



APPENDIX 5 ▪ Geotechnical Laboratory Certificates



4041

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Environmental Science

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Analytical Report Number : 16-18613

Project / Site name:	The Old Vinyl Factory - Machine Store	Samples received on:	17/05/2016
Your job number:	19579G	Samples instructed on:	25/05/2016
Your order number:	16-S646-DCE-19579G	Analysis completed by:	09/06/2016
Report Issue Number:	1	Report issued on:	09/06/2016
Samples Analysed:	8 soil samples		

Signed:

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Emma Winter
Assistant Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :	soils	- 4 weeks from reporting
	leachates	- 2 weeks from reporting
	waters	- 2 weeks from reporting
	asbestos	- 6 months from reporting

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Analytical Report Number: 16-18613

Project / Site name: The Old Vinyl Factory - Machine Store

Your Order No: 16-S646-DCE-19579G

Lab Sample Number				579281	579282	579283	579284	579285
Sample Reference				MBH1	MBH1	MBH1	MBH1	MBH1
Sample Number				D	U	U	D	U
Depth (m)				4.75	6.50	9.50	10.50	12.50
Date Sampled				13/05/2016	13/05/2016	13/05/2016	13/05/2016	13/05/2016
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	-	-	< 0.1	-
Moisture Content	%	N/A	NONE	13	-	-	13	-
Total mass of sample received	kg	0.001	NONE	1.3	-	-	1.0	-

Geotechnical

Geotechnical Testing - Various		N/A	NONE	-	See attached	See attached	-	See attached
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General Inorganics

pH	pH Units	N/A	MCERTS	7.7	-	-	8.6	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	170	-	-	950	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.044	-	-	0.34	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	44.1	-	-	341	-
Total Sulphur	mg/kg	50	NONE	85	-	-	3900	-



Analytical Report Number: 16-18613

Project / Site name: The Old Vinyl Factory - Machine Store

Your Order No: 16-S646-DCE-19579G

Lab Sample Number				579286	579287	579288		
Sample Reference				MBH1	MBH1	MBH1		
Sample Number				U	D	U		
Depth (m)				15.50	16.50	18.50		
Date Sampled				13/05/2016	13/05/2016	13/05/2016		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	-	< 0.1	-		
Moisture Content	%	N/A	NONE	-	15	-		
Total mass of sample received	kg	0.001	NONE	-	0.75	-		

Geotechnical

Geotechnical Testing - Various		N/A	NONE	See attached	-	See attached		
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General Inorganics

pH	pH Units	N/A	MCERTS	-	8.6	-		
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	840	-		
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.33	-		
Water Soluble Sulphate (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	334	-		
Total Sulphur	mg/kg	50	NONE	-	8300	-		



Analytical Report Number : 16-18613

Project / Site name: The Old Vinyl Factory - Machine Store

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
579281	MBH1	D	4.75	Light brown clay with gravel.
579282	MBH1	U	6.50	-
579283	MBH1	U	9.50	-
579284	MBH1	D	10.50	Brown clay.
579285	MBH1	U	12.50	-
579286	MBH1	U	15.50	-
579287	MBH1	D	16.50	Brown clay.
579288	MBH1	U	18.50	-



Analytical Report Number : 16-18613

Project / Site name: The Old Vinyl Factory - Machine Store

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Geotechnical Testing in Soil	See attached geotechnical report	See attached geotechnical report		W	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil	L038-PL	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

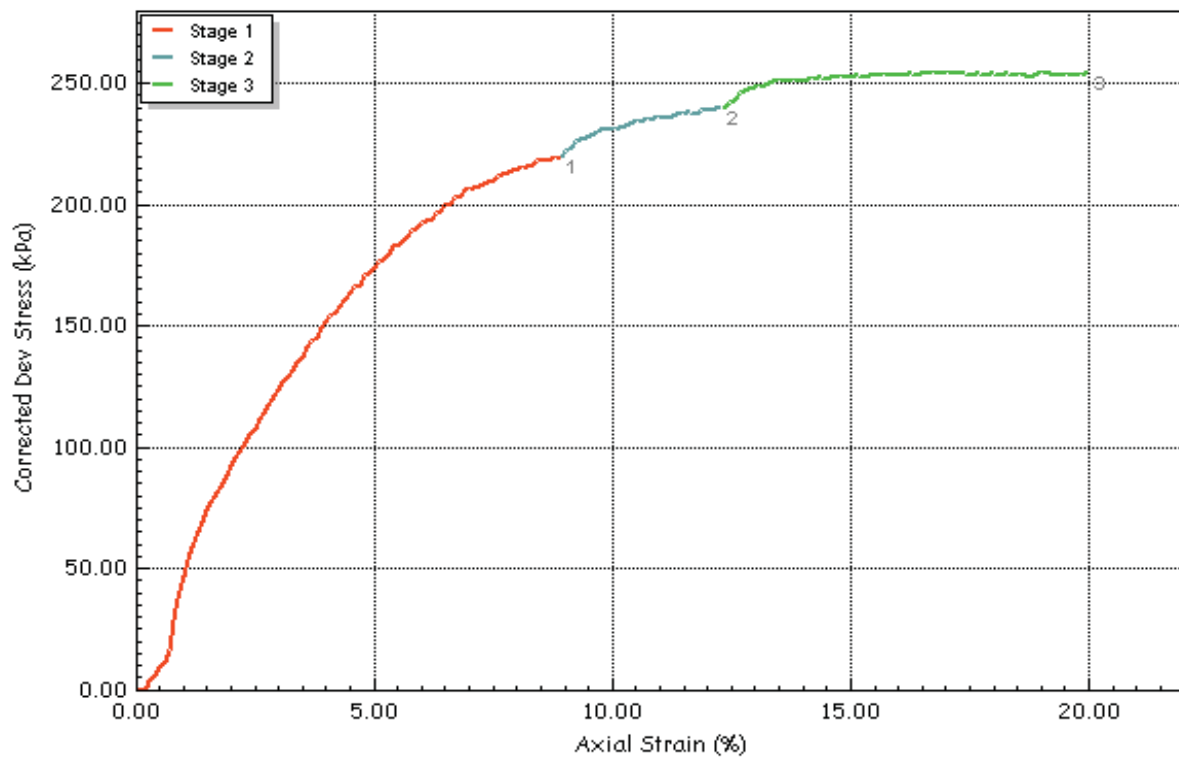
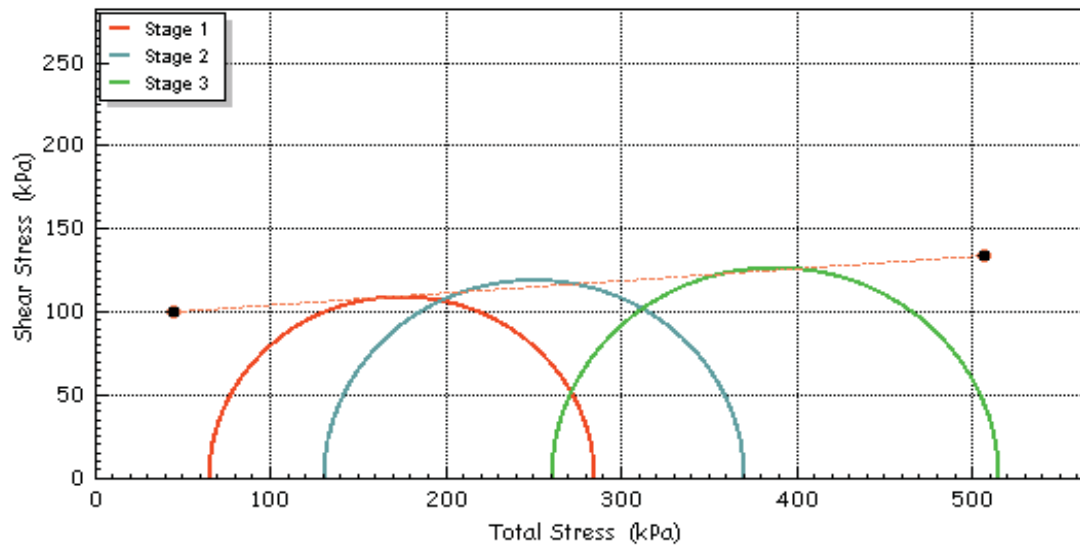
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots

Cohesion Level	c	(kPa)	96.6
Friction Angle	ϕ	(deg)	4.2



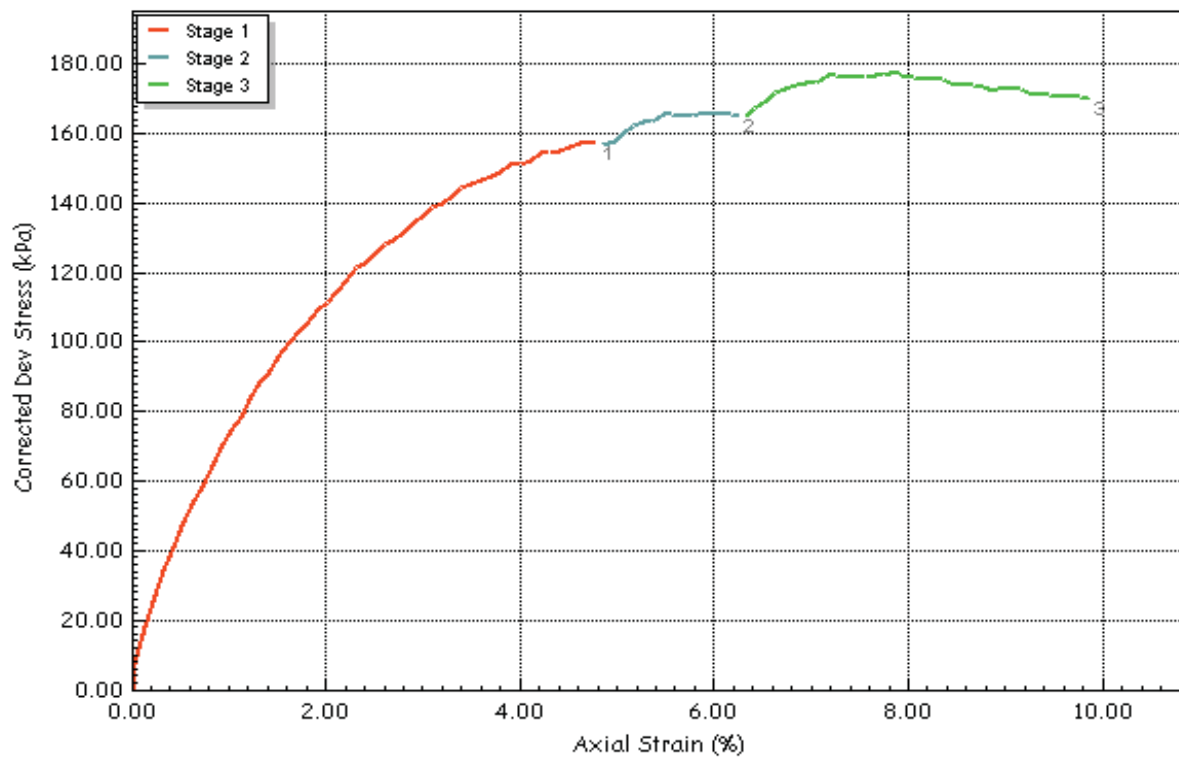
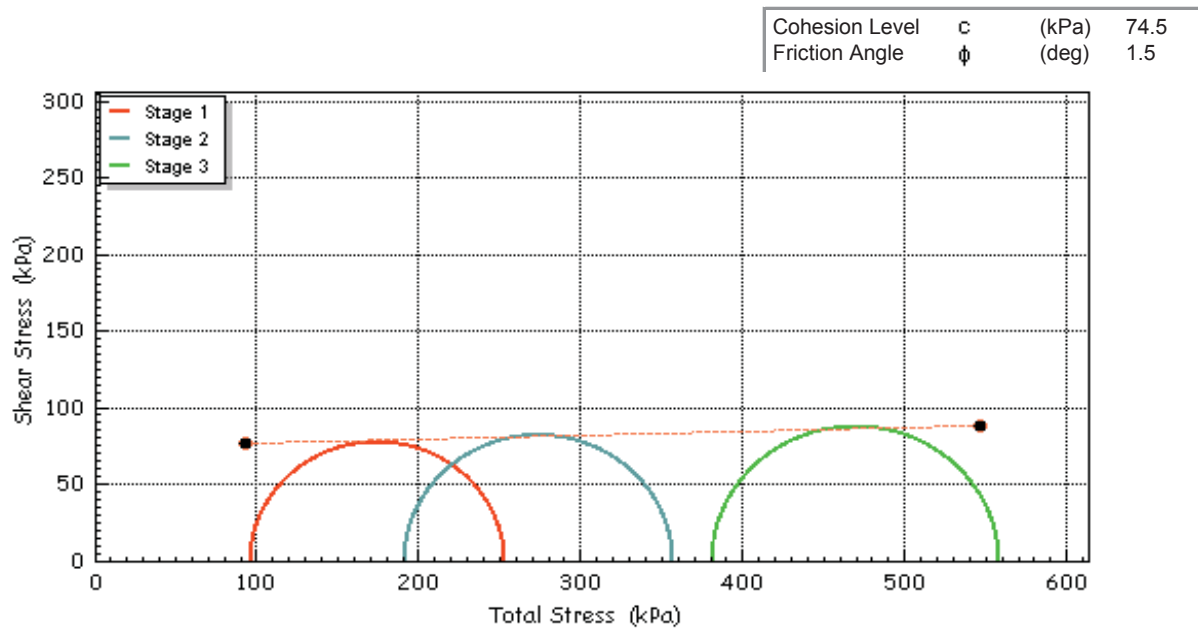
 Environmental Science	Test Method BS1377-7 : 1990 Clause 9		Test Name 579282	
	Database: .SQLEXPRESS \ 6171-I2 Analytical		Test Date 09/06/2016	
	Site Reference The Old Vinyl Factory - Machine Store		Borehole MBH1	
	Jobfile 16-18613		Sample 579282	
	Client Idom Merebrook Ltd		Depth 6.50	
Operator	bielatowicz	Checked	pytlikm	Approved
		pytlikm		pytlikm

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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots



	Test Method BS1377-7 : 1990 Clause 9		Test Name 579283	
	Database: .\SQLEXPRESS \ 6171-I2 Analytical		Test Date 09/06/2016	
	Site Reference The Old Vinyl Factory - Machine Store		Borehole MBH1	
	Jobfile 16-18613		Sample 579283	
	Client Idom Merebrook Ltd		Depth 9.50	
Operator	bielatowicz	Checked	pytlikm	Approved
				pytlikm

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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Summary Report

Sample Details  <i>sketch showing specimen location in original sample</i>	Depth	12.50		
	Description	Greyish brown silty CLAY		
	Type	U		
	Initial Sample Length	L ₀	(mm)	200.0
	Initial Sample Diameter	D ₀	(mm)	100.0
	Initial Sample Weight	W ₀	(gr)	3031.6
	Bulk Density	ρ ₀	(Mg/m ³)	1.93
	Particle Density	ρ _s	(Mg/m ³)	2.65

Initial Conditions			Stage 1	2	3
Initial Cell Pressure	σ ₃	(kPa)	125	250	500
Strain Rate	m _s	(mm/min)	3.99960	3.99960	3.99960
Membrane Thickness	m _b	(mm)	0.33		
Displacement Input	L _{IP}	(mm)	CH 2		
Load Input	N _{IP}	(N)	CH 1		
Initial Moisture	ω _i %	(%)	26		
Initial Dry Density	ρ _{d0}	(Mg/m ³)	1.54		
Initial Voids Ratio	e ₀	.	0.73		
Initial Degree of Saturation	S _o	(%)	94		

Final Conditions			Stage 1	2	3
Max Deviator Stress	(σ ₁ - σ ₃) _f	(kPa)	251	291	332
Membrane Correction	m _c	(kPa)	0.551	0.676	0.870
Strain At Max Stress	ε _f %	(%)	6.78	8.46	10.77
Shear Strength	c _u	(kPa)	126	145	166
Final Moisture	ω _f %	(%)	26		
Final Dry Density	ρ _{df}	(Mg/m ³)	1.54		
Final Voids Ratio	e _f	.	0.73		
Final Degree of Saturation	S _f	(%)	93.8		
Notes					
		Correction values:			
		125 kPa = 60 N			
		250 kPa = 120 N			
		500 kPa = 240 N			
			 		
			Failure Sketch <i>(surface inclination)</i>		

	Test Method	BS1377-7 : 1990 Clause 9	Test Name	579285
	Database:	.\SQLEXPRESS \ 6171-I2 Analytical	Test Date	09/06/2016
	Site Reference	The Old Vinyl Factory - Machine Store	Borehole	MBH1
	Jobfile	16-18613	Sample	579285
	Client	Idom Merebrook Ltd	Depth	12.50
	Operator	bielatowicz	Checked	pytlikm
			Approved	pytlikm

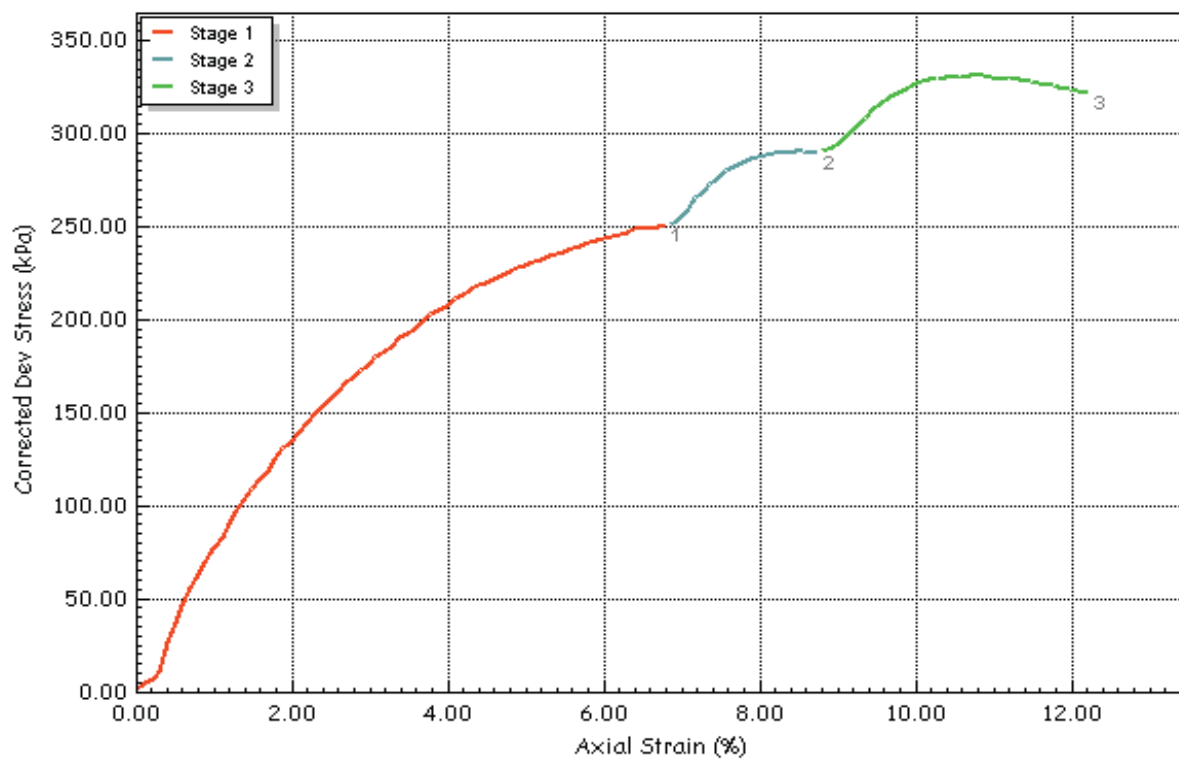
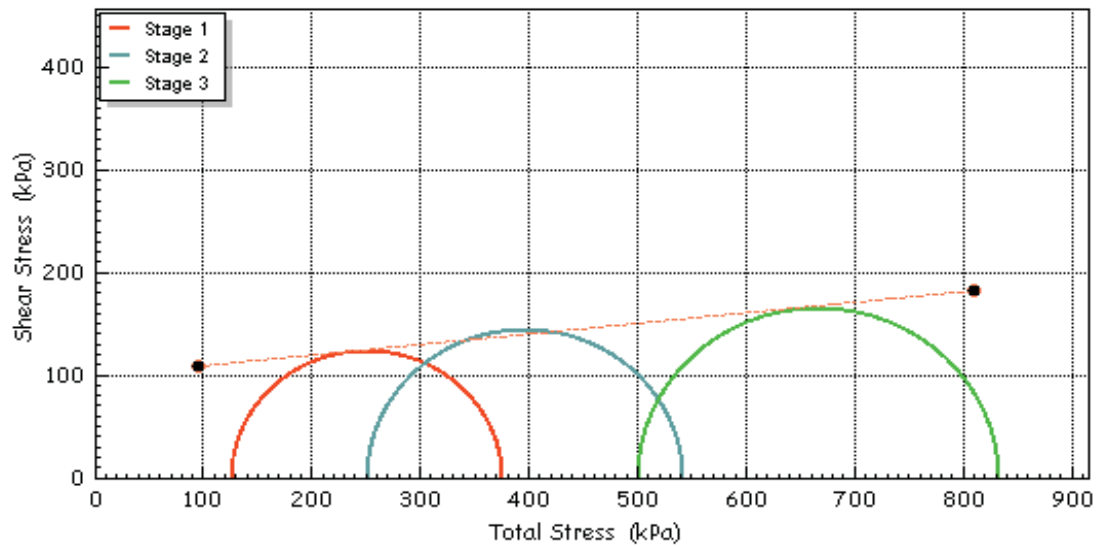
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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots

Cohesion Level	c	(kPa)	99.1
Friction Angle	ϕ	(deg)	5.8



 Environmental Science	Test Method BS1377-7 : 1990 Clause 9		Test Name 579285	
	Database: .SQLEXPRESS \ 6171-I2 Analytical		Test Date 09/06/2016	
	Site Reference The Old Vinyl Factory - Machine Store		Borehole MBH1	
	Jobfile 16-18613		Sample 579285	
	Client Idom Merebrook Ltd		Depth 12.50	
Operator	bielatowicz	Checked	pytlikm	Approved
				pytlikm

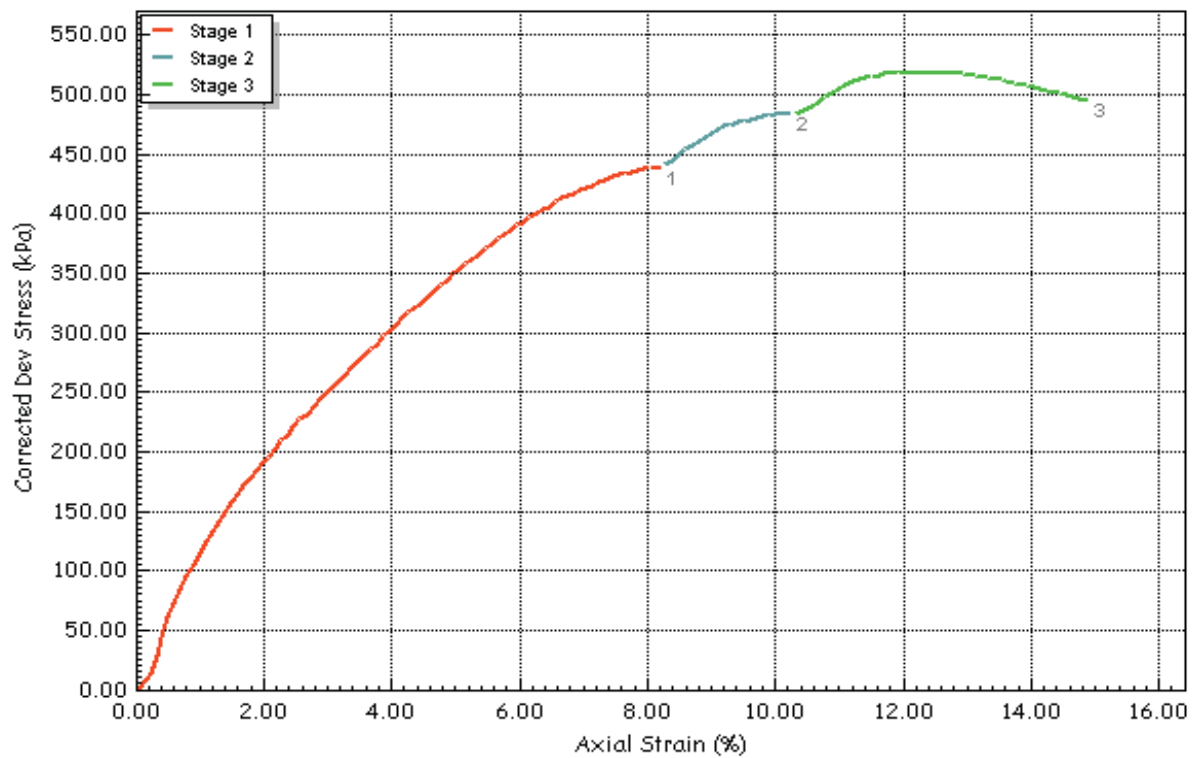
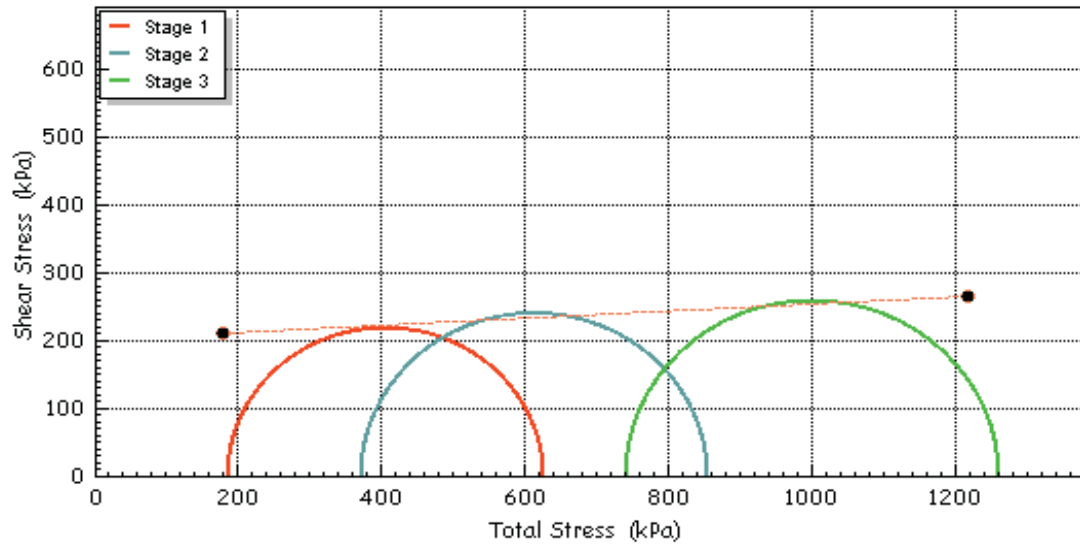
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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots

Cohesion Level	c	(kPa)	199.2
Friction Angle	ϕ	(deg)	3.1



 Environmental Science	Test Method		BS1377-7 : 1990 Clause 9		Test Name		579288	
	Database:		.\SQLEXPRESS \ 6171-I2 Analytical		Test Date		09/06/2016	
	Site Reference		The Old Vinyl Factory - Machine Store		Borehole		MBH1	
	Jobfile		16-18613		Sample		579288	
	Client		Idom Merebrook Ltd		Depth		18.50	
	Operator		bielatowicz		Checked		pytlikm	
					Approved		pytlikm	

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Environmental Science

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Analytical Report Number : 16-18693

Project / Site name:	The Old Vinyl Factory - Machine Store	Samples received on:	18/04/2016
Your job number:	19579G	Samples instructed on:	26/05/2016
Your order number:	16-S655-DCE-19579G	Analysis completed by:	10/06/2016
Report Issue Number:	1	Report issued on:	10/06/2016
Samples Analysed:	22 soil samples		

Signed:

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Dr Claire Stone
Quality Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Environmental Science

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MCERTS

Analytical Report Number: 16-18693

Project / Site name: The Old Vinyl Factory - Machine Store

Your Order No: 16-S655-DCE-19579G

Lab Sample Number	579685	579686	579687	579688	579689
Sample Reference	MBH2	MBH2	MBH2	MBH2	MBH2
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	4.00-4.45	6.50	9.00	9.50	12.50
Date Sampled	13/04/2016	13/04/2016	13/04/2016	13/04/2016	13/04/2016
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	< 0.1	-
Moisture Content	%	N/A	NONE	4.0	-
Total mass of sample received	kg	0.001	NONE	2.0	-

Geotechnical

Geotechnical Testing - Various		N/A	NONE	-	See attached	-	See attached	See attached
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General Inorganics

pH	pH Units	N/A	MCERTS	8.5	-	8.2	-	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	270	-	1900	-	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.023	-	0.78	-	-
Total Sulphur	mg/kg	50	NONE	170	-	5900	-	-



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MCERTS

Analytical Report Number: 16-18693

Project / Site name: The Old Vinyl Factory - Machine Store

Your Order No: 16-S655-DCE-19579G

Lab Sample Number	579690	579691	579692	579693	579694
Sample Reference	MBH2	MBH2	MBH2	MBH2	MBH2
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	15.50	17.00	18.50	21.50	23.00
Date Sampled	14/04/2016	14/04/2016	14/04/2016	14/04/2016	14/04/2016
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	-	< 0.1
Moisture Content	%	N/A	NONE	-	13
Total mass of sample received	kg	0.001	NONE	-	0.93

Geotechnical

Geotechnical Testing - Various		N/A	NONE	See attached	-	See attached	See attached	-
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General Inorganics

pH	pH Units	N/A	MCERTS	-	8.6	-	-	8.6
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	1600	-	-	1400
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.73	-	-	0.60
Total Sulphur	mg/kg	50	NONE	-	7100	-	-	4600



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MCERTS

Analytical Report Number: 16-18693

Project / Site name: The Old Vinyl Factory - Machine Store

Your Order No: 16-S655-DCE-19579G

Lab Sample Number	579695	579696	579697	579698	579699
Sample Reference	MBH2	MBH3	MBH3	MBH3	MBH3
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	24.50	6.20	8.00	11.00	12.00
Date Sampled	14/04/2016	15/04/2016	15/04/2016	15/04/2016	15/04/2016
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	-	< 0.1
Moisture Content	%	N/A	NONE	-	14
Total mass of sample received	kg	0.001	NONE	-	0.76

Geotechnical

Geotechnical Testing - Various		N/A	NONE	See attached	-	See attached	See attached	-
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General Inorganics

pH	pH Units	N/A	MCERTS	-	8.5	-	-	8.7
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	1700	-	-	1000
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.72	-	-	0.48
Total Sulphur	mg/kg	50	NONE	-	7300	-	-	3600



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MCERTS

Analytical Report Number: 16-18693

Project / Site name: The Old Vinyl Factory - Machine Store

Your Order No: 16-S655-DCE-19579G

Lab Sample Number	579700	579701	579702	579703	579704
Sample Reference	MBH3	MBH3	MBH3	MBH3	MBH3
Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)	14.00	17.00	18.00	22.00	23.00
Date Sampled	15/04/2016	15/04/2016	15/04/2016	15/04/2016	15/04/2016
Time Taken	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status		
Stone Content	%	0.1	NONE	-	-
Moisture Content	%	N/A	NONE	-	-
Total mass of sample received	kg	0.001	NONE	-	-

Geotechnical

Geotechnical Testing - Various		N/A	NONE	See attached	See attached	-	-	See attached
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General Inorganics

pH	pH Units	N/A	MCERTS	-	-	8.0	8.9	-
Total Sulphate as SO ₄	mg/kg	50	MCERTS	-	-	1900	860	-
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	-	0.88	0.36	-
Total Sulphur	mg/kg	50	NONE	-	-	8800	3600	-



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MCERTS

Analytical Report Number: 16-18693

Project / Site name: The Old Vinyl Factory - Machine Store

Your Order No: 16-S655-DCE-19579G

Lab Sample Number				579705	579706			
Sample Reference				MBH3	MBH3			
Sample Number				None Supplied	None Supplied			
Depth (m)				27.00	29.00			
Date Sampled				15/04/2016	15/04/2016			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)								
	Units	Limit of detection	Accreditation Status					
Stone Content	%	0.1	NONE	< 0.1	-			
Moisture Content	%	N/A	NONE	15	-			
Total mass of sample received	kg	0.001	NONE	0.91	-			

Geotechnical

Geotechnical Testing - Various		N/A	NONE	-	See attached			
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General Inorganics

pH	pH Units	N/A	MCERTS	9.0	-			
Total Sulphate as SO ₄	mg/kg	50	MCERTS	1100	-			
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.44	-			
Total Sulphur	mg/kg	50	NONE	27000	-			

Analytical Report Number : 16-18693

Project / Site name: The Old Vinyl Factory - Machine Store

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
579685	MBH2	None Supplied	4.00-4.45	Light brown gravelly sand.
579686	MBH2	None Supplied	6.50	-
579687	MBH2	None Supplied	9.00	Brown clay.
579688	MBH2	None Supplied	9.50	-
579689	MBH2	None Supplied	12.50	-
579690	MBH2	None Supplied	15.50	-
579691	MBH2	None Supplied	17.00	Brown clay.
579692	MBH2	None Supplied	18.50	-
579693	MBH2	None Supplied	21.50	-
579694	MBH2	None Supplied	23.00	Brown clay.
579695	MBH2	None Supplied	24.50	-
579696	MBH3	None Supplied	6.20	Brown clay.
579697	MBH3	None Supplied	8.00	-
579698	MBH3	None Supplied	11.00	-
579699	MBH3	None Supplied	12.00	Brown clay.
579700	MBH3	None Supplied	14.00	-
579701	MBH3	None Supplied	17.00	-
579702	MBH3	None Supplied	18.00	Brown clay.
579703	MBH3	None Supplied	22.00	Brown clay.
579704	MBH3	None Supplied	23.00	-
579705	MBH3	None Supplied	27.00	Brown clay.
579706	MBH3	None Supplied	29.00	-



4041

MCERTS

Analytical Report Number : 16-18693

Project / Site name: The Old Vinyl Factory - Machine Store

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Geotechnical Testing in Soil	See attached geotechnical report	See attached geotechnical report		W	NONE
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests, 2:1 water:soil extraction, analysis by ICP-OES.	L038-PL	D	MCERTS
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, and MEWAM 2006 Methods for the Determination of Metals in Soil	L038-PL	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Sample Deviation Report



Sample ID	Other_ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation Code
MBH2		S	16-18693	579685	c	pH in soil (automated)	L099-PL	c
MBH2		S	16-18693	579687	c	pH in soil (automated)	L099-PL	c
MBH2		S	16-18693	579691	c	pH in soil (automated)	L099-PL	c
MBH2		S	16-18693	579694	c	pH in soil (automated)	L099-PL	c
MBH3		S	16-18693	579696	c	pH in soil (automated)	L099-PL	c
MBH3		S	16-18693	579699	c	pH in soil (automated)	L099-PL	c
MBH3		S	16-18693	579702	c	pH in soil (automated)	L099-PL	c
MBH3		S	16-18693	579703	c	pH in soil (automated)	L099-PL	c
MBH3		S	16-18693	579705	c	pH in soil (automated)	L099-PL	c

Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Summary Report

Sample Details  <i>sketch showing specimen location in original sample</i>	Depth	6.50		
	Description	Greyish brown silty CLAY		
	Type	U		
	Initial Sample Length	L ₀	(mm)	200.0
	Initial Sample Diameter	D ₀	(mm)	99.7
	Initial Sample Weight	W ₀	(gr)	3057.0
	Bulk Density	ρ ₀	(Mg/m ³)	1.96
	Particle Density	ρ _s	(Mg/m ³)	2.65

Initial Conditions			Stage 1	2	3
Initial Cell Pressure	C	(kPa)	65	130	260
Strain Rate	Φ	(mm/min)	3.99980	3.99980	3.99980
Membrane Thickness	m _b	(mm)	0.35		
Displacement Input	L _{IP}	(mm)	CH 2		
Load Input	N _{IP}	(N)	CH 1		
Initial Moisture	ω _i %	(%)	24		
Initial Dry Density	ρ _{d0}	(Mg/m ³)	1.58		
Initial Voids Ratio	e ₀	.	0.68		
Initial Degree of Saturation	S _o	(%)	94		

Final Conditions			Stage 1	2	3
Max Deviator Stress	(σ ₁ - σ ₃) _f	(kPa)	278.02	292.48	311.97
Membrane Correction	m _c	(kPa)	0.583	0.661	0.799
Strain At Max Stress	ε _f %	(%)	6.73	7.80	9.97
Shear Strength	c _u	(kPa)	139.01	146.24	155.99
Final Moisture	ω _f %	(%)	24		
Final Dry Density	ρ _{df}	(Mg/m ³)	1.58		
Final Voids Ratio	e _f	.	0.68		
Final Degree of Saturation	S _f	(%)	93.6		
Notes					
		Correction values:			
		65 kPa = 30 N			
		130 kPa = 60 N			
		260 kPa = 120 N			
			 Failure Sketch <i>(surface inclination)</i>		
					

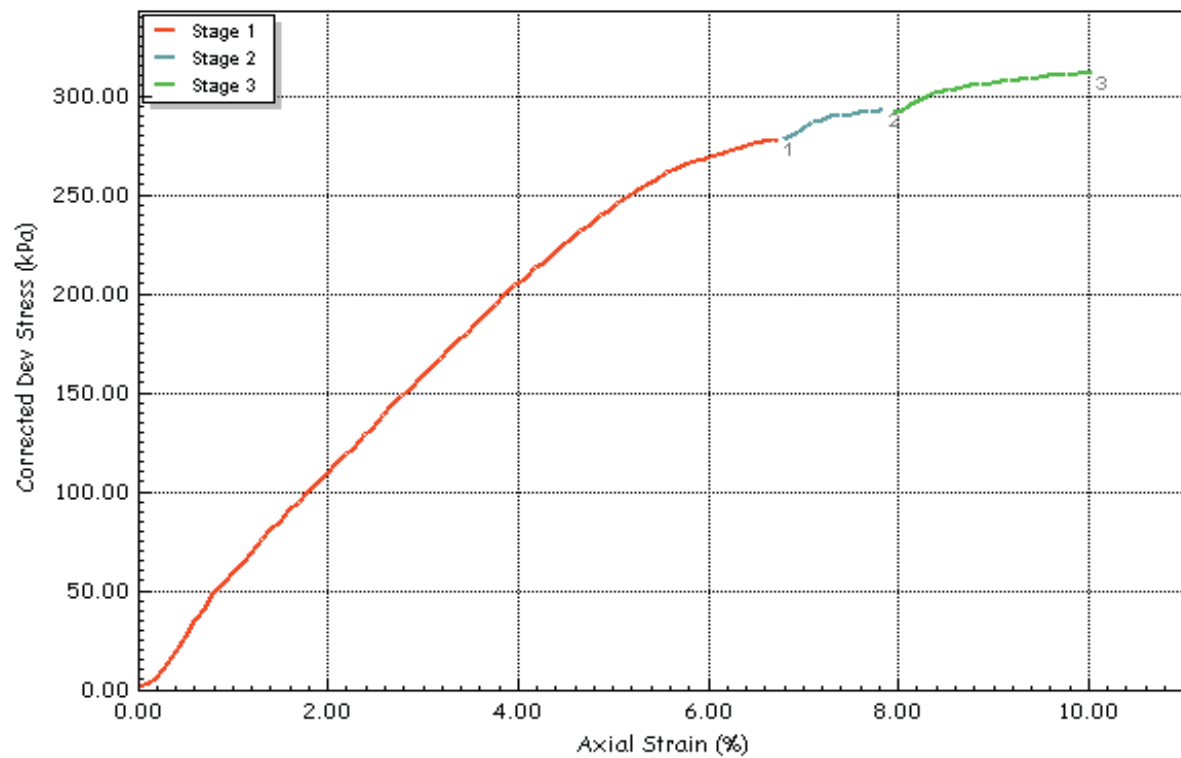
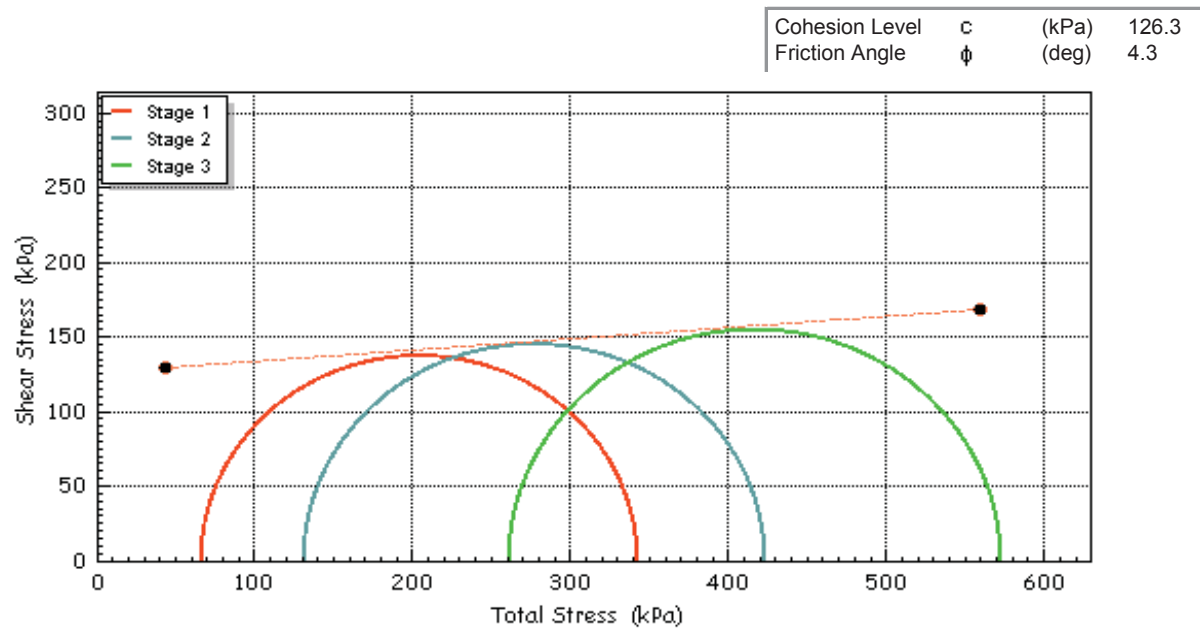
 Environmental Science	Test Method	BS1377-7 : 1990 Clause 9	Test Name	579686
	Database:	.\SQLEXPRESS \ 6171-I2 Analytical	Test Date	09/06/2016
	Site Reference	The Old Vinyl Factory - Machine Store	Borehole	MBH2
	Jobfile	16-18693	Sample	579686
	Client	Idom Merebrook Ltd	Depth	6.50
	Operator	bielatowicz	Checked	pytlikm
			Approved	pytlikm

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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots



	Test Method BS1377-7 : 1990 Clause 9		Test Name 579686	
	Database: .SQLEXPRESS \ 6171-I2 Analytical		Test Date 09/06/2016	
	Site Reference The Old Vinyl Factory - Machine Store		Borehole MBH2	
	Jobfile 16-18693		Sample 579686	
	Client Idom Merebrook Ltd		Depth 6.50	
Operator	bielatowicz	Checked	pytlikm	Approved
				pytlikm

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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Summary Report

Sample Details  <i>sketch showing specimen location in original sample</i>	Depth	9.50		
	Description	Greyish brown silty CLAY		
	Type	U		
	Initial Sample Length	L ₀	(mm)	200.0
	Initial Sample Diameter	D ₀	(mm)	99.9
	Initial Sample Weight	W ₀	(gr)	3157.0
	Bulk Density	ρ ₀	(Mg/m ³)	2.01
	Particle Density	ρ _s	(Mg/m ³)	2.65

Initial Conditions			Stage 1	2	3
Initial Cell Pressure	C	(kPa)	95	190	380
Strain Rate	Φ	(mm/min)	4.00000	4.00000	4.00000
Membrane Thickness	m _b	(mm)	0.28		
Displacement Input	L _{IP}	(mm)	CH 2		
Load Input	N _{IP}	(N)	CH 1		
Initial Moisture	ω _i %	(%)	25		
Initial Dry Density	ρ _{d0}	(Mg/m ³)	1.61		
Initial Voids Ratio	e ₀	.	0.64		
Initial Degree of Saturation	S _o	(%)	100		

Final Conditions			Stage 1	2	3
Max Deviator Stress	(σ ₁ - σ ₃) _f	(kPa)	231.60	253.08	278.78
Membrane Correction	m _c	(kPa)	0.361	0.439	0.612
Strain At Max Stress	ε _f %	(%)	4.81	5.83	8.01
Shear Strength	c _u	(kPa)	115.80	126.54	139.39
Final Moisture	ω _f %	(%)	25		
Final Dry Density	ρ _{df}	(Mg/m ³)	1.61		
Final Voids Ratio	e _f	.	0.64		
Final Degree of Saturation	S _f	(%)	100.0		
Notes					
		Correction values:			
		95 kPa = 50 N			
		190 kPa = 90 N			
		380 kPa = 180 N			
			 		
			Failure Sketch (surface inclination)		

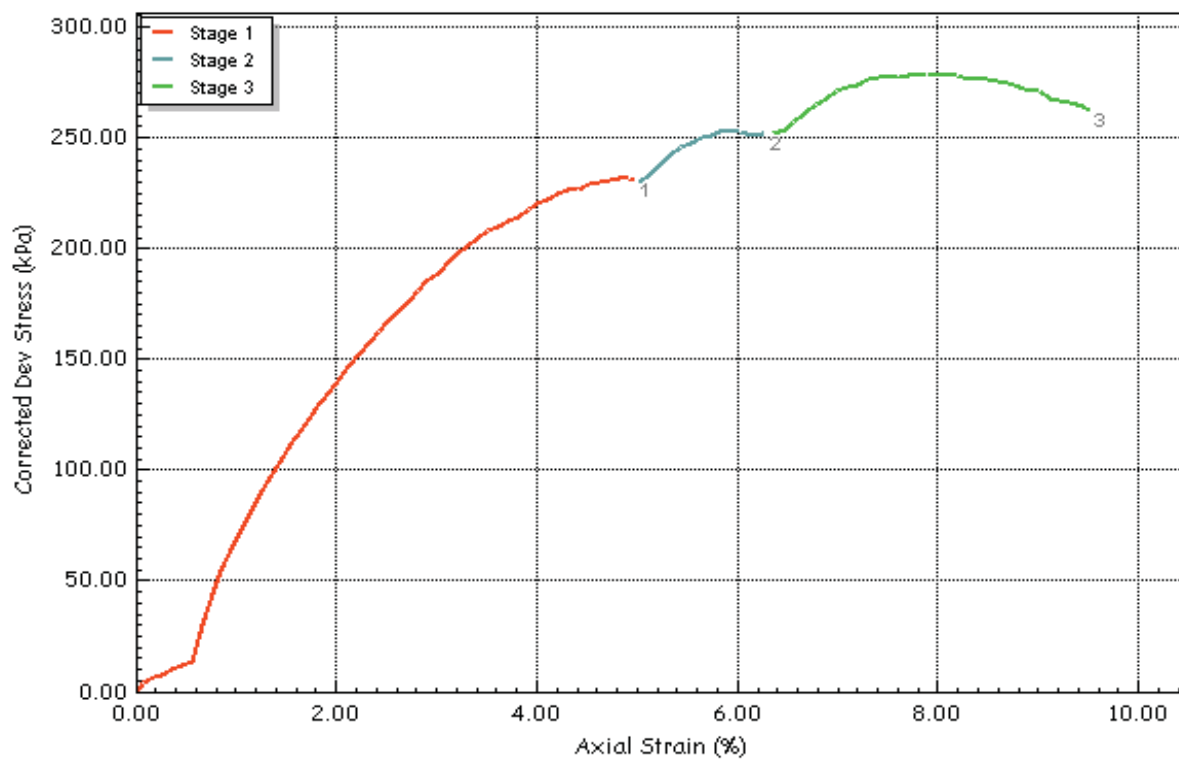
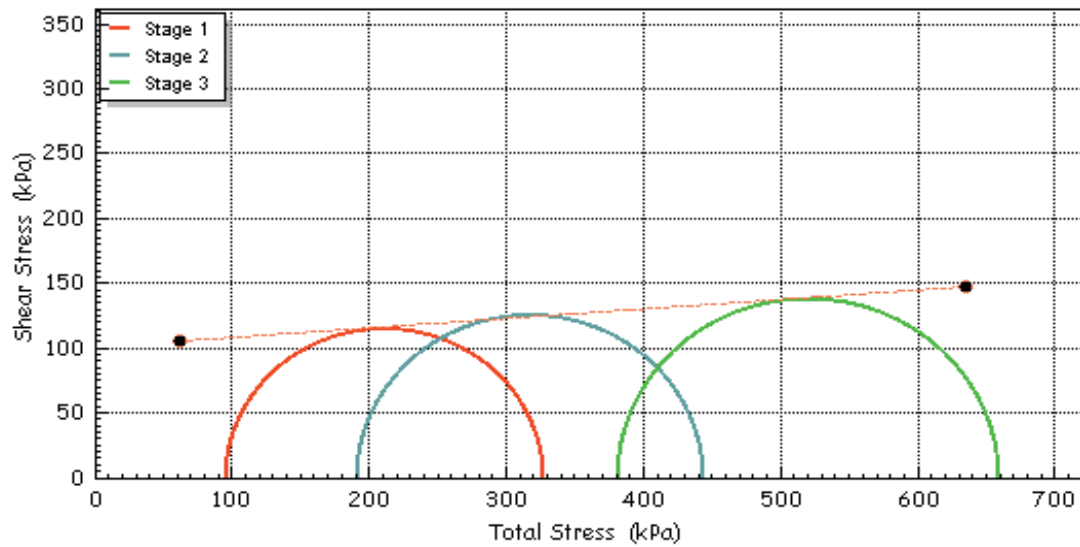
 Environmental Science	Test Method	BS1377-7 : 1990 Clause 9	Test Name	579688
	Database:	.\SQLEXPRESS \ 6171-I2 Analytical	Test Date	09/06/2016
	Site Reference	The Old Vinyl Factory - Machine Store	Borehole	MBH2
	Jobfile	16-18693	Sample	579688
	Client	Idom Merebrook Ltd	Depth	9.50
	Operator	bielatowicz	Checked	pytlikm
			Approved	pytlikm

Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots

Cohesion Level	c	(kPa)	100.4
Friction Angle	ϕ	(deg)	4.2



 Environmental Science	Test Method BS1377-7 : 1990 Clause 9		Test Name 579688	
	Database: .SQLEXPRESS \ 6171-I2 Analytical		Test Date 09/06/2016	
	Site Reference The Old Vinyl Factory - Machine Store		Borehole MBH2	
	Jobfile 16-18693		Sample 579688	
	Client Idom Merebrook Ltd		Depth 9.50	
Operator	bielatowicz	Checked	pytlikm	Approved
				pytlikm

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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Summary Report

Sample Details  <i>sketch showing specimen location in original sample</i>	Depth	12.50		
	Description	Greyish brown silty CLAY		
	Type	U		
	Initial Sample Length	L ₀	(mm)	199.9
	Initial Sample Diameter	D ₀	(mm)	99.8
	Initial Sample Weight	W ₀	(gr)	3083.0
	Bulk Density	ρ ₀	(Mg/m ³)	1.97
	Particle Density	ρ _s	(Mg/m ³)	2.65

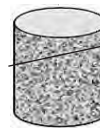
Initial Conditions			Stage 1	2	3
Initial Cell Pressure	C	(kPa)	125	250	500
Strain Rate	Φ	(mm/min)	3.99700	3.99700	3.99700
Membrane Thickness	m _b	(mm)	0.25		
Displacement Input	L _{IP}	(mm)	CH 2		
Load Input	N _{IP}	(N)	CH 1		
Initial Moisture	ω _i %	(%)	26		
Initial Dry Density	ρ _{d0}	(Mg/m ³)	1.56		
Initial Voids Ratio	e ₀	.	0.70		
Initial Degree of Saturation	S _o	(%)	100		

Final Conditions			Stage 1	2	3
Max Deviator Stress	(σ ₁ - σ ₃) _f	(kPa)	144.09	156.15	166.68
Membrane Correction	m _c	(kPa)	0.337	0.391	0.500
Strain At Max Stress	ε _f %	(%)	5.07	5.82	7.28
Shear Strength	c _u	(kPa)	72.04	78.07	83.34
Final Moisture	ω _f %	(%)	26		
Final Dry Density	ρ _{df}	(Mg/m ³)	1.56		
Final Voids Ratio	e _f	.	0.70		
Final Degree of Saturation	S _f	(%)	99.9		

Notes

Correction values:

125 kPa = 60 N
 250 kPa = 120 N
 500 kPa = 240 N



Failure Sketch

(surface inclination)



 Environmental Science	Test Method	BS1377-7 : 1990 Clause 9	Test Name	579689
	Database:	.\SQLEXPRESS \ 6171-I2 Analytical	Test Date	09/06/2016
	Site Reference	The Old Vinyl Factory - Machine Store	Borehole	MBH2
	Jobfile	16-18693	Sample	579689
	Client	Idom Merebrook Ltd	Depth	12.50
Operator bielatowicz			Checked	pytlikm
			Approved	pytlikm

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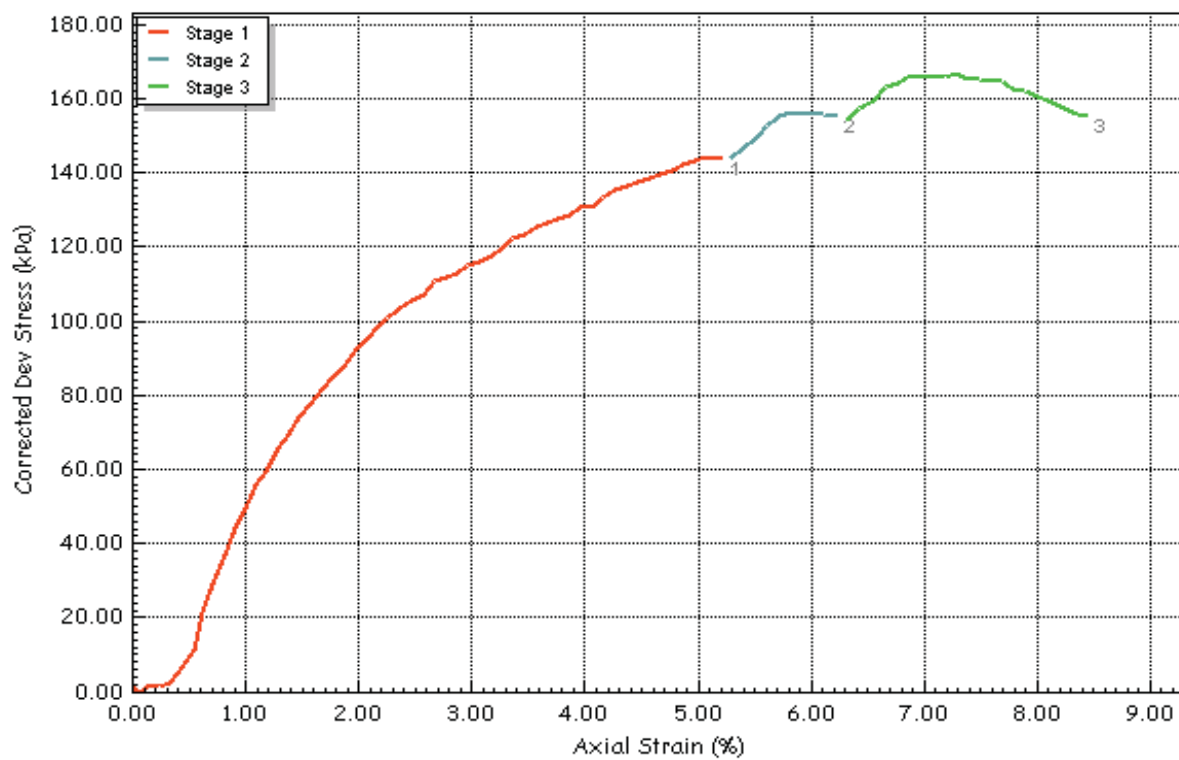
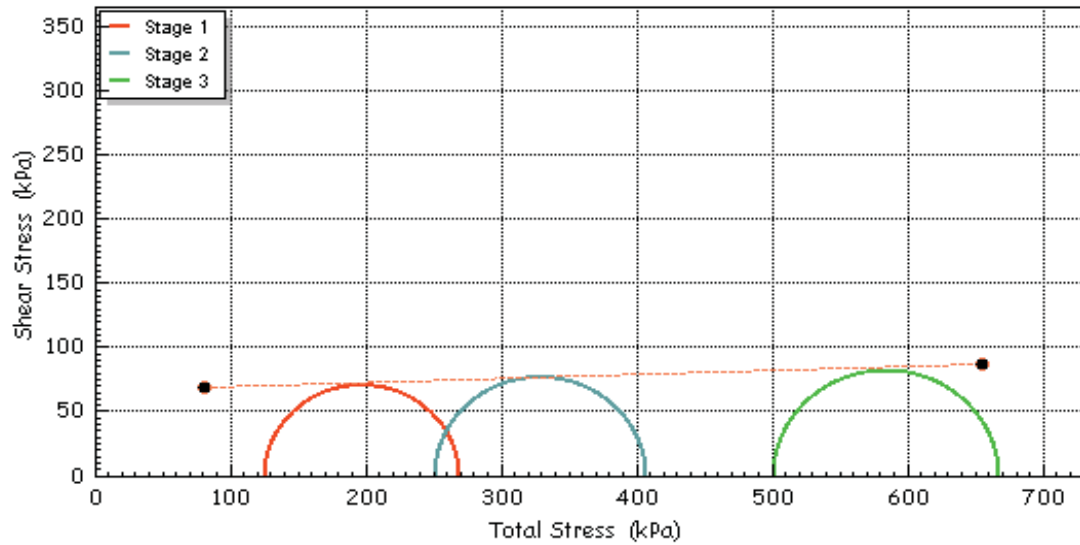
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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots

Cohesion Level	c	(kPa)	66.3
Friction Angle	ϕ	(deg)	1.8



	Test Method BS1377-7 : 1990 Clause 9		Test Name 579689	
	Database: .SQLEXPRESS \ 6171-I2 Analytical		Test Date 09/06/2016	
	Site Reference The Old Vinyl Factory - Machine Store		Borehole MBH2	
	Jobfile 16-18693		Sample 579689	
	Client Idom Merebrook Ltd		Depth 12.50	
Operator	bielatowicz	Checked	pytlikm	Approved
				pytlikm

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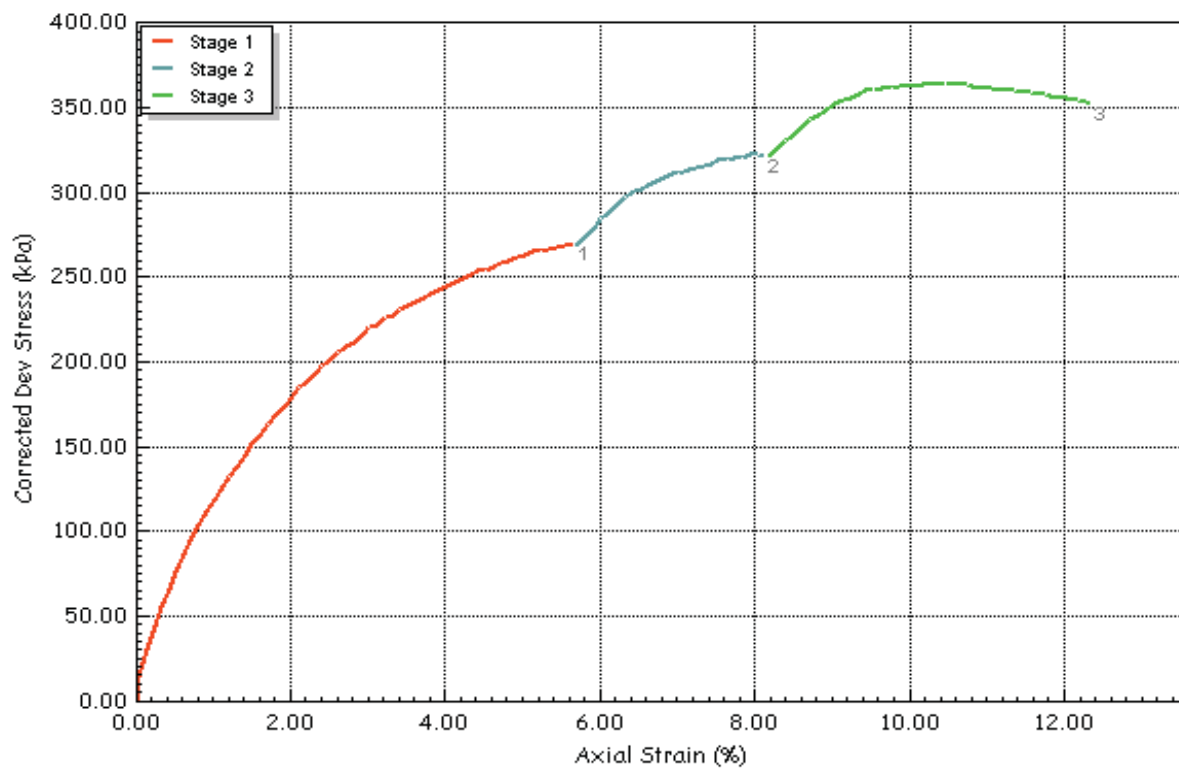
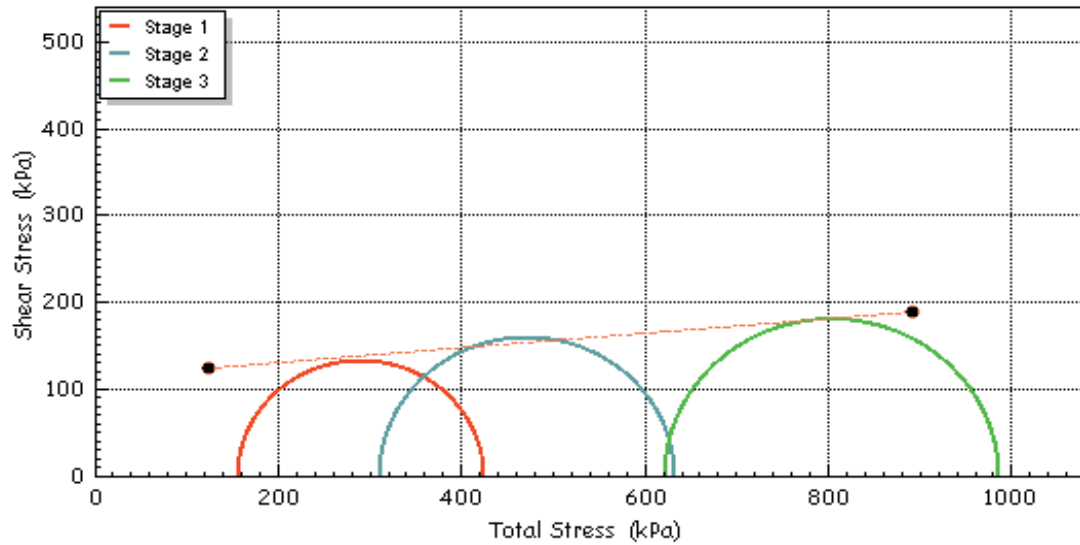
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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots

Cohesion Level	c	(kPa)	112.4
Friction Angle	ϕ	(deg)	5.0



 Environmental Science	Test Method		BS1377-7 : 1990 Clause 9		Test Name		579690	
	Database:		.\SQLEXPRESS \ 6171-I2 Analytical		Test Date		10/06/2016	
	Site Reference		The Old Vinyl Factory - Machine Store		Borehole		MBH2	
	Jobfile		16-18693		Sample		579690	
	Client		Idom Merebrook Ltd		Depth		15.50	
	Operator		bielatowicz		Checked		pytlikm	
					Approved		pytlikm	

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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Summary Report

Sample Details  <i>sketch showing specimen location in original sample</i>	Depth	18.50		
	Description	Greyish brown silty CLAY		
	Type	U		
	Initial Sample Length	L ₀	(mm)	140.8
	Initial Sample Diameter	D ₀	(mm)	69.5
	Initial Sample Weight	W ₀	(gr)	1084.0
	Bulk Density	ρ ₀	(Mg/m ³)	2.03
	Particle Density	ρ _s	(Mg/m ³)	2.65

Initial Conditions			Stage 1	2	3
Initial Cell Pressure	C	(kPa)	185	370	740
Strain Rate	Φ	(mm/min)	2.81560	2.81560	2.81560
Membrane Thickness	m _b	(mm)	0.28		
Displacement Input	L _{IP}	(mm)	CH 2		
Load Input	N _{IP}	(N)	CH 1		
Initial Moisture	ω _i %	(%)	33		
Initial Dry Density	ρ _{d0}	(Mg/m ³)	1.53		
Initial Voids Ratio	e ₀	.	0.73		
Initial Degree of Saturation	S _o	(%)	100		

Final Conditions			Stage 1	2	3
Max Deviator Stress	(σ ₁ - σ ₃) _f	(kPa)	260.74	369.83	483.05
Membrane Correction	m _c	(kPa)	0.246	0.404	0.658
Strain At Max Stress	ε _f %	(%)	1.92	3.74	5.85
Shear Strength	c _u	(kPa)	130.37	184.91	241.53
Final Moisture	ω _f %	(%)	33		
Final Dry Density	ρ _{df}	(Mg/m ³)	1.53		
Final Voids Ratio	e _f	.	0.73		
Final Degree of Saturation	S _f	(%)	100.0		

Notes

Correction values:

185 kPa = 90 N
 370 kPa = 180 N
 740 kPa = 360 N



Failure Sketch

(surface inclination)



 Environmental Science	Test Method	BS1377-7 : 1990	Test Name	579692
	Database:	.\SQLEXPRESS \ 6171-I2 Analytical	Test Date	10/06/2016
	Site Reference	The Old Vinyl Factory - Machine Store	Borehole	MBH2
	Jobfile	16-18693	Sample	579692
	Client	Idom Merebrook Ltd	Depth	18.50
Operator		bielatowicz	Checked	pytlikm
			Approved	pytlikm

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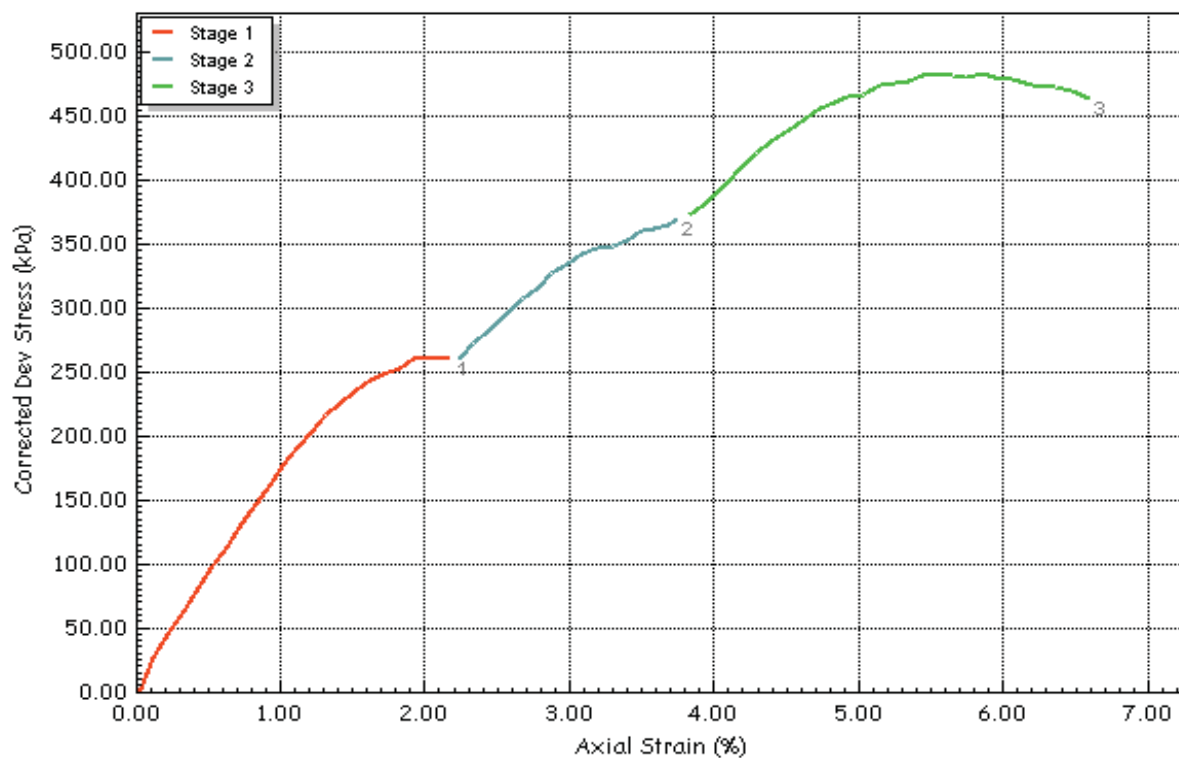
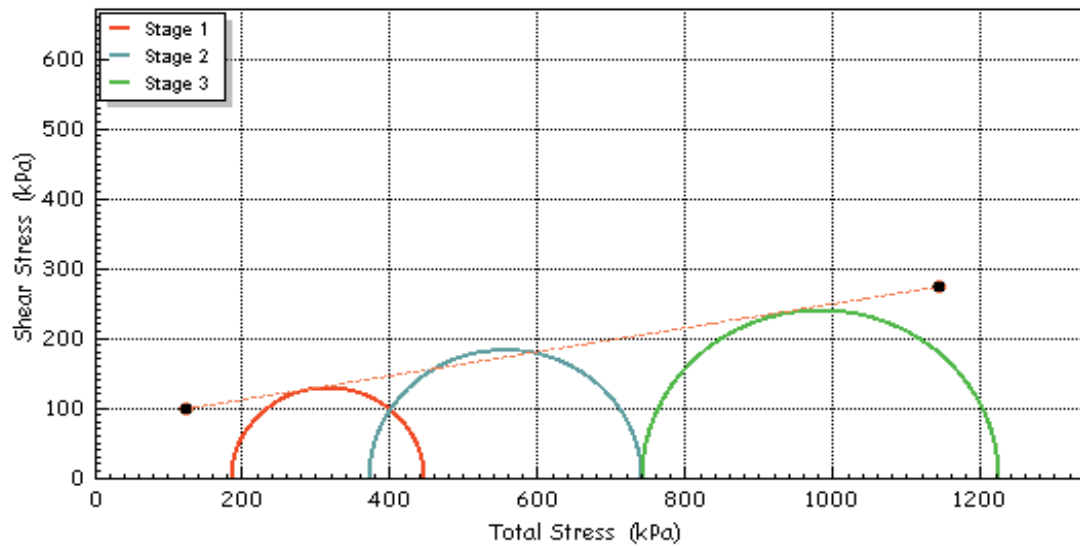
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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots

Cohesion Level	c	(kPa)	77.7
Friction Angle	ϕ	(deg)	9.7



 Environmental Science	Test Method BS1377-7 : 1990 Clause 9		Test Name 579692	
	Database: .SQLEXPRESS \ 6171-I2 Analytical		Test Date 10/06/2016	
	Site Reference The Old Vinyl Factory - Machine Store		Borehole MBH2	
	Jobfile 16-18693		Sample 579692	
	Client Idom Merebrook Ltd		Depth 18.50	
Operator	bielatowicz	Checked	pytlikm	Approved
				pytlikm

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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Summary Report

Sample Details  <i>sketch showing specimen location in original sample</i>	Depth	21.50		
	Description	Greyish brown silty CLAY		
	Type	U		
	Initial Sample Length	L ₀	(mm)	200.5
	Initial Sample Diameter	D ₀	(mm)	100.0
	Initial Sample Weight	W ₀	(gr)	3001.0
	Bulk Density	ρ ₀	(Mg/m ³)	1.91
	Particle Density	ρ _s	(Mg/m ³)	2.65

Initial Conditions			Stage 1	2	3
Initial Cell Pressure	C	(kPa)	215	430	860
Strain Rate	Φ	(mm/min)	4.00000	4.00000	4.00000
Membrane Thickness	m _b	(mm)	0.28		
Displacement Input	L _{IP}	(mm)	CH 2		
Load Input	N _{IP}	(N)	CH 1		
Initial Moisture	ω _i %	(%)	25		
Initial Dry Density	ρ _{d0}	(Mg/m ³)	1.53		
Initial Voids Ratio	e ₀	.	0.74		
Initial Degree of Saturation	S _o	(%)	90		

Final Conditions			Stage 1	2	3
Max Deviator Stress	(σ ₁ - σ ₃) _f	(kPa)	291.86	370.61	463.92
Membrane Correction	m _c	(kPa)	0.510	0.657	0.888
Strain At Max Stress	ε _f %	(%)	7.50	10.37	14.00
Shear Strength	c _u	(kPa)	145.93	185.30	231.96
Final Moisture	ω _f %	(%)	25		
Final Dry Density	ρ _{df}	(Mg/m ³)	1.53		
Final Voids Ratio	e _f	.	0.74		
Final Degree of Saturation	S _f	(%)	89.9		
Notes					
		Correction values:			
		215 kPa = 110 N			
		430 kPa = 220 N			
		860 kPa = 430 N			
			 		
			Failure Sketch <i>(surface inclination)</i>		

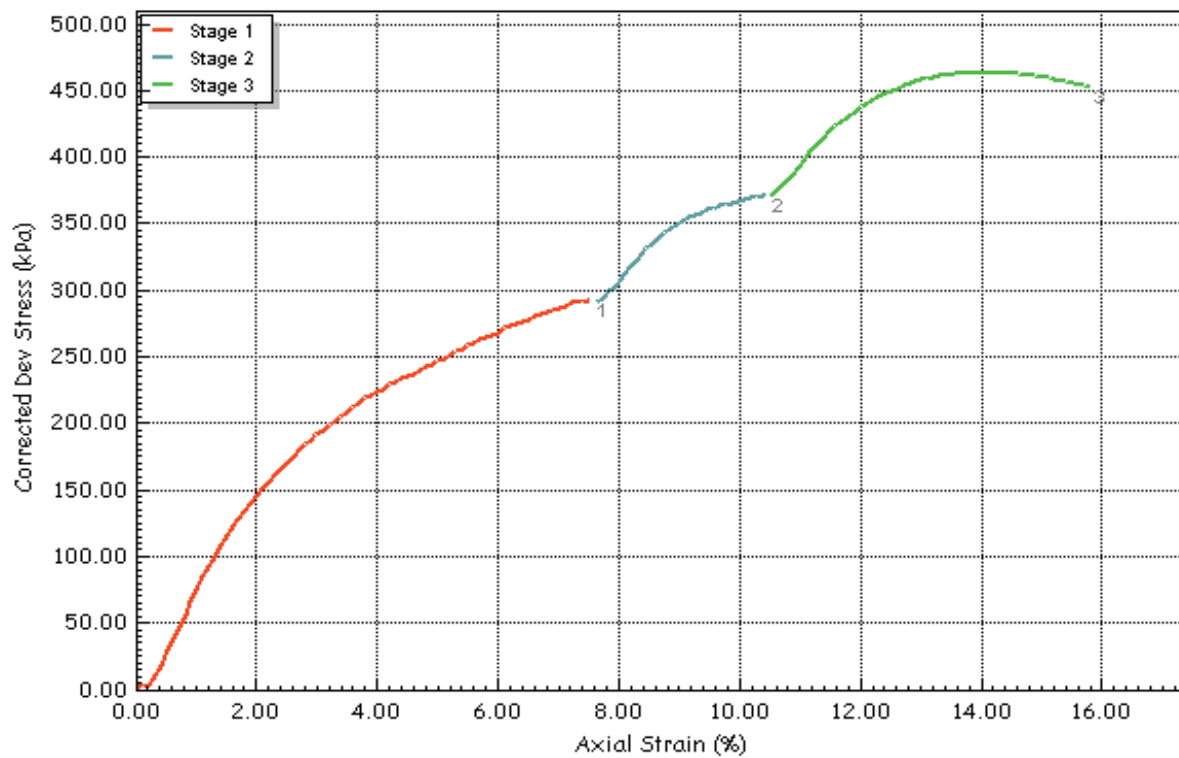
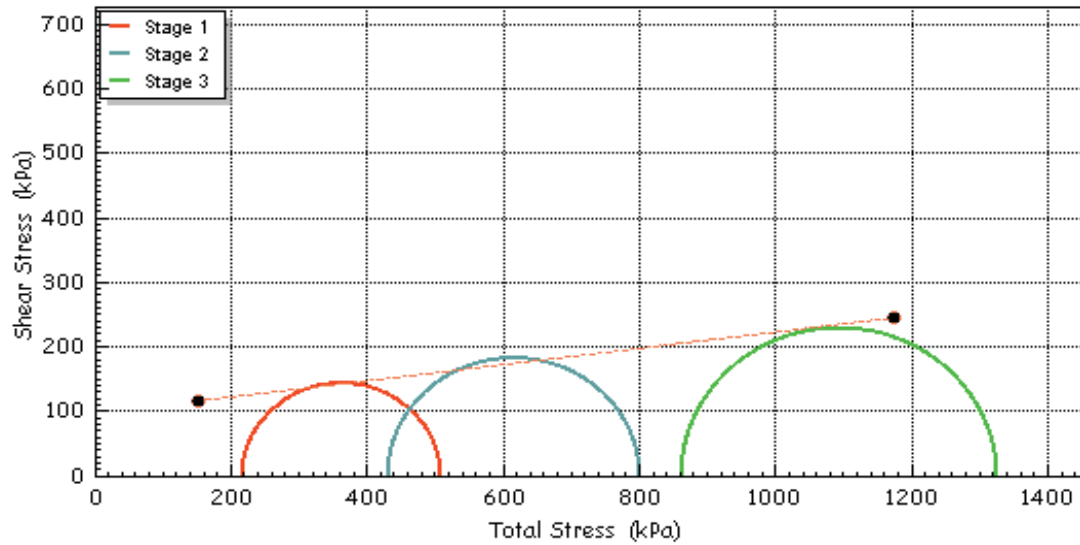
 Environmental Science	Test Method	BS1377-7 : 1990 Clause 9	Test Name	579693
	Database:	.\SQLEXPRESS \ 6171-I2 Analytical	Test Date	10/06/2016
	Site Reference	The Old Vinyl Factory - Machine Store	Borehole	MBH2
	Jobfile	16-18693	Sample	579693
	Client	Idom Merebrook Ltd	Depth	21.50
Operator		bielatowicz	Checked	pytlikm
			Approved	pytlikm

Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots

Cohesion Level	c	(kPa)	96.3
Friction Angle	ϕ	(deg)	7.3



 Environmental Science	Test Method BS1377-7 : 1990 Clause 9		Test Name 579693	
	Database: .SQLEXPRESS \ 6171-I2 Analytical		Test Date 10/06/2016	
	Site Reference The Old Vinyl Factory - Machine Store		Borehole MBH2	
	Jobfile 16-18693		Sample 579693	
	Client Idom Merebrook Ltd		Depth 21.50	
Operator	bielatowicz	Checked	pytlikm	Approved
				pytlikm

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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Summary Report

Sample Details  <i>sketch showing specimen location in original sample</i>	Depth	24.50		
	Description	Greyish brown silty CLAY		
	Type	U		
	Initial Sample Length	L ₀	(mm)	200.3
	Initial Sample Diameter	D ₀	(mm)	99.5
	Initial Sample Weight	W ₀	(gr)	3144.0
	Bulk Density	ρ ₀	(Mg/m ³)	2.02
	Particle Density	ρ _s	(Mg/m ³)	2.65

Initial Conditions			Stage 1	2	3
Initial Cell Pressure	C	(kPa)	245	490	900
Strain Rate	Φ	(mm/min)	4.00000	4.00000	4.00000
Membrane Thickness	m _b	(mm)	0.31		
Displacement Input	L _{IP}	(mm)	CH 2		
Load Input	N _{IP}	(N)	CH 1		
Initial Moisture	ω _i %	(%)	23		
Initial Dry Density	ρ _{d0}	(Mg/m ³)	1.64		
Initial Voids Ratio	e ₀	.	0.61		
Initial Degree of Saturation	S _o	(%)	99		

Final Conditions			Stage 1	2	3
Max Deviator Stress	(σ ₁ - σ ₃) _f	(kPa)	386.28	437.05	472.88
Membrane Correction	m _c	(kPa)	0.508	0.668	0.966
Strain At Max Stress	ε _f %	(%)	6.58	9.22	11.66
Shear Strength	c _u	(kPa)	193.14	218.52	236.44
Final Moisture	ω _f %	(%)	23		
Final Dry Density	ρ _{df}	(Mg/m ³)	1.64		
Final Voids Ratio	e _f	.	0.61		
Final Degree of Saturation	S _f	(%)	98.9		

Notes

Correction values:

245 kPa = 120 N

490 kPa = 240 N

900 kPa = 440 N

Due to safety limits third stage pressure was decreased from 980 kPa to 900 kPa.



Failure Sketch

(surface inclination)



 Environmental Science	Test Method	BS1377-7 : 1990 Clause 9	Test Name	579695
	Database:	.\SQLEXPRESS \ 6171-I2 Analytical	Test Date	10/06/2016
	Site Reference	The Old Vinyl Factory - Machine Store	Borehole	MBH2
	Jobfile	16-18693	Sample	579695
	Client	Idom Merebrook Ltd	Depth	24.50
Operator bielatowicz			Checked	pytlikm
			Approved	pytlikm

i2 Analytical Limited, 7 Woodshots Meadow, Croxley Green Business Park, Herts WD18 8YS

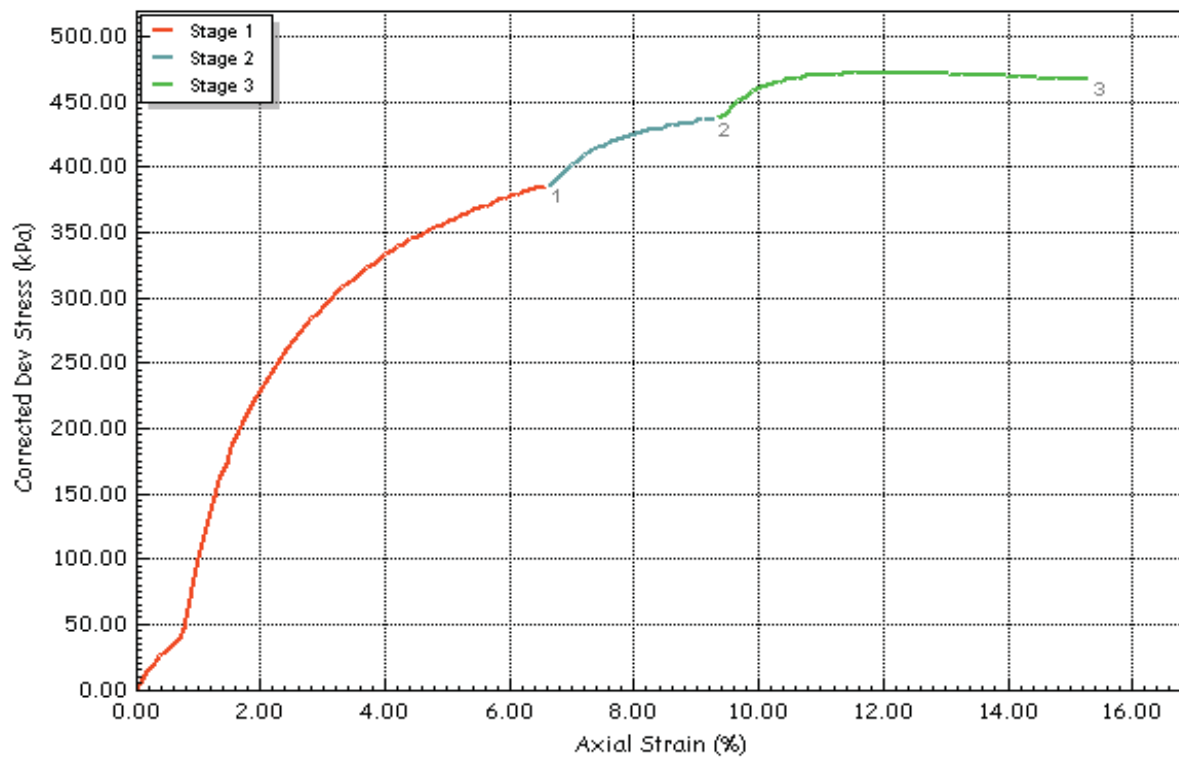
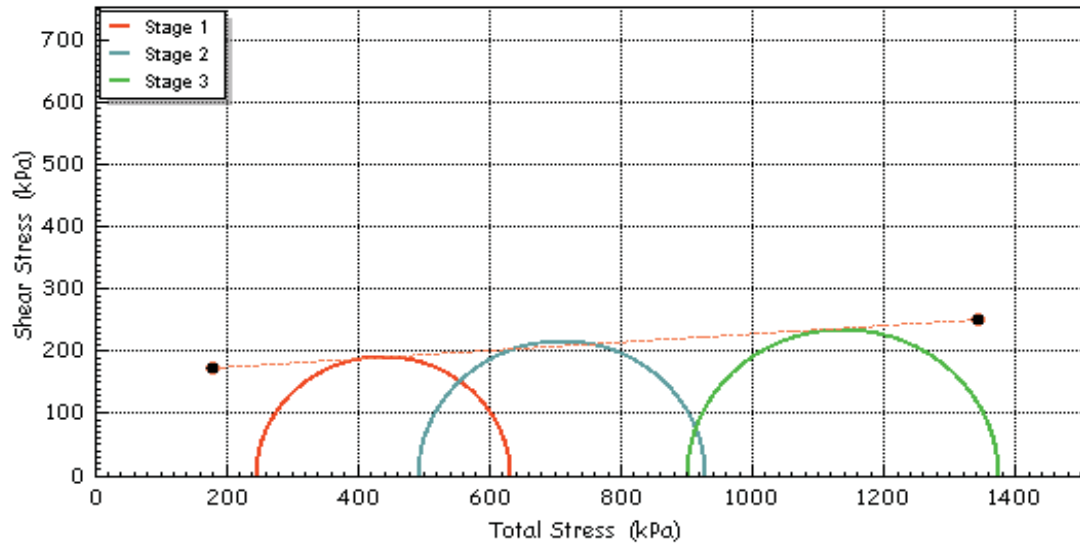
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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots

Cohesion Level	c	(kPa)	71.7
Friction Angle	ϕ	(deg)	26.9



 Environmental Science	Test Method BS1377-7 : 1990 Clause 9		Test Name 579695	
	Database: .SQLEXPRESS \ 6171-I2 Analytical		Test Date 10/06/2016	
	Site Reference The Old Vinyl Factory - Machine Store		Borehole MBH2	
	Jobfile 16-18693		Sample 579695	
	Client Idom Merebrook Ltd		Depth 24.50	
Operator	bielatowicz	Checked	pytlikm	Approved
				pytlikm

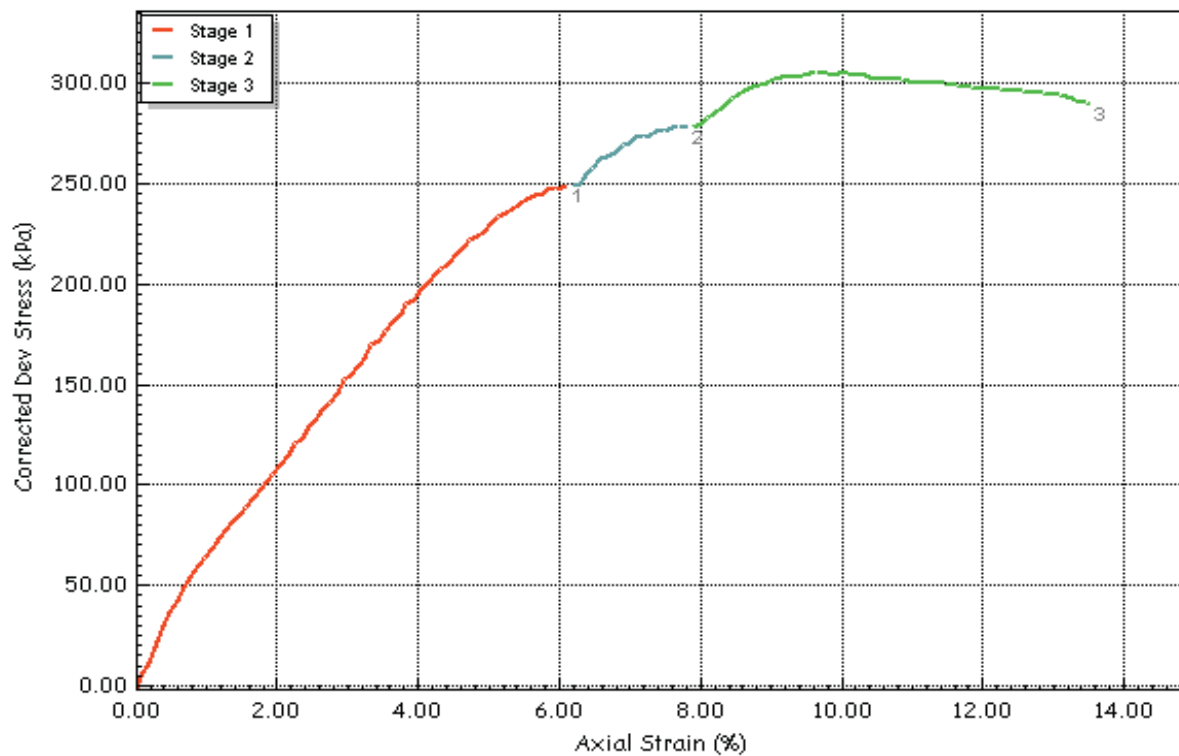
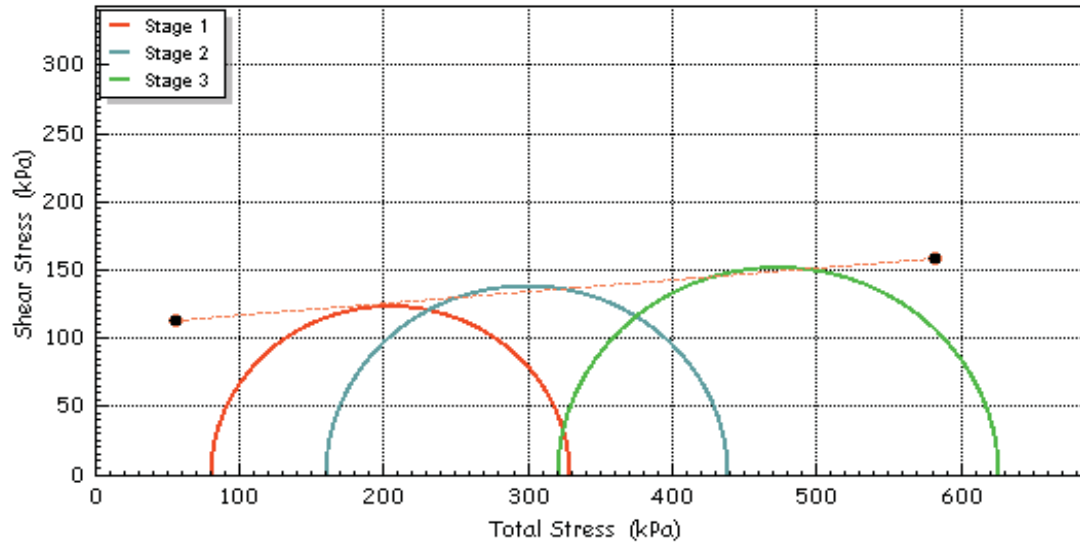
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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots

Cohesion Level	c	(kPa)	108.4
Friction Angle	ϕ	(deg)	4.9



Test Method BS1377-7 : 1990 clause 9

Database: .\SQLEXPRESS \ 6171-i2 Analytical

Site Reference The Old Vinyl Factory - Machine Store

Jobfile 16-18693

Client Idom Merebrook Ltd

Test Name 579697

Test Date 10/06/2016

Borehole MBH3

Sample 579697

Depth 8.00

Operator bielatowicz

Checked pytlm

Approved pytlm

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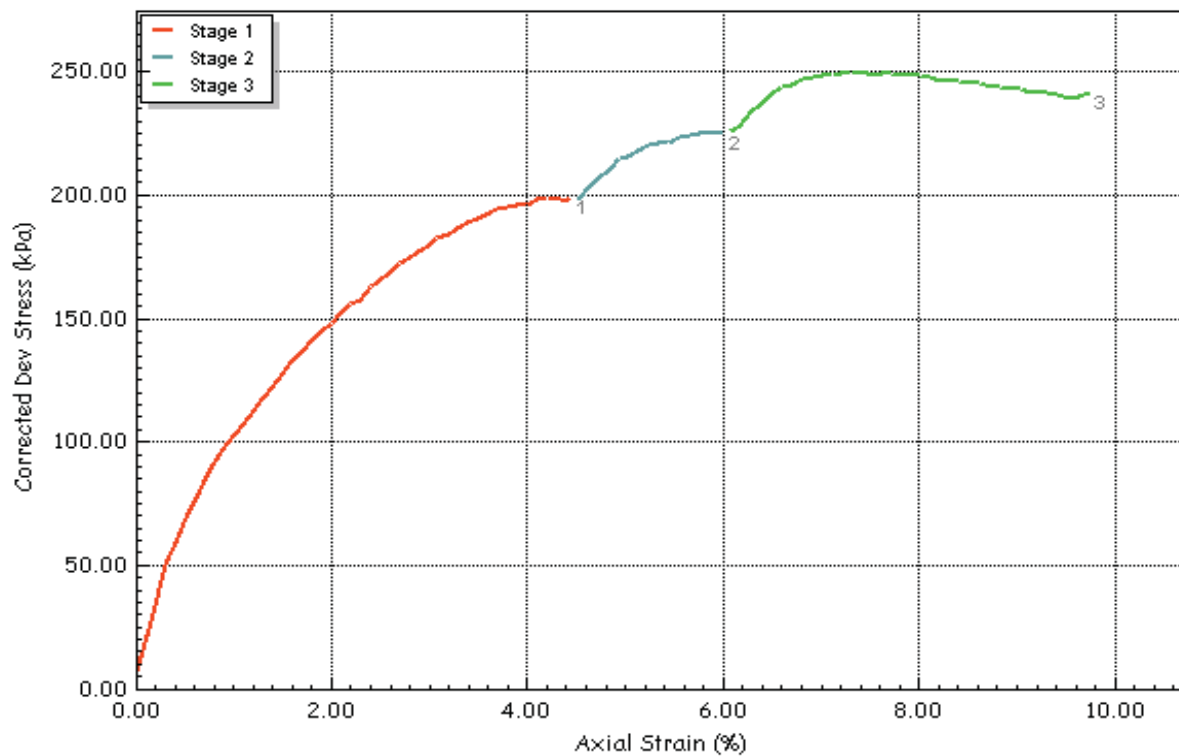
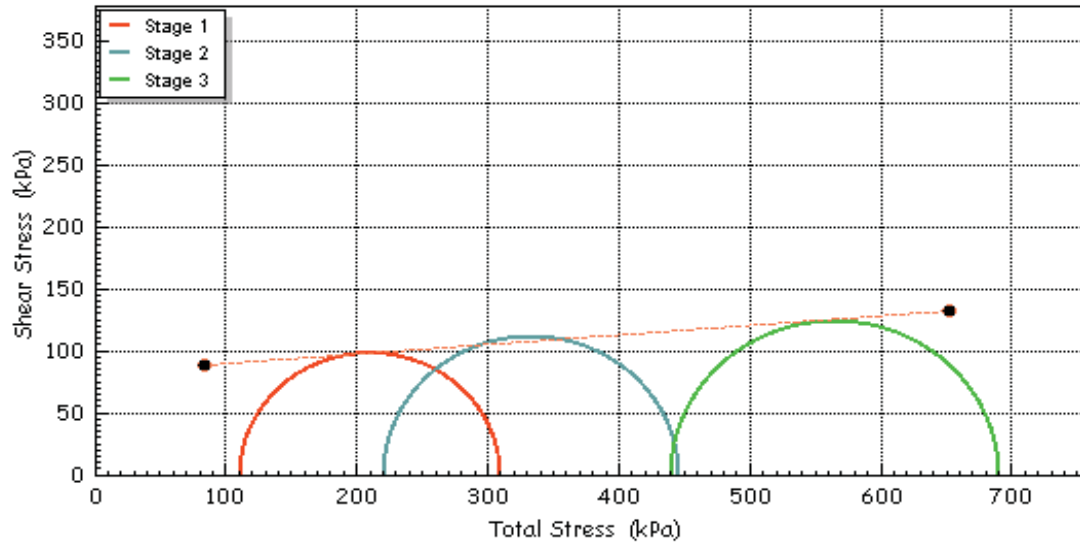
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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots

Cohesion Level	c	(kPa)	82.6
Friction Angle	ϕ	(deg)	4.4



	Test Method	BS1377-7 : 1990 clause 9	Test Name	579698
	Database:	.SQLEXPRESS \ 6171-I2 Analytical	Test Date	10/06/2016
	Site Reference	The Old Vinyl Factory - Machine Store	Borehole	MBH3
	Jobfile	16-18693	Sample	579698
	Client	Idom Merebrook Ltd	Depth	11.00
	Operator	bielatowicz	Checked	pytlikm
		Approved	pytlikm	

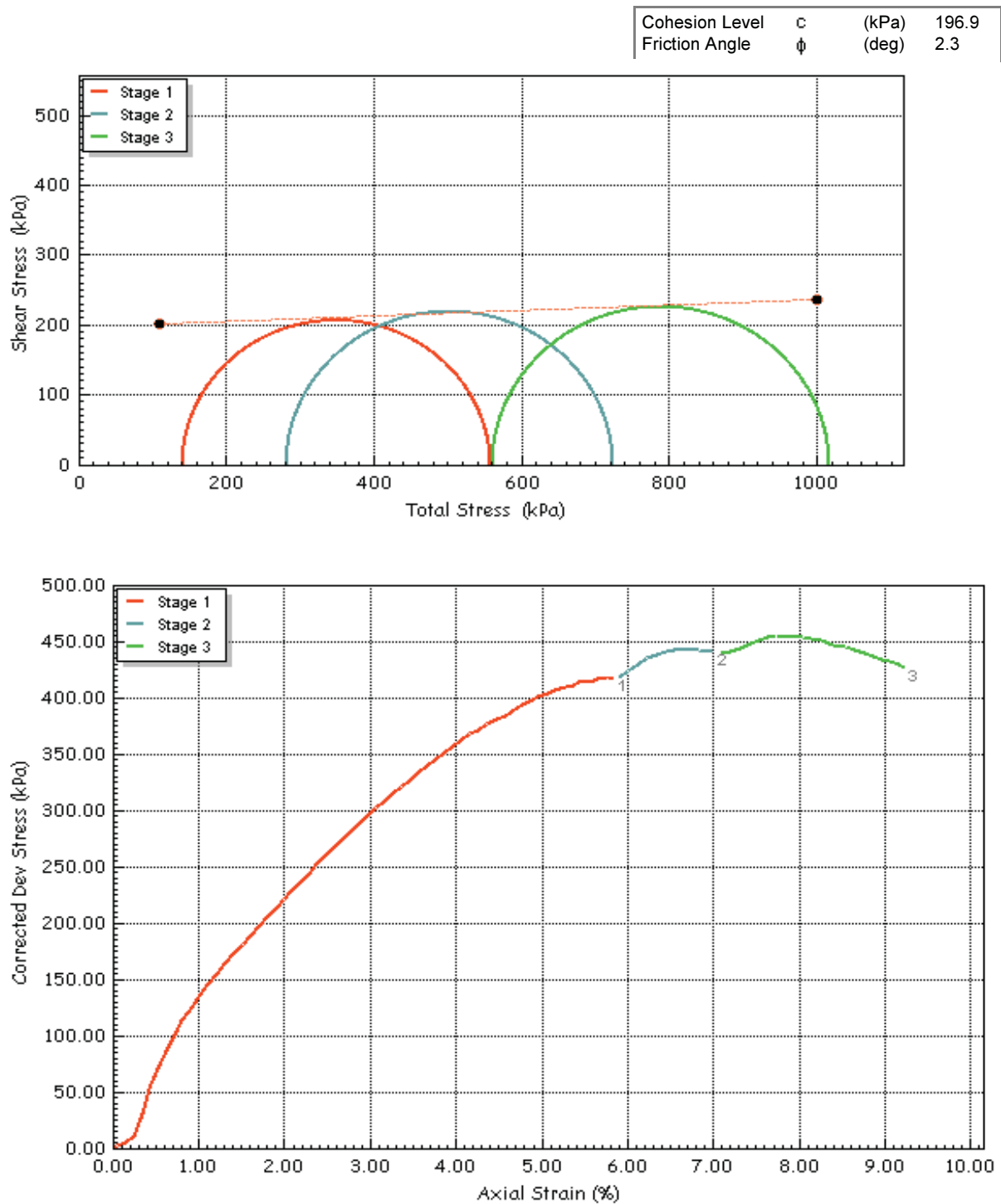
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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots



Test Method BS1377-7 : 1990 clause 9

Database: .SQLEXPRESS \ 6171-I2 Analytical

Site Reference The Old Vinyl Factory - Machine Store

Jobfile 16-18693

Client Idom Merebrook Ltd

Test Name 579700

Test Date 10/06/2016

Borehole MBH3

Sample 579700

Depth 14.00

Operator bielatowicz

Checked pytlík

Approved pytlík

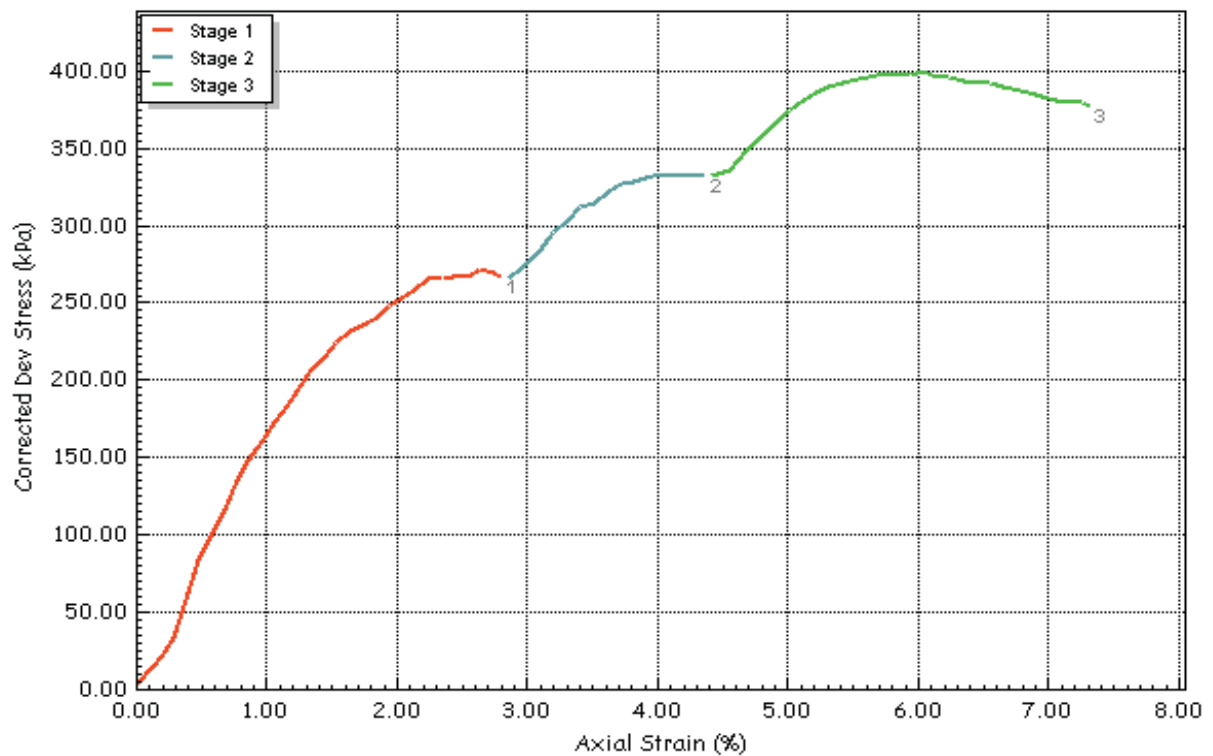
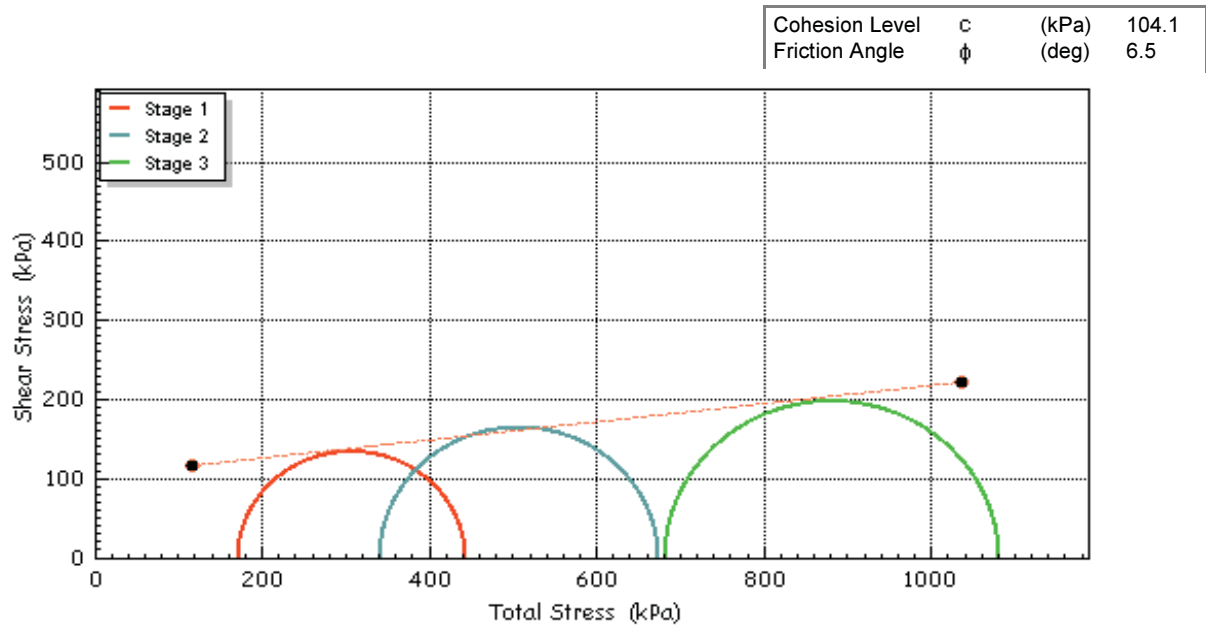
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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots



Test Method BS1377-7 : 1990 clause 9

Database: .\SQLEXPRESS \ 6171-I2 Analytical

Site Reference The Old Vinyl Factory - Machine Store

Jobfile 16-18693

Client Idom Merebrook Ltd

Test Name 579701

Test Date 10/06/2016

Borehole MBH3

Sample 579701

Depth 17.00

Operator bielatowicz

Checked pytlm

Approved pytlm

i2 Analytical Limited, 7 Woodshots Meadow, Croxley Green Business Park, Herts WD18 8YS

i2 Analytical Limited, ul. Pionierów 39, 41-711 Ruda Śląska, Poland

Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Summary Report

Sample Details  <i>sketch showing specimen location in original sample</i>	Depth	23.00		
	Description	Greyish brown silty CLAY		
	Type	U		
	Initial Sample Length	L ₀	(mm)	201.8
	Initial Sample Diameter	D ₀	(mm)	99.1
	Initial Sample Weight	W ₀	(gr)	3102.0
	Bulk Density	ρ ₀	(Mg/m ³)	2.00
	Particle Density	ρ _s	(Mg/m ³)	2.65

Initial Conditions			Stage 1	2	3
Initial Cell Pressure	σ _c	(kPa)	230	460	900
Strain Rate	Φ	(mm/min)	4.00000	4.00000	4.00000
Membrane Thickness	m _b	(mm)	0.28		
Displacement Input	L _{IP}	(mm)	CH 2		
Load Input	N _{IP}	(N)	CH 1		
Initial Moisture	ω _i %	(%)	25		
Initial Dry Density	ρ _{d0}	(Mg/m ³)	1.59		
Initial Voids Ratio	e ₀	.	0.66		
Initial Degree of Saturation	S _o	(%)	100		

Final Conditions			Stage 1	2	3
Max Deviator Stress	(σ ₁ - σ ₃) _f	(kPa)	399.34	447.29	471.59
Membrane Correction	m _c	(kPa)	0.526	0.636	0.805
Strain At Max Stress	ε _f %	(%)	7.75	9.65	11.45
Shear Strength	c _u	(kPa)	199.67	223.65	235.80
Final Moisture	ω _f %	(%)	25		
Final Dry Density	ρ _{df}	(Mg/m ³)	1.59		
Final Voids Ratio	e _f	.	0.66		
Final Degree of Saturation	S _f	(%)	100.0		
Notes					
		Correction values:			
		230 kPa = 110 N			
		460 kPa = 220 N			
		900 kPa = 440 N			
		Due to safety limits third stage pressure was decreased from 920 kPa to 900 kPa.			
			 Failure Sketch <i>(surface inclination)</i>		
					

	Test Method	BS1377-7 : 1990 clause 9	Test Name	579704
	Database:	.\SQLEXPRESS \ 6171-i2 Analytical	Test Date	10/06/2016
	Site Reference	The Old Vinyl Factory - Machine Store	Borehole	MBH3
	Jobfile	16-18693	Sample	579704
	Client	Idom Merebrook Ltd	Depth	23.00
	Operator	bielatowicz	Checked	pytlikm
			Approved	pytlikm

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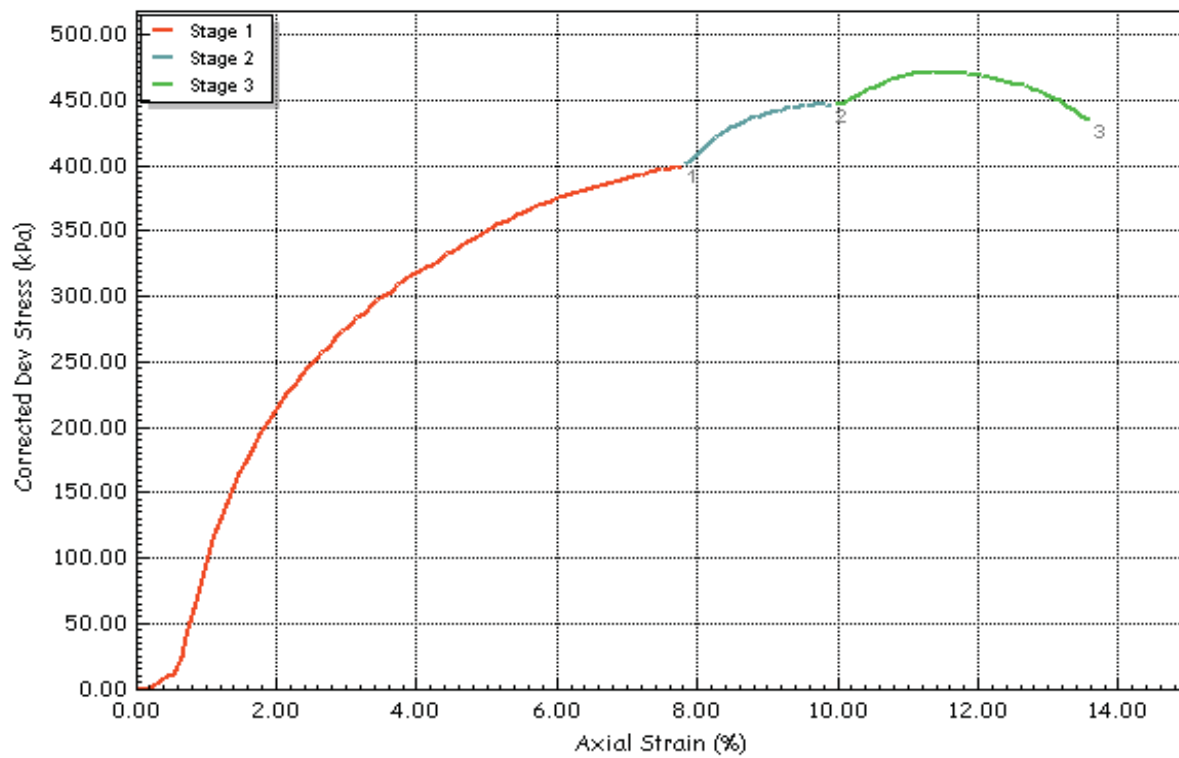
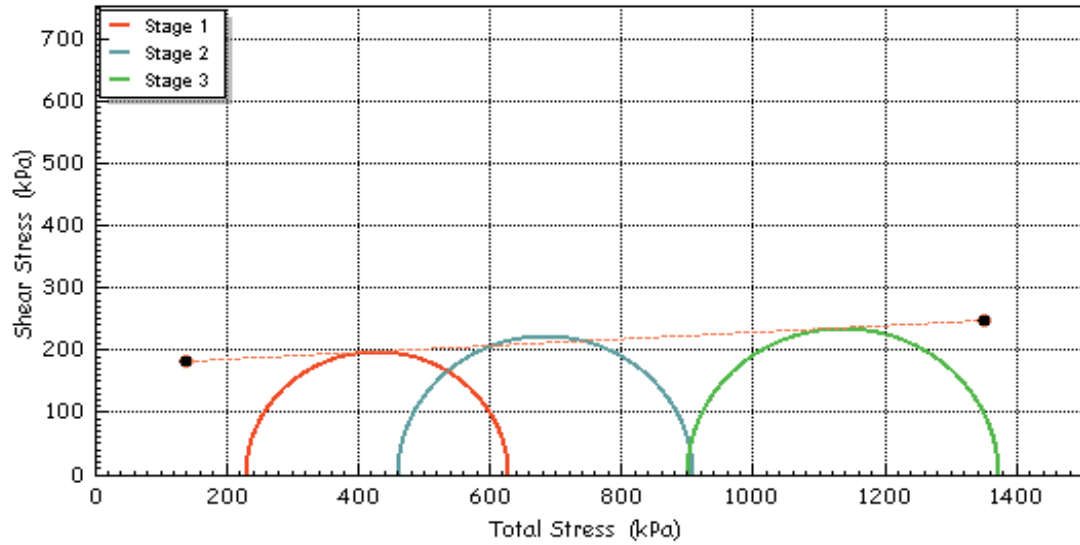
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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots

Cohesion Level	c	(kPa)	174.0
Friction Angle	ϕ	(deg)	3.1



	Test Method BS1377-7 : 1990 clause 9		Test Name 579704	
	Database: .\SQLEXPRESS \ 6171-I2 Analytical		Test Date 10/06/2016	
	Site Reference The Old Vinyl Factory - Machine Store		Borehole MBH3	
	Jobfile 16-18693		Sample 579704	
	Client Idom Merebrook Ltd		Depth 23.00	
	Operator bielatowicz	Checked pytlkm	Approved	pytlkm

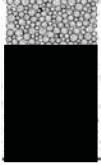
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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Summary Report

Sample Details  <i>sketch showing specimen location in original sample</i>	Depth	29.00		
	Description	Greyish brown silty CLAY		
	Type	U		
	Initial Sample Length	L_0	(mm)	200.5
	Initial Sample Diameter	D_0	(mm)	99.4
	Initial Sample Weight	W_0	(gr)	3084.0
	Bulk Density	ρ_0	(Mg/m ³)	1.98
	Particle Density	ρ_s	(Mg/m ³)	2.65

Initial Conditions		Stage 1	2	3
Initial Cell Pressure	σ_3 (kPa)	290	580	900
Strain Rate	$\dot{\epsilon}$ (mm/min)	4.00000	4.00000	4.00000
Membrane Thickness	m_b (mm)	0.28		
Displacement Input	L_{IP} (mm)	CH 2		
Load Input	N_{IP} (N)	CH 1		
Initial Moisture	ω_i (%)	26		
Initial Dry Density	ρ_{d0} (Mg/m ³)	1.58		
Initial Voids Ratio	e_0	0.68		
Initial Degree of Saturation	S_o (%)	100		

Final Conditions		Stage 1	2	3
Max Deviator Stress	$(\sigma_1 - \sigma_3)_f$ (kPa)	274.41	325.91	374.38
Membrane Correction	m_c (kPa)	0.247	0.379	0.680
Strain At Max Stress	ϵ_f (%)	3.18	5.23	10.78
Shear Strength	c_u (kPa)	137.20	162.95	187.19
Final Moisture	ω_f (%)	26		
Final Dry Density	ρ_{df} (Mg/m ³)	1.58		
Final Voids Ratio	e_f	0.68		
Final Degree of Saturation	S_f (%)	100.0		
Notes				
Correction values:				
290 kPa = 140 N				
580 kPa = 290 N				
900 kPa = 440 N				
Due to safety limits third stage pressure was decreased from 1160 kPa to 900 kPa.				
		 Failure Sketch <i>(surface inclination)</i>		
				

	Test Method	BS1377-7 : 1990 clause 9	Test Name	579706
	Database:	.\SQLEXPRESS \ 6171-I2 Analytical	Test Date	10/06/2016
	Site Reference	The Old Vinyl Factory - Machine Store	Borehole	MBH3
	Jobfile	16-18693	Sample	579706
	Client	Idom Merebrook Ltd	Depth	29.00
Operator		bielatowicz	Checked	pytlikm
			Approved	pytlikm

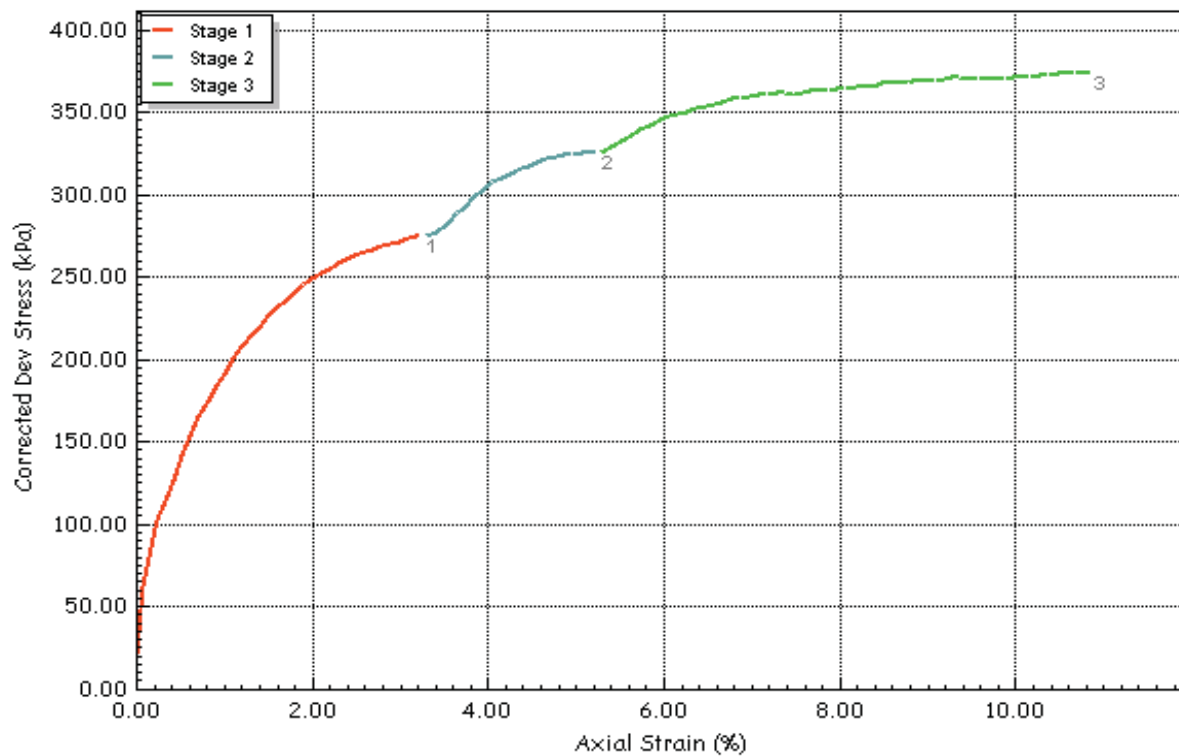
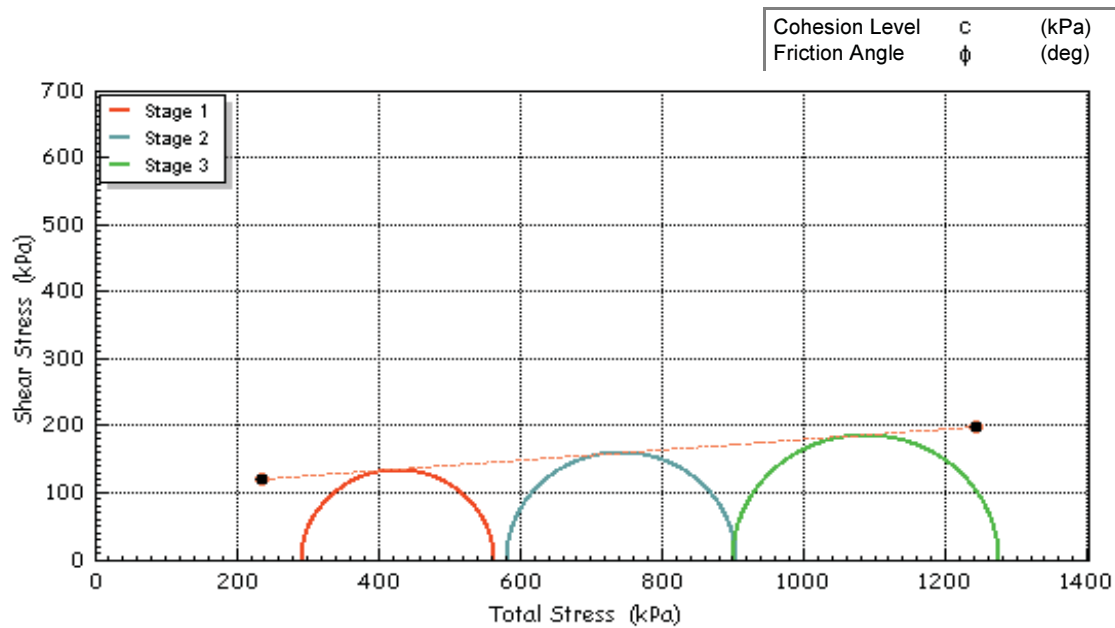
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Total Stress Triaxial Compression

Unconsolidated Undrained (Multiple Stage)

Test Results Plots



	Test Method	BS1377-7 : 1990 clause 9	Test Name	579706
	Database:	.SQLEXPRESS \ 6171-I2 Analytical	Test Date	10/06/2016
	Site Reference	The Old Vinyl Factory - Machine Store	Borehole	MBH3
	Jobfile	16-18693	Sample	579706
	Client	Idom Merebrook Ltd	Depth	29.00
	Operator	bielatowicz	Checked	pytlikm
		Approved	pytlikm	

i2 Analytical Limited, 7 Woodshots Meadow, Croxley Green Business Park, Herts WD18 8YS

i2 Analytical Limited, ul. Pionierów 39, 41-711 Ruda Slaska, Poland



APPENDIX 6 ▪ Groundwater Laboratory Certificates

**Troy Randall**

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e: reception@i2analytical.com

Analytical Report Number : 16-17766

Replaces Analytical Report Number : 16-17766, issue no. 1

Project / Site name:	TOVF (The Old Vinyl Factory)	Samples received on:	16/05/2016
Your job number:	19579	Samples instructed on:	16/05/2016
Your order number:	16-S2-FDO-LABS	Analysis completed by:	09/06/2016
Report Issue Number:	2	Report issued on:	10/06/2016
Samples Analysed:	2 water samples		

Signed:

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Emma Winter
Assistant Reporting Manager
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Iss No 16-17766-2 TOVF (The Old Vinyl Factory) 19579

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

Page 1 of 5



Analytical Report Number: 16-17766

Project / Site name: TOVF (The Old Vinyl Factory)

Your Order No: 16-S2-FDO-LABS

Lab Sample Number				574473	574474			
Sample Reference				BH03/16	BH02/16			
Sample Number				None Supplied	None Supplied			
Depth (m)				None Supplied	None Supplied			
Date Sampled				13/05/2016	13/05/2016			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status					

General Inorganics

pH	pH Units	N/A	ISO 17025	8.1	7.5			
Total Cyanide	µg/l	10	ISO 17025	22	< 10			
Sulphate as SO ₄	µg/l	45	ISO 17025	156000	135000			
Sulphide	µg/l	5	NONE	< 5.0	< 5.0			
Total Organic Carbon (TOC)	mg/l	0.1	ISO 17025	6.72	6.51			

Total Phenols

Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10			
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Speciated PAHs

Naphthalene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Acenaphthylene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Acenaphthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Fluorene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Phenanthrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(a)anthracene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Chrysene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(b)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(k)fluoranthene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Benzo(a)pyrene	µg/l	0.01	ISO 17025	< 0.01	< 0.01			
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01			
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01			
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01			

Total PAH

Total EPA-16 PAHs	µg/l	0.16	NONE	< 0.16	< 0.16			
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Heavy Metals / Metalloids

Arsenic (dissolved)	µg/l	0.15	ISO 17025	1.13	0.30			
Cadmium (dissolved)	µg/l	0.02	ISO 17025	0.02	0.05			
Chromium (hexavalent)	µg/l	5	ISO 17025	< 5.0	< 5.0			
Chromium (dissolved)	µg/l	0.2	ISO 17025	0.5	< 0.2			
Copper (dissolved)	µg/l	0.5	ISO 17025	2.7	2.1			
Lead (dissolved)	µg/l	0.2	ISO 17025	< 0.2	< 0.2			
Mercury (dissolved)	µg/l	0.05	ISO 17025	< 0.05	< 0.05			
Nickel (dissolved)	µg/l	0.5	ISO 17025	2.3	5.9			
Selenium (dissolved)	µg/l	0.6	ISO 17025	1.6	0.9			
Zinc (dissolved)	µg/l	0.5	ISO 17025	2.4	2.5			



Analytical Report Number: 16-17766

Project / Site name: TOVF (The Old Vinyl Factory)

Your Order No: 16-S2-FDO-LABS

Lab Sample Number	574473	574474			
Sample Reference	BH03/16	BH02/16			
Sample Number	None Supplied	None Supplied			
Depth (m)	None Supplied	None Supplied			
Date Sampled	13/05/2016	13/05/2016			
Time Taken	None Supplied	None Supplied			
Analytical Parameter (Water Analysis)	Units	Limit of detection	Accreditation Status		

Monoaromatics

Benzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Toluene	µg/l	1	ISO 17025	< 1.0	< 1.0			
Ethylbenzene	µg/l	1	ISO 17025	< 1.0	< 1.0			
p & m-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
o-xylene	µg/l	1	ISO 17025	< 1.0	< 1.0			
MTBE (Methyl Tertiary Butyl Ether)	µg/l	1	ISO 17025	< 1.0	< 1.0			

Petroleum Hydrocarbons

TPH-CWG - Aliphatic >C5 - C6	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C6 - C8	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C8 - C10	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10			

TPH-CWG - Aromatic >C5 - C7	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C7 - C8	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C8 - C10	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10			
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10			

U/S = Unsuitable Sample I/S = Insufficient Sample



Analytical Report Number : 16-17766

Project / Site name: TOVF (The Old Vinyl Factory)

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BTEX and MTBE in water (Monoaromatics)	Determination of BTEX and MTBE in water by headspace GC-MS. Accredited matrices: SW PW GW	In-house method based on USEPA8260	L073B-PL	W	ISO 17025
Hexavalent chromium in water	Determination of hexavalent chromium in water by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method by continuous flow analyser. Accredited Matrices SW, GW, PW.	L080-PL	W	ISO 17025
Metals in water by ICP-MS (dissolved)	Determination of metals in water by acidification followed by ICP-MS. Accredited Matrices: SW, GW, PW except B=SW,GW, Hg=SW,PW, Al=SW,PW.	In-house method based on USEPA Method 6020 & 200.8 *for the determination of trace elements in water by ICP-MS.	L012-PL	W	ISO 17025
Monohydric phenols in water	Determination of phenols in water by continuous flow analyser. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
pH in water	Determination of pH in water by electrometric measurement. Accredited matrices: SW PW GW	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	ISO 17025
Speciated EPA-16 PAHs in water	Determination of PAH compounds in water by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L0102B-PL	W	NONE
Sulphate in water	Determination of sulphate in water by acidification followed by ICP-OES. Accredited matrices: SW PW GW	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Sulphide in water	Determination of sulphide in water by ion selective electrode.	In-house method	L010-PL	W	NONE
Total cyanide in water	Determination of total cyanide by distillation followed by colorimetry. Accredited matrices: SW PW GW	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
Total organic carbon in water	Determination of dissolved organic carbon in water by TOC/DOC NDIR analyser.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L037-PL	W	ISO 17025
TPHCWG (Waters)	Determination of dichloromethane extractable hydrocarbons in water by GC-MS, speciation by interpretation.	In-house method	L070-PL	W	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Sample Deviation Report



Sample ID	Other ID	Sample Type	Job	Sample Number	Sample Deviation Code	test_name	test_ref	Test Deviation code
BH02/16		W	16-17766	574474	c	pH in water	L005-PL	c
BH03/16		W	16-17766	574473	c	pH in water	L005-PL	c

Key: a - No sampling date b - Incorrect container
c - Holding time d - Headspace e - Temperature



APPENDIX 7

- Field Monitoring Records
- Groundwater Level Data
- Hazardous Soil Gas Data

[illegible]



APPENDIX 8 ▪ Gas Risk Assessment

MODIFIED WILSON AND CARD GAS CHARACTERISTIC SITUATION

SITE: Machine Store, Hayes

JOB NUMBER: 19579G

10/06/2016

Carbon Dioxide		Methane	
Maximum Gas Concentration	0.60 %	Maximum Gas Concentration	0.10 %
Maximum Measured Steady Flow	0.10 L hr ⁻¹	Maximum Measured Peak Flow	0.40 L hr ⁻¹
Gas Screening Value	0.00 L hr ⁻¹	Gas Screening Value	0.00 L hr ⁻¹
Characteristic Situation	1	Characteristic Situation	1

if measured values are zero then resolution limit of instrument is used for calculation of GSV
worst case carbon dioxide or methane characteristic situation value defines overall characteristic situation for the site

Modified Wilson and Card Classification

					BS 8485:2015 Gas Protection Scores - refer to standard for full guidance			
					Minimum Gas Protection Score Required			
Characteristic Situation	Risk Classification	Gas Screening Value Threshold (L hr ⁻¹)	Additional Factors	Typical Source of Generation	Type A Building	Type B Building	Type C Building	Type D Building
1	very low risk	<0.07	typically methane not to exceed 1% and/or carbon dioxide 5% otherwise consider increase to situation 2	natural soils with low organic content; 'typical' made ground	0	0	0	0
2	low risk	0.07 to <0.7	borehole air flow rate not to exceed 70 L hr ⁻¹ otherwise consider increase to situation 3	natural soils with high peat/organic content; 'typical' made ground	3.5	3.5	2.5	1.5
3	moderate risk	0.7 to <3.5		old landfill, inert waste, mineworking flooded	4.5	4	3	2.5
4	moderate to high risk	3.5 to <15	quantitative risk assessment required to evaluate scope of protective measures	mineworking susceptible to flooding, completed landfill	6.5 ^{A)}	5.5 ^{A)}	4.5	3.5
5	high risk	15 to <70		mineworking unroofed/inactive with shallow workings/near surface	hazard too high for this method to define protection measures	6.5 ^{A)}	5.5	4.5
6	very high risk	>70		recent landfill site	hazard too high for this method to define protection measures	hazard too high for this method to define protection measures	7.5	6.5

BS 8485:2015 Gas Protection Measures - refer to standard for full guidance					
Select two or more elements from the following three types of protection to achieve score (only one element per type permitted)					
Structural Barrier	Score ^{B)}	Ventilation Measures		Score	Gas Resistant Membrane
Precast suspended segmental subfloor (i.e. beam and block)	0	Pressure relief pathway (usually formed of low fines gravel or with a thin geocomposite blanket or strips terminating in a gravel trench external to the building)		0.5	Gas resistant membrane meeting all of the following criteria: 1. sufficiently impervious to the gases with a methane gas transmission rate <40.0 ml/day/m ² /atm (average) for sheet and joints (tested in accordance with BS ISO 15105-1 manometric method) 2. sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions 3. sufficiently strong to withstand in-service stresses (e.g. settlement if placed below a floor slab) 4. sufficiently strong to withstand the installation process and following trades until covered (e.g. penetration from steel fibres in fibre reinforced concrete, penetration of reinforcement ties, tearing due to working above it, dropping tools, etc) 5. capable, after installation, of providing a complete barrier to the entry of the relevant gas 6. verified in accordance with CIRIA C735
Cast in situ ground-bearing floor slab (with only nominal mesh reinforcement)	0.5	Passive sub floor dispersal layer	Very good performance ^{E)}	2.5	
			Good performance ^{E)}	1.5	
Cast in situ monolithic reinforced ground bearing raft or reinforced cast in situ suspended floor slab with minimal penetrations	1 or 1.5 ^{C)}	Active dispersal layer, usually comprising fans with active abstraction (suction) from a subfloor dilution layer, with roof level vents. The dilution layer may comprise a clear void or be formed of geocomposite or polystyrene void formers ^{F)}		1.5 to 2.5	
Basement floor and walls conforming to BS 8102:2009, Grade 2 waterproofing ^{D)}	2	Active positive pressurization by the creation of a blanket of external fresh air beneath the building floor slab by pumps supplying air to points across the central footprint of the building into a permeable layer, usually formed of a thin geocomposite blanket ^{E)}		1.5 to 2.5	
Basement floor and walls conforming to BS 8102:2009, Grade 3 waterproofing ^{D)}	2.5	Ventilated car park (floor slab of occupied part of the building under consideration is underlain by a basement or undercroft car park) ^{F)}		4	

Notes

A) Residential buildings should not be built on CS4 or higher sites unless the type of construction or site circumstances allow additional levels of protection to be incorporated, e.g. high-performance ventilation or pathway intervention measures, and an associated sustainable system of management of maintenance of the gas control system, e.g. in institutional and/or fully serviced contractual situations

B) The scores are conditional on breaches of floor slabs, etc., being effectively sealed

C) To achieve a score of 1.5 the raft or suspended slab should be well reinforced to control cracking and have minimal penetrations cast in

D) The score is conditional on the waterproofing not being based on the use of a geosynthetic clay liner waterproofing product

E) Refer to BS 8485:2015 Annex B to determine performance and assign score

F) Assumes that the car park is vented to deal with car exhaust fumes, designed to Buildings Regulations 2000, Approved Document F

Building Types
Type A

Private ownership with no building management controls on alterations to the internal structure, the use of rooms, the ventilation of rooms or the structural fabric of the building. Some small rooms present. Probably conventional building construction (rather than civil engineering). Examples include private housing and some retail premises.

Type C

Commercial building with central building management control of any alterations to the building or its uses and central building management control of the maintenance of the building, including the gas protection measures. Single occupancy of ground floor and basement areas. Small to large size rooms with active ventilation or good passive ventilation of all rooms and other internal spaces throughout ground floor and basement areas. Probably civil engineering construction. Examples include offices, some retail premises, and parts of some public buildings (such as schools, hospitals, leisure centres and parts of hotels).

FOR TYPE A BUILDINGS ACTIVE VENTILATION MEASURES ARE INAPPROPRIATE

Type B

Private or commercial property with central building management control of any alterations to the building or its uses but limited or no central building management control of the maintenance of the building, including the gas protection measures. Multiple occupancy. Small to medium size rooms with passive ventilation of rooms and other internal spaces throughout ground floor and basement areas. May be conventional building or civil engineering construction. Examples include managed apartments, multiple occupancy offices, some retail premises and parts of some public buildings (such as schools, hospitals, leisure centres) and parts of hotels.

Type D

Industrial style building having large volume internal space(s) that are well ventilated. Corporate ownership with building management controls on alterations to the ground floor and basement areas of the building and on maintenance of ground gas protective measures. Probably civil engineering construction. Examples are retail park sales buildings, factory shop floor areas, warehouses. (Small rooms within these style buildings should be separately categorized as Type B or Type C).



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