Ģ				Sur	nmary o	f in	ı-situ de	ensity te	est resu	llts	
Project No.			Project Nam	е							
D	10557AY			Giga One, Washington							
Test Position Reference	Test reference	Depth to top	Date of test	Soil Description	Site condition	ons st	Test Type	In-situ Bulk Density	Moisture Content	In-situ Dry Density	Remarks
		m					see below	Mg/m ³	%	Mg/m ³	
CCRT	CCRT		17/08/22	Clay	Sunny		CCD	2.02	19	1.70	
Specificatio	ns BS 1377 : Part BS 1377 : Part SRDS 2.1 San SRDL 2.2 San	2 : 1990 (9 : 1990 : d replacer d replacer	Clause 3 Moisture In situ density tes nent method (Sm nent method (Lar	content by oven drying sts, clauses : all pouring cylinder) ge pouring cylinder)	method	Арр 18	Date /08/2022	N Ho Materials	odson s Director	UKAS Accr No	edited Laboratory p. 20632



TEST CERTIFICATE Determination of the Shear Strength Using the Laboratory Handvane

Client: Groundwork Services (Durham) Ltd	Project No: D10557AY
Project: Envision, Washington	Date Tested: 17th August 2022
Sampled By: D. Rutter for ETA	Ambient Temperature: 19°C
Weather Conditions: Sunny, Dry	Vane Used: Small

Comments:

	Z8-L2	Z8-L2	Z8-L2	Z8-L2	Z8-L2
Client Reference	CC522	CC523	CC524	CC525	CC526
Reading 1	12.0	12.0	12.0	11.4	10.8
Reading 2	10.8	12.0	12.0	12.0	12.0
Reading 3	11.2	12.0	12.0	11.0	12.0
Average Readings:	11.3	12.0	12.0	11.4	11.6
Equivalent Shear Stress (kN/m2)	227	240	240	229	232

	Z8-L2	Z8-L2	Z8-L2	Z8-L2	Z8-L2
Client Reference	CC527	CC528	CC529	CC530	CC531
Reading 1	12.0	12.0	12.0	11.6	11.4
Reading 2	11.5	12.0	10.1	12.0	12.0
Reading 3	12.0	12.0	12.0	11.4	12.0
Average Readings:	11.8	12.0	11.3	11.6	11.8
Equivalent Shear Stress (kN/m2)	237	240	227	233	236

Approved By: Mobichar . N. Hodson

Materials Director

Date: 18th August 2022

Exploration and Testing Associates Limited, Unit 8B Bowburn South Industrial Estate, Durham, DH6 5AD





Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing

BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557AX
Client	Groundwork Services (Durhan	n) Limited	Date Tested	17/08/2022
	Thistle Road		Weather Conditions	Clear
	Littleburn Industrial Estate		Air Temperature °C	14°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	22t Tracked Excavator
Depth of T Groundley	Test from vel	0	Denisty & Moisture	Not Requested
Plate Diar	neter (mm)	450	Test Location	CBR 1 - Road Zone 10

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement







Maximum Pressure Applied (kPa)	153	Maximum Deformation (mm)	1.31
Pressure at 1.25mm penetration (kPa)	150	Modulus of Subgrade Reaction (Mn/M ² /M)	108.1

Calculated CBR (%) at 1.25mm 17

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter





Approved Date:





Test Report

Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557AX
Client	Groundwork Services (Durham	n) Limited	Date Tested	17/08/2022
	Thistle Road		Weather Conditions	Clear
	Littleburn Industrial Estate		Air Temperature °C	14°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	22t Tracked Excavator
Depth of T Groundley	Test from vel	0	Denisty & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 2 - Road Zone 10

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	80	Maximum Deformation (mm)	1.50
Pressure at 1.25mm penetration (kPa)	75	Modulus of Subgrade Reaction (Mn/M ² /M)	49.7
Calculated CBR (%) at 1.25mm	5.1		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved By:



Waterials Director

Approved Date:





Test Report

Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557AX
Client	Groundwork Services (Durham	n) Limited	Date Tested	17/08/2022
	Thistle Road		Weather Conditions	Clear
	Littleburn Industrial Estate		Air Temperature °C	14°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	22t Tracked Excavator
Depth of T Groundley	Test from vel	0	Denisty & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 3 - Road Zone 10

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement





Maximum Pressure Applied (kPa)	187	Maximum Deformation (mm)	1.27
Pressure at 1.25mm penetration (kPa)	187	Modulus of Subgrade Reaction (Mn/M ² /M)	137.9
Calculated CBR (%) at 1.25mm	24.9		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved By:

Materials Director

Approved Date:





Unit 8B Bowburn South Industrial Estate Durham, DH6 5AD T: 0191 389 6543

Test Report

Client	Groundwork Services (Durham) Limited		
	Littleburn Industrial Estate		
	Langley Moor		
Address	Durham		
	DH7 8HJ		
F.A.O	Paul Barton		
Project:	Giga One Factory, Washington		
Project Number:	D10557AZ		
Report Number:	L22-722		
Date Received:	18th August 2022		

	Insitu Density by Core Cutter - BS:1377-9:1990 Clause 2.3
	Hand Shear Vane*
	Vertical Deformation and Strength Characteristics by the Incremental Plate Load Test - BS:1377-9:1990 Clause 4.1
Testing Required:	Determination of Equivalent CBR Value using the Plate Bearing Test - Design Manual for Roads and Bridges, Volume 7: Pavement Design and Maintenance - Foundations HD25/9
Date Started:	18th August 2022
Date Finished:	22nd August 2022

Report Issue Date:	22nd August 2022
Reviewed By:	Mabahar.
	Natalie Hodson - Materials Director
Authorised By:	1hr
	Nik O'Brien - Laboratory Manager
Remarks:	(*) denotes testing is outside of UKAS Scope of Accreditation.
	(+) denotes subcontracted testing.

Samples will be stored for one month after the report has been issue before being disposed of.

The published results appertain only to the specimens tested.

Exploration and Testing Associates Limited, registered in England and Wales #11803869 at 8B, Bowburn South Industrial Estate, Bowburn, Durham, DH6 5AD

				Sur	nmary of in	ı-situ de	ensity te	est resu	lts
roject No.			Project Name	Э					
D	10557AZ		Giga One, Washington						
Test Position Reference	Test reference	Depth to top m	Date of test	Soil Description	Site conditions during test	Test Type see below	In-situ Bulk Density Mg/m ³	Moisture Content %	In-situ Dry Density Mg/m ³

Remarks

P

F

CCD 2.4 Core cutter method

		m					see below	Mg/m ³	%	Mg/m ³	
Z8-L2-CC1	CC531		18/08/22	Clay	Clear		CCD	1.92	20	1.60	
Z8-L2-CC2	CC532		18/08/22	Clay	Clear		CCD	2.11	20	1.77	
Z8-L2-CC3	CC533		18/08/22	Clay	Clear		CCD	2.01	23	1.64	
Z8-L2-CC4	CC534		18/08/22	Clay	Clear		CCD	1.91	17	1.63	
Z8-L3-CC5	CC535		18/08/22	Clay	Clear		CCD	2.01	20	1.68	
Z8-L3-CC6	CC536		18/08/22	Clay	Clear		CCD	2.02	13	1.79	
Z8-L3-CC7	CC537		18/08/22	Clay	Clear		CCD	2.09	35	1.55	
Z8-L3-CC8	CC538		18/08/22	Clay	Clear		CCD	2.07	20	1.73	
Specifications					Арр	proved By	N Ho	dson			
BS 1377 : Part 2 : 1990 Clause 3 Moisture content by oven drying method BS 1377 : Part 9 : 1990 : In situ density tests, clauses : SRDS 2.1 Sand replacement method (Small pouring cylind age 2 of 10				method 2 of 10	19/	Date /08/2022	Materials	Director	UKAS Accr No	edited Laboratory 5. 20632	
SRDL 2.2 Sand replacement method (Large pouring cylinder)						Mochar.					

TEST CERTIFICATE Determination of the Shear Strength Using the Laboratory Handvane

Client: Groundwork Services (Durham) Ltd

Project: Envision, Washington

Project No: D10557AZ

D. Tennant for ETA

Ambient Temperature: 17°C

Date Tested: 18th August 2022

Weather Conditions: Clear

Vane Used: Small

Comments:

Sampled By:

	Z8-L2	Z8-L2	Z8-L2	Z8-L2	Z8-L3	Z8-L3
Client Reference	CC531	CC532	CC533	CC534	CC535	CC536
Reading 1	12.0	11.2	10.6	11.1	12.0	12.0
Reading 2	11.4	11.8	9.8	11.0	11.3	12.0
Reading 3	11.0	11.8	10.1	11.4	11.3	12.0
Average Readings:	11.4	11.6	10.2	11.3	11.5	12.0
Equivalent Shear Stress (kN/m2)	229	232	203	227	231	240

	Z8-L3	Z8-L3
Client Reference	CC537	CC538
Reading 1	7.8	10.1
Reading 2	7.6	11.0
Reading 3	7.8	10.8
Average Readings:	7.7	10.6
Equivalent Shear Stress (kN/m2)	155	213

Approved By:

N. Hodson Materials Director

Date: 19th August 2022





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Was	shington	Job Number	D10557AY
Client	Groundwork	Services (Durham) Limited	Date Tested	18/08/2022
	Thistle Road		Weather Conditions	Clear
	Littleburn Ind	ustrial Estate	Air Temperature °C	17°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	rest from vel	0	Denisty & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 1 - Zone 7
	N/A			

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement





Maximum Pressure Applied (kPa)	94	Maximum Deformation (mm)	1.30
Pressure at 1.25mm penetration (kPa)	92	Modulus of Subgrade Reaction (Mn/M ² /M)	62.8
Calculated CBR (%) at 1.25mm	7.3		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Tennant

Materials Technician

Approved By:

Madau Materials Director

Approved Date:





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Was	shington	Job Number	D10557AY
Client	Groundwork	Services (Durham) Limited	Date Tested	18/08/2022
	Thistle Road		Weather Conditions	Clear
	Littleburn Inc	lustrial Estate	Air Temperature °C	17°C
	Langley Moo	r	Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	Test from vel	0	Denisty & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 2 - Zone 7
	N/A			

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	82	Maximum Deformation (mm)	1.30
Pressure at 1.25mm penetration (kPa)	81	Modulus of Subgrade Reaction (Mn/M ² /M)	54.4
Calculated CBR (%) at 1.25mm	5.8		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Tennant

Materials Technician

Approved By: Madau

Approved Date:

Materials Director 19 August 2022





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, W	ashington	Job Number	D10557AY
Client	Groundwor	k Services (Durham) Limited	Date Tested	18/08/2022
	Thistle Road	I	Weather Conditions	Clear
	Littleburn Ir	dustrial Estate	Air Temperature °C	17°C
	Langley Mo	or	Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	Test from vel	0	Denisty & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 3 - Zone 7
	N/A			

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	124	Maximum Deformation (mm)	1.30
Pressure at 1.25mm penetration (kPa)	123	Modulus of Subgrade Reaction (Mn/M ² /M)	86.4
Calculated CBR (%) at 1.25mm	12		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Tennant

Materials Technician

Approved By:

Madau Materials Director

Approved Date:





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, W	ashington	Job Number	D10557AY
Client	Groundwor	k Services (Durham) Limited	Date Tested	18/08/2022
	Thistle Road	I	Weather Conditions	Clear
	Littleburn Ir	dustrial Estate	Air Temperature °C	17°C
	Langley Mo	or	Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	Test from vel	0	Denisty & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 4 - Zone 7
	N/A			

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	145	Maximum Deformation (mm)	1.31
Pressure at 1.25mm penetration (kPa)	140	Modulus of Subgrade Reaction (Mn/M ² /M)	100.2
Calculated CBR (%) at 1.25mm	15		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Tennant

Materials Technician

Approved By:

Madau Materials Director

Approved Date:





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, V	/ashington	Job Number	D10557AY
Client	t Groundwork Services (Durham) Limited		Date Tested	18/08/2022
	Thistle Roa	d	Weather Conditions	Clear
	Littleburn I	ndustrial Estate	Air Temperature °C	17°C
	Langley Mo	por	Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	rest from vel	0	Denisty & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 5 - Zone 7
	Distan	ce between the edge of the plate and the wall of	he excavation (mm)	N/A

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	162	Maximum Deformation (mm)	1.30
Pressure at 1.25mm penetration (kPa)	158	Modulus of Subgrade Reaction (Mn/M ² /M)	114.8
Calculated CBR (%) at 1.25mm	19		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Tennant

Materials Technician

Approved By: Albohau

Materials Director

Approved Date:





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, W	/ashington	Job Number	D10557AY
Client	t Groundwork Services (Durham) Limited		Date Tested	18/08/2022
	Thistle Roa	d	Weather Conditions	Clear
	Littleburn I	ndustrial Estate	Air Temperature °C	17°C
	Langley Mo	or	Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	Test from vel	0	Denisty & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 6 - Zone 7
	Distan	ce between the edge of the plate and the wall of t	he excavation (mm)	N/A

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	120	Maximum Deformation (mm)	1.29
Pressure at 1.25mm penetration (kPa)	119	Modulus of Subgrade Reaction (Mn/M ² /M)	83.7
Calculated CBR (%) at 1.25mm	11		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Tennant

Materials Technician

Approved By:

Madau Materials Director

Approved Date:





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, W	/ashington	Job Number	D10557AY
Client	t Groundwork Services (Durham) Limited		Date Tested	18/08/2022
	Thistle Roa	d	Weather Conditions	Clear
	Littleburn I	ndustrial Estate	Air Temperature °C	17°C
	Langley Mo	or	Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	rest from vel	0	Denisty & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 7 - Zone 7
	Distan	ce between the edge of the plate and the wall of t	the excavation (mm)	N/A

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	101	Maximum Deformation (mm)	1.33
Pressure at 1.25mm penetration (kPa)	99	Modulus of Subgrade Reaction (Mn/M ² /M)	68.0
Calculated CBR (%) at 1.25mm	8		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Tennant

Materials Technician

Approved By:

Albohau Materials Director

Approved Date:



Unit 8B Bowburn South Industrial Estate Durham, DH6 5AD T: 0191 389 6543



Client	Groundwork Services (Durham) Limited
	Littleburn Industrial Estate
	Langley Moor
Address	Durham
	DH7 8HJ
F.A.O	Paul Barton
Project:	Giga One Factory, Washington
Project Number:	D10557BA
Report Number:	L22-728
Date Received:	19th August 2022

	Insitu Density by Core Cutter - BS:1377-9:1990 Clause 2.3
	Hand Shear Vane*
	Vertical Deformation and Strength Characteristics by the Incremental Plate Load Test - BS:1377-9:1990 Clause 4.1
Testing Required:	Determination of Equivalent CBR Value using the Plate Bearing Test - Design Manual for Roads and Bridges, Volume 7: Pavement Design and Maintenance - Foundations HD25/9
Date Started:	19th August 2022
Date Finished:	22nd August 2022

Report Issue Date:	22nd August 2022
Reviewed By:	NDEOLOU.
	Natalie Hodson - Materials Director
Authorised By:	eth-
	Nik O'Brien - Laboratory Manager
Bomorkov	(*) denotes testing is outside of UKAS Scope of Accreditation.
Relidins.	(+) denotes subcontracted testing.

Samples will be stored for one month after the report has been issue before being disposed of.

The published results appertain only to the specimens tested.

Exploration and Testing Associates Limited, registered in England and Wales #11803869 at 8B, Bowburn South Industrial Estate, Bowburn, Durham, DH6 5AD

EXPLORATION
& TESTING ASSOCIATES

Summary of in-situ density test results

6				Sur	nmary of	f in	-situ de	ensity te	est resu	llts	
Project No.			Project Name	e							
D	10557BA		Giga One, Washington								
Test Position Reference	Test reference	Depth to top m	Date of test	Soil Description	Site conditio during test	ns t	Test Type see below	In-situ Bulk Density Mg/m ³	Moisture Content %	In-situ Dry Density Mg/m ³	Remarks
Z8-CC1- 433401/558 633	CC539		19/08/22	Clay	Clear		CCD	1.91	20	1.60	
Z8-CC2- 433396/558 642	CC540		19/08/22	Clay	Clear		CCD	1.96	20	1.64	
Z8-CC3- 433390/558 655	CC541		19/08/22	Clay	Clear		CCD	2.02	18	1.71	
Z8-CC4- 433403/558 663	CC542		19/08/22	Clay	Clear		CCD	2.00	14	1.75	
Specifications BS 1377 : Part 2 : 1990 Clause 3 Moisture content by oven drying method BS 1377 : Part 9 : 1990 : In situ density tests, clauses : SRDS 2.1 Sand replacement method (Small pouring cylind page 2 of 6 SRDL 2.2 Sand replacement method (Large pouring cylinder)			method e 2 of 6	App [22/	roved By Date 08/2022	N Ho Materials	dson Director	UKAS Accr No	edited Laboratory b. 20632		





Test Report

Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BA
Client	Groundwork Services (Durham	n) Limited	Date Tested	19/08/2022
	Thistle Road		Weather Conditions	Clear
	Littleburn Industrial Estate		Air Temperature °C	15°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	40t Tracked Excavator
Depth of T Groundley	est from vel	0	Denisty & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 1 - Zone 10 433106/558828

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	121	Maximum Deformation (mm)	1.31
Pressure at 1.25mm penetration (kPa)	118	Modulus of Subgrade Reaction (Mn/M²/M)	82.6
Calculated CBR (%) at 1.25mm	11		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Tennant

Materials Technician

Approved By:

Materials Director

Approved Date:





Test Report

Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BA
Client	Groundwork Services (Durham	n) Limited	Date Tested	19/08/2022
	Thistle Road		Weather Conditions	Clear
	Littleburn Industrial Estate		Air Temperature °C	15°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	40t Tracked Excavator
Depth of T Groundlev	Test from vel	0	Denisty & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 2 - Zone 10 433135/558850

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	127	Maximum Deformation (mm)	1.40
Pressure at 1.25mm penetration (kPa)	120	Modulus of Subgrade Reaction (Mn/M ² /M)	84.5
Calculated CBR (%) at 1.25mm	12		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Tennant

Materials Technician

Approved By:

Materials Director

Approved Date:





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision,	Washington	Job Number	D10557BA
Client	Groundw	ork Services (Durham) Limited	Date Tested	19/08/2022
	Thistle Ro	ad	Weather Conditions	Clear
	Littleburn	Industrial Estate	Air Temperature °C	15°C
	Langley N	loor	Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	Test from vel	0	Denisty & Moisture	Not Requested
Plate Dian	neter (mm	450	Test Location	CBR 3 - Attenuation Tank
	Dista	nce between the edge of the plate and the wall of the e	xcavation (mm)	N/A

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement





Maximum Pressure Applied (kPa)	106	Maximum Deformation (mm)	1.31
Pressure at 1.25mm penetration (kPa)	103	Modulus of Subgrade Reaction (Mn/M ² /M)	70.9
Calculated CBR (%) at 1.25mm	8.8		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Tennant

Materials Technician

Approved By:



Approved Date:



TEST CERTIFICATE Determination of the Shear Strength Using the Laboratory Handvane

Client: Ground	work Services (Durham) Ltd	Project No: D10557BA
Project: Envisi	on, Washington	Date Tested: 19th August 2022
Sampled By:	D. Tennant for ETA	Ambient Temperature: 17°C
Weather Condit	ions: Clear	Vane Used: Small

Comments:

	433401- 558633	433396- 558642	433390- 558655	433403- 558663
Client Reference	Z8-CC539	Z8-CC540	Z8-CC541	Z8-CC542
Reading 1	9.6	11.6	10.6	9.6
Reading 2	10.2	10.8	9.8	10.2
Reading 3	10.4	11.2	11.2	10.0
Average Readings:	10.0	11.2	10.5	9.9
Equivalent Shear Stress (kN/m2)	201	224	211	199

Approved By: Mabahau

N. Hodson **Materials Director** Date: 22th August 2022



Unit 8B Bowburn South Industrial Estate Durham, DH6 5AD T: 0191 389 6543



Test Report

Client	Groundwork Services (Durham) Limited		
	Littleburn Industrial Estate		
	Langley Moor		
Address	Durham		
	DH7 8HJ		
F.A.O	Paul Barton		
Project:	Giga One Factory, Washington		
Project Number:	D10557BE		
Report Number:	L22-740		
Date Received:	25th August 2022		

	Insitu Density by Core Cutter - BS:1377-9:1990 Clause 2.3
	Hand Shear Vane*
	Vertical Deformation and Strength Characteristics by the Incremental Plate Load Test - BS:1377-9:1990 Clause 4.1
Testing Required:	Determination of Equivalent CBR Value using the Plate Bearing Test - Design Manual for Roads and Bridges, Volume 7: Pavement Design and Maintenance - Foundations HD25/9
Date Started:	25th August 2022
Date Finished:	26th August 2022

Report Issue Date:	26th August 2022
Reviewed By:	NOBOHOU.
	Natalie Hodson - Materials Director
Authorised By:	al-
	Nik O'Brien - Laboratory Manager
	(*) denotes testing is outside of UKAS Scope of
Pomarka:	Accreditation.
Remarks.	(+) denotes subcontracted testing.

Samples will be stored for one month after the report has been issue before being disposed of.

The published results appertain only to the specimens tested.

Exploration and Testing Associates Limited, registered in England and Wales #11803869 at 8B, Bowburn South Industrial Estate, Bowburn, Durham, DH6 5AD

EXPLORATION a testing associates			Summary of in-situ density test results								
Project No.	Project No. Project Name										
, D	D10557RE					Gio	na One Was	shington			
						Ole					
Test Position Reference	Test reference	Depth to top	Date of test	Soil Description	Site condit during te	tions est	Test Type	In-situ Bulk Density	Moisture Content	In-situ Dry Density	Remarks
		m					see below	Mg/m ³	%	Mg/m ³	
CC552-RT	CC9		25/08/22	Clay	Sunny		CCD	2.05	21	1.69	
							1				
Specificatio	NS BS 1377 : Part	2 : 1990 (Clause 3 Moisture	content by oven drying	method	Ар	proved By	N Ho	odson	UKAS Accr	edited Laboratory
	SRDS 2.1 San SRDL 2.2 San CCD 2.4 Core	9 : 1990 : d replacer d replacen cutter met	nn situ density tes nent method (Sm nent method (Lar thod	all pouring cylind中没g ge pouring cylinder)	e 2 of 6	6 Date Materials Director UKAS Accredited I 26/08/2022 Nobodiver			p. 20632		

EXPLORATION	
& TESTING ASSOCIATES	

Summary of in-situ density test results

Ģ	EXPLORATION Summary of in-situ density test results										
Project No. Project Name											
D	10557BE			Giga One, Washington							
Test Position Reference	Test reference	Depth to top	Date of test	Soil Description	Site condi during to	tions est	Test Type	ln-situ Bulk Density	Moisture Content	In-situ Dry Density	Remarks
		m					see below	Mg/m ³	%	Mg/m ³	
CC522-RT	CC1		25/08/22	Clay	Sunny	,	CCD	2.07	19	1.75	
CC553-RT	CC10		25/08/22	Clay	Sunny	,	CCD	2.04	21	1.69	
CC554-RT	CC11		25/08/22	Clay	Sunny	,	CCD	2.06	21	1.70	
CC545-RT	CC12		25/08/22	Clay	Sunny		CCD	2.11	19	1.77	
CC546-RT	CC13		25/08/22	Clay	Sunny		CCD	2.06	20	1.72	
CC524-RT	CC2		25/08/22	Clay	Sunny	,	CCD	2.13	21	1.76	
CC528-RT	CC3		25/08/22	Clay	Sunny	,	CCD	2.13	22	1.75	
CC529-RT	CC4		25/08/22	Clay	Sunny	,	CCD	2.03	19	1.71	
CC531-RT	CC5		25/08/22	Clay	Sunny		CCD	2.04	23	1.66	
CC534-RT	CC6		25/08/22	Clay	Sunny	,	CCD	2.04	21	1.69	
CC536-RT	CC7		25/08/22	Clay	Sunny	,	CCD	1.99	18	1.69	
CC537-RT	CC8		25/08/22	Clay	Sunny	,	CCD	2.00	19	1.68	
		1		1		1		·		1	1
Specificatio	ns					App	proved By	N Ho	odson		
	BS 1377 : Part BS 1377 : Part SRDS 2.1 San	2 : 1990 (9 : 1990 : d replacer	Clause 3 Moisture In situ density tes nent method (Sm	content by oven drying sts, clauses : all pouring cylind 甲 àge	method e 3 of 6	26	Date	Materials	Director	UKAS Accr No	edited Laboratory p. 20632
SRDL 2.2 Sand replacement method (Large pouring cylinder) 26/08/2022 CCD 2.4 Core cutter method V											



TEST CERTIFICATE Determination of the Shear Strength Using the Laboratory Handvane

Client: Groundwork Services (Durham) Ltd

Project: Envision, Washington

Sampled By: D. Rutter for ETA Date Tested: 24th August 2022

Ambient Temperature: 20°C

Vane Used: Small

Project No: D10557BE

Weather Conditions: Overcast

Comments:

Z4-L2 CC1 Z4-L2 CC2 Z4-L2 CC3 Z4-L2 CC4 Z4-L2 CC5 Client CC559 CC560 CC561 CC562 CC563 Reference Reading 1 12.0 9.0 8.0 12.0 10.8 Reading 2 8.9 9.8 11.8 10.6 12.0 Reading 3 12.0 12.0 12.0 10.5 11.4 Average 9.9 9.9 11.8 11.4 11.1Readings: Equivalent 199 199 229 223 236 **Shear Stress** (kN/m2) Z4-L2 CC6 Z4-L2 CC7 Z4-L2 CC8 Z4-L2 CC9 Z4-L2 CC10 Client CC564 CC565 CC566 CC567 **CC568** Reference Reading 1 12.0 9.4 12.0 12.0 10.6 Reading 2 10.8 12.0 10.8 11.8 12.0 Reading 3 11.8 12.0 9.1 12.0 9.8 Average 11.5 12.0 10.6 11.0 10.8 **Readings:** Equivalent 231 240 213 221 216 **Shear Stress** (kN/m2) Z4-L2 CC12 Z4-L2 CC13 Z4-L2 CC11 Client CC571 CC569 CC570 Reference Reading 1 8.8 10.5 12.0 Reading 2 11.0 11.7 10.8 Reading 3 11.4 12.0 12.0 Average 10.4 11.4 11.6 Readings: Equivalent 208 228 232 **Shear Stress** (kN/m2)

Approved By: Macha

N. Hodson **Materials Director**

Date: 26th August 2022





Test Report

Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BD
Client	Groundwork Services (Durhan	n) Limited	Date Tested	25/08/2022
	Thistle Road		Weather Conditions	Overcast
	Littleburn Industrial Estate		Air Temperature °C	17°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	Test from vel	0	Density & Moisture	Not Requested
Plate Diar	neter (mm)	450	Test Location	CBR 1 - Zone 4

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement





Maximum Pressure Applied (kPa)	106	Maximum Deformation (mm)	1.26
Pressure at 1.25mm penetration (kPa)	106	Modulus of Subgrade Reaction (Mn/M ² /M)	73.6

Calculated CBR (%) at 1.25mm 9.4

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved Date:

Materials Director

Approved By:





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Wa	shington	Job Number	D10557BD
Client	Groundwork	Services (Durham) Limited	Date Tested	25/08/2022
	Thistle Road		Weather Conditions	Overcast
	Littleburn In	dustrial Estate	Air Temperature °C	17°C
	Langley Mod	r	Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	Test from vel	0	Density & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 2 - Zone 4
	Distance	between the edge of the plate and the wall	of the excavation (mm)	N/A

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	180	Maximum Deformation (mm)	1.32
Pressure at 1.25mm penetration (kPa)	174	Modulus of Subgrade Reaction (Mn/M ² /M)	127.3
Calculated CBR (%) at 1.25mm	22		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved By:

Madau Materials Director

Approved Date:





Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing

BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BF
Client	Groundwork Services (Durhan	n) Limited	Date Tested	26/08/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Industrial Estate		Air Temperature °C	20°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	Test from vel	0	Density & Moisture	Not Requested
Plate Diar	neter (mm)	450	Test Location	CBR 1

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement







Maximum Pressure Applied (kPa)	78	Maximum Deformation (mm)	1.37
Pressure at 1.25mm penetration (kPa)	75	Modulus of Subgrade Reaction (Mn/M ² /M)	50.1

Calculated CBR (%) at 1.25mm 5.1

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved Date:

Materials Director

Approved By:





Test Report

Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BF
Client	Groundwork Services (Durhan	n) Limited	Date Tested	26/08/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Industrial Estate		Air Temperature °C	20°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	Test from vel	0	Density & Moisture	Not Requested
Plate Diar	neter (mm)	450	Test Location	CBR 2

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement





Maximum Pressure Applied (kPa)	104	Maximum Deformation (mm)	1.44
Pressure at 1.25mm penetration (kPa)	97	Modulus of Subgrade Reaction (Mn/M ² /M)	67.0

Calculated CBR (%) at 1.25mm 8.1

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

Time Elapsed (mins)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved Date:

Materials Director

Approved By:





Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing

BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BF
Client	Groundwork Services (Durhan	n) Limited	Date Tested	26/08/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Industrial Estate		Air Temperature °C	20°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of 1 Groundle	Test from vel	0	Density & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 3

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement







Maximum Pressure Applied (kPa)	100	Maximum Deformation (mm)	1.35
Pressure at 1.25mm penetration (kPa)	95	Modulus of Subgrade Reaction (Mn/M ² /M)	64.8

Calculated CBR (%) at 1.25mm 7.7

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved Date:

Materials Director

Approved By:



Unit 8B Bowburn South Industrial Estate Durham, DH6 5AD T: 0191 389 6543



Test Report

Client	Groundwork Services (Durham) Limited			
	Littleburn Industrial Estate			
	Langley Moor			
Address	Durham			
	DH7 8HJ			
F.A.O	Paul Barton			
Project:	Giga One Factory, Washington			
Project Number:	D10557BG			
Report Number:	L22-746			
Date Received:	30th August 2022			

	Insitu Density by Core Cutter - BS:1377-9:1990 Clause 2.3
	Hand Shear Vane*
	Vertical Deformation and Strength Characteristics by the Incremental Plate Load Test - BS:1377-9:1990 Clause 4.1
Testing Required:	Determination of Equivalent CBR Value using the Plate Bearing Test - Design Manual for Roads and Bridges, Volume 7: Pavement Design and Maintenance - Foundations HD25/9
Date Started	30th August 2022
Date Finished:	31st August 2022

Report Issue Date:	: 31st August 2022		
Reviewed By:	NOBOHOU.		
	Natalie Hodson - Materials Director		
Authorised By:	Je		
	J. Curry - Quality Technician		
Remarks:	(*) denotes testing is outside of UKAS Scope of Accreditation.		
	(+) denotes subcontracted testing.		

Samples will be stored for one month after the report has been issue before being disposed of.

The published results appertain only to the specimens tested.

Exploration and Testing Associates Limited, registered in England and Wales #11803869 at 8B, Bowburn South Industrial Estate, Bowburn, Durham, DH6 5AD

Ģ	EXPLORATION & TESTING ASSOCIATES
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Summary of in-situ density test results

	& TESTING ASSOCIATES										
Project No.			Project Name	9							
D10557BG					Gig	ja One, Was	shington				
Test Position Reference	Test reference	Depth to top	Date of test	Soil Description	Site condit during te	tions est	Test Type see below	In-situ Bulk Density Mɑ/m ³	Moisture Content %	In-situ Dry Density Ma/m ³	Remarks
Z8- L2_CC559_ 433414/558 711	CC1		30/08/22	Clay	Sunny		CCD	2.05	18	1.73	
Z8- L2_CC560_ 433429/558 722	CC2		30/08/22	Clay	Sunny		CCD	2.00	16	1.73	
Z8- L2_CC561_ 433440/558 725	CC3		30/08/22	Clay	Sunny		CCD	1.94	18	1.64	
Z8- L2_CC562_ 433454/558 729	CC4		30/08/22	Clay	Sunny		CCD	2.00	18	1.70	
Specificatio	ns BS 1377 : Part BS 1377 : Part	2 : 1990 (9 : 1990 :	Clause 3 Moisture In situ density tes	content by oven drying its, clauses :	method	Арр	proved By Date	N Ho Materials	dson 5 Director	UKAS Accr	edited Laboratory 5. 20632
	SRDL 2.2 San	d replacer d replacen cutter met	nent method (Sm nent method (Larg	an pouring cylind er age ge pouring cylinder)	e 2 of 5	31	/08/2022	122 Madaa .			

Ģ			í	Sur	nmary of ir	ı-situ d∉	ensity te	est resu	lts	
Project No.			Project Nam	е						
D [.]	10557BG				Giç	ja One, Was	shington			
Test Position Reference	Test reference	Depth to top	Date of test	Soil Description	Site conditions during test	Test Type	In-situ Bulk Density	Moisture Content	In-situ Dry Density	Remarks
[!]	 	m	<u> </u>		ļ!	see below	Mg/m ³	%	Mg/m ³	ļ
CC503-RT	CC5		30/08/22	Clay	Sunny	CCD	1.99	21	1.64	
CC511-RT	CC6		30/08/22	Clay	Sunny	CCD	2.11	20	1.76	
CC513-RT	CC7		30/08/22	Clay	Sunny	CCD	2.13	20	1.78	
CC518-RT	CC8		30/08/22	Clay	Sunny	CCD	2.13	20	1.77	
CC521-RT	CC9		30/08/22	Clay	Sunny	CCD	2.07	21	1.71	

Specifications BS 1377 : Part 2 : 1990 Clause 3 Moisture content by oven drying method BS 1377 : Part 9 : 1990 : In situ density tests, clauses : SRDS 2.1 Sand replacement method (Small pouring cylind Page 3 of 5 SRDL 2.2 Sand replacement method (Large pouring cylinder)	Approved By Date 31/08/2022	N Hodson Materials Director	UKAS Accredited Laboratory No. 20632
CCD 2.4 Core cutter method			





Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing

BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BG
Client	Groundwork Services (Durhan	n) Limited	Date Tested	30/08/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Industrial Estate		Air Temperature °C	19°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of 1 Groundley	Test from vel	0	Density & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 1

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement







Maximum Pressure Applied (kPa)	103	Maximum Deformation (mm)	1.38
Pressure at 1.25mm penetration (kPa)	98	Modulus of Subgrade Reaction (Mn/M²/M)	67.4

Calculated CBR (%) at 1.25mm 8.2

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved Date:

Materials Director

Approved By:



TEST CERTIFICATE Determination of the Shear Strength Using the Laboratory Handvane

Client: Groundwork Services (Durham) Ltd

Project: Envision, Washington

Sampled By: D. Rutter for ETA Project No: D10557BG

Date Tested: 30th August 2022

Ambient Temperature: 20°C

Weather Conditions: Sunny

Comments:

Z8-L2 Z8-L2 Z8-L2 Z8-L2 Z4-L2 Client CC2 CC3 CC1 CC4 CC5 Reference Reading 1 9.3 12.0 12.0 11.8 11.0 Reading 2 11.0 12.0 10.8 12.0 11.5 Reading 3 12.0 10.5 11.1 12.0 10.8 Average 11.6 11.4 10.4 11.6 11.4 Readings: Equivalent 229 233 229 208 233 Shear Stress (kN/m2) Z8-L2 Z8-L2 Z8-L2 Z8-L2 Client CC6 CC7 **CC8** CC9 Reference Reading 1 12.0 11.3 12.0 11.5 Reading 2 10.5 11.3 12.0 12.0 Reading 3 12.0 12.0 10.8 10.4 Average 11.6 11.5 11.3 11.4 **Readings:** Equivalent 232 230 227 229 Shear Stress (kN/m2)

Approved By: Macha

N. Hodson **Materials Director**

Date: 31st August 2022

Vane Used: Small



Unit 8B Bowburn South Industrial Estate Durham, DH6 5AD T: 0191 389 6543



Test Report

Client	Groundwork Services (Durham) Limited			
	Littleburn Industrial Estate			
	Langley Moor			
Address	Durham			
	DH7 8HJ			
F.A.O	Paul Barton			
Project:	Giga One Factory, Washington			
Project Number:	D10557BI			
Report Number:	L22-755			
Date Received:	1st September 2022			

	Insitu Density by Core Cutter - BS:1377-9:1990 Clause 2.3
	Hand Shear Vane*
	Vertical Deformation and Strength Characteristics by the Incremental Plate Load Test - BS:1377-9:1990 Clause 4.1
Testing Required:	Determination of Equivalent CBR Value using the Plate Bearing Test - Design Manual for Roads and Bridges, Volume 7: Pavement Design and Maintenance - Foundations HD25/9
Date Started:	1st September 2022
Date Finished:	2nd September 2022

Report Issue Date:	2nd September 2022
Reviewed By:	NOBOLAU.
	Natalie Hodson - Materials Director
Authorised By:	Je
	J. Curry - Quality Technician
Remarks:	(*) denotes testing is outside of UKAS Scope of
	(+) denotes subcontracted testing
	(·) denotes subcontracted testing.

Samples will be stored for one month after the report has been issue before being disposed of.

The published results appertain only to the specimens tested.

Exploration and Testing Associates Limited, registered in England and Wales #11803869 at 8B, Bowburn South Industrial Estate, Bowburn, Durham, DH6 5AD


Summary of in-situ density test results

Project No.				Project Nam	e							
	D10557BI			Giga One, Envision, Washington								
Test Position Reference	Test reference	Test No.	Depth to top m	Date of test	Soil Description	Site conditio during tes	ons t	Test Type see below	In-situ Bulk Density Mg/m ³	Moisture Content %	In-situ Dry Density Mg/m ³	Remarks
E433437_N55869 6_Z8-L1	CC572	CC572		01/09/22	Clay	Cloudy		CCD	2.11	14	1.86	
E433461_N55867 6_Z8-L1	CC573	CC573		09/05/00	Clay	Cloudy		CCD	2.02	15	1.75	
E433471_N55867 0_Z8-L1	CC574	CC574		01/09/22	Clay	Cloudy		CCD	2.12	16	1.82	
E433471_N55870 6_Z8-L1	CC575	CC575		01/09/22	Clay	Cloudy		CCD	2.11	21	1.75	
E433479_N55869 0_Z8-L1	CC576	CC576		01/09/22	C;lay	Cloudy		CCD	1.99	19	1.68	
E433487_N55867 8_Z8-L1	CC577	CC577		01/09/22	Clay	Cloudy		CCD	2.03	18	1.73	
E433484_N55871 2_Z8-L1	CC578	CC578		01/09/22	Clay	Cloudy		CCD	1.95	14	1.72	
E433487_N55870 0_Z8-L1	CC579	CC579		01/09/22	Clay	Cloudy		CCD	1.94	18	1.64	
E433497_N55868 8_Z8-L1	CC580	CC580		01/09/22	Clay	Cloudy		CCD	2.06	19	1.73	
							Ann	roved Ry				
Specifications BS 1377 : Part 2 : 1990 Clause 3 Moisture content by oven drying method BS 1377 : Part 9 : 1990 : In situ density tests, clauses : SRDS 2.1 Sand replacement method (Small pouring cylinder) SRDL 2.2 Sand replacement method (Large pouring cylinder) CCD 2.4 Core cutter method					дррі [02/(Date 09/2022	N O'I Laboratory	Brien y Manager	UKAS Laborate	Accredited ory No. 20632		



TEST CERTIFICATE Determination of the Shear Strength Using the Laboratory Handvane

Client: Groundwork Services (Durham) Ltd

Project: Envision, Washington

Sampled By: D. Rutter for ETA

Project No: D10557BI

Date Tested: 1st September 2022

Ambient Temperature: 16°C

Weather Conditions: Sunny Comments:

Vane Used: Small

	Z8-L1	Z8-L1	Z8-L1	Z8-L1	Z4-L1
Client Reference	CC1	CC2	CC3	CC4	CC5
Reading 1	11.0	9.0	12.0	10.0	12.0
Reading 2	12.0	11.8	8.8	10.9	12.0
Reading 3	12.0	12.0	12.0	12.0	10.6
Average Readings:	11.6	10.9	10.9	10.9	11.5
Equivalent Shear Stress (kN/m2)	233	219	217	219	231
	Z8-L1	Z8-L1	Z8-L1	Z8-L1	
Client Reference	CC6	CC7	CC8	CC9	
Reading 1	12.0	12.0	10.9	11.0	
Reading 2	12.0	12.0	12.0	11.8	
Reading 3	10.6	11.3	12.0	10.3	
Average Readings:	11.5	11.7	11.6	11.0	
Equivalent Shear Stress (kN/m2)	231	235	233	221	

Approved By:

J. Curry Quality Technician

Date: 1st September 2022

Exploration and Testing Associates Limited, Unit 8B Bowburn South Industrial Estate, Durham, DH6 5AD





Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing

BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BI
Client	Groundwork Services (Durham	n) Limited	Date Tested	01/09/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Industrial Estate		Air Temperature °C	19°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of 1 Groundlev	Test from vel	0	Density & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 1 - Zone 8

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement





Maximum Pressure Applied (kPa)	98	Maximum Deformation (mm)	1.34
Pressure at 1.25mm penetration (kPa)	92	Modulus of Subgrade Reaction (Mn/M ² /M)	63.1

Calculated CBR (%) at 1.25mm 7.4

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

Time Elapsed (mins)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved Date:

Materials Director

Approved By:





Test Report

Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BI
Client	Groundwork Services (Durham	n) Limited	Date Tested	01/09/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Industrial Estate		Air Temperature °C	19°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of 1 Groundlev	Test from vel	0	Density & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 2 - Zone 8

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement







Maximum Pressure Applied (kPa)	127	Maximum Deformation (mm)	1.30
Pressure at 1.25mm penetration (kPa)	125	Modulus of Subgrade Reaction (Mn/M ² /M)	88.1

Calculated CBR (%) at 1.25mm 12

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved Date:

Materials Director

Approved By:





Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing

BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BI
Client	Groundwork Services (Durham	n) Limited	Date Tested	01/09/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Industrial Estate		Air Temperature °C	19°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of 1 Groundle	Test from vel	0	Density & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 3 - Zone 8

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement







Maximum Pressure Applied (kPa)	209	Maximum Deformation (mm)	1.28
Pressure at 1.25mm penetration (kPa)	209	Modulus of Subgrade Reaction (Mn/M ² /M)	156.2

Calculated CBR (%) at 1.25mm 30.3

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved Date:

Materials Director

Approved By:





Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing

BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BI
Client	Groundwork Services (Durham	n) Limited	Date Tested	01/09/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Industrial Estate		Air Temperature °C	19°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of 1 Groundle	Test from vel	0	Density & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 4 - Zone 8

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement







Maximum Pressure Applied (kPa)	205	Maximum Deformation (mm)	1.31
Pressure at 1.25mm penetration (kPa)	196	Modulus of Subgrade Reaction (Mn/M ² /M)	145.8

Calculated CBR (%) at 1.25mm 27

1.60 1.40

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved Date:

Materials Director

Approved By:





Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing

BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BI
Client	Groundwork Services (Durham	n) Limited	Date Tested	01/09/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Industrial Estate		Air Temperature °C	19°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	Test from vel	0	Density & Moisture	Not Requested
Plate Diar	neter (mm)	450	Test Location	CBR 5 - Zone 8

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement







Maximum Pressure Applied (kPa)	177	Maximum Deformation (mm)	1.31
Pressure at 1.25mm penetration (kPa)	173	Modulus of Subgrade Reaction (Mn/M ² /M)	126.4

Calculated CBR (%) at 1.25mm 22

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved Date:

Materials Director

Approved By:



Unit 8B Bowburn South Industrial Estate Durham, DH6 5AD T: 0191 389 6543



Test Report

Client	Groundwork Services (Durham) Limited
	Littleburn Industrial Estate
	Langley Moor
Address	Durham
	DH7 8HJ
F.A.O	Paul Barton
Project:	Giga One Factory, Washington
Project Number:	D10557BJ
Report Number:	L22-773
Date Received:	2nd September 2022

	Insitu Density by Core Cutter - BS:1377-9:1990 Clause 2.3			
	Hand Shear Vane*			
	Vertical Deformation and Strength Characteristics by the Incremental Plate Load Test - BS:1377-9:1990 Clause 4.1			
Testing Required:	Determination of Equivalent CBR Value using the Plate Bearing Test - Design Manual for Roads and Bridges, Volume 7: Pavement Design and Maintenance - Foundations HD25/9			
Date Started	2nd September 2022			
Date Clarled.	5th September 2022			
Date Finished:	our September 2022			

Report Issue Date:	5th September 2022
Reviewed By:	the
	N. Obrien - Labratory Manager
Authorised By:	J
	J. Curry - Quality Technician
	(*) denotes testing is outside of UKAS Scope of
Bomarka:	Accreditation.
Remarks:	(+) denotes subcontracted testing.

Samples will be stored for one month after the report has been issue before being disposed of.

The published results appertain only to the specimens tested.

Exploration and Testing Associates Limited, registered in England and Wales #11803869 at 8B, Bowburn South Industrial Estate, Bowburn, Durham, DH6 5AD

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CEXPLORATION Summary of in-situ density test results											
Project No.			Project Name								
D	10557BJ				Gię	ga Or	ne, Envision,	Washingto	n		
Test Position Reference	Test reference	Depth to top	Date of test	Soil Description	Site conditi during te	ions st	Test Type	In-situ Bulk Density Ma/m ³	Moisture Content	In-situ Dry Density Ma/m ³	Remarks
E433257_N 558971_Z4- L1	CC581		02/09/22	Clay	Sunny		CCD	2.01	22	1.65	
E433294_N 558986_Z4- L1	CC582		02/09/22	Clay	Sunny		CCD	2.11	20	1.77	
E433285_N 558980_Z4- L1	CC583		02/09/22	Clay	Sunny		CCD	1.97	20	1.64	
E433271_N 558976_Z4- L1	CC584		02/09/22	Clay	Sunny		CCD	2.05	19	1.72	
E433290_N 558990_Z4- L1	CC585		02/09/22	Clay	Sunny		CCD	2.04	21	1.69	
E433279_N 558985_Z4- L1	CC586		02/09/22	Clay	Sunny		CCD	2.06	18	1.75	
E433267_N 558980_Z4- L1	CC587		02/09/22	Clay	Sunny		CCD	1.99	19	1.67	
E433255_N 558977_Z4- L1	CC588		02/09/22	Clay	Sunny		CCD	1.99	23	1.62	
		I									
Specifications BS 1377 : Part 2 : 1990 Clause 3 Moisture content by oven drying method BS 1377 : Part 9 : 1990 : In situ density tests, clauses : SRDS 2.1 Sand replacement method (Small pouring cylinder) SRDL 2.2 Sand replacement method (Large pouring cylinder)			method	Арр 05	Droved By Date /09/2022	N O' Laborator	Brien y Manager	UKAS Accr No	edited Laboratory 5. 20632		



TEST CERTIFICATE Determination of the Shear Strength Using the Laboratory Handvane

Client: Groundwork Services (Durham) Ltd

Project: Envision, Washington

Project No: D10557BJ

Date Tested: 2nd September 2022

Ambient Temperature: 20°C

Sampled By: D. Rutter for ETA

Vane Used: Small

Weather Conditions: Sunny Comments:

	Z4-L1	Z4-L1	Z4-L1	Z4-L1	Z4-L1
Client Reference	CC1	CC2	ССЗ	CC4	CC5
Reading 1	12.0	11.6	12.0	10.5	12.0
Reading 2	10.8	12.0	9.8	12.0	10.8
Reading 3	11.1	12.0	12.0	11.0	11.8
Average Readings:	11.2	11.8	11.2	11.1	11.5
Equivalent Shear Stress (kN/m2)	225	237	225	223	231
	Z4-L1	Z4-L1	Z4-L1		
Client Reference	CC6	CC7	CC8		
Reading 1	9.1	12.0	10.1		
Reading 2	10.4	9.4	12.0		
Reading 3	12.0	8.9	12.0		
Average Readings:	10.5	10.1	11.3		
Equivalent Shear Stress (kN/m2)	210	202	227		

Approved By:

N. Obrien Laboratory Manager Date: 5th September 2022

Page 3 of 8

Exploration and Testing Associates Limited, Unit 8B Bowburn South Industrial Estate, Durham, DH6 5AD





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BJ
Client	Groundwork	Services (Durham) Limited	Date Tested	02/09/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Ind	lustrial Estate	Air Temperature °C	20°C
	Langley Moor	r	Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	Test from vel	0	Density & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 1 - Zone 8
	Distance	between the edge of the plate and the wal	of the excavation (mm)	N/A

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	183	Maximum Deformation (mm)	1.30
Pressure at 1.25mm penetration (kPa)	180	Modulus of Subgrade Reaction (Mn/M ² /M)	132.1
Calculated CBR (%) at 1.25mm	23.3		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved By:



Laboratory Manager

Approved Date:





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Was	hington	Job Number	D10557BJ
Client	Groundwork S	Services (Durham) Limited	Date Tested	02/09/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Ind	ustrial Estate	Air Temperature °C	20°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	۲est from vel	0	Density & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 2 - Zone 8
	Distance I	between the edge of the plate and the wal	l of the excavation (mm)	N/A

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement





Maximum Pressure Applied (kPa)	190	Maximum Deformation (mm)	1.33
Pressure at 1.25mm penetration (kPa)	184	Modulus of Subgrade Reaction (Mn/M ² /M)	135.2
Calculated CBR (%) at 1.25mm	24.2		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved By:



Laboratory Manager





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Was	shington	Job Number	D10557BJ
Client	Groundwork	Services (Durham) Limited	Date Tested	02/09/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Ind	ustrial Estate	Air Temperature °C	20°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	rest from vel	0	Density & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 3 - Zone 8
Distance between the edge of the plate and the wall of the excavation (mm)				N/A

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	150	Maximum Deformation (mm)	1.29
Pressure at 1.25mm penetration (kPa)	149	Modulus of Subgrade Reaction (Mn/M ² /M)	107.2
Calculated CBR (%) at 1.25mm	17		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved By:

Uh Laboratory Manager

Approved Date:





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BJ
Client	Groundwork	Services (Durham) Limited	Date Tested	02/09/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Ind	ustrial Estate	Air Temperature °C	20°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	۲est from vel	0	Density & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 4 - Zone 8
	N/A			

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	162	Maximum Deformation (mm)	1.32
Pressure at 1.25mm penetration (kPa)	157	Modulus of Subgrade Reaction (Mn/M ² /M)	114.0
Calculated CBR (%) at 1.25mm	19		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

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Test Carried Out By:

D. Rutter

Materials Technician

Approved By:



Laboratory Manager

Approved Date:





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BJ
Client	Groundwor	k Services (Durham) Limited	Date Tested	02/09/2022
	Thistle Roa	t	Weather Conditions	Sunny
	Littleburn I	ndustrial Estate	Air Temperature °C	20°C
	Langley Mo	or	Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	Test from vel	0	Density & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 5 - Zone 8
	Distanc	e between the edge of the plate and the wall	of the excavation (mm)	N/A

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	143	Maximum Deformation (mm)	1.29
Pressure at 1.25mm penetration (kPa)	142	Modulus of Subgrade Reaction (Mn/M ² /M)	101.3
Calculated CBR (%) at 1.25mm	15		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

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Test Carried Out By:

D. Rutter

Materials Technician

Approved By:

1An Laboratory Manager

Approved Date:



Unit 8B Bowburn South Industrial Estate Durham, DH6 5AD T: 0191 389 6543



Test Report

Client	Groundwork Services (Durham) Limited
	Littleburn Industrial Estate
	Langley Moor
Address	Durham
	DH7 8HJ
F.A.O	Paul Barton
Project:	Giga One Factory, Washington
Project Number:	D10557BJ
Report Number:	L22-773
Date Received:	2nd September 2022

	Insitu Density by Core Cutter - BS:1377-9:1990 Clause 2.3
	Hand Shear Vane*
	Vertical Deformation and Strength Characteristics by the Incremental Plate Load Test - BS:1377-9:1990 Clause 4.1
Testing Required:	Determination of Equivalent CBR Value using the Plate Bearing Test - Design Manual for Roads and Bridges, Volume 7: Pavement Design and Maintenance - Foundations HD25/9
Date Started	2nd September 2022
Date Clarled.	5th September 2022
Date Finished:	our September 2022

Report Issue Date:	5th September 2022
Reviewed By:	the
	N. Obrien - Labratory Manager
Authorised By:	
	J. Curry - Quality Technician
	(*) denotes testing is outside of UKAS Scope of
Remarks:	Accreditation.
	(+) denotes subcontracted testing.

Samples will be stored for one month after the report has been issue before being disposed of.

The published results appertain only to the specimens tested.

Exploration and Testing Associates Limited, registered in England and Wales #11803869 at 8B, Bowburn South Industrial Estate, Bowburn, Durham, DH6 5AD

Ü			Ĩ	Sur	nmary of in	-situ de	ensity te	est resu	lts	
Project No.			Project Name	e						
D	10557BK				Giga On	ie, Envision,	, Washingto	n		
Test Position Reference	Test reference	Depth to top	Date of test	Soil Description	Site conditions during test	Test Type see below	In-situ Bulk Density Ma/m ³	Moisture Content %	In-situ Dry Density Ma/m ³	Remarks
E433302_N 558994_Z4- L2	CC589		05/09/22	Clay	Sunny	CCD	1.91	16	1.65	
E433291_N 558985_Z4- L2	CC590		05/09/22	Clay	Sunny	CCD	1.98	19	1.66	
E433277_N 558979_Z4- L2	CC591		05/09/22	Clay	Sunny	CCD	1.97	21	1.62	
E433268_N 558976_Z4- L2	CC592		05/09/22	Clay	Sunny	CCD	2.00	19	1.69	

Specifications BS 1377 : Part 2 : 1990 Clause 3 Moisture content by oven drying method BS 1377 : Part 9 : 1990 : In situ density tests, clauses : SRDS 2.1 Sand replacement method (Small pouring cylind Page 2 of 9 SRDL 2.2 Sand replacement method (Large pouring cylinder)	Approved By Date 06/09/2022	N O'Brien Laboratory Manager	UKAS Accredited Laboratory No. 20632
SRDL 2.2 Sand replacement method (Large pouring cylinder) CCD 2.4 Core cutter method		llh-	





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BK
Client	Groundwork	Services (Durham) Limited	Date Tested	05/09/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Ind	dustrial Estate	Air Temperature °C	20°C
	Langley Moo	r	Sample Description	Type 1
	DH7 8HJ		Reaction Load	18t Tracked Excavator
Depth of T Groundley	Test from vel	0	Density & Moisture	Not Requested
Plate Dian	neter (mm)	600	Test Location	CBR 1 - Main Building
	Distance	between the edge of the plate and the wall	of the excavation (mm)	N/A

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement







Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	4.96
Pressure at 1.25mm penetration (kPa)	68	Modulus of Subgrade Reaction (Mn/M ² /M)	59.3
Calculated CBR (%) at 1.25mm	6.7		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved By:

6 J. Curry

06 September 2022

Approved Date:

Page 3 of 9





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Wa	shington	Job Number	D10557BK
Client	Groundwork	Services (Durham) Limited	Date Tested	05/09/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Ind	dustrial Estate	Air Temperature °C	20°C
	Langley Moo	r	Sample Description	Type 1
	DH7 8HJ		Reaction Load	18t Tracked Excavator
Depth of T Groundle	Test from vel	0	Density & Moisture	Not Requested
Plate Diar	neter (mm)	600	Test Location	CBR 2 - Main Building
	Distance	between the edge of the plate and the wal	of the excavation (mm)	N/A

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	4.80
Pressure at 1.25mm penetration (kPa)	53	Modulus of Subgrade Reaction (Mn/M ² /M)	45.6
Calculated CBR (%) at 1.25mm	4.4		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved By: 6

J. Curry

Approved Date:





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Wa	shington	Job Number	D10557BK
Client	Groundwork	Services (Durham) Limited	Date Tested	05/09/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Inc	dustrial Estate	Air Temperature °C	20°C
	Langley Moo	r	Sample Description	Type 1
	DH7 8HJ		Reaction Load	18t Tracked Excavator
Depth of T Groundle	Test from vel	0	Density & Moisture	Not Requested
Plate Diar	neter (mm)	600	Test Location	CBR 3 - Main Building
Distance between the edge of the plate and the wall of the excavation (mm)				N/A

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	4.76
Pressure at 1.25mm penetration (kPa)	70	Modulus of Subgrade Reaction (Mn/M ² /M)	61.4
Calculated CBR (%) at 1.25mm	7.1		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved By:

6 J. Curry

Approved Date:





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, W	ashington	Job Number	D10557BK
Client	Groundwor	k Services (Durham) Limited	Date Tested	05/09/2022
	Thistle Roa	d	Weather Conditions	Sunny
	Littleburn I	ndustrial Estate	Air Temperature °C	20°C
	Langley Mo	or	Sample Description	Type 1
	DH7 8HJ		Reaction Load	18t Tracked Excavator
Depth of T Groundle	Test from vel	0	Density & Moisture	Not Requested
Plate Diar	neter (mm)	600	Test Location	CBR 4 - Main Building
Distance between the edge of the plate and the wall of the excavation (mm)				N/A

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	6.91
Pressure at 1.25mm penetration (kPa)	46	Modulus of Subgrade Reaction (Mn/M ² /M)	38.8
Calculated CBR (%) at 1.25mm	3.4		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved By:

6 J. Curry

Approved Date:





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Wa	shington	Job Number	D10557BK
Client	Groundwork	Services (Durham) Limited	Date Tested	05/09/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Inc	lustrial Estate	Air Temperature °C	20°C
	Langley Moo	r	Sample Description	Type 1
	DH7 8HJ		Reaction Load	18t Tracked Excavator
Depth of T Groundley	Гest from vel	0	Density & Moisture	Not Requested
Plate Dian	neter (mm)	600	Test Location	CBR 5 - Main Building
Distance between the edge of the plate and the wall of the excavation (mm)				N/A

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	6.08
Pressure at 1.25mm penetration (kPa)	42	Modulus of Subgrade Reaction (Mn/M ² /M)	34.8
Calculated CBR (%) at 1.25mm	2.9		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved By:

6 J. Curry

Approved Date:





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Was	shington	Job Number	D10557BK
Client	Groundwork	Services (Durham) Limited	Date Tested	05/09/2022
	Thistle Road		Weather Conditions	Sunny
	Littleburn Ind	lustrial Estate	Air Temperature °C	20°C
	Langley Moor	r	Sample Description	Type 1
	DH7 8HJ		Reaction Load	18t Tracked Excavator
Depth of T Groundley	Test from vel	0	Density & Moisture	Not Requested
Plate Dian	neter (mm)	600	Test Location	CBR 6 - Main Building
Distance between the edge of the plate and the wall of the excavation (mm)				N/A

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	11.38
Pressure at 1.25mm penetration (kPa)	31	Modulus of Subgrade Reaction (Mn/M ² /M)	24.9
Calculated CBR (%) at 1.25mm	1.7		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved By: 6

J. Curry

Approved Date:



TEST CERTIFICATE Determination of the Shear Strength Using the Laboratory Handvane

Client: Groundwork Services (Durham) Ltd

Project: Envision, Washington

Sampled By: D. Rutter for ETA

Project No: D10557BK

Date Tested: 5th September 2022

Ambient Temperature: 21°C

Weather Conditions: Sunny Comments:

Vane Used: Small

	Z4-L2	Z4-L2	Z4-L2	Z4-L2
Client Reference	CC1	CC2	CC3	CC4
Reading 1	7.2	11.5	8.5	12.0
Reading 2	11.4	12.0	9.7	10.4
Reading 3	10.8	10.4	12.0	12.0
Average Readings:	9.8	11.3	10.6	11.4
Equivalent Shear Stress (kN/m2)	196	226	201	229

Approved By:

J. Curry Quality- Technician Date: 6th September 2022

Page 9 of 9





Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BS
Client	Groundwork Services (Durhan	n) Limited	Date Tested	16/09/2022
	Thistle Road		Weather Conditions	Clear
	Littleburn Industrial Estate		Air Temperature °C	9°C
Langley Moor			Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	Test from vel	0	Density & Moisture	Not Requested
Plate Diar	neter (mm)	450	Test Location	CBR 1 - Road

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement







Maximum Pressure Applied (kPa)	99	Maximum Deformation (mm)	1.28
Pressure at 1.25mm penetration (kPa)	99	Modulus of Subgrade Reaction (Mn/M ² /M)	68.5

Calculated CBR (%) at 1.25mm 8.4

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:	Approved By:
D. Rutter	.)
Materials Technician	J. Curry

Approved Date:





Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BS
Client	Groundwork Services (Durhan	n) Limited	Date Tested	16/09/2022
	Thistle Road		Weather Conditions	Clear
	Littleburn Industrial Estate		Air Temperature °C	9°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	Test from vel	0	Density & Moisture	Not Requested
Plate Diar	neter (mm)	450	Test Location	CBR 2 - Road

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement







Maximum Pressure Applied (kPa)	175	Maximum Deformation (mm)	1.27
Pressure at 1.25mm penetration (kPa)	175	Modulus of Subgrade Reaction (Mn/M ² /M)	128.5

Calculated CBR (%) at 1.25mm 22

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:	Approved By:
D. Rutter	J
Materials Technician	J. Curry

Approved Date:





Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BS
Client	Groundwork Services (Durhan	n) Limited	Date Tested	16/09/2022
	Thistle Road		Weather Conditions	Clear
	Littleburn Industrial Estate		Air Temperature °C	9°C
	Langley Moor		Sample Description	Clay
	DH7 8HJ		Reaction Load	13t Tracked Excavator
Depth of T Groundley	est from rel	0	Density & Moisture	Not Requested
Plate Dian	neter (mm)	450	Test Location	CBR 3 - Road

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement







Maximum Pressure Applied (kPa)	197	Maximum Deformation (mm)	1.32
Pressure at 1.25mm penetration (kPa)	190	Modulus of Subgrade Reaction (Mn/M ² /M)	140.7

Calculated CBR (%) at 1.25mm 26

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

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Test Carried Out By:	Approved By:
D. Rutter	1
Materials Technician	J. Curry

Approved Date:





N/A

Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BU
Client	Groundwork Services (Durham)	Limited	Date Tested	21/09/2022
	Thistle Road		Weather Conditions	Clear, Dry
	Littleburn Industrial Estate		Air Temperature °C	16°C
	Langley Moor		Sample Description	Stone
	DH7 8HJ		Reaction Load	17t Tracked Excavator
Depth of T Groundlev	est from el	0	Density & Moisture	Not Requested
Plate Diam	neter (mm)	600	Test Location	PLT1

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement





Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	4.19
Pressure at 1.25mm penetration (kPa)	90	Modulus of Subgrade Reaction (Mn/M ² /M)	81.4
Calculated CBR (%) at 1.25mm	11		

In Accordance with CD225 Design for New Pavement Foundations,CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

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Test Carried Out By:

D. Rutter Materials Technician

J. Curry

6

Approved By:

Approved Date:





N/A

Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BU
Client	Groundwork Services (Durham)	Limited	Date Tested	21/09/2022
	Thistle Road		Weather Conditions	Sunny, Dry
	Littleburn Industrial Estate		Air Temperature °C	16°C
	Langley Moor		Sample Description	Stone
	DH7 8HJ		Reaction Load	17t Tracked Excavator
Depth of T Groundlev	est from el	0	Density & Moisture	Not Requested
Plate Diam	neter (mm)	600	Test Location	PLT2

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement





Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	3.59
Pressure at 1.25mm penetration (kPa)	113	Modulus of Subgrade Reaction (Mn/M ² /M)	104.3
Calculated CBR (%) at 1.25mm	16		

In Accordance with CD225 Design for New Pavement Foundations,CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved By: 6

J. Curry 22 September 2022





N/A

Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BU
Client	Groundwork Services (Durham)	Limited	Date Tested	21/09/2022
	Thistle Road		Weather Conditions	Sunny, Dry
	Littleburn Industrial Estate		Air Temperature °C	16°C
	Langley Moor		Sample Description	Stone
	DH7 8HJ		Reaction Load	17t Tracked Excavator
Depth of T Groundlev	est from el	0	Density & Moisture	Not Requested
Plate Diam	neter (mm)	600	Test Location	PLT3

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement





Time Elapsed (mins)

Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	3.11
Pressure at 1.25mm penetration (kPa)	145	Modulus of Subgrade Reaction (Mn/M ² /M)	137.7
Calculated CBR (%) at 1.25mm	25		

In Accordance with CD225 Design for New Pavement Foundations,CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

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Approved Date:

Test Carried Out By:

D. Rutter

Materials Technician

Approved By: 6

J. Curry 22 September 2022





N/A

Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BU
Client	Groundwork Services (Durham)	Limited	Date Tested	21/09/2022
	Thistle Road		Weather Conditions	Sunny, Dry
	Littleburn Industrial Estate		Air Temperature °C	16°C
	Langley Moor		Sample Description	Stone
	DH7 8HJ		Reaction Load	17t Tracked Excavator
Depth of T Groundlev	est from el	0	Density & Moisture	Not Requested
Plate Diam	neter (mm)	600	Test Location	PLT4

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement





Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	3.85
Pressure at 1.25mm penetration (kPa)	100	Modulus of Subgrade Reaction (Mn/M²/M)	91.8
Calculated CBR (%) at 1.25mm	13		

In Accordance with CD225 Design for New Pavement Foundations,CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

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Test Carried Out By:

D. Rutter

Materials Technician

Approved By: 6

J. Curry 22 September 2022





N/A

Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BU
Client	Groundwork Services (Durham)	Limited	Date Tested	21/09/2022
	Thistle Road		Weather Conditions	Sunny, Dry
	Littleburn Industrial Estate		Air Temperature °C	16°C
	Langley Moor		Sample Description	Stone
	DH7 8HJ		Reaction Load	17t Tracked Excavator
Depth of T Groundlev	est from el	0	Density & Moisture	Not Requested
Plate Diam	neter (mm)	600	Test Location	PLT5

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement





Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	3.83
Pressure at 1.25mm penetration (kPa)	98	Modulus of Subgrade Reaction (Mn/M ² /M)	89.0
Calculated CBR (%) at 1.25mm	13		

In Accordance with CD225 Design for New Pavement Foundations,CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

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Test Carried Out By:

D. Rutter

Materials Technician

6 J. Curry

Approved By:

22 September 2022





N/A

Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BU
Client	Groundwork Services (Durham)	Limited	Date Tested	21/09/2022
	Thistle Road		Weather Conditions	Sunny, Dry
	Littleburn Industrial Estate		Air Temperature °C	16°C
	Langley Moor		Sample Description	Stone
	DH7 8HJ		Reaction Load	17t Tracked Excavator
Depth of T Groundlev	est from el	0	Density & Moisture	Not Requested
Plate Diam	neter (mm)	600	Test Location	PLT6

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement



Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	3.28
Pressure at 1.25mm penetration (kPa)	119	Modulus of Subgrade Reaction (Mn/M²/M)	111.3
Calculated CBR (%) at 1.25mm	18		

In Accordance with CD225 Design for New Pavement Foundations,CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved By: 6

Approved Date:

J. Curry 22 September 2022





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Wa	shington	Job Number	D10557BZ
Client	Groundwork	Services (Durham) Limited	Date Tested	05/10/2022
	Thistle Road		Weather Conditions	Rain
	Littleburn In	dustrial Estate	Air Temperature °C	14°C
	Langley Moc	r	Sample Description	Stone
	DH7 8HJ		Reaction Load	18t Tracked Excavator
Depth of T Groundle	Test from vel	0	Density & Moisture	Not Requested
Plate Diar	neter (mm)	600	Test Location	PLT1
	Distance	between the edge of the plate and the wall	of the excavation (mm)	N/A

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	4.10
Pressure at 1.25mm penetration (kPa)	120	Modulus of Subgrade Reaction (Mn/M ² /M)	112.0
Calculated CBR (%) at 1.25mm	18		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved By: 6

J. Curry

06 October 2022





Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BZ
Client	Groundwork Services (Durhan	n) Limited	Date Tested	05/10/2022
	Thistle Road		Weather Conditions	Rain
	Littleburn Industrial Estate		Air Temperature °C	14°C
	Langley Moor		Sample Description	Stone
	DH7 8HJ		Reaction Load	18t Tracked Excavator
Depth of T Groundley	Fest from vel	0	Density & Moisture	Not Requested
Plate Diar	neter (mm)	600	Test Location	PLT2

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement





Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	5.81
Pressure at 1.25mm penetration (kPa)	78	Modulus of Subgrade Reaction (Mn/M ² /M)	69.7

Calculated CBR (%) at 1.25mm 8.6

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:		Approved By:
D. Rutter		J
Materials Technician		J. Curry
	Approved Date:	06 October 2022





Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, V	/ashington	Job Number	D10557BZ
Client	Groundwo	rk Services (Durham) Limited	Date Tested	05/10/2022
	Thistle Roa	d	Weather Conditions	Rain
	Littleburn	ndustrial Estate	Air Temperature °C	14°C
	Langley M	por	Sample Description	Stone
	DH7 8HJ		Reaction Load	18t Tracked Excavator
Depth of Groundle	Test from vel	0	Density & Moisture	Not Requested
Plate Diar	neter (mm)	600	Test Location	PLT3
	Distan	ce between the edge of the plate and the wall of	the excavation (mm)	N/A

Pressure Applied / Plate Setlement



Settlement / Time



Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	5.04
Pressure at 1.25mm penetration (kPa)	103	Modulus of Subgrade Reaction (Mn/M ² /M)	94.7
Calculated CBR (%) at 1.25mm	14		

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:

D. Rutter

Materials Technician

Approved By:

J. Curry




N/A

Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BZ
Client	Groundwork Services (Durham) Limited		Date Tested	05/10/2022
	Thistle Road		Weather Conditions	Rain
Littleburn Industrial Estate			Air Temperature °C	14°C
	Langley Moor		Sample Description	Stone
	DH7 8HJ		Reaction Load	18t Tracked Excavator
Depth of Test from Groundlevel		0	Density & Moisture	Not Requested
Plate Diameter (mm)		600	Test Location	PLT4

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement





Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	10.37
Pressure at 1.25mm penetration (kPa)	51	Modulus of Subgrade Reaction (Mn/M ² /M)	43.0

Calculated CBR (%) at 1.25mm 4.0

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:		Approved By:
D. Rutter		J
Materials Technician		J. Curry
	Approved Date:	06 October 2022





N/A

Test Report Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing BS 1377-9:1990 Clause 4.1

Project	Envision, Washington		Job Number	D10557BZ
Client	Groundwork Services (Durhan	n) Limited	Date Tested	05/10/2022
	Thistle Road		Weather Conditions	Rain
	Littleburn Industrial Estate		Air Temperature °C	14°C
	Langley Moor		Sample Description	Stone
	DH7 8HJ		Reaction Load	18t Tracked Excavator
Depth of Test from Groundlevel		0	Density & Moisture	Not Requested
Plate Diameter (mm)		600	Test Location	PLT5

Distance between the edge of the plate and the wall of the excavation (mm)

Pressure Applied / Plate Setlement





Maximum Pressure Applied (kPa)	371	Maximum Deformation (mm)	4.97
Pressure at 1.25mm penetration (kPa)	69	Modulus of Subgrade Reaction (Mn/M ² /M)	61.1

Calculated CBR (%) at 1.25mm 7.0

In Accordance with CD225 Design for New Pavement Foundations, CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)

In Accordance with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94

Comments:

Unless otherwise stated, this test has been carried out in accordance with the published standard, with no deviations from the test method outlined.

The published results are appertaining only to the locations tested and are correct at the time of testing.

Test Carried Out By:	Approved By:
D. Rutter	10
Materials Technician	J. Curry

Approved Date:

06 October 2022