

TEST REPORT

Client Earth Environmental & Geotechnical Ltd

Address Houldsworth Mill Business & Arts Centre
Houldsworth Mill
Reddish
Stockport
SK5 6DA

Contract A4210 -
Ducie Street, Manchester

Job Number MRN 4099/73
Date of Issue 10 September 2021
Pages 1 of 31

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.
- 5 The results included within the report are representative of the samples submitted for analysis.
- 6 This certificate should not be reproduced, except in full, without the express permission of the laboratory.



Andrew House, Hadfield Street, Dukinfield, Cheshire SK16 4QX Tel: 0161 475 0870
Email: enquiries@murrayrix.com Website: www.murrayrix.com

Also at: London: 020 8523 1999

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MURRAY RIX

Andrew House, Hadfield Street,
Dukinfield, Cheshire SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

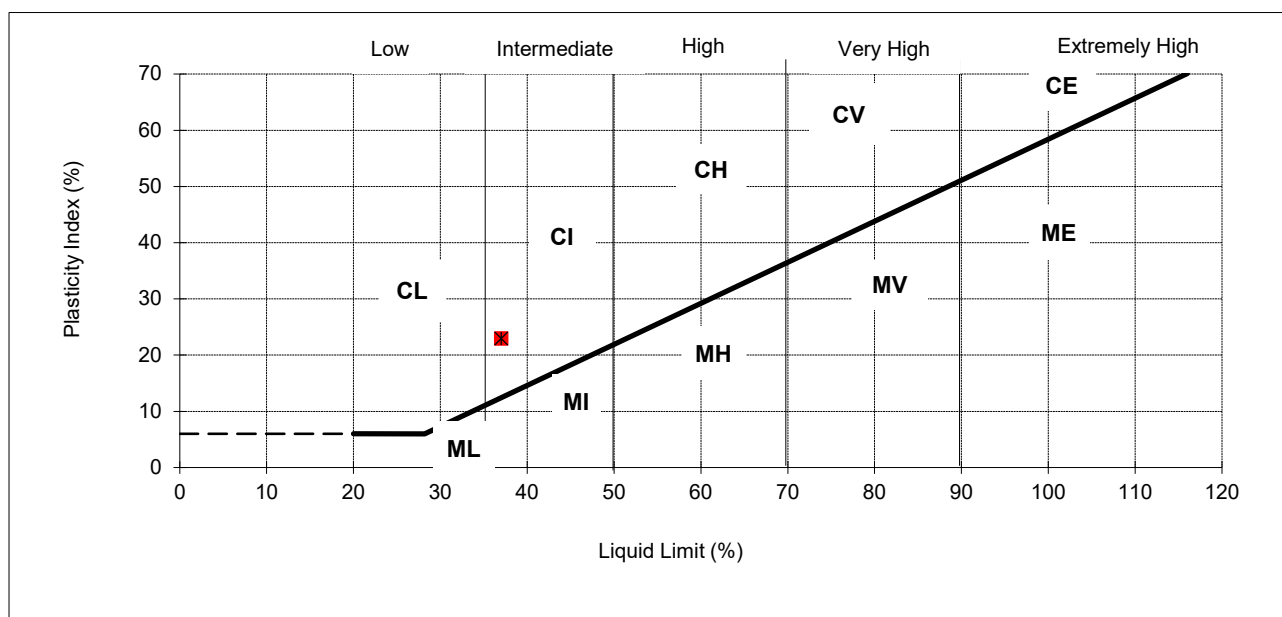
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP1 3.00-3.45	DATE SAMPLED	02-Aug-21
SAMPLE No.	102698	DATE RECEIVED	05-Aug-21
DATE TESTED	12-Aug-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
16	37	14	23	97



REMARKS

Sample tested in natural condition

SIGNED

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

DATE 10-Sep-21

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

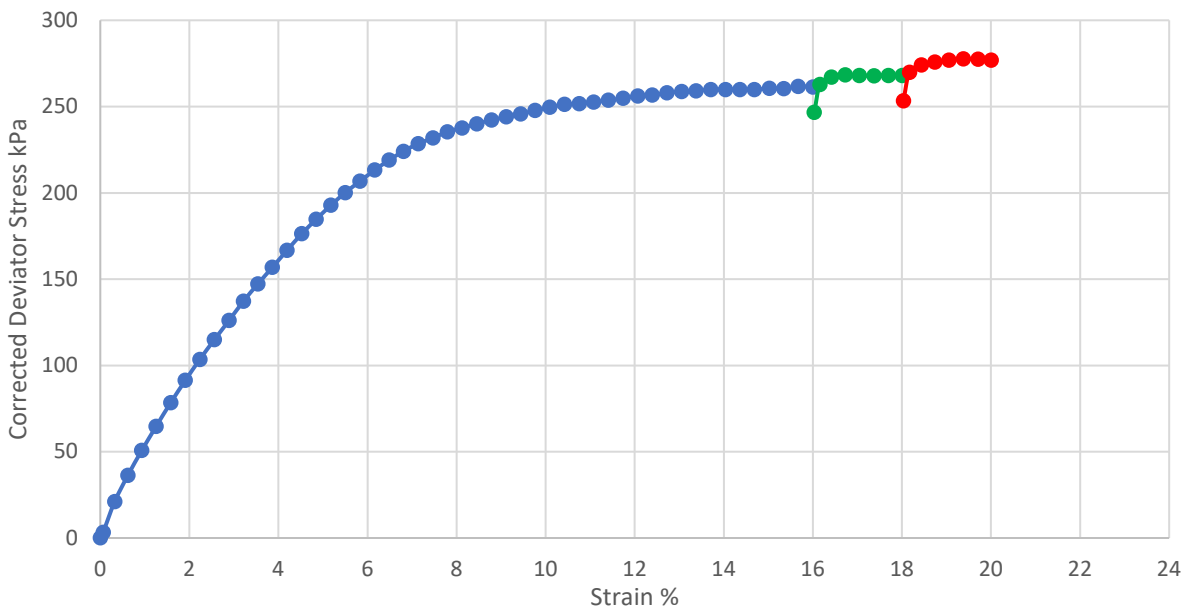
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377 : PART 7: Clause 9 Multi Stage

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP1 3.00-3.45m	DATE SAMPLED	02-Aug-21
LAB SAMPLE No.	102698	DATE RECEIVED	05-Aug-21
DATE TESTED	02-Sep-21	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY		
ADVISED SOURCE	Site Investigation Sample		

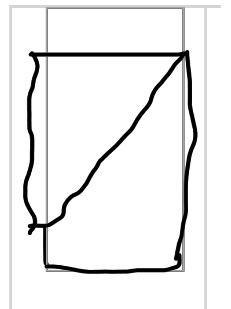
INITIAL CONDITIONS

Specimen Location		Sample Length (mm)	450	Specimen depth from top of Sample (mm)	240
		Sample Orientation	Vertical	Specimen Condition	Undisturbed
		Specimen Length (mm)	203	Specimen Moisture Content (%)	16
		Specimen Diameter (mm)	103	Specimen Bulk Density (Mg/m3)	2.17
		Membrane Thickness (mm)	0.40	Specimen Dry Density (Mg/m3)	1.87
		Membrane Correction	1.25	1.36	1.47

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
MULTI STAGE

SKETCH OF SPECIMEN AT FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
30	16	2	261.4	131
60	18	2	268.0	134
120	20	2	276.9	138

Remarks/Abnormalities

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

Signed



Date 10 September 2021

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TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

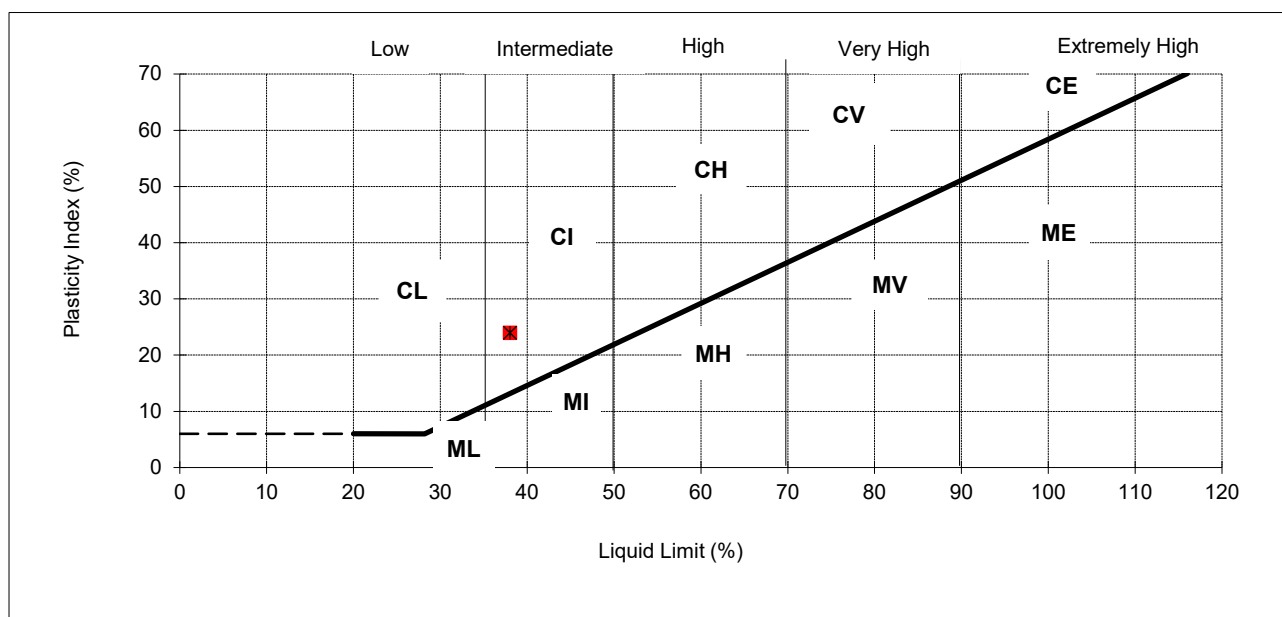
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP1 6.00-6.45	DATE SAMPLED	02-Aug-21
SAMPLE No.	102700	DATE RECEIVED	05-Aug-21
DATE TESTED	12-Aug-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
14	38	14	24	98



REMARKS

Sample tested in natural condition

SIGNED

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

DATE 10-Sep-21

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TEST CERTIFICATE

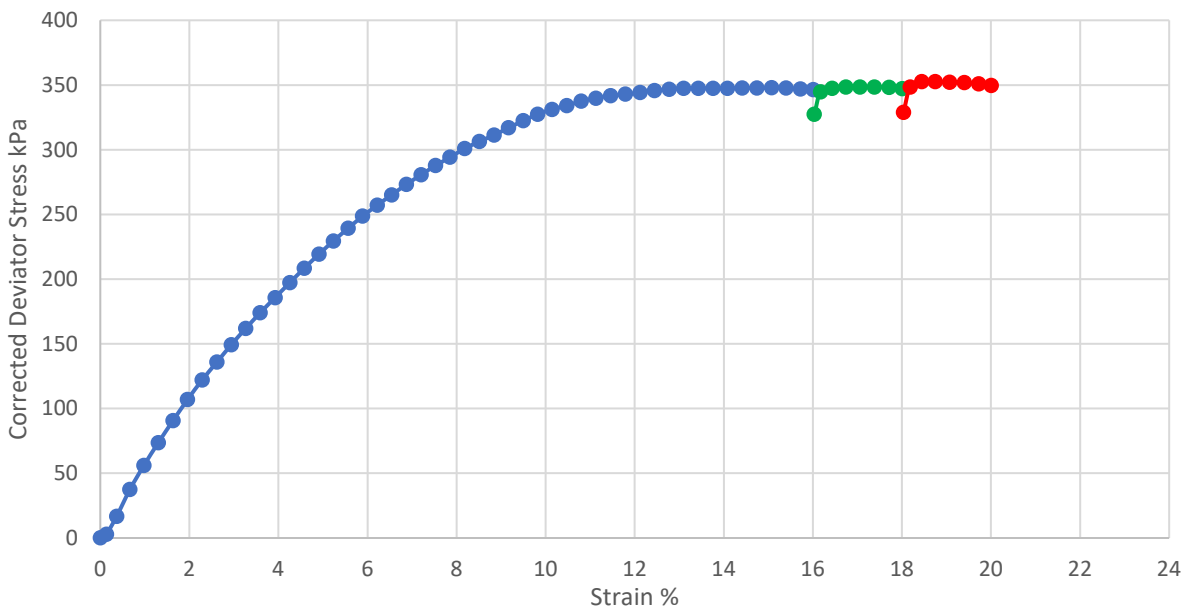
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377 : PART 7: Clause 9 Multi Stage

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP1 6.00-6.45m	DATE SAMPLED	02-Aug-21
LAB SAMPLE No.	102700	DATE RECEIVED	05-Aug-21
DATE TESTED	02-Sep-21	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY		
ADVISED SOURCE	Site Investigation Sample		

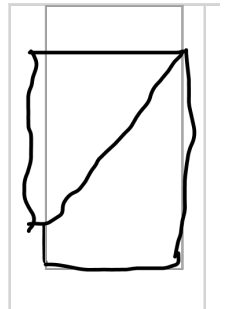
INITIAL CONDITIONS

Specimen Location		Sample Length (mm)	400	Specimen depth from top of Sample (mm)	135
		Sample Orientation	Vertical	Specimen Condition	Undisturbed
		Specimen Length (mm)	203	Specimen Moisture Content (%)	14
		Specimen Diameter (mm)	102	Specimen Bulk Density (Mg/m3)	2.21
		Membrane Thickness (mm)	0.40	Specimen Dry Density (Mg/m3)	1.94
		Membrane Correction	1.26	1.37	1.48

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
MULTI STAGE

SKETCH OF SPECIMEN AT FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength C_u (kPa)
60	16	2	346.4	173
120	18	2	347.2	174
240	20	2	349.8	175

Remarks/Abnormalities

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

Signed



Date 10 September 2021

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

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

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP01 6.00-6.45	DATE SAMPLED	02 August 2021
LAB SAMPLE No	102700	DATE RECEIVED	05 August 2021
DATE TESTED	12 August 2021	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)	0.15	

REMARKS

SIGNED



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(Laboratory Manager)

DATE 10 September 2021

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LIQUID AND PLASTIC LIMIT

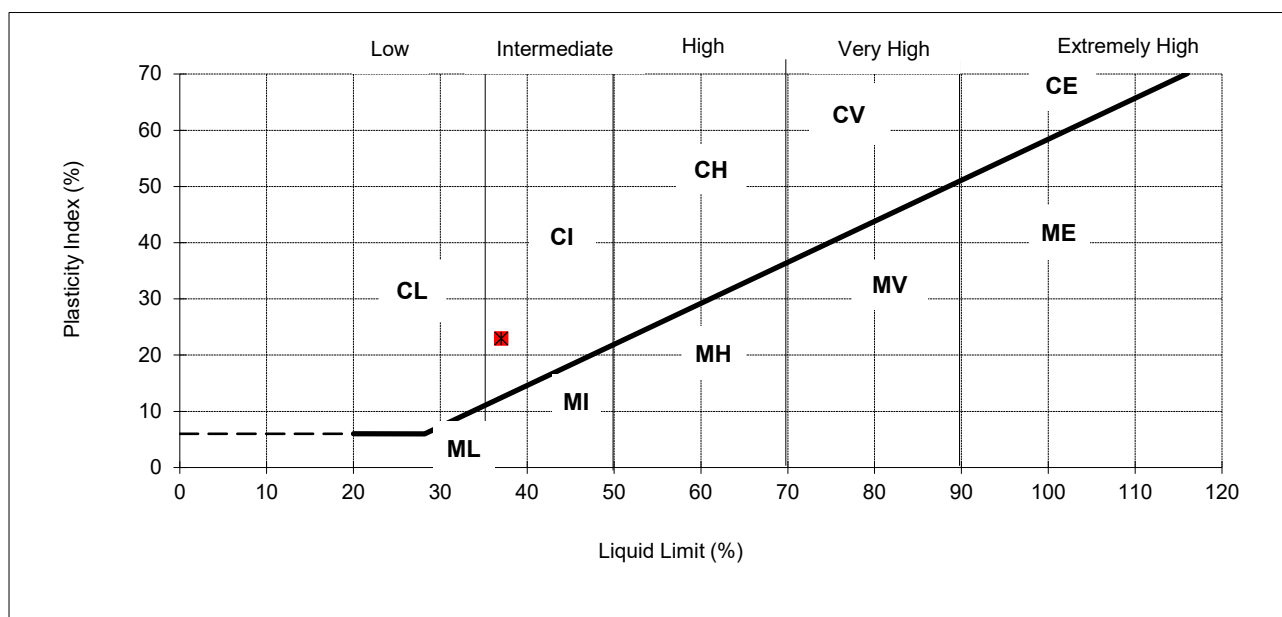
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MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP1 7.50-7.95	DATE SAMPLED	02-Aug-21
SAMPLE No.	102702	DATE RECEIVED	05-Aug-21
DATE TESTED	12-Aug-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
17	37	14	23	94



REMARKS

Sample tested in natural condition

SIGNED

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(Laboratory Manager)

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TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

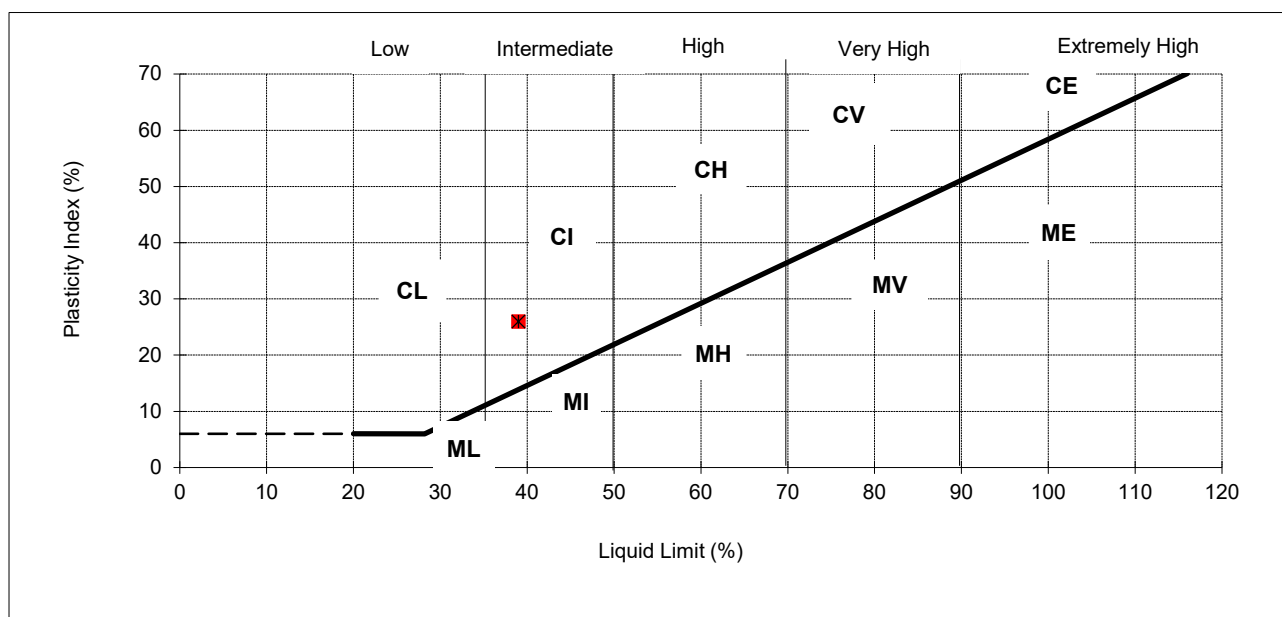
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP1 10.50-10.95	DATE SAMPLED	03-Aug-21
SAMPLE No.	102704	DATE RECEIVED	05-Aug-21
DATE TESTED	12-Aug-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
11	39	13	26	100



REMARKS

Sample tested in natural condition

SIGNED

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

DATE 10-Sep-21

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DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

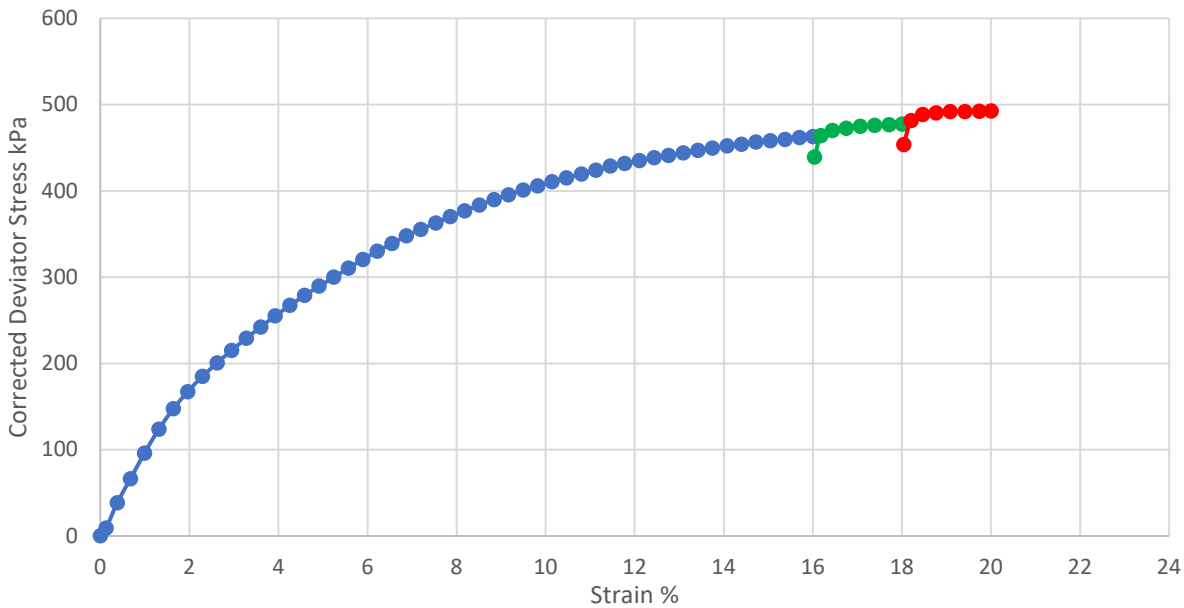
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377 : PART 7: Clause 9 Multi Stage

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP1 10.50-10.95m	DATE SAMPLED	03-Aug-21
LAB SAMPLE No.	102704	DATE RECEIVED	05-Aug-21
DATE TESTED	02-Sep-21	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY		
ADVISED SOURCE	Site Investigation Sample		

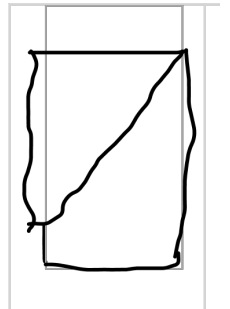
INITIAL CONDITIONS

Specimen Location		Sample Length (mm)	450	Specimen depth from top of Sample (mm)	120
		Sample Orientation	Vertical	Specimen Condition	Undisturbed
		Specimen Length (mm)	204	Specimen Moisture Content (%)	11
		Specimen Diameter (mm)	101	Specimen Bulk Density (Mg/m3)	2.33
		Membrane Thickness (mm)	0.40	Specimen Dry Density (Mg/m3)	2.10
		Membrane Correction	1.27	1.38	1.50

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
MULTI STAGE

SKETCH OF SPECIMEN AT FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
105	16	2	463.0	231
210	18	2	477.4	239
420	20	2	492.7	246

Remarks/Abnormalities

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

Signed



Date 10 September 2021

MURRAY RIX

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TEST CERTIFICATE

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

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP01 10.50-10.95	DATE SAMPLED	03 August 2021
LAB SAMPLE No	102704	DATE RECEIVED	05 August 2021
DATE TESTED	12 August 2021	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)	0.11	

REMARKS

SIGNED



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

DATE 10 September 2021

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TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

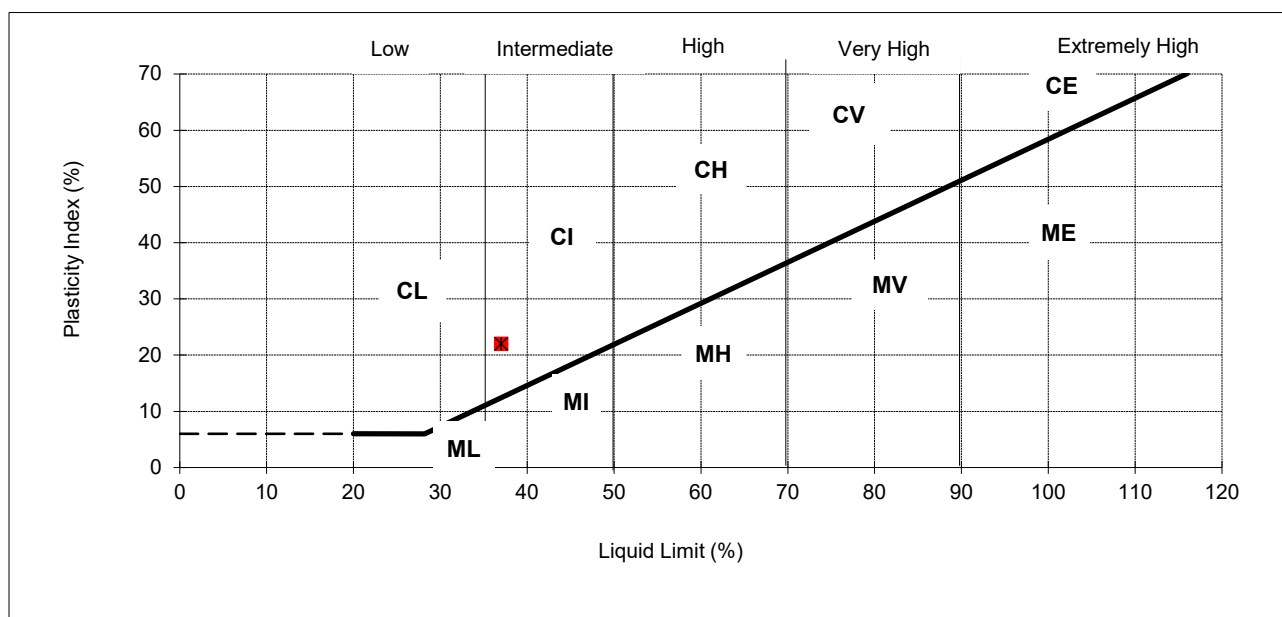
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP1 13.50-13.95	DATE SAMPLED	03-Aug-21
SAMPLE No.	102706	DATE RECEIVED	05-Aug-21
DATE TESTED	12-Aug-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
14	37	15	22	97



REMARKS

Sample tested in natural condition

SIGNED

NAME

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

DATE

10-Sep-21

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

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

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP01 16.50-16.95	DATE SAMPLED	03 August 2021
LAB SAMPLE No	102707	DATE RECEIVED	05 August 2021
DATE TESTED	12 August 2021	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)	0.18	

REMARKS

SIGNED



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

DATE 10 September 2021

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TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

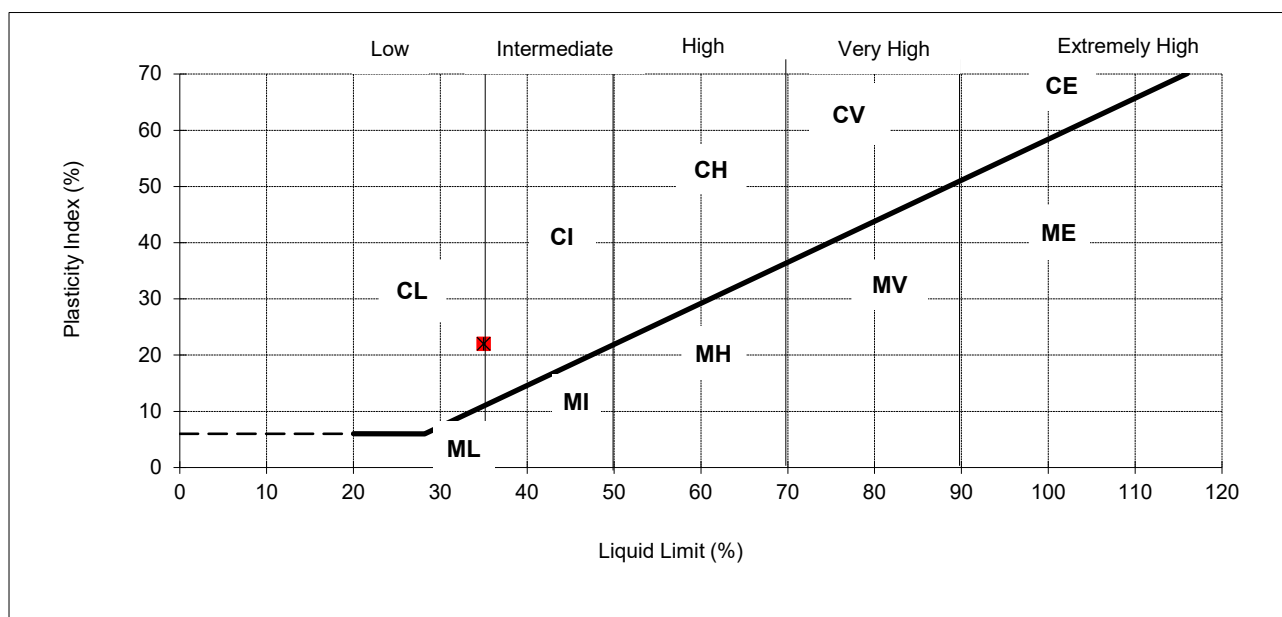
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP2B 4.50-4.95m	DATE SAMPLED	04-Aug-21
SAMPLE No.	102709	DATE RECEIVED	05-Aug-21
DATE TESTED	12-Aug-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
14	35	13	22	94



REMARKS

Sample tested in natural condition

SIGNED

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

DATE 10-Sep-21

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DUKINFIELD, CHESHIRE SK16 4QX
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TEST CERTIFICATE

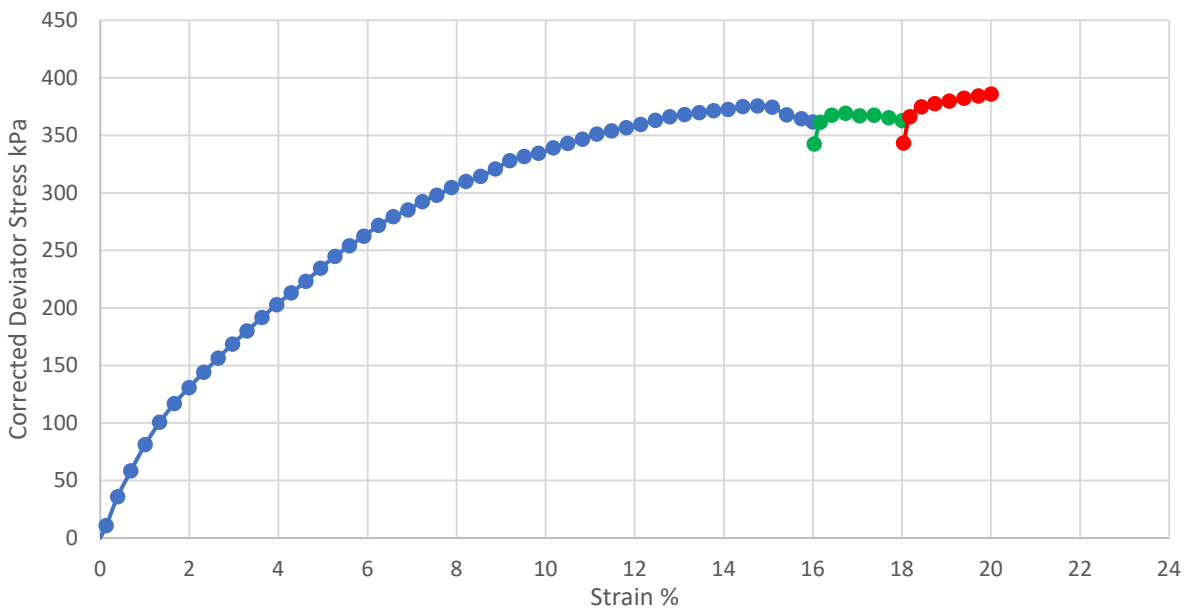
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377 : PART 7: Clause 9 Multi Stage

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP2B 4.50-4.95m	DATE SAMPLED	04-Aug-21
LAB SAMPLE No.	102709	DATE RECEIVED	05-Aug-21
DATE TESTED	02-Sep-21	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY		
ADVISED SOURCE	Site Investigation Sample		

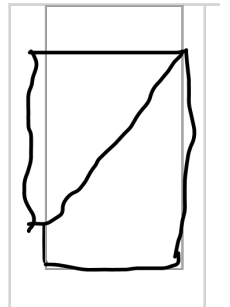
INITIAL CONDITIONS

Specimen Location		Sample Length (mm)	450	Specimen depth from top of Sample (mm)	120
		Sample Orientation	Vertical	Specimen Condition	Undisturbed
		Specimen Length (mm)	203	Specimen Moisture Content (%)	11
		Specimen Diameter (mm)	102	Specimen Bulk Density (Mg/m3)	2.18
		Membrane Thickness (mm)	0.40	Specimen Dry Density (Mg/m3)	1.96
		Membrane Correction	1.26	1.37	1.49

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
MULTI STAGE

SKETCH OF SPECIMEN AT FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
45	16	2	361.5	181
90	18	2	362.6	181
180	20	2	385.8	193

Remarks/Abnormalities

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

Signed



Date 10 September 2021

MURRAY RIX

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TEST CERTIFICATE

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

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP2B 4.50-4.95	DATE SAMPLED	04 August 2021
LAB SAMPLE No	102709	DATE RECEIVED	05 August 2021
DATE TESTED	12 August 2021	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)	0.10	

REMARKS

SIGNED



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

DATE 10 September 2021

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TEST CERTIFICATE

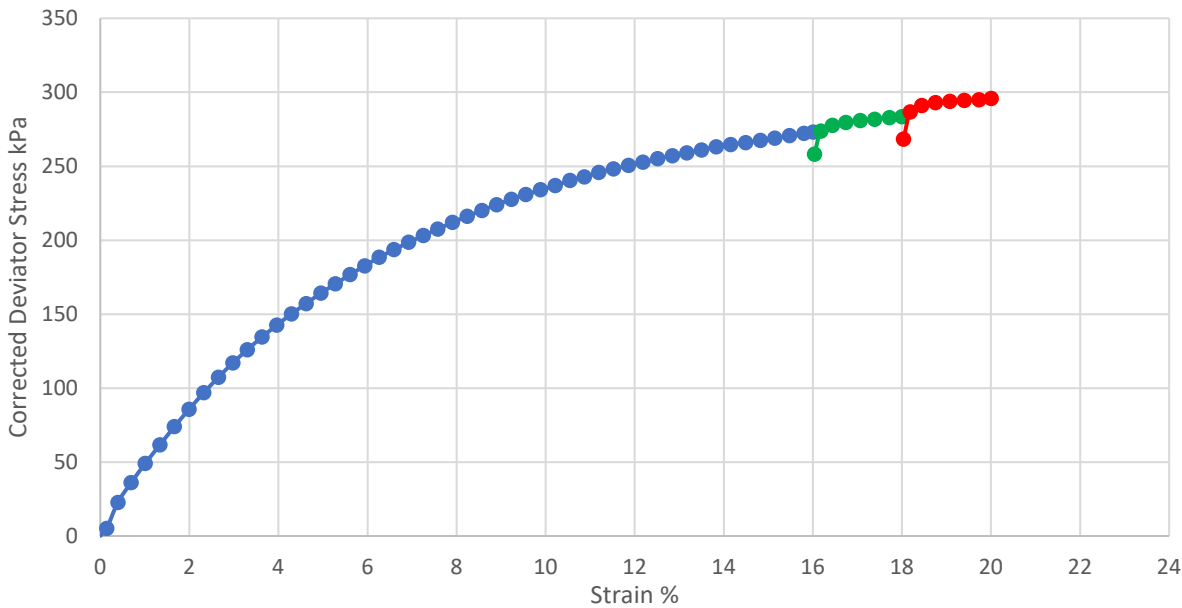
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377 : PART 7: Clause 9 Multi Stage

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP2B 7.50-7.95	DATE SAMPLED	04-Aug-21
LAB SAMPLE No.	102711	DATE RECEIVED	05-Aug-21
DATE TESTED	02-Sep-21	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY		
ADVISED SOURCE	Site Investigation Sample		

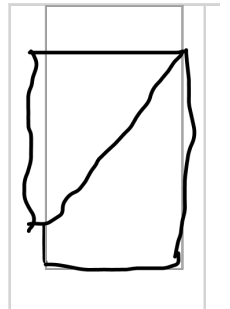
INITIAL CONDITIONS

Specimen Location		Sample Length (mm)	450	Specimen depth from top of Sample (mm)	210
		Sample Orientation	Vertical	Specimen Condition	Undisturbed
		Specimen Length (mm)	202	Specimen Moisture Content (%)	13
		Specimen Diameter (mm)	102	Specimen Bulk Density (Mg/m3)	2.24
		Membrane Thickness (mm)	0.40	Specimen Dry Density (Mg/m3)	1.98
		Membrane Correction	1.25	1.37	1.48

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
MULTI STAGE

SKETCH OF SPECIMEN AT FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
75	16	2	273.1	137
150	18	2	283.4	142
300	20	2	295.7	148

Remarks/Abnormalities

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

Signed



Date 10 September 2021

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TEST CERTIFICATE

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

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP2B 7.50-7.95	DATE SAMPLED	04 August 2021
LAB SAMPLE No	102711	DATE RECEIVED	05 August 2021
DATE TESTED	12 August 2021	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)	0.16	

REMARKS

SIGNED



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

DATE 10 September 2021

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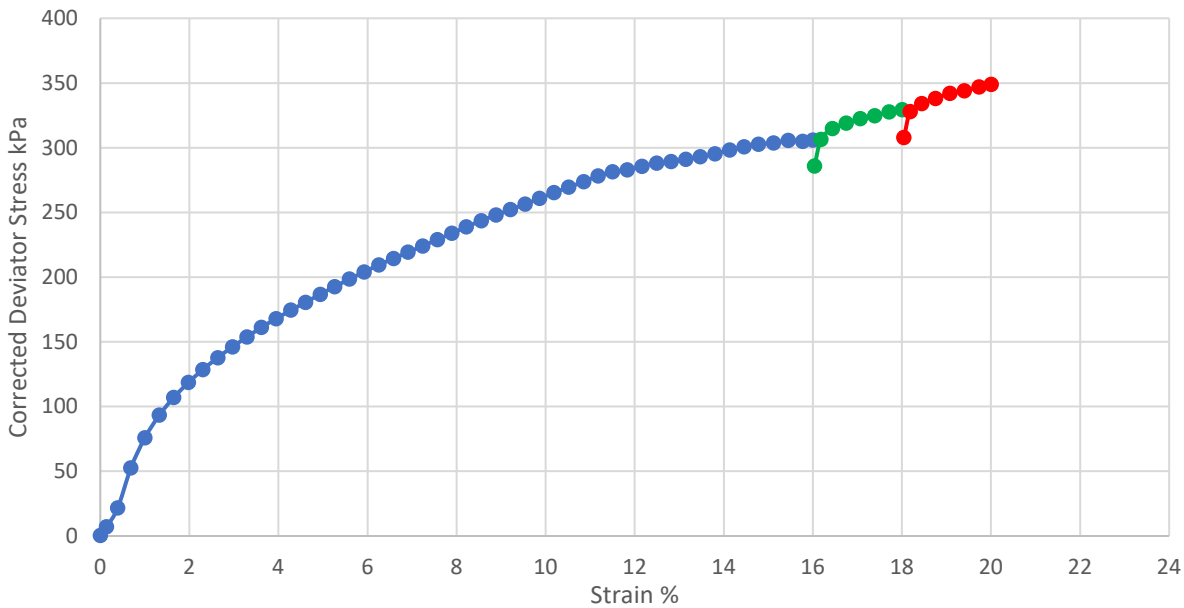
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BS 1377 : PART 7: Clause 9 Multi Stage

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP2B 10.50-10.95m	DATE SAMPLED	04-Aug-21
LAB SAMPLE No.	102713	DATE RECEIVED	05-Aug-21
DATE TESTED	02-Sep-21	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY		
ADVISED SOURCE	Site Investigation Sample		

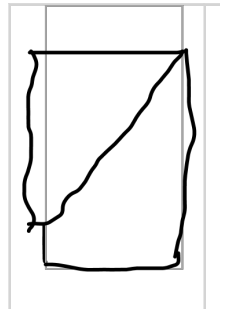
INITIAL CONDITIONS

Specimen Location	Sample Length (mm)	440	Specimen depth from top of Sample (mm)	10
	Sample Orientation	Vertical	Specimen Condition	Undisturbed
	Specimen Length (mm)	203	Specimen Moisture Content (%)	10
	Specimen Diameter (mm)	102	Specimen Bulk Density (Mg/m ³)	2.34
	Membrane Thickness (mm)	0.40	Specimen Dry Density (Mg/m ³)	2.13
	Membrane Correction	1.25	1.37	1.48

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
MULTI STAGE

SKETCH OF SPECIMEN AT FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength C_u (kPa)
105	16	2	305.8	153
210	18	2	329.3	165
420	20	2	349.0	175

Remarks/Abnormalities

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

Signed

Date 10 September 2021

MURRAY RIX

Andrew House, Hadfield Street,
Dukinfield, Cheshire SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

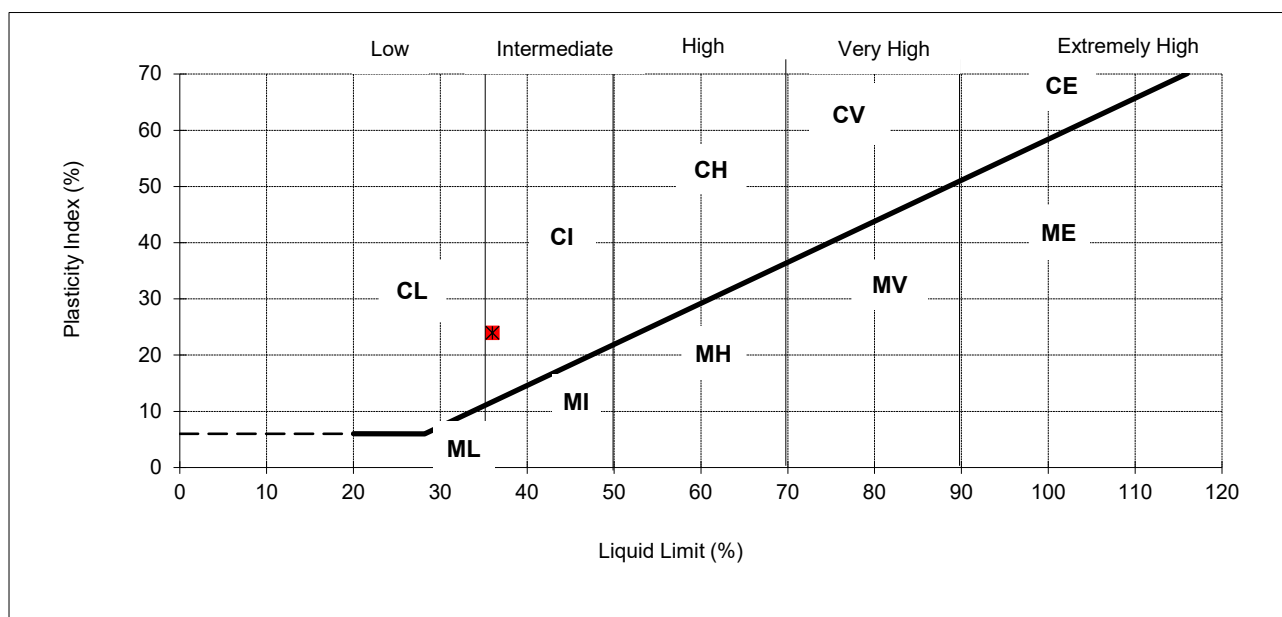
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP2B 12.00-12.45m	DATE SAMPLED	04-Aug-21
SAMPLE No.	102715	DATE RECEIVED	05-Aug-21
DATE TESTED	12-Aug-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
11	36	12	24	98



REMARKS

Sample tested in natural condition

SIGNED

NAME

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

DATE

10-Sep-21

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

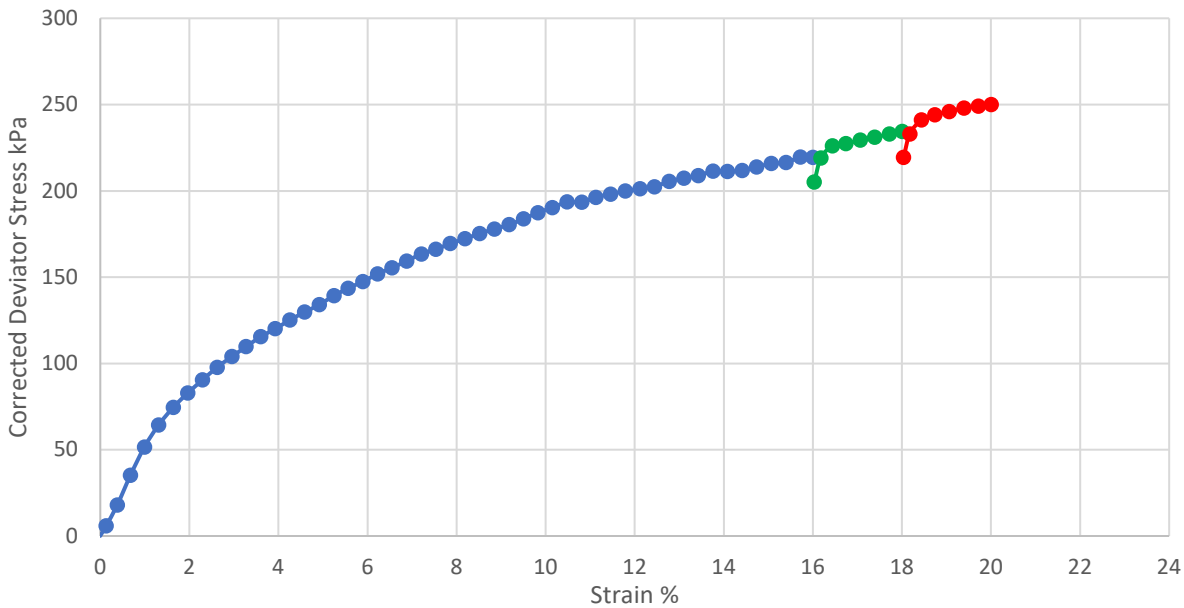
UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377 : PART 7: Clause 9 Multi Stage

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP2B 12.00-12.45m	DATE SAMPLED	04-Aug-21
LAB SAMPLE No.	102715	DATE RECEIVED	05-Aug-21
DATE TESTED	02-Sep-21	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY		
ADVISED SOURCE	Site Investigation Sample		

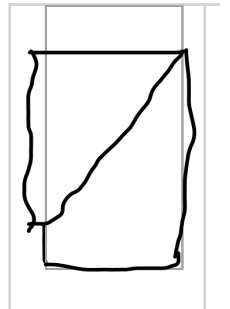
INITIAL CONDITIONS

Specimen Location	Sample Length (mm)	350	Specimen depth from top of Sample (mm)		50
	Sample Orientation	Vertical	Specimen Condition		Undisturbed
	Specimen Length (mm)	203	Specimen Moisture Content (%)		11
	Specimen Diameter (mm)	102	Specimen Bulk Density (Mg/m3)		2.22
	Membrane Thickness (mm)	0.40	Specimen Dry Density (Mg/m3)		2.00
	Membrane Correction	1.25	1.37	1.47	

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN

TEST TYPE
MULTI STAGE

SKETCH OF SPECIMEN AT FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength Cu (kPa)
120	16	2	219.4	110
240	18	2	234.5	117
480	20	2	250.4	125

Remarks/Abnormalities

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

Signed

Date 10 September 2021

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

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

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP2B 12.00-12.45	DATE SAMPLED	04 August 2021
LAB SAMPLE No	102715	DATE RECEIVED	05 August 2021
DATE TESTED	12 August 2021	SAMPLED BY	Client

ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried

PH Value	7.1	g/l
Sulphate as SO ₄ (2:1 Water Extract)	0.13	

REMARKS

SIGNED



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

DATE 10 September 2021

MURRAY RIX

Andrew House, Hadfield Street,
Dukinfield, Cheshire SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

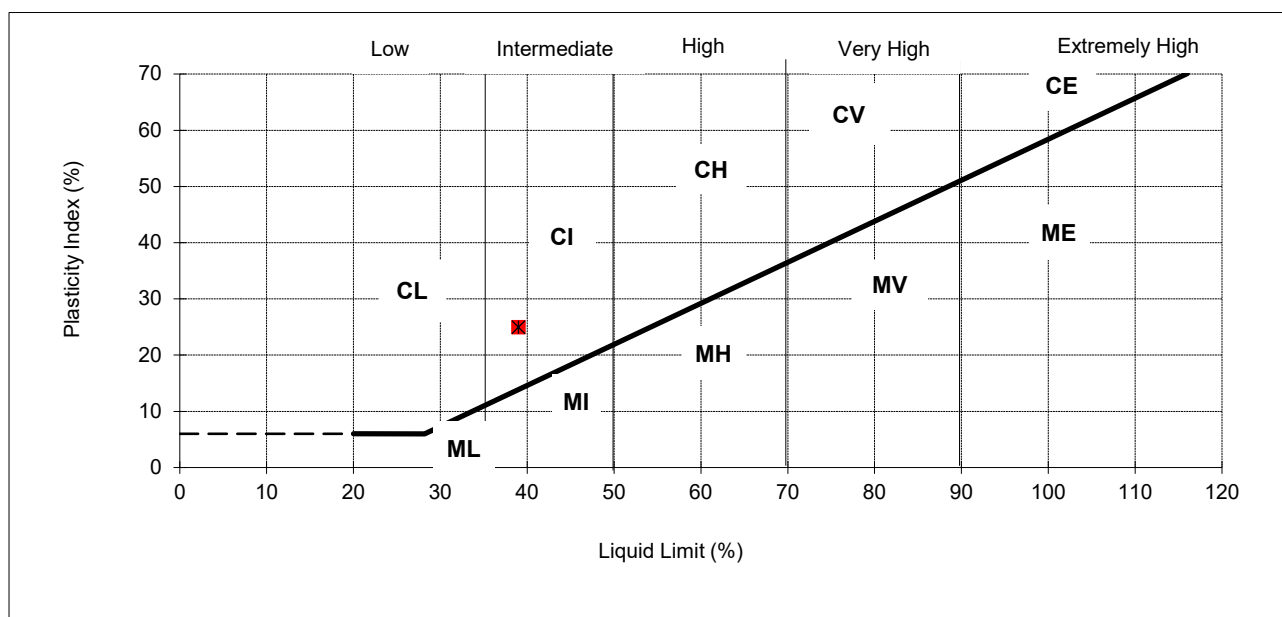
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP2B 13.50-13.95m	DATE SAMPLED	04-Aug-21
SAMPLE No.	102716	DATE RECEIVED	05-Aug-21
DATE TESTED	12-Aug-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
15	39	14	25	98



REMARKS

Sample tested in natural condition

SIGNED

NAME

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

DATE

10-Sep-21

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION
BS 1377 : PART 7: Clause 9 Multi Stage

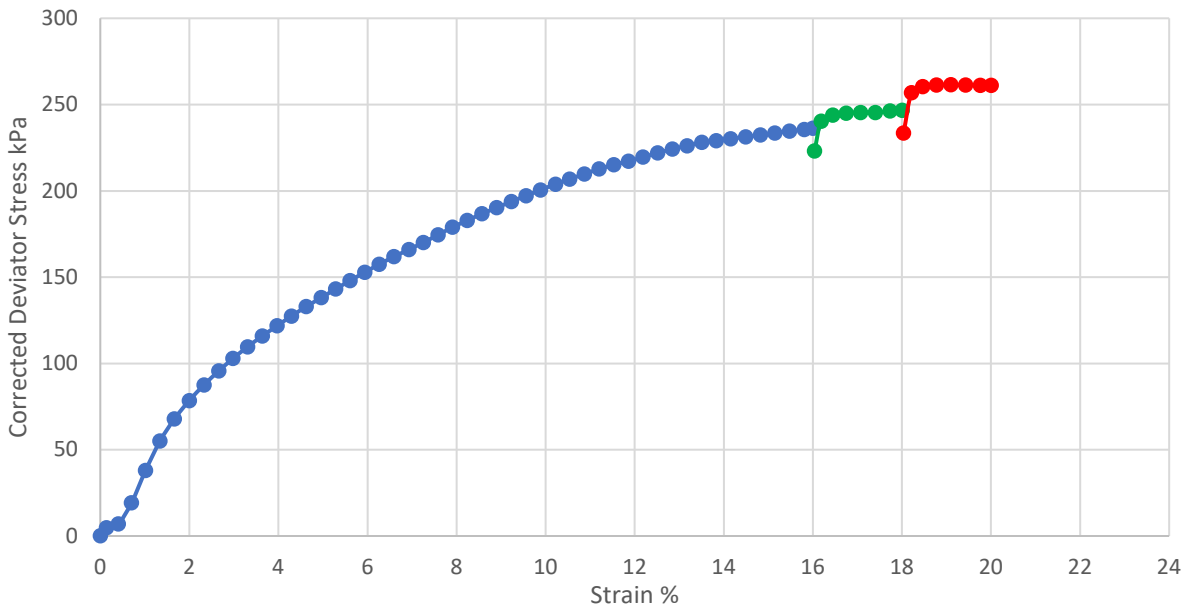
CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP2B 13.50-13.95m	DATE SAMPLED	04-Aug-21
LAB SAMPLE No.	102716	DATE RECEIVED	05-Aug-21
DATE TESTED	02-Sep-21	SAMPLED BY	Client
MATERIAL	Stiff brown silty sandy CLAY		
ADVISED SOURCE	Site Investigation Sample		

INITIAL CONDITIONS

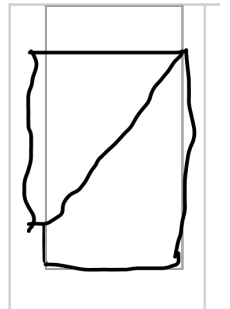
Specimen Location	Sample Length (mm)	450	Specimen depth from top of Sample (mm)	50
	Sample Orientation	Vertical	Specimen Condition	Undisturbed
	Specimen Length (mm)	202	Specimen Moisture Content (%)	15
	Specimen Diameter (mm)	102	Specimen Bulk Density (Mg/m3)	2.17
	Membrane Thickness (mm)	0.40	Specimen Dry Density (Mg/m3)	1.89
	Membrane Correction	1.25	1.37	1.48

CORRECTED DEVIATOR STRESS vs AXIAL STRAIN



TEST TYPE
MULTI STAGE

SKETCH OF SPECIMEN AT FAILURE



SIMPLE_SHEAR

Cell Pressure (kPa)	Failure Strain (%)	Rate of Strain (%/min)	Corrected Deviator Stress (kPa)	Shear Strength C_u (kPa)
135	16	2	236.2	118
270	18	2	246.7	123
540	20	2	261.1	131

Remarks/Abnormalities

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

Signed

Date 10 September 2021

MURRAY RIX

Andrew House, Hadfield Street,
Dukinfield, Cheshire SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

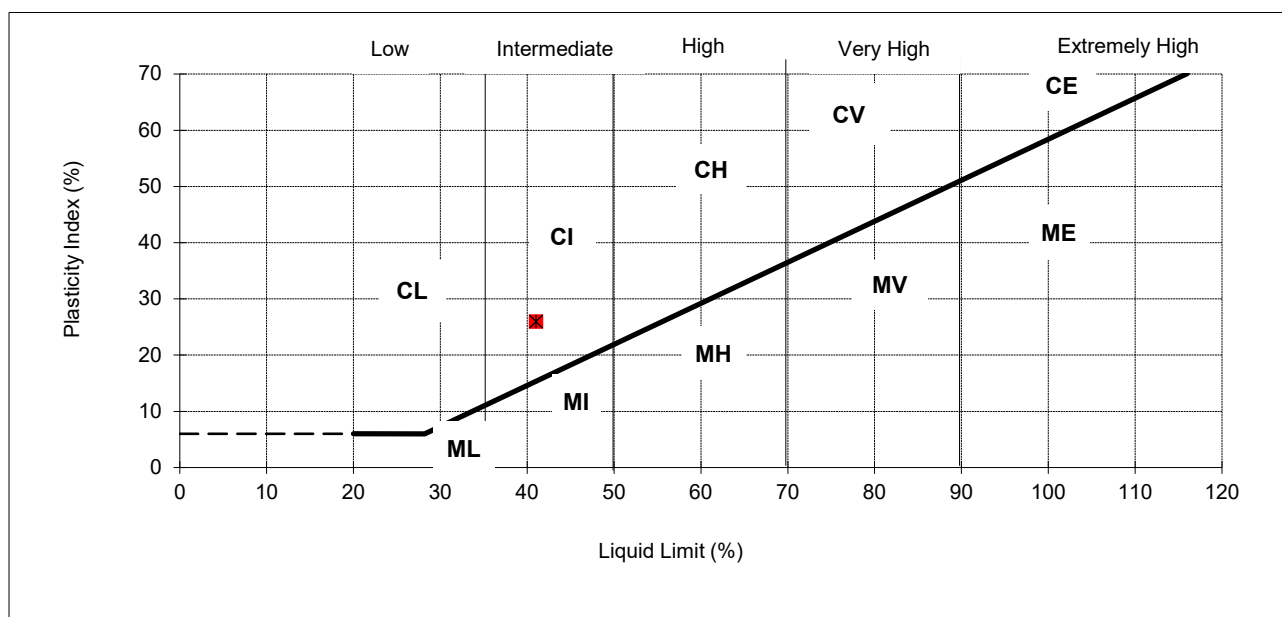
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP2B 15.45-15.95m	DATE SAMPLED	04-Aug-21
SAMPLE No.	102717	DATE RECEIVED	05-Aug-21
DATE TESTED	12-Aug-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
18	41	15	26	100



REMARKS

Sample tested in natural condition

SIGNED

NAME

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

DATE

10-Sep-21

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

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

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	CP2B 18.00-18.45	DATE SAMPLED	05 August 2021
LAB SAMPLE No	102718	DATE RECEIVED	05 August 2021
DATE TESTED	12 August 2021	SAMPLED BY	Client

ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried

PH Value	6.7	g/l
Sulphate as SO ₄ (2:1 Water Extract)	0.27	

REMARKS

SIGNED



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

DATE 10 September 2021

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

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

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	WS1 D 1.80	DATE SAMPLED	03 August 2021
LAB SAMPLE No	102694	DATE RECEIVED	05 August 2021
DATE TESTED	12 August 2021	SAMPLED BY	Client

ADVISED SOURCE	Site Investigation Sample
PRE TREATMENT	Air Dried

PH Value	6.6	g/l
Sulphate as SO ₄ (2:1 Water Extract)	0.35	

REMARKS

SIGNED 

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

DATE 10 September 2021

MURRAY RIX

Andrew House, Hadfield Street,
Dukinfield, Cheshire SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

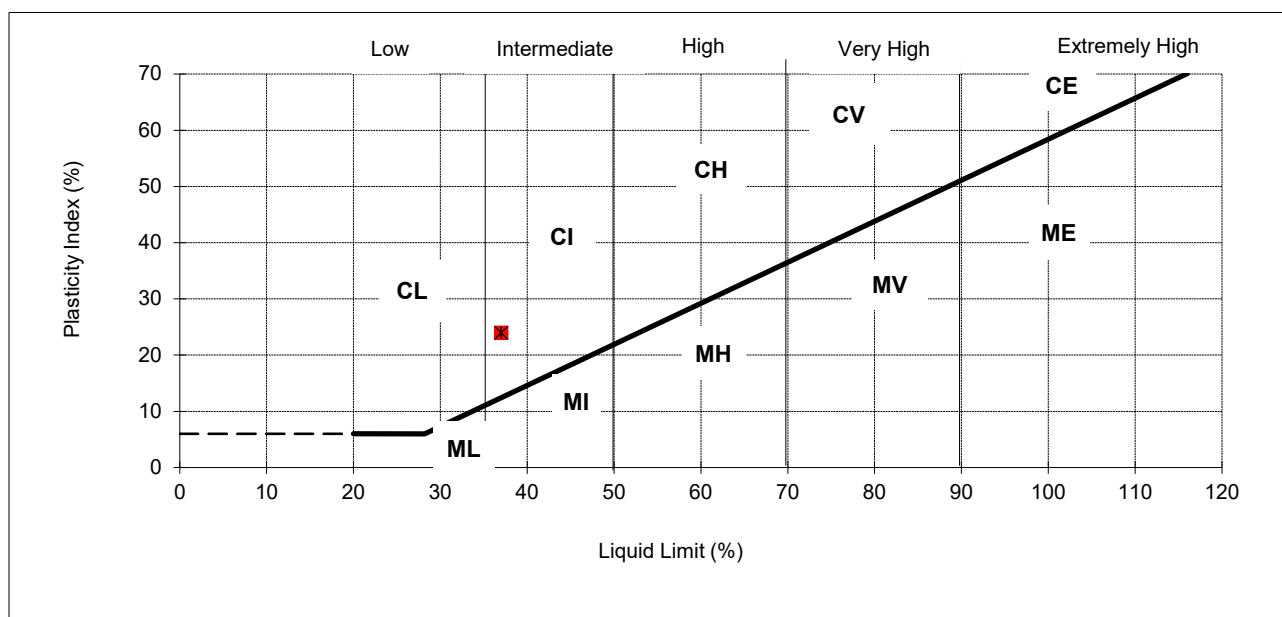
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	WS2 2.50	DATE SAMPLED	03-Aug-21
SAMPLE No.	102695	DATE RECEIVED	05-Aug-21
DATE TESTED	12-Aug-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
11	37	13	24	95



REMARKS

Sample tested in natural condition

SIGNED

NAME

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

DATE

10-Sep-21

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

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

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	WS2 D 2.50	DATE SAMPLED	03 August 2021
LAB SAMPLE No	102695	DATE RECEIVED	05 August 2021
DATE TESTED	12 August 2021	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



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

DATE 10 September 2021

MURRAY RIX

Andrew House, Hadfield Street,
Dukinfield, Cheshire SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

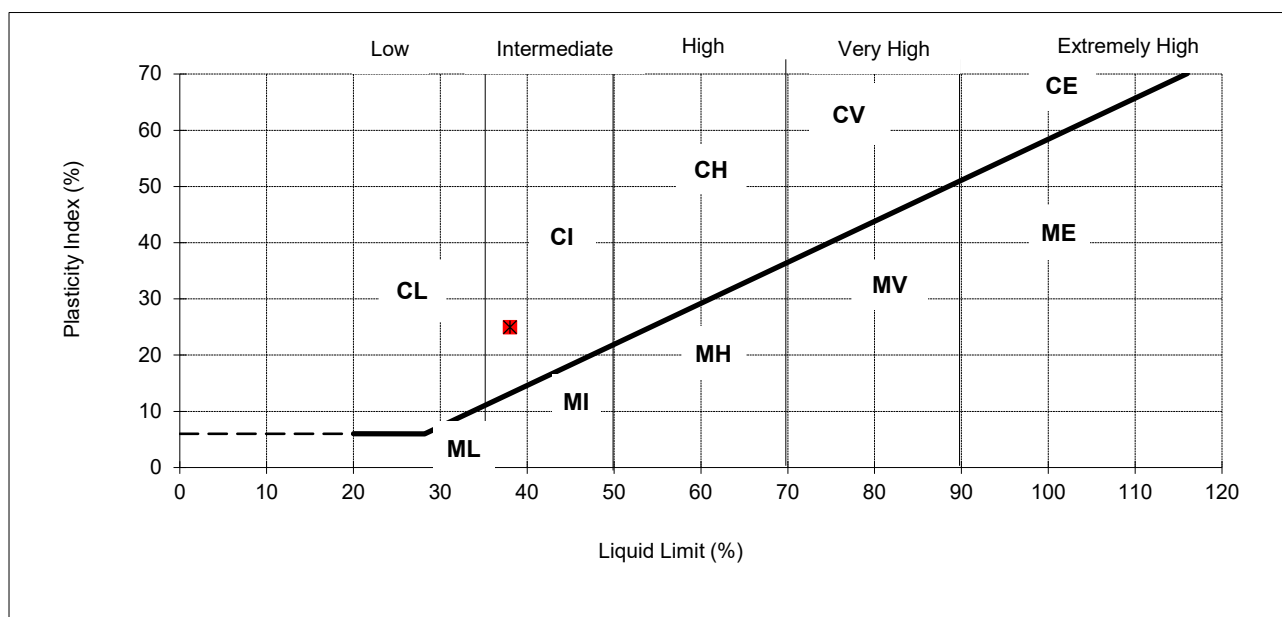
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	WS4 2.00	DATE SAMPLED	03-Aug-21
SAMPLE No.	102696	DATE RECEIVED	05-Aug-21
DATE TESTED	12-Aug-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
13	38	13	25	95



REMARKS

Sample tested in natural condition

SIGNED

NAME

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

DATE

10-Sep-21

MURRAY RIX

Andrew House, Hadfield Street,
Dukinfield, Cheshire SK16 4QX
TEL 0161 475 0870



TEST CERTIFICATE

LIQUID AND PLASTIC LIMIT

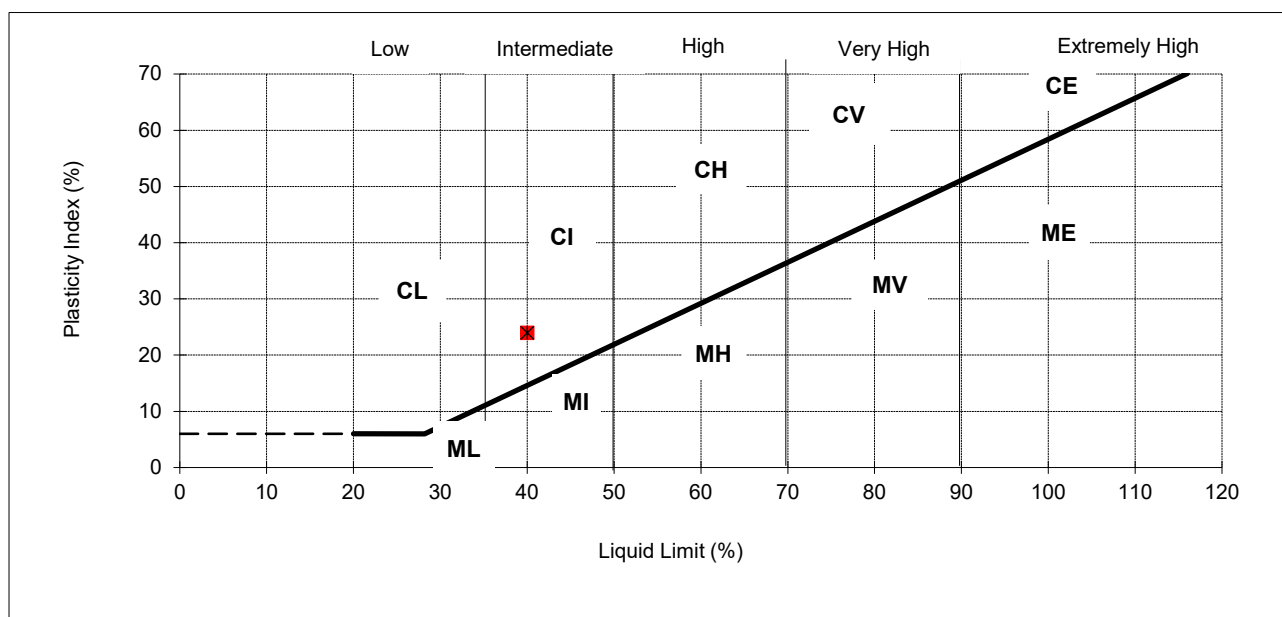
BS 1377: PART 2: 1990 Clause 4.4 ONE POINT METHOD & Clause 5.3
MOISTURE CONTENT METHOD BS 1377: PART 2: 1990 Clause 3.2

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	WS4 3.50	DATE SAMPLED	03-Aug-21
SAMPLE No.	102697	DATE RECEIVED	05-Aug-21
DATE TESTED	12-Aug-21	SAMPLED BY	Client

MATERIAL	Stiff brown silty sandy CLAY
ADVISED SOURCE	Site Investigation Sample

Moisture Content (Natural) (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Passing 425 micron (%)
22	40	16	24	97



REMARKS

Sample tested in natural condition

SIGNED

NAME

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

DATE

10-Sep-21

MURRAY RIX

ANDREW HOUSE, HADFIELD STREET,
DUKINFIELD, CHESHIRE SK16 4QX
TEL 0161 475 0870

TEST CERTIFICATE

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

CLIENT	Earth Environmental & Geotechnical Ltd
SITE	A4210 - Ducie Street, Manchester
JOB NUMBER	MRN 4099/73

SAMPLE LABEL	WS4 D 3.50	DATE SAMPLED	03 August 2021
LAB SAMPLE No	102697	DATE RECEIVED	05 August 2021
DATE TESTED	12 August 2021	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)	0.14	

REMARKS

SIGNED



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

DATE 10 September 2021