0.06	

Notes

1. Dimension A= Minimum Width for Lump Tests
   Dimension A=Length for Diametral Tests
   Dimension A=Diameter for Axial Tests
   Dimension B=Platen Separation
2. Moisture Content of sample : as-received
3. All preparation and testing carried out in accordance with ISRM Commission on Testing Methods 1985
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Originator	Approved
SE	03/06/2014

POINT LOAD INDEX TESTS

Figure 1

Sheet 3 of 3

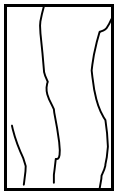
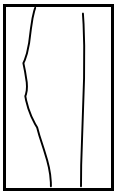
TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROYSTON

Client Nott Group

Engineer

Contract No B18319-2

Exploration Point		RC1	RC1		
Depth	m	8.15	9.10		
Date Received		21.05.14	21.05.14		
Date Tested		31.05.14	31.05.14		
Length	mm	170.2	117.8		
Mean Diameter	mm	79.3	77.7		
Length / Diameter Ratio		2.15	1.52		
Perpendicularity	mm	0.0012	0.0017		
Bulk Density	Mg/m³	1.94	1.97		
Moisture Content	%	27.9	24.9		
Degree of Saturation	%	As received	As received		
Stress Rate	kPa/sec	3.00	3.00		
Test Duration		0min 50sec	0min 57sec		
Failure Load	kN	2.5	3.4		
Uniaxial Compressive Strength	MPa	0.5	0.7		
Type of Failure		Normal	Normal		
Strength Classification		Very Weak	Very Weak		
Associated Comment Numbers (see notes)		7	3,7		
Failure Diagram					

Notes:

1. Prepared in accordance with ASTM D4543-01.
2. Tested in accordance with ASTM D2938-95.
3. Height/diameter ratio outwith limits of 2.0 to 2.5. Best effort conformance accepted - tested as is.
4. Straightness of core more than 0.50mm over length. Best effort conformance accepted - tested as is.
5. Flatness of core ends more than 0.025mm. Best effort conformance accepted - tested as is.
6. Perpendicularity of core more than 0.0043mm. Best effort conformance accepted - tested as is.
7. Test duration not falling between 2 and 15 minutes. Best effort conformance accepted.
8. There are some rock types with physical characteristics which preclude preparing specimens to the desired tolerances. Where this is the case the specimen is evaluated to determine whether a best effort was achieved for the rock type involved. Based upon the evaluation and professional judgement a determination is made whether the specimen should be discarded, tested as is, use of capping compound or start over.

Originator	Checked & Approved
SE	03/06/2014

UNIAXIAL COMPRESSIVE STRENGTH
ASTM Methods

Figure 2

TERRA TEK
SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROYSTON	Contract No	B18319-2
Client	Nott Group	Hole ID	RC1
Engineer		Sample Ref	
		Depth (m)	8.15
		Sample Type	C



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PHOTOGRAPHS OF SPECIMEN FAILURE

Figure 3

TERRA TEK
SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROYSTON	Contract No	B18319-2
Client	Nott Group	Hole ID	RC1
Engineer		Sample Ref	
		Depth (m)	9.10
		Sample Type	C



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PHOTOGRAPHS OF SPECIMEN FAILURE

Figure 4

Sheet 1 of 1

TERRA TEK
SITE INVESTIGATION AND LABORATORY SERVICES

Site ROYSTON

Client Nott Group

Engineer

Contract No 72302

Hole ID	Sample	Depth (m)	Description	Moisture Content %	Bulk Density Mg/m³	Dry Density Mg/m³	Saturation Moisture Content %	Porosity %
RC1	253440	4.50	White CHALK.	11	2.29	2.06	12	24
RC2	253452	6	White CHALK.	27	1.97	1.56	27	42
RC2	253449	2.6	White CHALK.	15	2.20	1.91	15	29
RC1	253437	3.5	White CHALK.	16	2.15	1.86	17	31
RC1	253435	2.2	White CHALK.	20	2.07	1.72	21	36
RC1	253445	8	White CHALK.	28	1.95	1.52	29	44
RC1	253442	5.7	White CHALK.	21	1.91	1.58	26	42
RC2	253447	0.56 - 2.00	White CHALK.	18	2.01	1.69	22	37

Originator	Checked & Approved
PM	S. Langrish 04/06/2014

SATURATION MOISTURE CONTENT OF CHALK
BS1377:Part2:1990:Clause 3.3

Figure 5