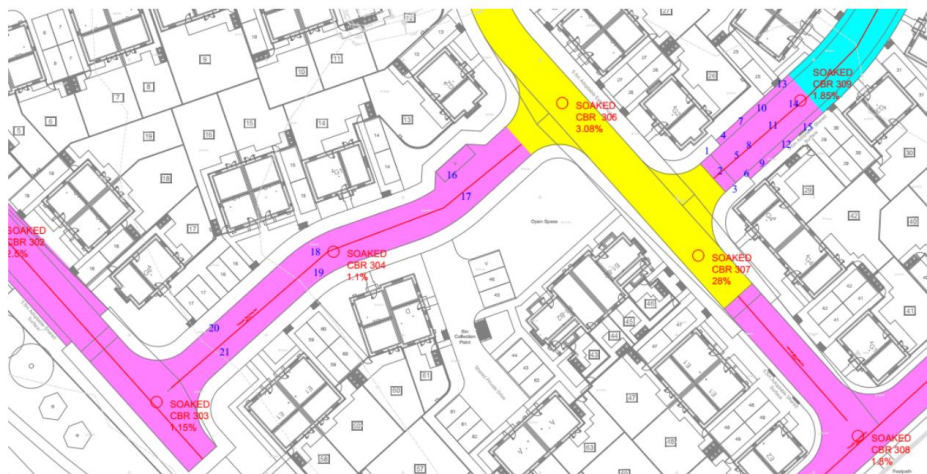


Stevenage – Embankment Stabilisation

Project	JJM2642 – Adoptable Roads Stabilisation
Location	Marham Park Bury St Edmunds
Client	Orbital Homes
Key works delivered	Capping and Sub Base Replacement - Stabilisation
Project Duration	March 2022
Stabilised Area	5,000m ²
Earthworks	By MC



PROJECT OVERVIEW

- Adoptable Estate Road identified as suitable for Capping replacement by Stabilising the site won excavated material
- Excavated material on site to be shifted and In-situ treat material laid in layers to provide a 9E or 9F Capping Layer - 450mm deep in two layers with Lime and Cement in Class 6R or 7I material to achieve min 15% CBR, 95% Compaction (2.5kg Rammer) & HSV's > 60kPa.
- Client requirements 95% Compaction and 30% CBR Non Frost Susceptibility
- JJMac tested and classified the material as suitable to achieve these requirements

643 (02/16) Lime and Cement Stabilisation to Form Capping

1 (02/16) Where capping is to consist of, either wholly or in part, lime and cement stabilised material **Class 9E or 9F**, this Clause shall apply to the construction of those parts which are stabilised with lime and cement.

2 (02/16) Material to be stabilised with lime and cement shall be **Class 6R or 7I** material all complying with Clause 601 and Table 6/1.

PROJECT CHALLENGES

The project was very challenging as the drainage had been installed prior to Stabilisation. Mellowing of the lime mix was min 24hrs, so time management and coordination was a key requirement from all parties on site to ensure an efficient operation and highest quality was always maintained.

Poor CBR % at formation level would require careful working with heavy machinery not to damage the formation.



TEST REPORT
Soil Property Testing Ltd

Date of Issue as page 1

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Contract Parcel F, Marham Park, Bury St Edmunds.

Serial No 39570_1

Date of Test: 11/10/2021

PRIMA LIGHT WEIGHT DEFLECTOMETER TEST								
FOUNDATION SURFACE MODULUS (E _{mod}) – STIFFNESS – MPa								
Test No	Approximate Location		E _{mod} (MPa)	kNmm ²	Average Deflection (µm)	Average CBR of three test drops	Surface Material	Surface Moisture / Observations
	Chainage	Position						
1	40	Left hand side of roadway 1.0m from kerb edge	24.60	0.025	1154	2.4	Light grey Chalk MARL	Damp 5.8°C
2	40	Right hand side of roadway 1.0m from kerb edge	23.03	0.023	1163	2.3	Light grey Chalk MARL	Damp 5.8°C
3	50	Left hand side of roadway 1.0m from kerb edge	20.52	0.021	1402	2.0	Light grey Chalk MARL	Dry 7.2°C
4	50	Right hand side of roadway 1.0m from kerb edge	19.84	0.200	1431	1.9	Light grey Chalk MARL	Dry 7.2°C
5	50	Left hand side of roadway 1.0m from kerb edge	27.50	0.021	908	2.8	Light grey Chalk MARL	Dry 7.2°C
6	50	Right hand side of roadway 1.0m from kerb edge	27.01	0.027	917	2.6	Light grey Chalk MARL	Dry 7.2°C
7	20	Left hand side of roadway 1.0m from kerb edge	33.48	0.033	835	3.3	Light grey Chalk MARL	Dry 8.4°C
8	20	Right hand side of roadway 1.0m from kerb edge	31.62	0.032	857	3.1	Light grey Chalk MARL	Dry 8.4°C
Remarks	Tests carried out at various locations along the length of the carriageway at the top of the foundation as instructed by the client.							
Date	Time	Engineer	In-House Calibration		Conditions			
11/10/2021	10:30	A Butcher BSc (Hons)	Checked		Clear 17°C			
LWD Used	Prima 100 Serial No. PMC 2020002		Next manufacturers calibration due: 26/03/2022					

ENGINEERING AND SOLUTIONS TO OVERCOME THE CHALLENGES

To overcome the project challenges set by the client, our team:

- Worked with the client and advised on the findings of the site won material testing and classification.
- The challenge was to spread and stabilise the excavated material by mixing with Cement and complying with the stringent testing schedule for the stabilised material.
- Our site team set to work with the MC team to develop a system to allow both earthworks and stabilisation to progress efficiently.

Stabilisation during Construction Phase

Agile equipment utilised for the tight working conditions in and around the drainage
Fendt tractor and Stehr Tractor mounted Stabilisation Mixer



Completed Works

Stabilised Capping Replacement sealed with Bitumen Tack Coat


CBR Report on Finished Stabilised Surface

TEST REPORT
Soil Property Testing Ltd

Date of Issue as page 1

Page of 5

Contract Marham Park Road 3a

Serial No 39825_1

Date of Test: 11/10/2021

PRIMA LIGHT WEIGHT DEFLECTOMETER TEST								
FOUNDATION SURFACE MODULUS (E _{mod}) – STIFFNESS – MPa								
Test No	Approximate Location		E _{mod} (MPa)	kNmm ²	Average Deflection (µm)	Average CBR of three test drops	Material	Surface Moisture / Observations
	Chainage	Position						
1	5	Left hand side of roadway 1.0m from kerb edge	463.80	0.464	58	166.0	stabilised road surface	Dry 14°C
2		Centre line of roadway	454.33	0.454	59	160.7	stabilised road surface	Dry 14°C
3		Right hand side of roadway 1.0m from kerb edge	472.23	0.472	56	170.7		
4	10	Left hand side of roadway 1.0m from kerb edge	469.27	0.469	57	169.0		
5		Centre line of roadway	476.13	0.476	56	172.9		
6		Right hand side of roadway 1.0m from kerb edge	485.70	0.486	55	178.4		
7	15	Left hand side of roadway 1.0m from kerb edge	543.80	0.544	50	212.8		
8		Centre line of roadway	553.27	0.553	49	218.6		
9		Right hand side of roadway 1.0m from kerb edge	552.47	0.552	49	218.1		
10	20	Left hand side of roadway 1.0m from kerb edge	360.27	0.360	74	111.8		
11		Centre line of roadway	314.77	0.315	85	90.6		
12		Right hand side of roadway 1.0m from kerb edge	412.53	0.413	67	138.2		

ADVANTAGES

The works had numerous advantages to this site.

- Utilise site won material from Excavations for Modification
- Elimination of Primary Aggregates for making up levels
- Elimination of Primary Aggregate and Lorries from the surrounding Roads

BENEFITS TO CLIENT

Cost Saving



60%

Programme Reduction



70%

Vehicle Movements Reduction



95%

Imported Aggregate Reduction



90%

Material Sent To Landfill Reduced By



100%

Stone Layer Depth Reduction



75%