

**TEST REPORT**

Client Earth Environmental & Geotechnical Ltd

Address Houldsworth Mills Business & Arts Centre
Houldsworth Street
Reddish
Stockport
SK5 6DA

Contract A2212 -
Claremont Road, Manchester

Job Number MRN 3507/4
Date of Issue 11 January 2019
Page 1 of 15

Approved Signatories

S J Hutchings, O P Davies

Notes

- 1 All remaining samples and remnants from this contract will be disposed 28 days from the date of this report unless you notify us to the contrary.
- 2 Result certificates, in this report, not bearing a UKAS mark, are not included in our UKAS accreditation schedule.
- 3 Opinions and interpretations expressed herein are outside the scope of our UKAS accreditation
- 4 Certified that the samples have been examined and tested in accordance with the terms of the contract/order and unless otherwise stated conform to the standards/specifications quoted. This does not, however, guarantee the balance of the materials from which the tested samples have been taken to be of equal quality.



MURRAY RIX

33C VAUXHALL INDUSTRIAL ESTATE
GREG STREET, REDDISH, STOCKPORT SK5 7BR
TEL 0161 475 0870 FAX 0161 475 0871

TEST CERTIFICATE

PARTICLE SIZE DISTRIBUTION

BS 1377: PART 2: Clause 9.5: 1990

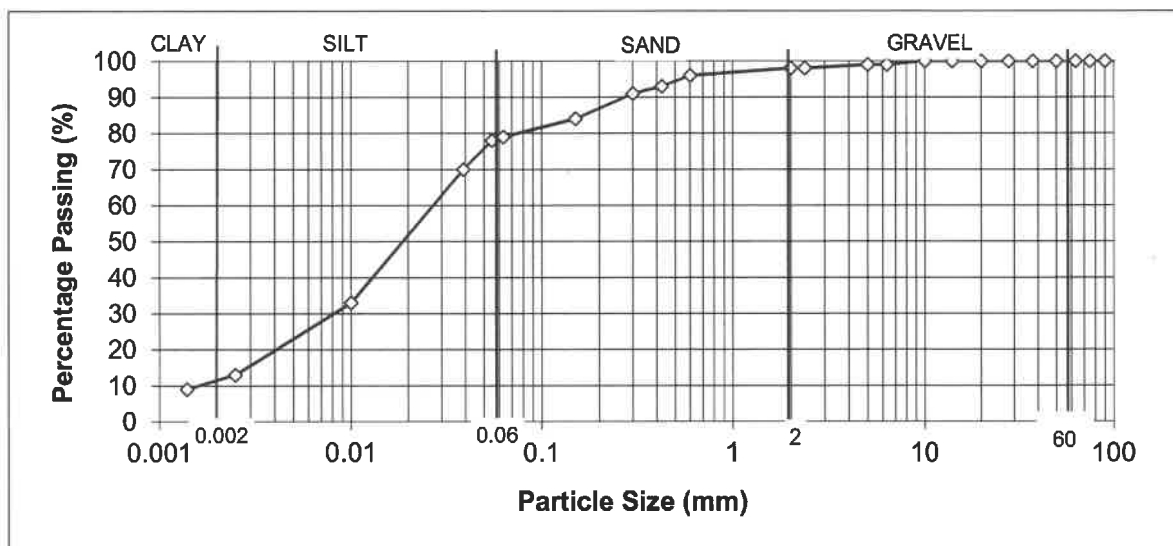
Determination of Moisture Content in accordance with BS 1377: PART 2: Clause 3: 1990 (Oven Dry)

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A2212 - Claremont Road, Manchester
JOB NUMBER	MRN 3507/4

SAMPLE LABEL	WS1 U 2.7-3m	DATE SAMPLED	20-Dec-18
LAB SAMPLE No	80729	DATE RECEIVED	20-Dec-18
DATE TESTED	03-Jan-19	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		2.36	98	
90	100		2	98	
75	100		0.6	96	
63	100		0.425	93	
50	100		0.3	91	
37.5	100		0.15	84	
28	100		0.063	79	
20	100		0.055	78	
14	100		0.039	70	
10	100		0.01	33	
6.3	99		0.0025	13	
5	99		0.0014	9	



REMARKS

As received moisture content = 18%

SIGNED 

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 11-Jan-19

MURRAY RIX

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TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

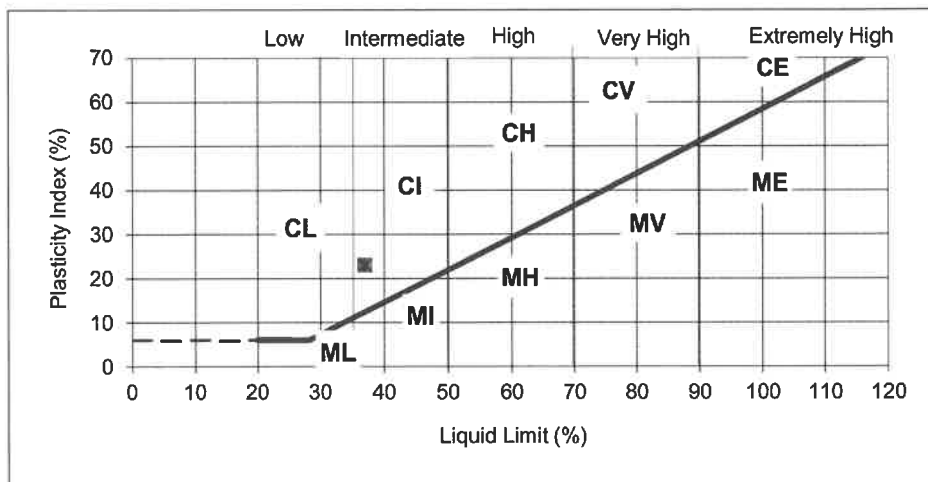
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A2212 - Claremont Road, Manchester
JOB NUMBER	MRN 3507/4

SAMPLE LABEL	WS1 U 2.7-3m	DATE SAMPLED	20-Dec-18
SAMPLE No.	80729	DATE RECEIVED	20-Dec-18
DATE TESTED	04-Jan-19	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
18	37	17	23	93



REMARKS

Sample tested in natural condition

SIGNED

NAME

Page 3 of 15

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

11-Jan-19

MURRAY RIX

33C VAUXHALL INDUSTRIAL ESTATE, GREG STREET
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TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION BS 1377: PART 7: 1990:CLAUSE 8 SINGLE STAGE

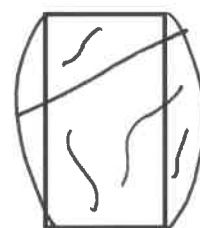
CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A2212 – Claremont Road, Manchester
JOB NUMBER	MRN 3507/4

SAMPLE LABEL	WS1 U 2.7-3m	DATE SAMPLED	20 December 2018
LAB SAMPLE No	80729	DATE RECEIVED	20 December 2018
DATE TESTED	03 January 2019	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation sample

SPECIMEN LENGTH	144	mm
SPECIMEN DIAMETER	72	mm
MOISTURE CONTENT OF SAMPLE	18	%
BULK DENSITY	2.12	Mg/m ³
DRY DENSITY	1.80	Mg/m ³
DEPTH OF TOP OF SPECIMEN	2.75	m
RATE OF STRAIN	2	%/min
RUBBER MEMBRANE THICKNESS	0.6	mm

SPECIMEN AT FAILURE



Measured Cell Pressure (kPa)	Strain at Failure (%)	Membrane Correction (kPa)	Corrected Max Deviator Stress (kPa)	Shear Stress Cu (kPa)
60	17	2.0	239.8	120

REMARKS

SIGNED

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 11 January 2019

MURRAY RIX

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TEST CERTIFICATE

pH and Sulphate as SO₄
BS 1377: PART 3: 1990

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A2212 – Claremont Road, Manchester
JOB NUMBER	MRN 3507/4

SAMPLE LABEL	WS1 U 2.7-3m	DATE SAMPLED	20 December 2018
LAB SAMPLE No	80729	DATE RECEIVED	20 December 2018
DATE TESTED	02 January 2019	SAMPLED BY	Client

ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried

PH Value	6.9	g/l
Sulphate as SO ₄ (2:1 Water Extract)	0.28	

REMARKS

SIGNED



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(Laboratory Manager)

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TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3

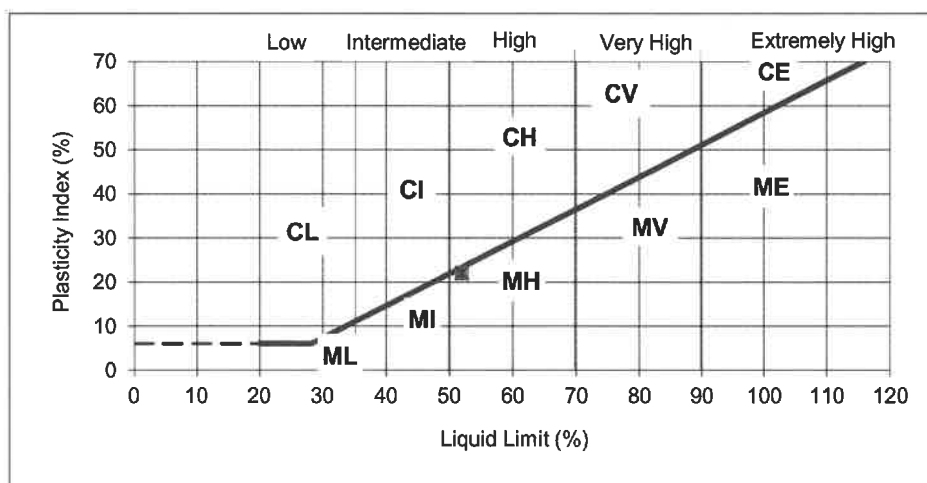
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A2212 - Claremont Road, Manchester
JOB NUMBER	MRN 3507/4

SAMPLE LABEL	WS2 D 1.2m	DATE SAMPLED	20-Dec-18
SAMPLE No.	80730	DATE RECEIVED	20-Dec-18
DATE TESTED	04-Jan-19	SAMPLED BY	Client

MATERIAL	Firm grey clayey sandy SILT
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
43	52	30	22	83



REMARKS

Sample tested in natural condition

SIGNED

NAME

Page 6 of 15

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

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pH and Sulphate as SO₄
BS 1377: PART 3: 1990

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A2212 – Claremont Road, Manchester
JOB NUMBER	MRN 3507/4

SAMPLE LABEL	WS2 D 1.2m	DATE SAMPLED	20 December 2018
LAB SAMPLE No	80730	DATE RECEIVED	20 December 2018
DATE TESTED	02 January 2019	SAMPLED BY	Client

ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried

PH Value	7.0	g/l
Sulphate as SO ₄ (2:1 Water Extract)	0.21	

REMARKS

SIGNED



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(Laboratory Manager)

DATE 11 January 2019

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TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION BS 1377: PART 7: 1990:CLAUSE 8 SINGLE STAGE

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A2212 – Claremont Road, Manchester
JOB NUMBER	MRN 3507/4

SAMPLE LABEL	WS2 U 1.8-2m	DATE SAMPLED	20 December 2018
LAB SAMPLE No	80731	DATE RECEIVED	20 December 2018
DATE TESTED	03 January 2019	SAMPLED BY	Client

MATERIAL	Firm brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation sample

SPECIMEN LENGTH	170	mm
SPECIMEN DIAMETER	85	mm
MOISTURE CONTENT OF SAMPLE	20	%
BULK DENSITY	2.12	Mg/m ³
DRY DENSITY	1.77	Mg/m ³
DEPTH OF TOP OF SPECIMEN	1.80	m
RATE OF STRAIN	2	%/min
RUBBER MEMBRANE THICKNESS	0.6	mm

SPECIMEN AT
FAILURE



Measured Cell Pressure (kPa)	Strain at Failure (%)	Membrane Correction (kPa)	Corrected Max Deviator Stress (kPa)	Shear Stress Cu (kPa)
40	20	2.0	126.4	63

REMARKS

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TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3

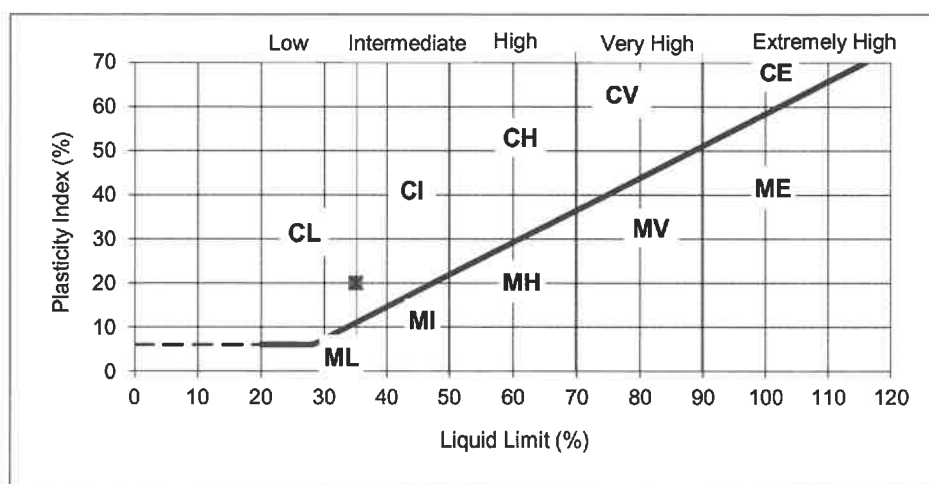
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A2212 - Claremont Road, Manchester
JOB NUMBER	MRN 3507/4

SAMPLE LABEL	WS3 U 1.5-1.8m	DATE SAMPLED	20-Dec-18
SAMPLE No.	80732	DATE RECEIVED	20-Dec-18
DATE TESTED	04-Jan-19	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
19	35	15	20	90



REMARKS

Sample tested in natural condition

SIGNED

NAME

Page 9 of 15

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

11-Jan-19

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TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377: PART 7: 1990:CLAUSE 8 SINGLE STAGE

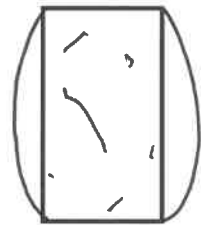
CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A2212 – Claremont Road, Manchester
JOB NUMBER	MRN 3507/4

SAMPLE LABEL	WS3 U 1.5-1.8m	DATE SAMPLED	20 December 2018
LAB SAMPLE No	80732	DATE RECEIVED	20 December 2018
DATE TESTED	03 January 2019	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation sample

SPECIMEN LENGTH	167	mm
SPECIMEN DIAMETER	84	mm
MOISTURE CONTENT OF SAMPLE	19	%
BULK DENSITY	2.18	Mg/m ³
DRY DENSITY	1.83	Mg/m ³
DEPTH OF TOP OF SPECIMEN	1.55	m
RATE OF STRAIN	2	%/min
RUBBER MEMBRANE THICKNESS	0.6	mm

SPECIMEN AT
FAILURE



Measured Cell Pressure (kPa)	Strain at Failure (%)	Membrane Correction (kPa)	Corrected Max Deviator Stress (kPa)	Shear Stress Cu (kPa)
40	20	2.0	257.9	129

REMARKS

SIGNED

A handwritten signature in black ink, appearing to be 'O.P. Davies'.

NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 11 January 2019

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pH and Sulphate as SO₄
BS 1377: PART 3: 1990

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A2212 – Claremont Road, Manchester
JOB NUMBER	MRN 3507/4

SAMPLE LABEL	WS3 U 1.5-1.8m	DATE SAMPLED	20 December 2018
LAB SAMPLE No	80732	DATE RECEIVED	20 December 2018
DATE TESTED	02 January 2019	SAMPLED BY	Client

ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried

PH Value	7.0	g/l
Sulphate as SO ₄ (2:1 Water Extract)	0.29	

REMARKS

SIGNED



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(Laboratory Manager)

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PARTICLE SIZE DISTRIBUTION

BS 1377: PART 2: Clause 9.5: 1990

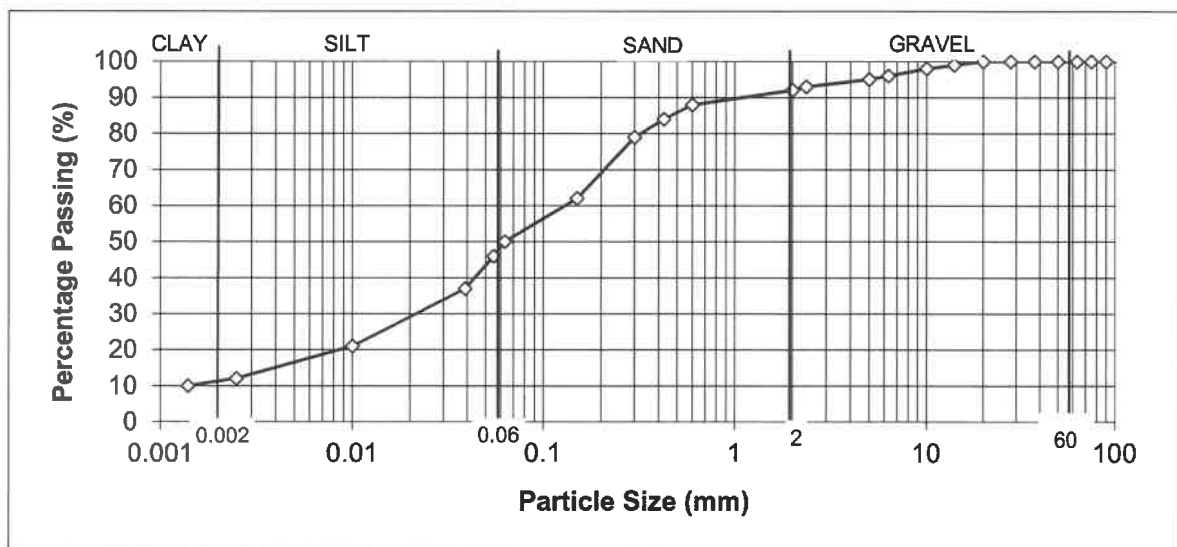
Determination of Moisture Content in accordance with BS 1377: PART 2: Clause 3: 1990 (Oven Dry)

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A2212 - Claremont Road, Manchester
JOB NUMBER	MRN 3507/4

SAMPLE LABEL	WS3 D 3.5m	DATE SAMPLED	20-Dec-18
LAB SAMPLE No	80733	DATE RECEIVED	20-Dec-18
DATE TESTED	03-Jan-19	SAMPLED BY	Client

MATERIAL	Stiff brown silty very sandy CLAY with gravel
ADVISED SOURCE	Site Investigation Sample

Sieve Size (mm)	% Passing (%)	Specification (%)	Sieve Size (mm)	% Passing (%)	Specification (%)
125	100		2.36	93	
90	100		2	92	
75	100		0.6	88	
63	100		0.425	84	
50	100		0.3	79	
37.5	100		0.15	62	
28	100		0.063	50	
20	100		0.055	46	
14	99		0.039	37	
10	98		0.01	21	
6.3	96		0.0025	12	
5	95		0.0014	10	



REMARKS

As received moisture content = 11%

SIGNED

NAME

O.P. Davies BA (Hons)
(Laboratory Manager)

DATE

11-Jan-19

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TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3

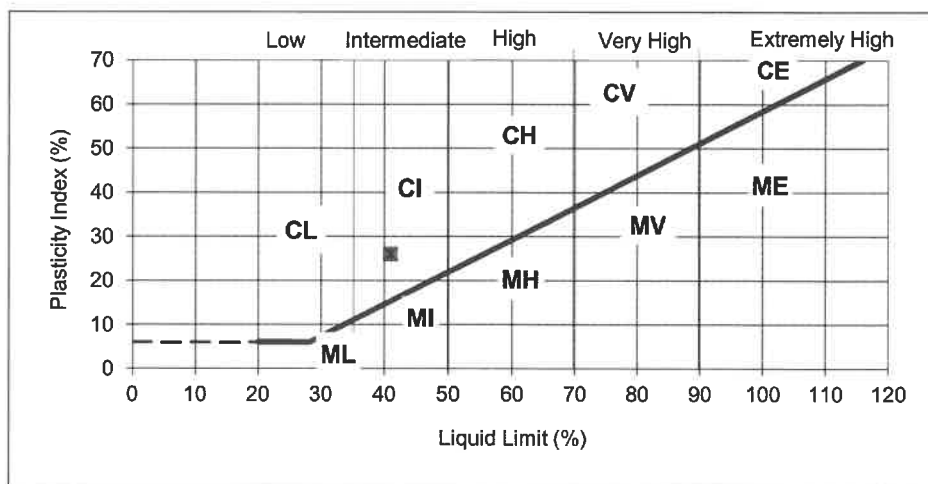
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A2212 - Claremont Road, Manchester
JOB NUMBER	MRN 3507/4

SAMPLE LABEL	WS5 U 1.7-1.9m	DATE SAMPLED	20-Dec-18
SAMPLE No.	80736	DATE RECEIVED	20-Dec-18
DATE TESTED	04-Jan-19	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
20	41	15	26	88



REMARKS

Sample tested in natural condition

SIGNED

NAME
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O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 11-Jan-19

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UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377: PART 7: 1990:CLAUSE 8 SINGLE STAGE

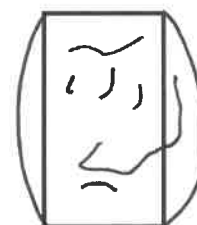
CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A2212 – Claremont Road, Manchester
JOB NUMBER	MRN 3507/4

SAMPLE LABEL	WS5 U 1.7-1.9m	DATE SAMPLED	20 December 2018
LAB SAMPLE No	80736	DATE RECEIVED	20 December 2018
DATE TESTED	03 January 2019	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY with rare gravel
ADVISED SOURCE	Site Investigation sample

SPECIMEN LENGTH	160	mm
SPECIMEN DIAMETER	84	mm
MOISTURE CONTENT OF SAMPLE	20	%
BULK DENSITY	2.12	Mg/m ³
DRY DENSITY	1.77	Mg/m ³
DEPTH OF TOP OF SPECIMEN	1.70	m
RATE OF STRAIN	2	%/min
RUBBER MEMBRANE THICKNESS	0.6	mm

SPECIMEN AT
FAILURE



Measured Cell Pressure (kPa)	Strain at Failure (%)	Membrane Correction (kPa)	Corrected Max Deviator Stress (kPa)	Shear Stress Cu (kPa)
40	20	2.0	236.3	118

REMARKS

SIGNED

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(Laboratory Manager)

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pH and Sulphate as SO₄
BS 1377: PART 3: 1990

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A2212 – Claremont Road, Manchester
JOB NUMBER	MRN 3507/4

SAMPLE LABEL	WS5 U 1.7-1.9m	DATE SAMPLED	20 December 2018
LAB SAMPLE No	80736	DATE RECEIVED	20 December 2018
DATE TESTED	02 January 2019	SAMPLED BY	Client

ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried

PH Value	7.2	g/l
Sulphate as SO ₄ (2:1 Water Extract)	0.36	

REMARKS

SIGNED



NAME O.P. Davies BA (Hons)
(Laboratory Manager)

DATE 11 January 2019