Nott Group
Suite 2M2
Hastingwood Industrial Park
Wood Lane
Birmingham
B24 9QR
For the attention of Mark Hiatt

Report No: B18284
Issue No 01

LABORATORY TEST REPORT

Project Name	**ROYSTON**		
Project Number	**B18284**	Date samples received	17/04/2014
Your Ref		Date written instructions received	17/04/2014
Purchase Order	12302	Date testing commenced	17/04/2014

Please find enclosed the results as summarised below

Figure / Table	Test Quantity	Description	ISO 17025 Accredited
1	22	Saturation Moisture Content of Chalk	No
2-7	6	Particle Size Distribution	Yes
8-13	6	Moisture Content/Dry Density Relationship	Yes

Remarks :

Issued by : Stephen Langman Date of Issue : 12/05/2014

Approved Signatories : S. Langman 12/05/2014

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

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROYSTON

Client Nott Group

Engineer

Contract No B18284

Hole ID	Sample	Depth (m)	Description	Moisture Content %	Bulk Density Mg/m³	Dry Density Mg/m³	Saturation Moisture Content %	Porosity %
TP06	252361	0.50	White CHALK.	21	2.03	1.68	23	38
TP06	252362	1.00	White CHALK.	21	2.06	1.70	22	37
TP06	252363	1.45	White CHALK.	21	2.03	1.67	23	38
TP07	252364	1.40	White CHALK.	14	2.17	1.90	16	30
TP08	252365	1.00	White CHALK.	15	2.18	1.90	16	30
TP09	525366	0.60	White CHALK.	24	2.01	1.61	25	40
TP09	252367	0.80	White CHALK.	21	2.01	1.66	23	39
TP10	252368	0.70	White CHALK.	18	2.09	1.77	19	34
TP11	252369	0.50	White CHALK.	11	2.26	2.03	12	25
TP13	252370	0.40	White CHALK.	12	2.25	2.01	13	26
TP17	252371	1.00	White CHALK.	21	2.05	1.70	22	37
TP18	252372	1.40	White CHALK.	22	2.03	1.67	23	38

Originator	Checked & Approved
PM	S. Langrish 12/05/2014

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

Figure 1

TERRA TEK
SITE INVESTIGATION AND LABORATORY SERVICES

Site ROYSTON

Client Nott Group

Engineer

Contract No B18284

Hole ID	Sample	Depth (m)	Description	Moisture Content %	Bulk Density Mg/m³	Dry Density Mg/m³	Saturation Moisture Content %	Porosity %
TP21	252373	0.80	White CHALK.	21	2.02	1.66	23	38
TP21	252374	1.30	White CHALK.	21	2.01	1.66	23	39
CP01	252375	1.50 - 1.95	White CHALK.	16	2.19	1.88	16	30
CP02	252376	1.95 - 2.00	White CHALK.	12	2.11	1.89	16	30
CP03	252377	1.95 - 2.00	White CHALK.	13	2.14	1.89	16	30
CP04	252378	1.50 - 2.00	White CHALK.	18	2.13	1.81	18	33
CP05	252379	1.95 - 2.00	White CHALK.	12	2.21	1.97	14	27
CP06	252380	1.50 - 1.95	White CHALK.	17	2.08	1.77	19	34
CP07	252381	1.50	White CHALK.	22	1.97	1.62	25	40
CP08	252382	1.50	White CHALK.	13	2.18	1.92	15	29

Originator	Checked & Approved
PM	S. Longmore 12/05/2014

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

Figure 1

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROYSTON

Client Nott Group

Engineer

Contract No B18284

Hole TP06
Sample Ref
Depth (m) 1.00
Sample Type B

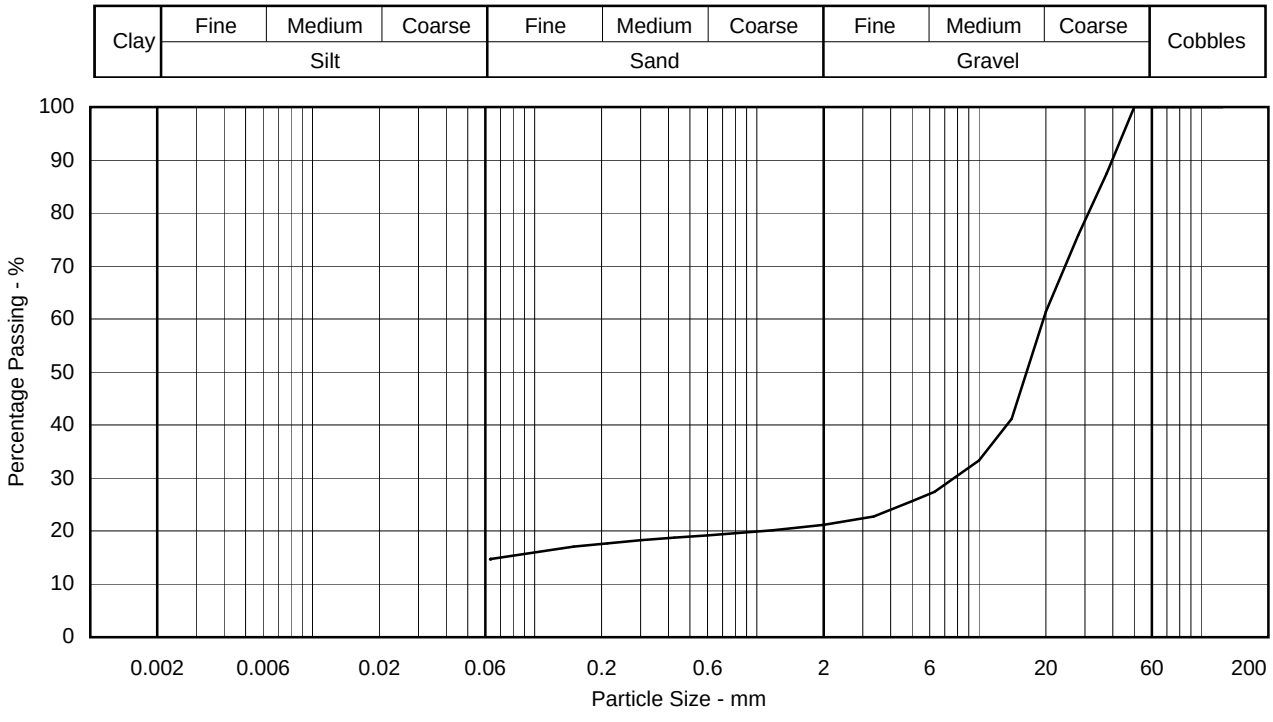
Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	88
28.0 mm	76
20.0 mm	61
14.0 mm	41
10.0 mm	33
6.30 mm	27
5.00 mm	26
3.35 mm	23
2.00 mm	21
1.18 mm	20
600 µm	19
425 µm	19
300 µm	18
212 µm	18
150 µm	17
63 µm	15

Non Engineering Description
White CHALK.

Sample Proportions - %	
Cobbles	0.0
Gravel	78.9
Sand	6.4
Silt & Clay	14.7

Particle Diameter - mm	
D100	50
D60	20
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
CR/PM	S. Longmore 12/05/2014

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 2

Moor Lane, Witton, Birmingham, B6 7HG

TERRA TEK
SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROYSTON	**Contract No**	**B18284**
Client	Nott Group	Hole	TP09
Engineer		Sample Ref	
		Depth (m)	0.60
		Sample Type	B

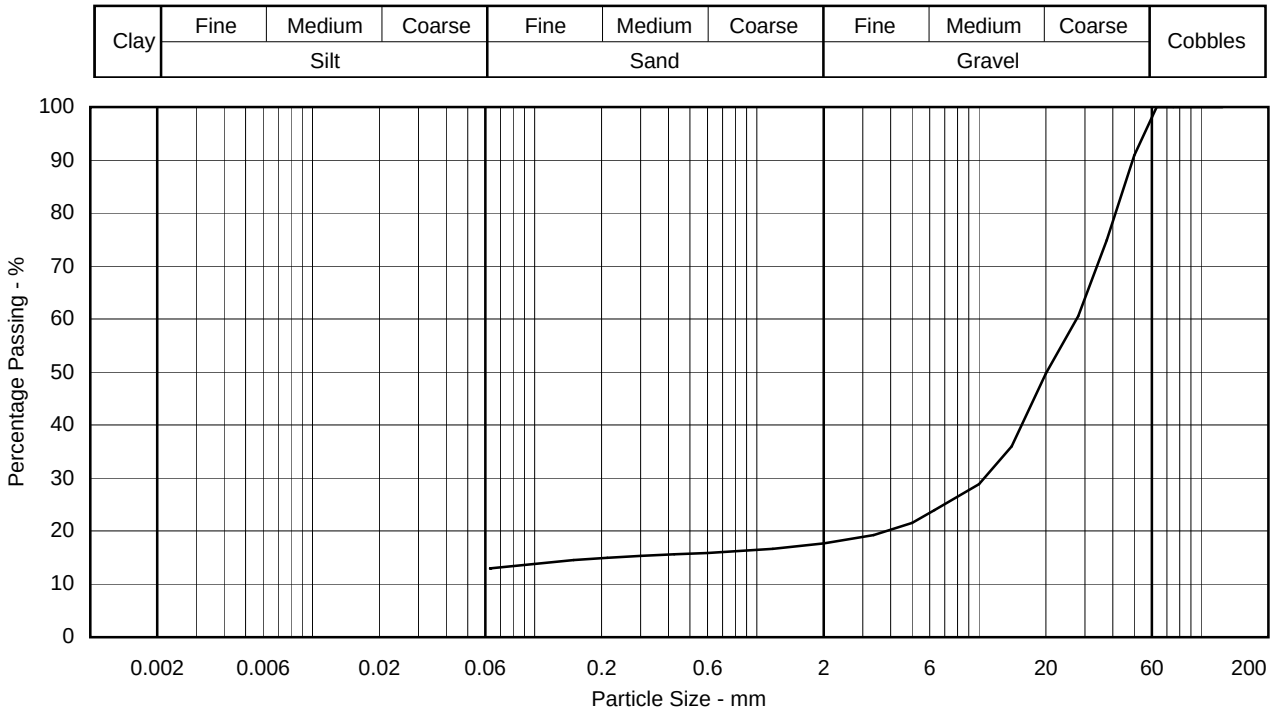
Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	91
37.5 mm	75
28.0 mm	61
20.0 mm	50
14.0 mm	36
10.0 mm	29
6.30 mm	24
5.00 mm	22
3.35 mm	19
2.00 mm	18
1.18 mm	17
600 µm	16
425 µm	16
300 µm	15
212 µm	15
150 µm	15
63 µm	13

Non Engineering Description
White CHALK.

Sample Proportions - %	
Cobbles	2.1
Gravel	80.3
Sand	4.7
Silt & Clay	12.9

Particle Diameter - mm	
D100	63
D60	28
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
CR/PM	12/05/2014

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 3

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROYSTON	**Contract No**	**B18284**
Client	Nott Group	Hole	TP11
Engineer		Sample Ref	
		Depth (m)	0.50
		Sample Type	B

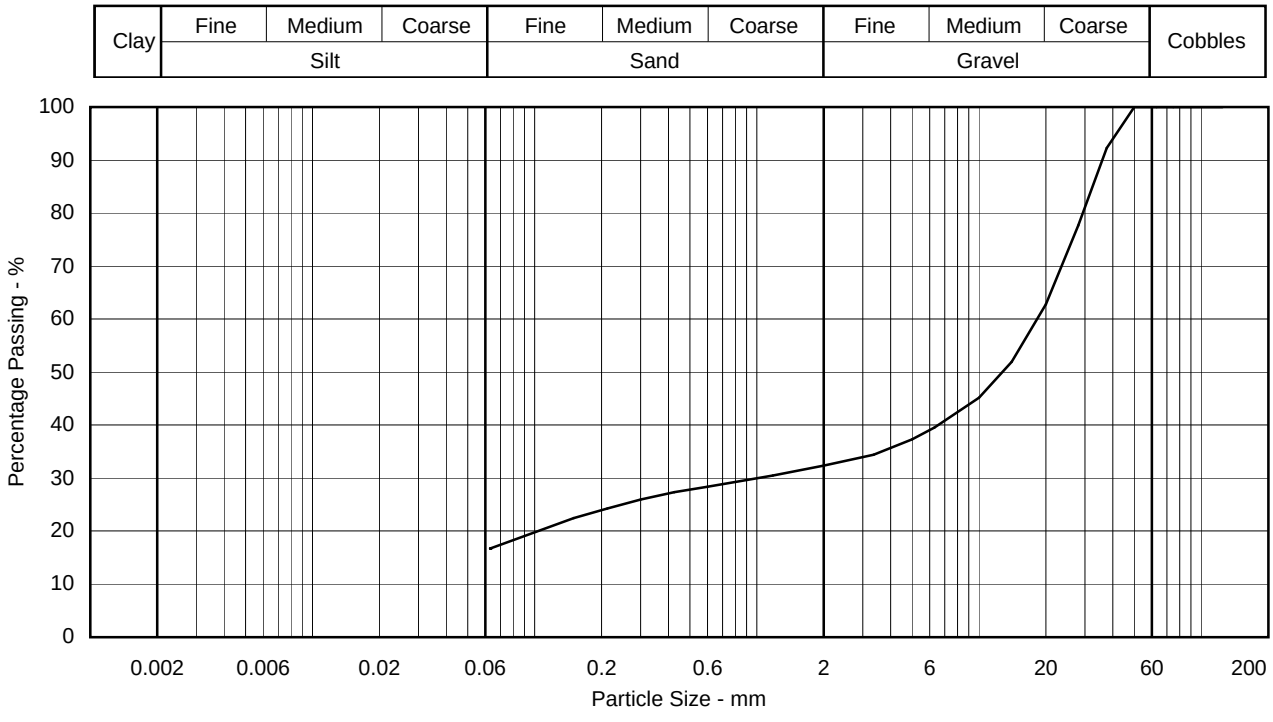
Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	92
28.0 mm	78
20.0 mm	63
14.0 mm	52
10.0 mm	45
6.30 mm	40
5.00 mm	37
3.35 mm	34
2.00 mm	32
1.18 mm	30
600 µm	28
425 µm	27
300 µm	26
212 µm	24
150 µm	22
63 µm	17

Non Engineering Description
White CHALK.

Sample Proportions - %	
Cobbles	0.0
Gravel	67.7
Sand	15.7
Silt & Clay	16.7

Particle Diameter - mm	
D100	50
D60	18
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
CR/PM	S. Longmore 12/05/2014

PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 4

TERRA TEK
SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROYSTON	**Contract No**	**B18284**
Client	Nott Group	Hole	TP13
Engineer		Sample Ref	
		Depth (m)	0.40
		Sample Type	B

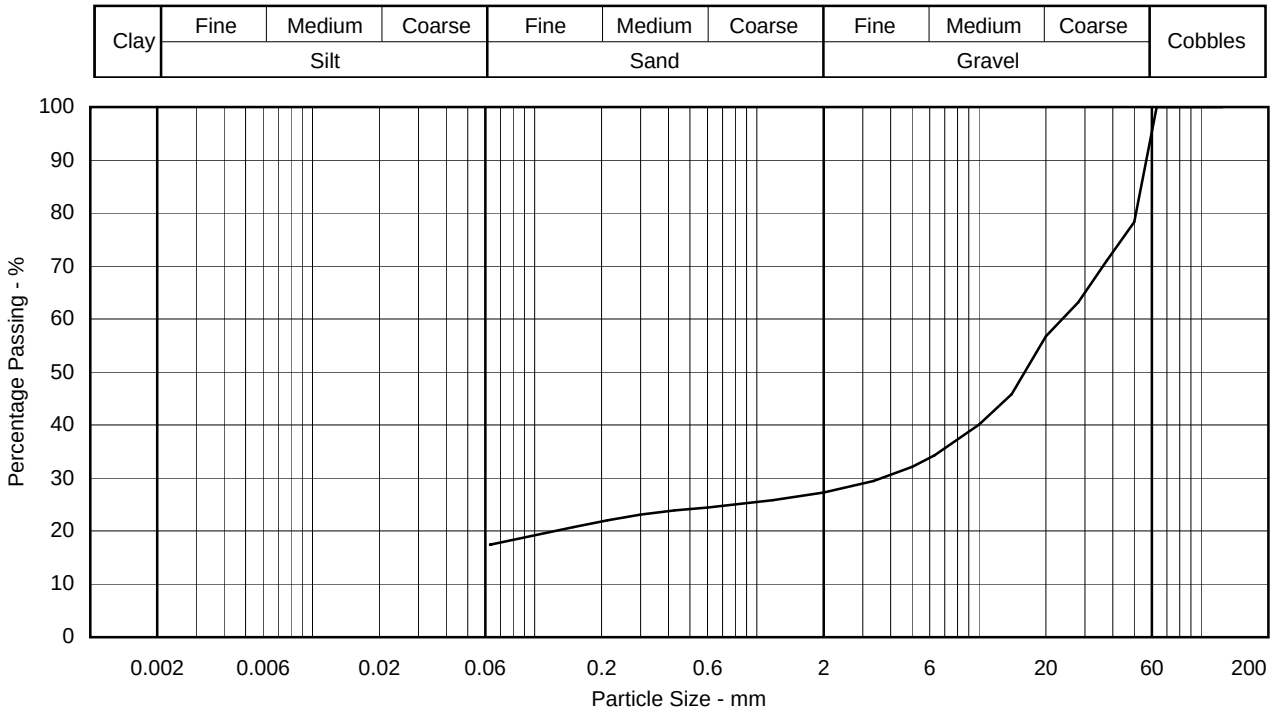
Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	78
37.5 mm	71
28.0 mm	63
20.0 mm	57
14.0 mm	46
10.0 mm	40
6.30 mm	34
5.00 mm	32
3.35 mm	29
2.00 mm	27
1.18 mm	26
600 µm	24
425 µm	24
300 µm	23
212 µm	22
150 µm	21
63 µm	17

Non Engineering Description
White CHALK.

Sample Proportions - %	
Cobbles	5.0
Gravel	67.7
Sand	9.9
Silt & Clay	17.4

Particle Diameter - mm	
D100	63
D60	24
D10	
Uniformity Coefficient	N/A

Notes
Sample does not comply with BS1377 minimum mass requirements



Originator	Checked & Approved
CR/PM	S. Longmore 12/05/2014

PARTICLE SIZE DISTRIBUTION

BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 5

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TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site ROYSTON

Client Nott Group

Engineer

Contract No B18284

Hole TP17
Sample Ref
Depth (m) 1.00
Sample Type B

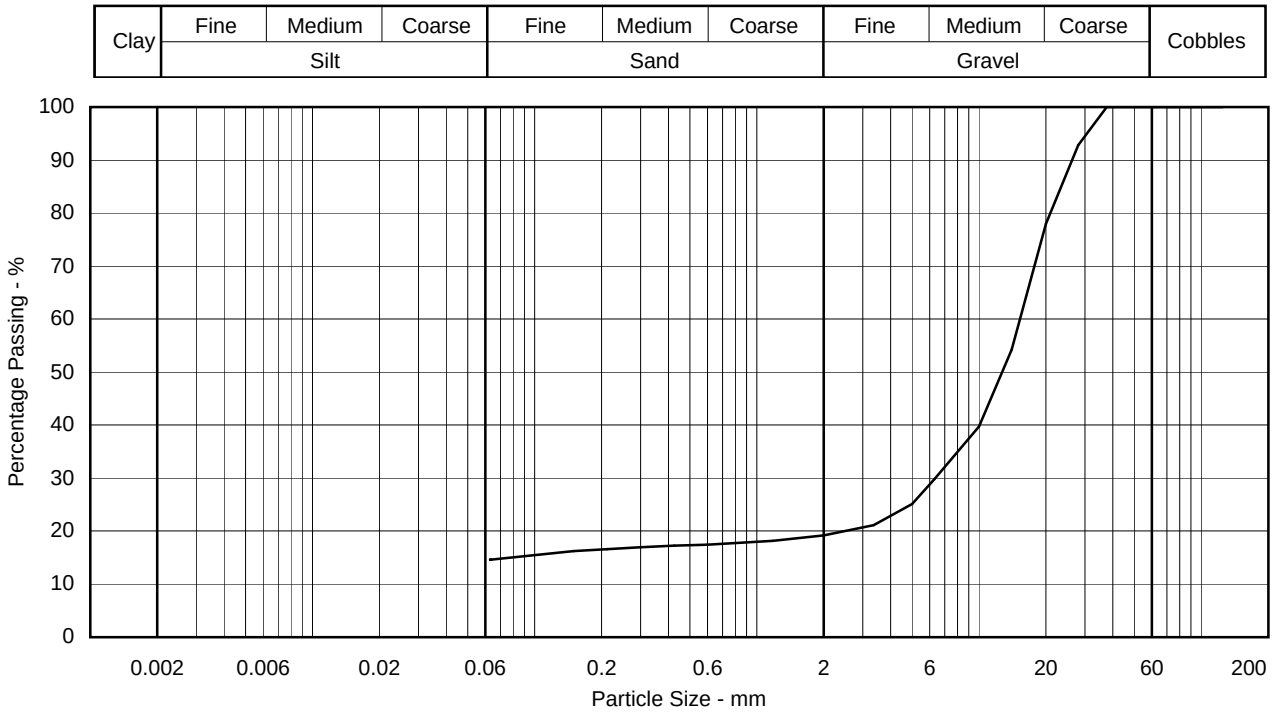
Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	100
28.0 mm	93
20.0 mm	78
14.0 mm	54
10.0 mm	40
6.30 mm	30
5.00 mm	25
3.35 mm	21
2.00 mm	19
1.18 mm	18
600 µm	17
425 µm	17
300 µm	17
212 µm	17
150 µm	16
63 µm	15

Non Engineering Description
White CHALK.

Sample Proportions - %	
Cobbles	0.0
Gravel	80.8
Sand	4.6
Silt & Clay	14.6

Particle Diameter - mm	
D100	38
D60	15
D10	
Uniformity Coefficient	N/A

Notes



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PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 6

Moor Lane, Witton, Birmingham, B6 7HG

Version 059 - 24/06/2013
1260 - PSD TP21 00.80 B - B18284-252373.xls : Sample ID 252373

TERRA TEK
SITE INVESTIGATION AND LABORATORY SERVICES

Site ROYSTON
Client Nott Group
Engineer

Contract No B18284
Hole TP21
Sample Ref
Depth (m) 0.80
Sample Type B

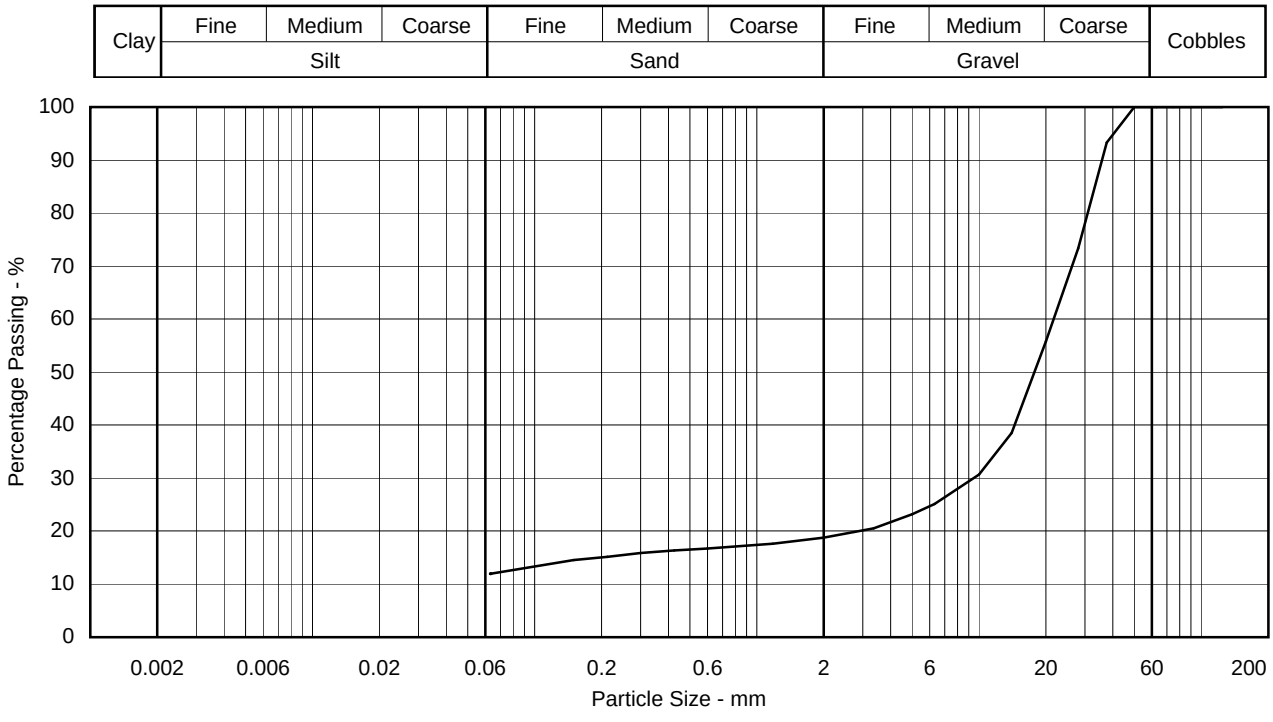
Particle Size	% Passing
125.0 mm	100
90.0 mm	100
75.0 mm	100
63.0 mm	100
50.0 mm	100
37.5 mm	93
28.0 mm	73
20.0 mm	56
14.0 mm	38
10.0 mm	31
6.30 mm	25
5.00 mm	23
3.35 mm	20
2.00 mm	19
1.18 mm	18
600 µm	17
425 µm	16
300 µm	16
212 µm	15
150 µm	15
63 µm	12

Non Engineering Description
White CHALK.

Sample Proportions - %	
Cobbles	0.0
Gravel	81.2
Sand	6.8
Silt & Clay	11.9

Particle Diameter - mm	
D100	50
D60	22
D10	
Uniformity Coefficient	N/A

Notes



Originator	Checked & Approved
CR/PM	S. Longmore 12/05/2014

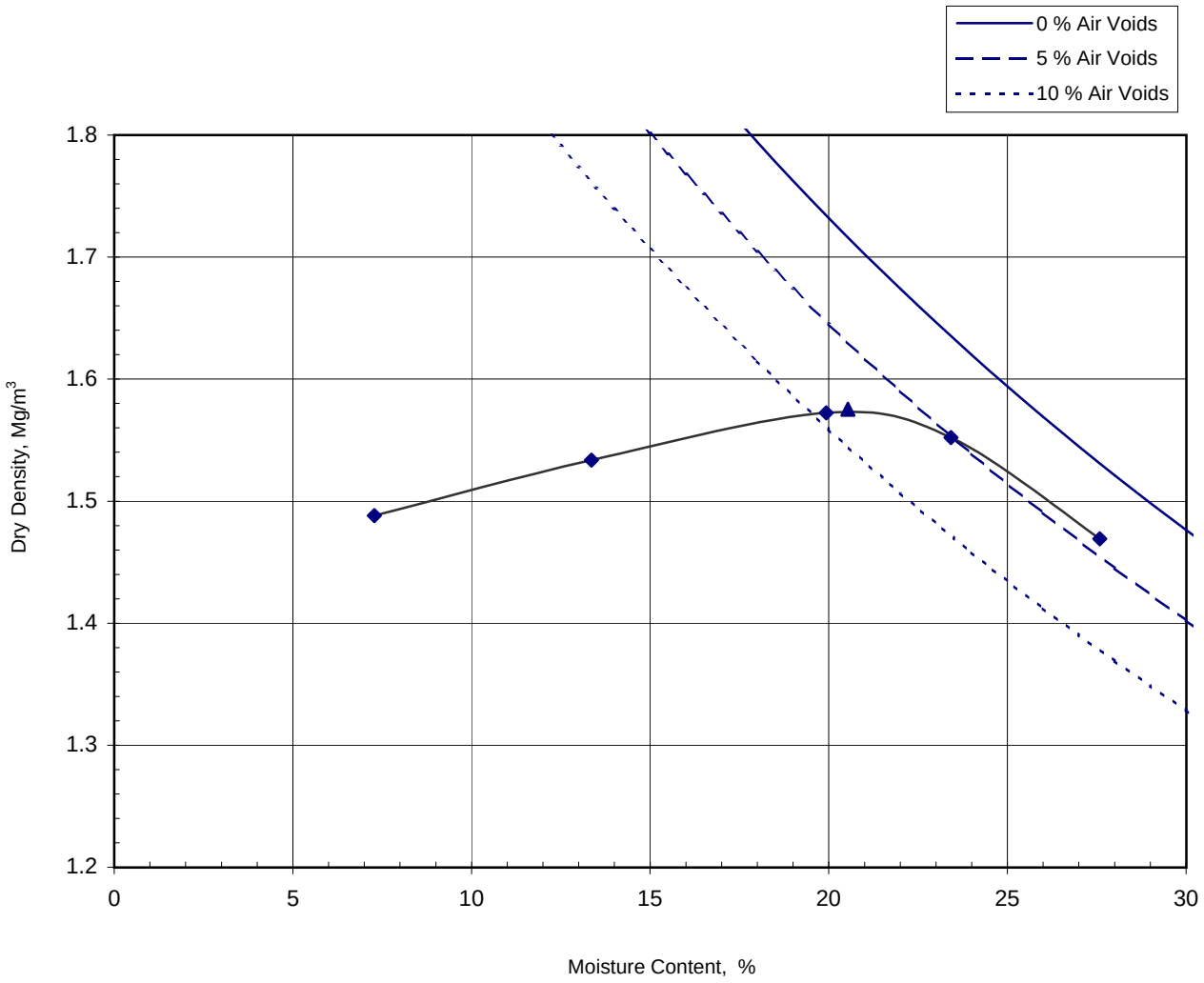
PARTICLE SIZE DISTRIBUTION
BS1377:Part 2:1990 Clause 9.2 - Wet Sieving

Figure 7

Moor Lane, Witton, Birmingham, B6 7HG
Lab Project No B18284 : 12/05/2014 16:34:22

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROYSTON	**Contract No**	**B18284**
Client	Nott Group	Hole	TP06
Engineer		Sample Ref	
		Depth (m)	1.00
		Sample Type	B



Non Engineering Description		White CHALK.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	12
Mass Retained on 20.0 mm Sieve	%	26
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	-
Maximum Dry Density	Mg/m³	1.58
Optimum Moisture Content	%	20.5

Originator	Checked & Approved
PM	S. Langmead 12/05/2014

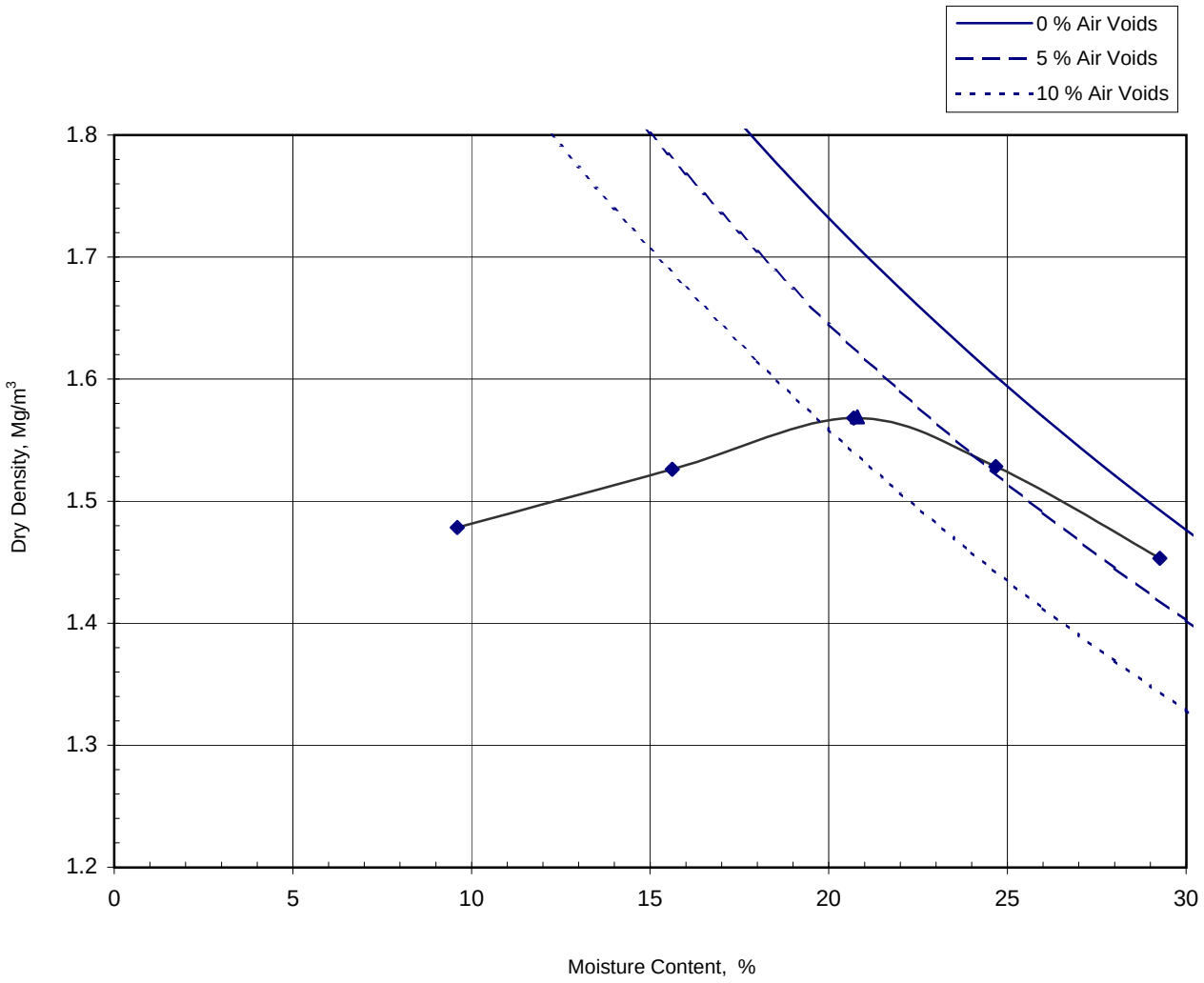
Moisture Content / Dry Density Relationship
BS1377:Part 4:1990 Clause 3.3

Figure 8

Moor Lane, Witton, Birmingham, B6 7HG

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROYSTON	**Contract No**	**B18284**
Client	Nott Group	Hole	TP09
Engineer		Sample Ref	
		Depth (m)	0.60
		Sample Type	B



Non Engineering Description		White CHALK.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	25
Mass Retained on 20.0 mm Sieve	%	25
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	-
Maximum Dry Density	Mg/m³	1.57
Optimum Moisture Content	%	20.8

Originator	Checked & Approved
PM	S. Langman 12/05/2014

Moisture Content / Dry Density Relationship

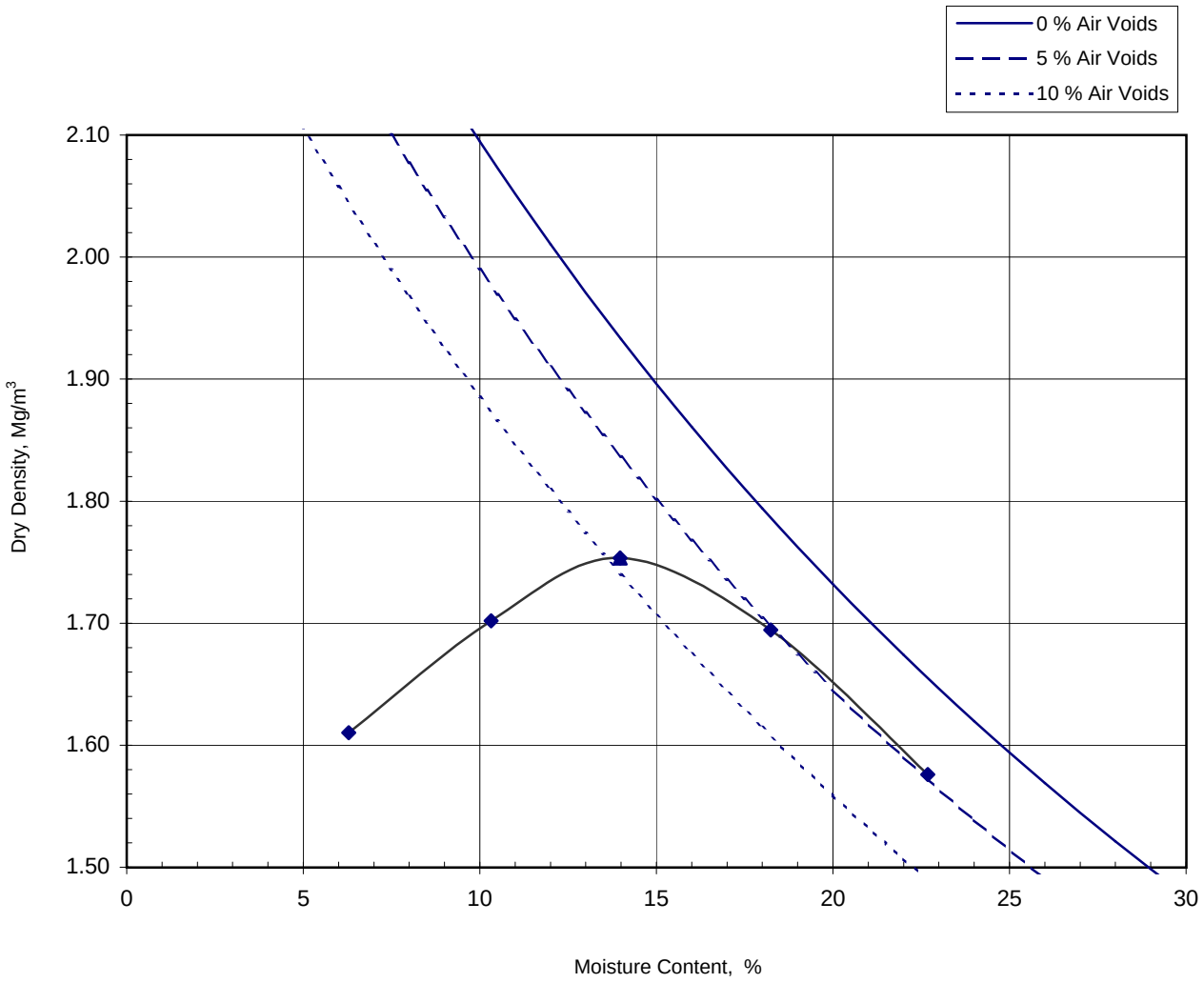
BS1377:Part 4:1990 Clause 3.3

Figure 9

Moor Lane, Witton, Birmingham, B6 7HG

TERRA TEK
SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROYSTON	**Contract No**	**B18284**
Client	Nott Group	Hole	TP11
Engineer		Sample Ref	
		Depth (m)	0.50
		Sample Type	B



Non Engineering Description		White CHALK.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	8
Mass Retained on 20.0 mm Sieve	%	30
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	-
Maximum Dry Density	Mg/m³	1.75
Optimum Moisture Content	%	14.0

Originator	Checked & Approved
PM	S. Langman 12/05/2014

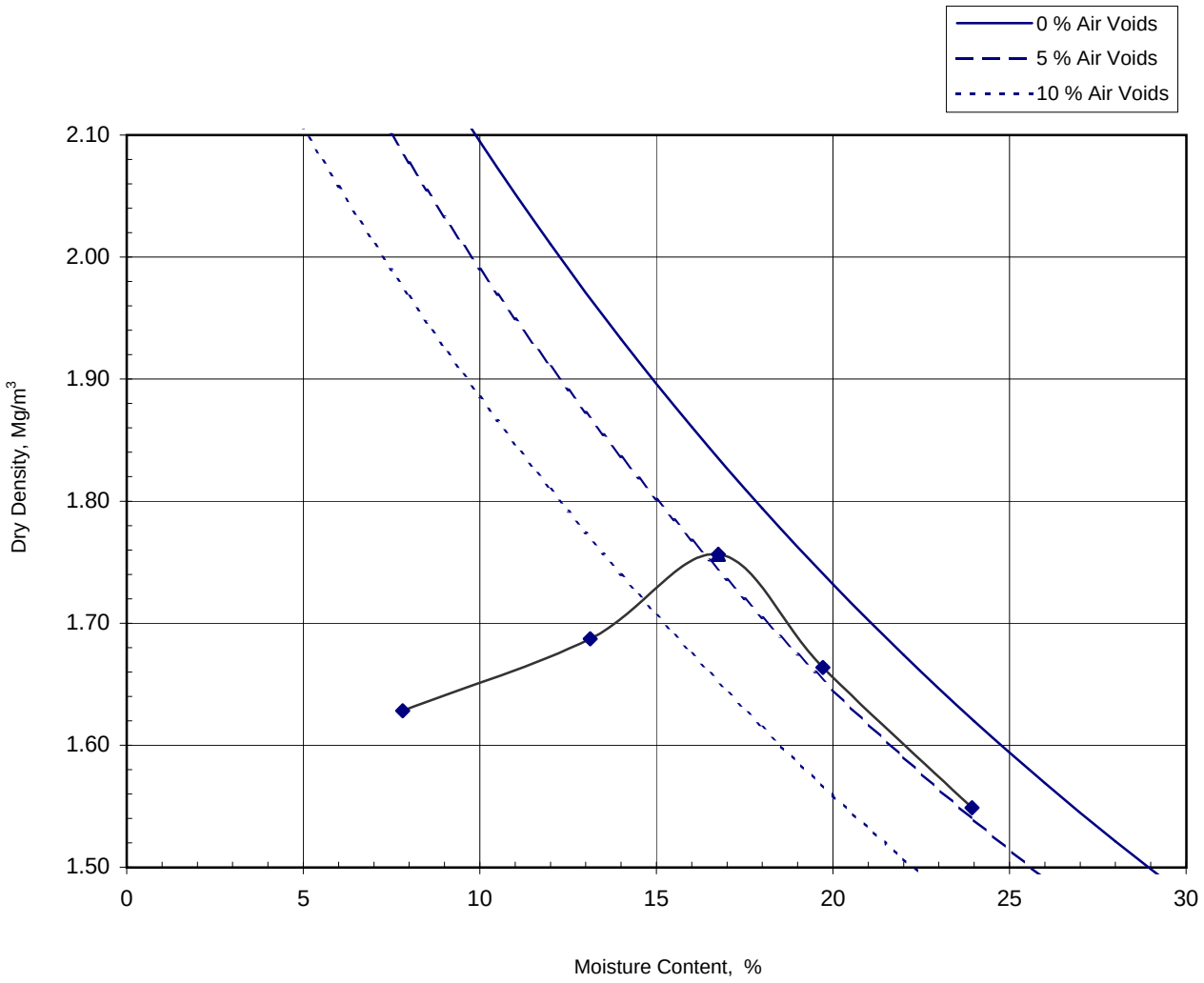
Moisture Content / Dry Density Relationship
BS1377:Part 4:1990 Clause 3.3

Figure 10

Moor Lane, Witton, Birmingham, B6 7HG

TERRA TEK
SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROYSTON	**Contract No**	**B18284**
Client	Nott Group	Hole	TP13
Engineer		Sample Ref	
		Depth (m)	0.40
		Sample Type	B



Non Engineering Description		White CHALK.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	29
Mass Retained on 20.0 mm Sieve	%	14
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	-
Maximum Dry Density	Mg/m³	1.76
Optimum Moisture Content	%	16.7

Originator	Checked & Approved
PM	S. Langman 12/05/2014

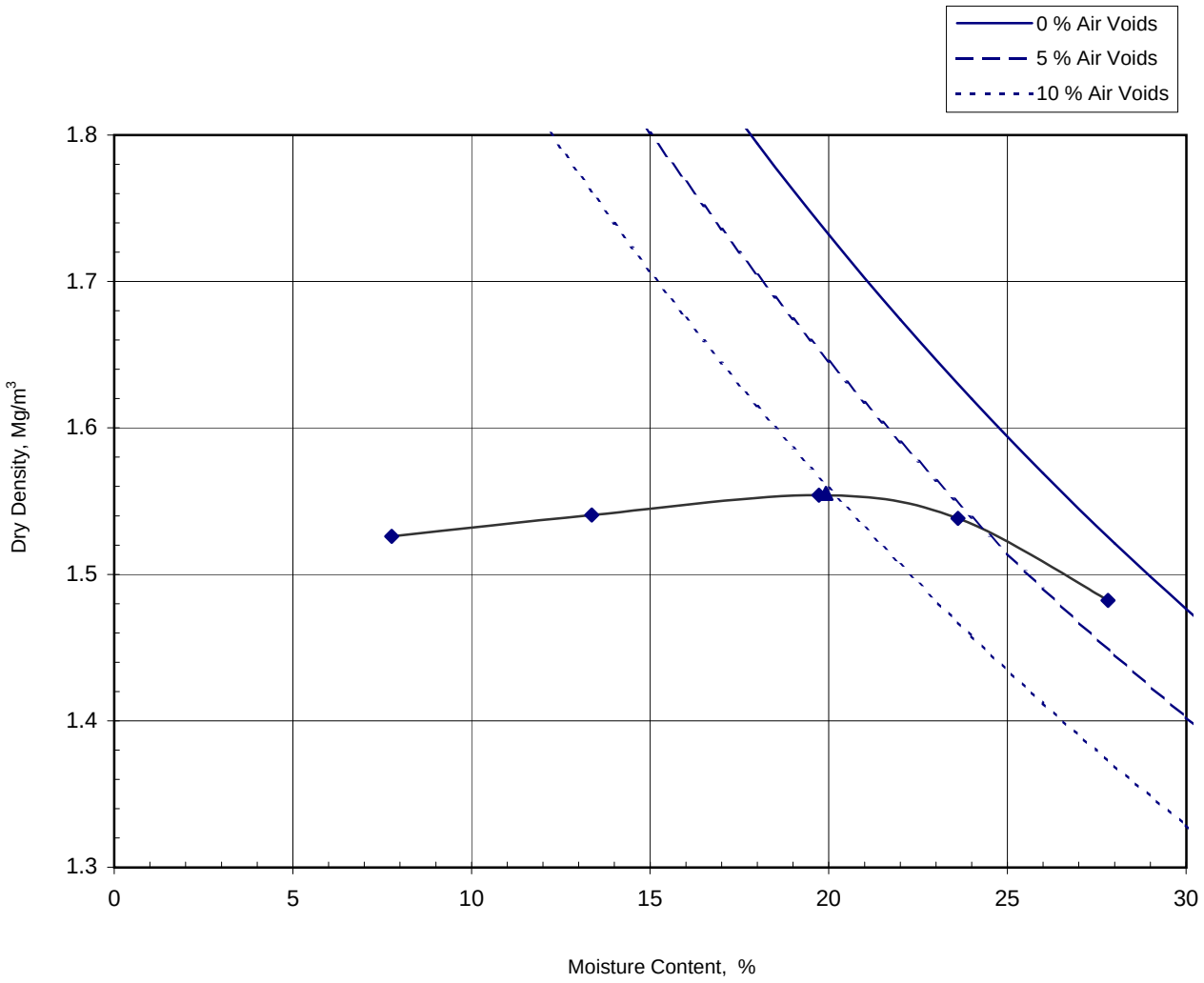
Moisture Content / Dry Density Relationship
BS1377:Part 4:1990 Clause 3.3

Figure 11

Moor Lane, Witton, Birmingham, B6 7HG

TERRA TEK
SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROYSTON	**Contract No**	**B18284**
Client	Nott Group	Hole	TP17
Engineer		Sample Ref	
		Depth (m)	1.00
		Sample Type	B



Non Engineering Description		White CHALK.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	0
Mass Retained on 20.0 mm Sieve	%	22
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	-
Maximum Dry Density	Mg/m³	1.56
Optimum Moisture Content	%	19.9

Originator	Checked & Approved
PM	S. Langman 12/05/2014

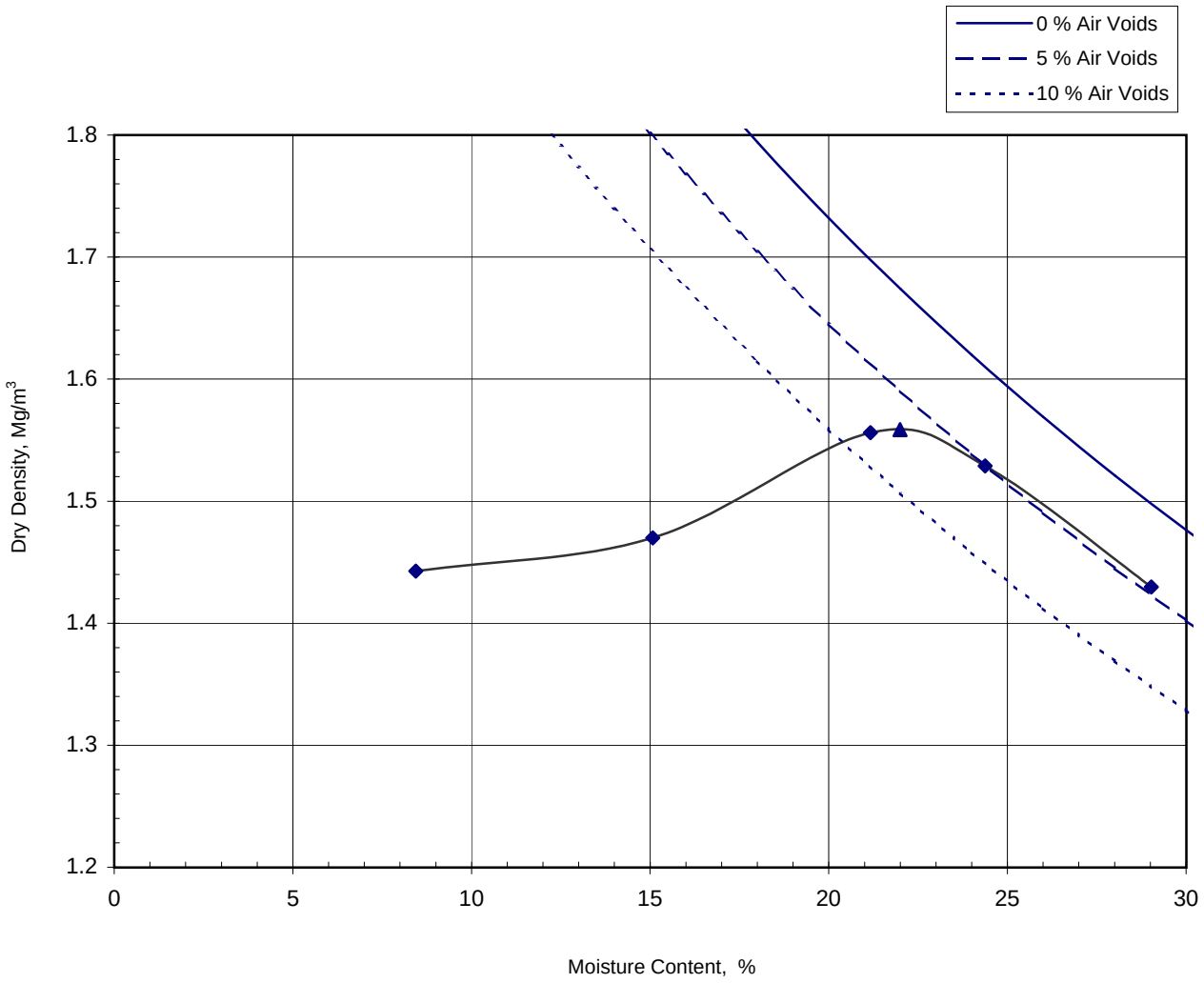
Moisture Content / Dry Density Relationship
BS1377:Part 4:1990 Clause 3.3

Figure 12

Moor Lane, Witton, Birmingham, B6 7HG

TERRA TEK SITE INVESTIGATION AND LABORATORY SERVICES

Site	ROYSTON	**Contract No**	**B18284**
Client	Nott Group	Hole	TP21
Engineer		Sample Ref	
		Depth (m)	0.80
		Sample Type	B



Non Engineering Description		White CHALK.
Preparation		Air dried
Test Method		2.5kg Rammer for soils with particles up to medium-gravel size
Samples Used		Single
Mass Retained on 37.5 mm Sieve	%	7
Mass Retained on 20.0 mm Sieve	%	38
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	-
Maximum Dry Density	Mg/m³	1.56
Optimum Moisture Content	%	22.0

Originator	Checked & Approved
PM	S. Langmead 12/05/2014

Moisture Content / Dry Density Relationship

BS1377:Part 4:1990 Clause 3.3

Figure 13

Moor Lane, Witton, Birmingham, B6 7HG