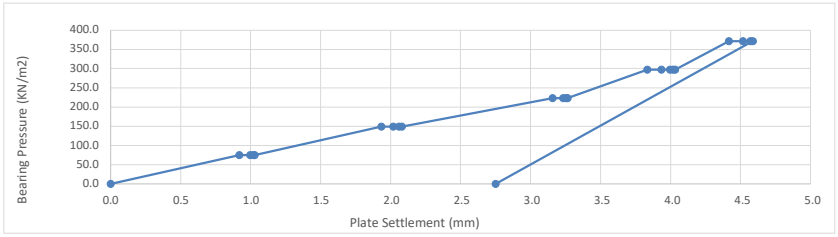
EXPLORATION
& TESTING ASSOCIATES
Unit 8B Bowburn South Industrial Estate
Durham, DH6 5AD
Tel. (+44) 0191 389 6543

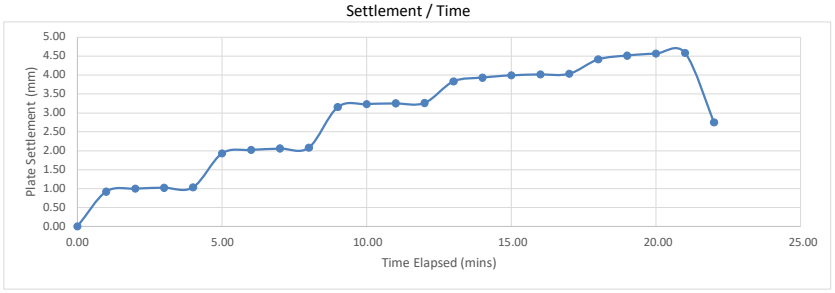
**Test Report**
**Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing**
**BS 1377-9:1990 Clause 4.1**

| | | | |
|---|---|---|---|
| **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** | PLT6 |
| **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)** | 4.59 |
| **Pressure at 1.25mm penetration (kPa)** | 92 | **Modulus of Subgrade Reaction (Mn/M²/M)** | 83.8 |
| **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In Accordance with CD225 Design for New Pavement Foundations,CBR Value has been caluclated in conjunction with superseded document IAN 73/06 Revision 1 (2009)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with CD225 Design for New Pavement Foundations, Modulus of Subgrade Reaction has been calculated in conjunction with superseded document HD 25/94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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**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: | 06 October 2022 |

EXPLORATION
& TESTING ASSOCIATES
Unit 8B Bowburn South Industrial Estate
Durham, DH6 5AD
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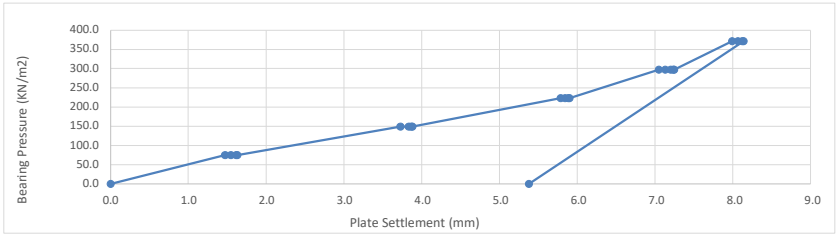
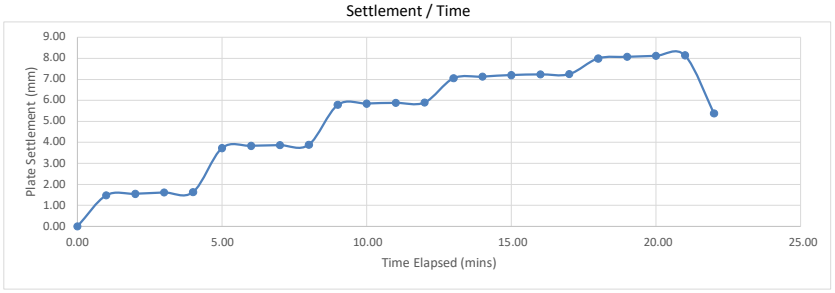
**Test Report**
**Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing**
**BS 1377-9:1990 Clause 4.1**

| | | | |
|---|---|---|---|
| **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** | PLT7 |
| **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)** | 8.14 |
| **Pressure at 1.25mm penetration (kPa)** | 63 | **Modulus of Subgrade Reaction (Mn/M²/M)** | 54.9 |
| **Calculated CBR (%) at 1.25mm** | 5.9 | | |

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**Test Carried Out By:**

D. Rutter

Materials Technician

**Approved By:**

J. Curry

Approved Date: 06 October 2022

EXPLORATION
& TESTING ASSOCIATES
Unit 8B Bowburn South Industrial Estate
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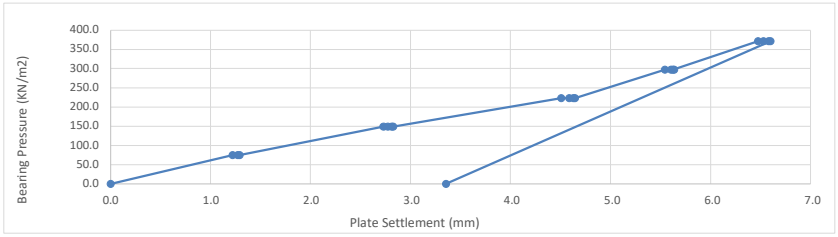
Tel. (+44) 0191 389 6543

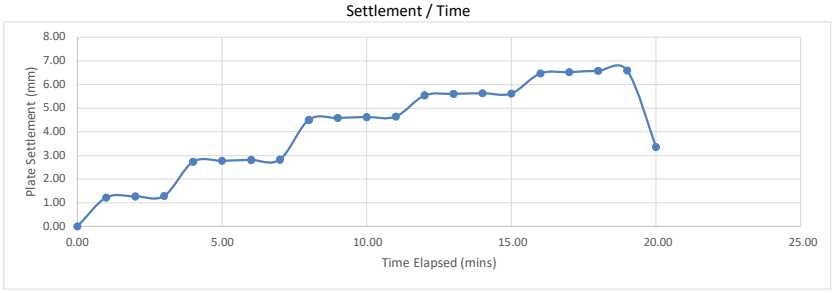
**Test Report**
**Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing**
**BS 1377-9:1990 Clause 4.1**

| | | | |
|---|---|---|---|
| **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** | PLT8 |
| **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)** | 6.60 |
| **Pressure at 1.25mm penetration (kPa)** | 74 | **Modulus of Subgrade Reaction (Mn/M²/M)** | 65.8 |
| **Calculated CBR (%) at 1.25mm** | 7.9 | | |

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**Test Carried Out By:**

D. Rutter

Materials Technician

**Approved By:**

J. Curry

Approved Date: 06 October 2022

EXPLORATION
& TESTING ASSOCIATES
Unit 8B Bowburn South Industrial Estate
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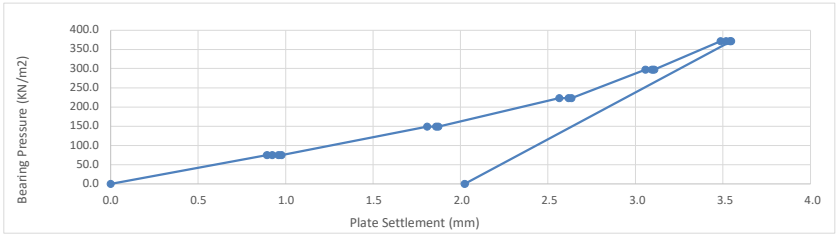
Tel. (+44) 0191 389 6543

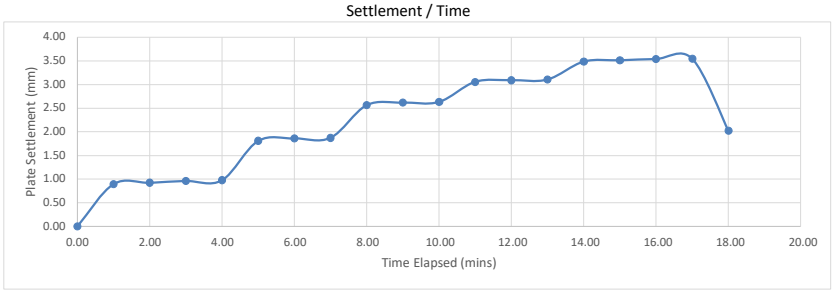
**Test Report**
**Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing**
**BS 1377-9:1990 Clause 4.1**

| | | | |
|---|---|---|---|
| **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** | PLT9 |
| **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)** | 3.55 |
| **Pressure at 1.25mm penetration (kPa)** | 99 | **Modulus of Subgrade Reaction (Mn/M²/M)** | 90.1 |
| **Calculated CBR (%) at 1.25mm** | 13 | | |

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**Test Carried Out By:**

D. Rutter

Materials Technician

**Approved By:**

J. Curry

Approved Date: 06 October 2022

EXPLORATION
& TESTING ASSOCIATES
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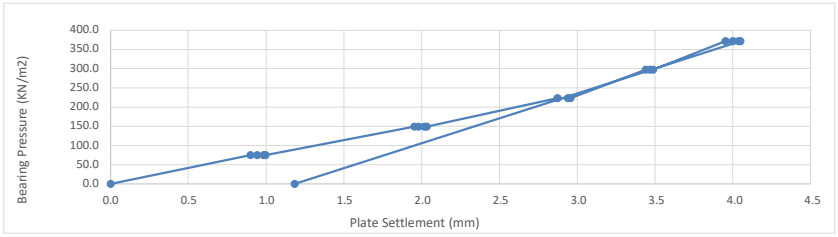
Tel. (+44) 0191 389 6543

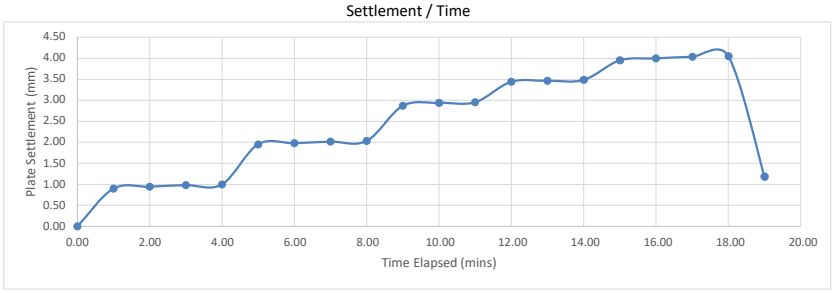
**Test Report**
**Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing**
**BS 1377-9:1990 Clause 4.1**

| | | | |
|---|---|---|---|
| **Project** | Envision, Washington | **Job Number** | D10557BZ |
| **Client** | Groundwork Services (Durham) Limited | **Date Tested** | 05/10/2022 |
| | Thistle Road | **Weather Conditions** | Overcast |
| | 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** | PLT10 |
| **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)** | 4.05 |
| **Pressure at 1.25mm penetration (kPa)** | 94 | **Modulus of Subgrade Reaction (Mn/M²/M)** | 85.4 |
| **Calculated CBR (%) at 1.25mm** | 12 | | |

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**Test Carried Out By:**

D. Rutter

Materials Technician

**Approved By:**

J. Curry

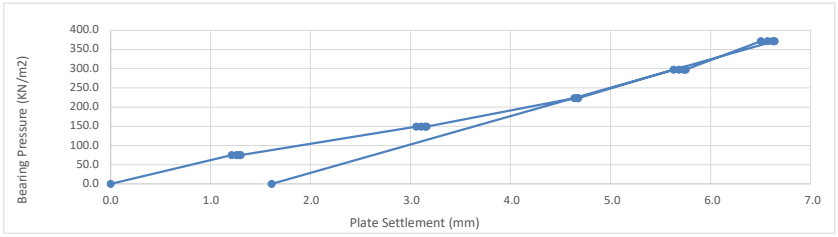
Approved Date: 06 October 2022

EXPLORATION
& TESTING ASSOCIATES
Unit 8B Bowburn South Industrial Estate
Durham, DH6 5AD
Tel. (+44) 0191 389 6543

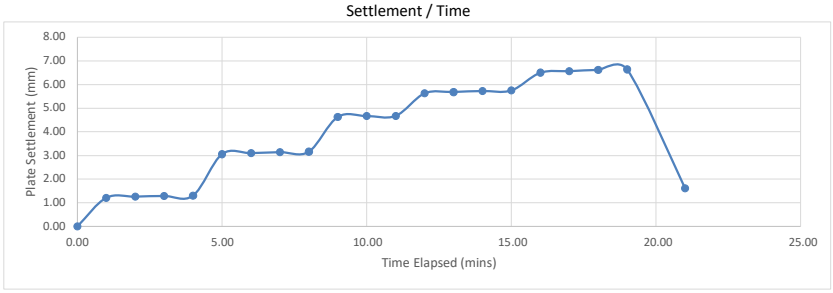
**Test Report**
**Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing**
**BS 1377-9:1990 Clause 4.1**

| | | | |
|---|---|---|---|
| **Project** | Envision, Washington | **Job Number** | D10557BZ |
| **Client** | Groundwork Services (Durham) Limited | **Date Tested** | 05/10/2022 |
| | Thistle Road | **Weather Conditions** | Overcast |
| | 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** | PLT11 |
| **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)** | 6.64 |
| **Pressure at 1.25mm penetration (kPa)** | 74 | **Modulus of Subgrade Reaction (Mn/M²/M)** | 65.8 |
| **Calculated CBR (%) at 1.25mm** | 7.9 | | |

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**Test Carried Out By:**

D. Rutter

Materials Technician

**Approved By:**

J. Curry

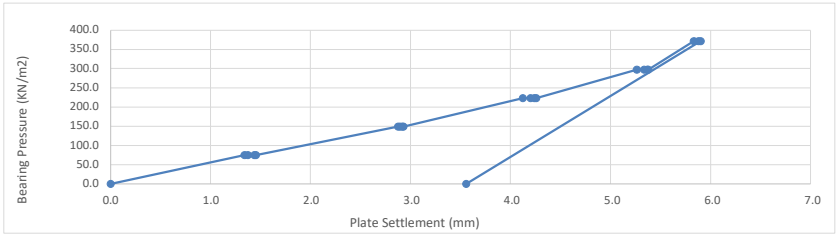
Approved Date: 06 October 2022

EXPLORATION
& TESTING ASSOCIATES
Unit 8B Bowburn South Industrial Estate
Durham, DH6 5AD
Tel. (+44) 0191 389 6543

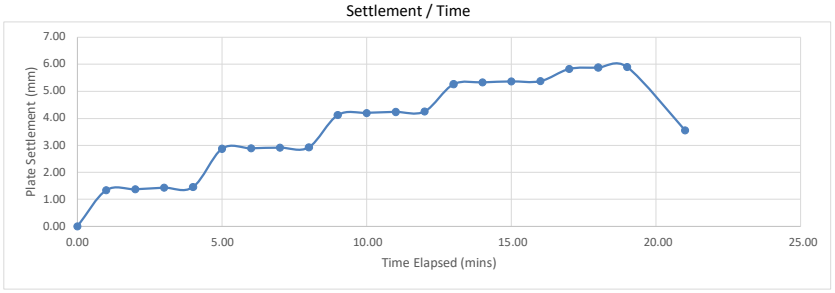
**Test Report**
**Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing**
**BS 1377-9:1990 Clause 4.1**

| | | | |
|---|---|---|---|
| **Project** | Envision, Washington | **Job Number** | D10557BZ |
| **Client** | Groundwork Services (Durham) Limited | **Date Tested** | 05/10/2022 |
| | Thistle Road | **Weather Conditions** | Overcast |
| | 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** | PLT12 |
| **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)** | 5.90 |
| **Pressure at 1.25mm penetration (kPa)** | 69 | **Modulus of Subgrade Reaction (Mn/M²/M)** | 60.9 |
| **Calculated CBR (%) at 1.25mm** | 7.0 | | |

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

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& TESTING ASSOCIATES
Unit 8B Bowburn South Industrial Estate
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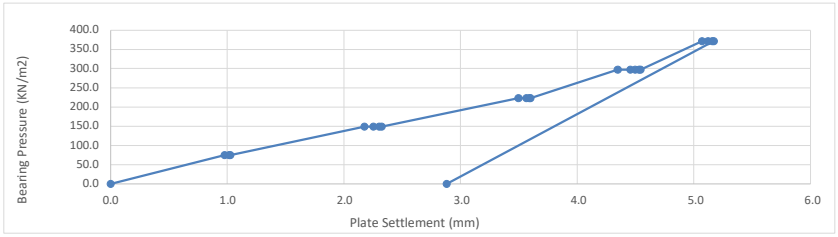
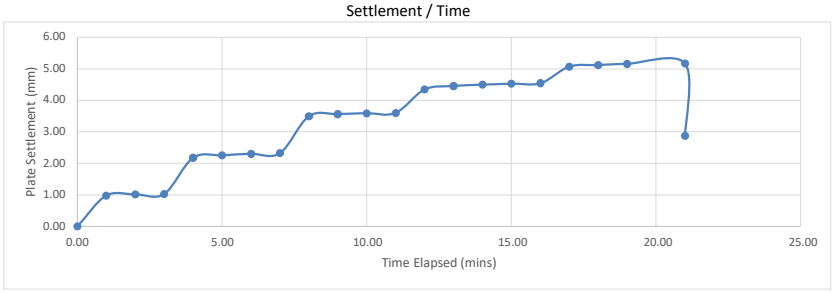
**Test Report**
**Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing**
**BS 1377-9:1990 Clause 4.1**

| | | | |
|---|---|---|---|
| **Project** | Envision, Washington | **Job Number** | D10557BZ |
| **Client** | Groundwork Services (Durham) Limited | **Date Tested** | 05/10/2022 |
| | Thistle Road | **Weather Conditions** | Overcast |
| | 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** | PLT13 |
| **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)** | 5.17 |
| **Pressure at 1.25mm penetration (kPa)** | 89 | **Modulus of Subgrade Reaction (Mn/M²/M)** | 80.1 |
| **Calculated CBR (%) at 1.25mm** | 11 | | |

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**Test Carried Out By:**

D. Rutter

Materials Technician

**Approved By:**

J. Curry

Approved Date: 06 October 2022

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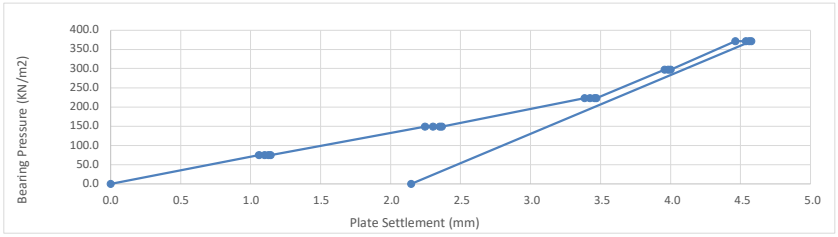
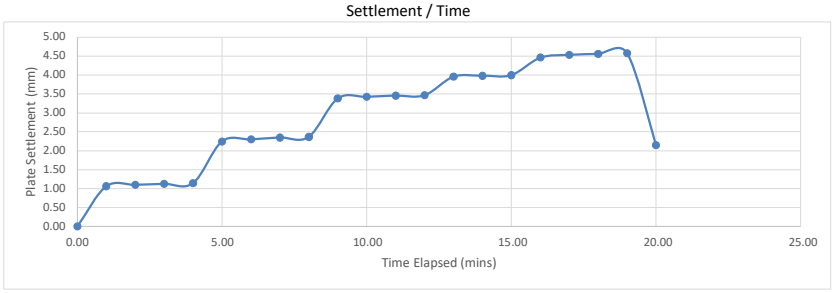
**Test Report**
**Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing**
**BS 1377-9:1990 Clause 4.1**

| | | | |
|---|---|---|---|
| **Project** | Envision, Washington | **Job Number** | D10557BZ |
| **Client** | Groundwork Services (Durham) Limited | **Date Tested** | 05/10/2022 |
| | Thistle Road | **Weather Conditions** | Overcast |
| | 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** | PLT14 |
| **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)** | 4.58 |
| **Pressure at 1.25mm penetration (kPa)** | 81 | **Modulus of Subgrade Reaction (Mn/M²/M)** | 72.9 |
| **Calculated CBR (%) at 1.25mm** | 9.2 | | |

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**Test Carried Out By:**

D. Rutter

Materials Technician

**Approved By:**

J. Curry

Approved Date: 06 October 2022

EXPLORATION
& TESTING ASSOCIATES
Unit 8B Bowburn South Industrial Estate
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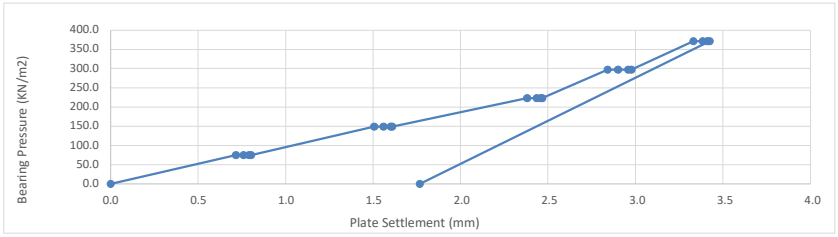
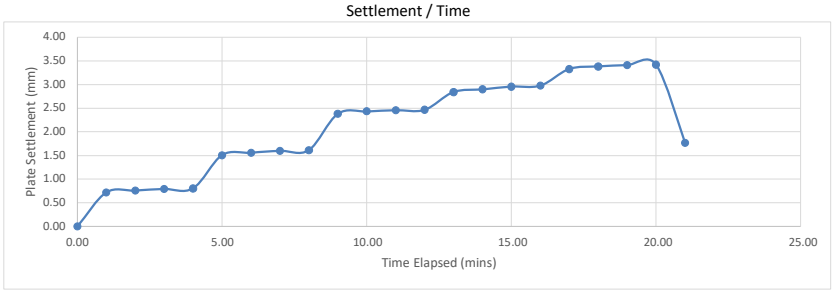
**Test Report**
**Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing**
**BS 1377-9:1990 Clause 4.1**

| | | | |
|---|---|---|---|
| **Project** | Envision, Washington | **Job Number** | D10557BZ |
| **Client** | Groundwork Services (Durham) Limited | **Date Tested** | 05/10/2022 |
| | Thistle Road | **Weather Conditions** | Overcast |
| | 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** | PLT15 |
| **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)** | 3.42 |
| **Pressure at 1.25mm penetration (kPa)** | 121 | **Modulus of Subgrade Reaction (Mn/M²/M)** | 113.5 |
| **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:**

J. Curry

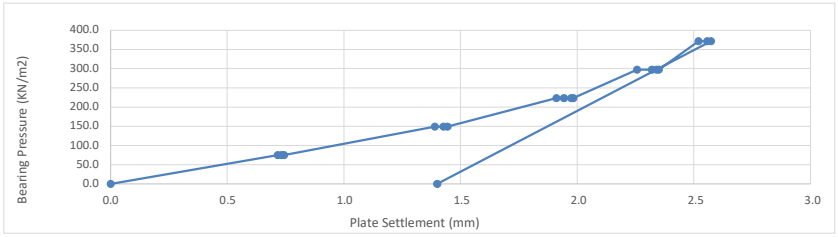
Approved Date: 06 October 2022

EXPLORATION
& TESTING ASSOCIATES
Unit 8B Bowburn South Industrial Estate
Durham, DH6 5AD
Tel. (+44) 0191 389 6543

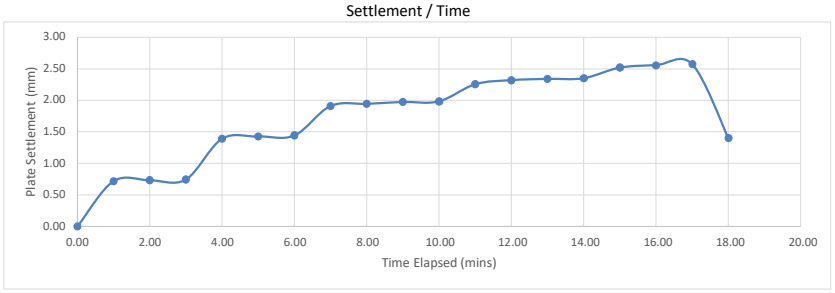
**Test Report**
**Determination of the Vertifcal Deformation and Strength Characteristics of Soil by the Plate Load Testing**
**BS 1377-9:1990 Clause 4.1**

| | | | |
|---|---|---|---|
| **Project** | Envision, Washington | **Job Number** | D10557BZ |
| **Client** | Groundwork Services (Durham) Limited | **Date Tested** | 05/10/2022 |
| | Thistle Road | **Weather Conditions** | Overcast |
| | 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** | PLT16 |
| **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)** | 2.57 |
| **Pressure at 1.25mm penetration (kPa)** | 132 | **Modulus of Subgrade Reaction (Mn/M²/M)** | 124.9 |
| **Calculated CBR (%) at 1.25mm** | 21 | | |

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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**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

Approved Date: 06 October 2022

# EARTHWORK VALIDATION

## Envision, Battery Plant, Sunderland

2022-12-23

JER8968

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**Contact**

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